Ashley King

1. Contact Information

Name: Ms. Ashley King

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Home Phone:

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Institution Name: Clark Public Utilities StreamTeam

Institution Address:
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Institution Phone: 360-992-8585

Classroom/Office Extension:

Institution Fax: 360-992-8027

Institution Website: www.StreamTeam.net

Other relevant websites: www.omsi.edu

Supervisor's Name: Jeff Wittler

Supervisor's Email Address: JWittler@clarkpud.com

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work primarily with students in the 4th - 8th grade, along with some students in 9 - 12th grade, from public, private, and home schools in suburban Vancouver, Washington. The students I work with have regular access to technology and approximately one third are eligible for free or reduced lunches.

d. Type of School (or students you work with): Other (describe below)

Other Type of School Being an informal educator, I work with both public and private schools, as well as home schooled students.

e. What is the population of your annual audience or school (estimates are fine) 15,000

f. School Ethnicity:
1.1 % - American Indian or Alaska Native
4.8 % - Asian
2.3 % - Black or African American
9.7 % - Hispanic or Latino
0.9 % - Native Hawaiian or Other Pacific Islander
77 % - White
4.2 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 33.6

h. Average class or audience size 30

i. Total number of students/audiences you teach in a year approximately 15,000 students

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Stream Stewards adult education series runs late September – first Saturday in November Leader Training, Earth Day and the Home and Garden Idea Fair are in April AmeriCorps recruitment is primarily in May and June AmeriCorps enrollment is in August AmeriCorps orientation and training is in September

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology and Psychology

Bachelor's Degree (Minor):

Masters Degree (Discipline): Organismal Biology and Ecology

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 14

c. How many years have you been working at your current institution?: 8

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Selected for participation in Leadership Training at work. Recruited to go through training to become a Master Volunteer at the Oregon Museum of Science and Industry. Received two (2) Aquatic Lands Enhancement Account grants ($14,375 in 2019 and $10,000 in 2015) Received a TEGNA Make a Difference Day Award ($10,000 in 2018) in recognition of a large-scale volunteer tree planting project. Received a Gifts for our Community grant ($2,500 in 2015) in support of our Earth Day Fest tree planting and community fair.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Middle School (Grades 6-8), Secondary (Grades 9-12), Informal Education (Science or Nature Center, Museum, etc.), Other (Describe Below)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science, Secondary Biology, Secondary Earth Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I have always been motivated to learn as much as I can from the natural world. I think that is what led me to my career in environmental education and program management, as well as my application for PolarTREC. I spend a great deal of time teaching the public about the importance of our water as a part of a stream restoration program. Among other lessons, I teach local students about the water cycle, how such a small percentage of our water is fresh water, and that most of our fresh water is caught up in the places like the polar ice caps. I think a trip with PolarTREC would allow me to increase the STEM content of my lessons and incorporate more details into these lessons, along with personal stories that will help the students retain the material more easily. I am also a Master Volunteer at the Oregon Museum of Science and Industry (OMSI). I would love to help create supplemental exhibits and demonstrations with the information I learn on one of these trips.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I believe that many of the topics covered on one of these trips could be incorporated into both my paid work for StreamTeam and my volunteer work at the Oregon Museum of Science and Industry (OMSI). The material could be added to student tours with local school groups, presentations in local schools, and even our adult education workshops at StreamTeam. OMSI’s Life Science Hall or Earth Lab would be the perfect home for new hands on demonstrations created as the result of a trip with PolarTREC. I am fascinated by the extreme conditions in the Arctic and Antarctic and want to learn more about adaptations that plants and animals in these locations have evolved, whether invasive species are becoming more prevalent in these regions as the result of global warming, and what types of renewable energies the research stations are using given their remote locations. However, I think almost any topic explored on this trip could be relevant to both my paid and volunteer work.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

The Oregon Museum of Science and Industry (OMSI) hosts free evening workshops

for educators on a range of topics. I would love to develop one focused on my experience with PolarTREC. I have even gone as far as to mention the possibility to my supervisor at OMSI, who also manages the educator workshops. This is an established program that brings in dozens of educators each night. I can also imagine developing online resources available to educators to be used in classrooms throughout the world and demonstrations that I can perform in local classrooms and the museum. As the author of the StreamTeam newsletter, this is an easy platform for sharing my experience with the community, and I could potentially even write an article for the OMSI volunteer newsletter. Being in charge of outreach for StreamTeam, I am an experienced communicator with a passion for engaging my community in scientific education.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Games or competitions are a great way to get students engaged. One of our popular activities for younger students is the salmon life cycle obstacle course. Students are taught the life cycle of salmon and their basic habitat needs before running through an obstacle course where they encounter some of the challenges faced by salmon, such as the turbine of a dam, commercial or recreational fishers, birds of prey, food limitation, bears, and waterfalls, before returning to the start to lay their eggs. I have found that students really retain the material after participating in the obstacle course. For older students, I like to tie the material to career paths and how it can be applied in real life. I also try to provide problems for the students to solve. For instance, after talking about habitat needs and problems faced by salmon or other wildlife, I give students scenarios and ask them what they would do to fix the problem. Often, I'll have them work in groups and then have the groups present to the rest of the class what they decided to do and why. I invite group discussions when possible.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I have a good grasp on a wide range of scientific fields including evolutionary biology, ecology, and earth science. I love discussing scientific issues and could provide valuable insight during group discussions. I understand the importance of attention to details and accuracy when collecting scientific data. I do well in group settings but am also happy taking a leadership role if I feel that I have enough knowledge and skills to do so effectively. I am an avid hiker and backpacker with training in wilderness first aid. Although my wilderness first aid training has lapsed, I

am currently certified in regular first aid and CPR. I am used to spending hours at a time outdoors in the winter in Montana teaching winter ecology to school children.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I currently collaborate with my supervisor and three co-workers to formulate and achieve shared goals. I also supervise a team of six AmeriCorps members and one student employee. As a result, I am equally comfortable taking the lead or letting someone else take the helm. My three co-workers are responsible for planning the restoration projects that our organization undertakes. I'm responsible for incorporating the public and school groups into our work both through education on the importance of our work and through hands-on experience at volunteer events and service-learning projects. And the AmeriCorps members and student employee help me implement our outreach and volunteer events. In all aspects of our program, I make sure that there are clear lines of communication, a reason for what we are doing, guidelines on how to reach our goals, and tangible results at the end of each project. StreamTeam participates in dozens of community events, hosts approximately 24 volunteer events, and makes thousands of community contacts each year. Our largest event, a tree planting and community fair for Earth Day, has increased five-fold in my time with StreamTeam.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Yesterday, my friend and I completed a grueling but rewarding hike in preparation for our goal of the hiking season: a hike to the Enchantment Lakes of Washington. The Enchantments will test our endurance over the course of 18 miles and 4500 feet of elevation gain, 2000 of which will come in less than a mile! But as the name suggests, the Enchantments are a magical place which will be made even more inspiring when the larch trees will turn golden right before dropping their needles in late October. Two species of deciduous conifer trees are found in the Pacific Northwest, the western larch, Larix occidentalis, and the subalpine larch, Larix lyallii. While most conifer trees keep their green needles year-round, these larches are unique in losing their needles to conserve resources because they grow in areas that are typically too cold to support photosynthesis in the winter. So with this goal in mind, we hiked 11 miles with 2300 feet elevation gain in the nearby Mount Hood Wilderness. Although we didn’t get treated to a view of golden larches, we got an up-close view of Mount Hood, which is certainly award enough!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
April, May, and August are hard months for me to be away from work. The Antarctic field season works better with my work schedule.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
3 – 5 weeks I am not available from September 1 – October 24.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I have always been fascinated by evolutionary biology and how it explains why lifeforms are the way they are. I would love to learn more about the adaptations that plants and animals have evolved to live in the extreme conditions found in the Arctic and Antarctic. Does living in a harsher environment limit the number of resources devoted to sexually selected traits such as showy plumage or male weaponry? Does it impact mating or social systems? In other words, are animals more likely to establish pair bonds or live in groups when living in harsh conditions. I'm also interested in many aspects of climate change. For example, what role is climate change playing in evolutionary biology? I'm curious about the presence of invasive species in the Arctic and the Antarctic and if their numbers are increasing as a result of climate change. I'm also interested in how quickly the glaciers and icecaps are melting, and what impact this is having on the water cycle. Additionally, I'm interested in the forms of renewable energy that the research stations are utilizing due to their remote locations.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
Adaptations to Life in Extreme Cold and Prolonged Darkness

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am an avid hiker, camper, and backpacker, spending as much of my free time outdoors as I can. I am often the person to plan the backpacking trips for myself and my friends. I go kayak camping one or two times a year. A couple of years ago, I spent 5 days kayak camping in Glacier Bay, Alaska. I have previously been trained in wilderness first aid, but it has since expired. However, I am current on CPR and First Aid.

b. Provide a basic statement of your general health and physical condition.
I am in excellent health and extremely active. I spend most of my breaks at work walking and practice yoga, hiking, backpacking, and weight lifting.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I have experience with both Macs and PCs. I currently use PCs running Windows 10 both at home and at work. I have used Macs in graduate school and previous jobs.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am very familiar with Office Suite including Access, Outlook, Word, Excel, and PowerPoint, as well as Photoshop. I also use laptops and tablets both for work and personal use, and both point and shoot and DSLR cameras.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Nate Lesiuk

Title and affiliation Senior Program Developer, Oregon Museum of Science and Industry

Email Address nlesiuk@omsi.edu

Phone Number 503-239-7817

Reference 2

Name Jeff Wittler

Title and affiliation Environmental Resources Manager, Clark Public Utilities

Email Address JWittler@clarkpud.com

Phone Number 360-992-8577

Reference 3

Name Aaron Shaw

Title and affiliation Restoration Program Manager, Tualatin Soil and Water Conservation District

Email Address Aaron.shaw@tualatinswcd.org

Phone Number 503-648-3174 ext 112

2020-2021 PolarTREC Educator Application

Cara Kinsey

1. Contact Information

Name: Ms. Cara Kinsey

Email: ckinsey@springfield-or.gov

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305 F St
Springfield, OR 97477 US

Home Phone: 206-928-1596

Cell Phone : 206-928-1596

Institution Name: Springfield Public Library

Institution Address:
225 5th St
Springfield, OR 97477 US

Institution Phone: 541-726-3766

Classroom/Office Extension: 541-726-4653

Institution Fax:

Institution Website: wheremindsgrow.org

Other relevant websites:

Supervisor's Name: LuCinda Gustavson

Supervisor's Email Address: lgustavson@springfield-or.gov

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Primarily working with teens ages 12+ in a town of approximately 60,000. The town has a large Hispanic population and neighbors a university town, but is surrounded by rural areas. It is estimated that more than 20% of the population lives below the poverty level and there are still many in the population without ready access to technology.

d. Type of School (or students you work with): Other (describe below)

Other Type of School I work as the teen librarian in the public library, serving all teens in the city and connecting with all the local public middle and high schools officially, as well as serving home schooling groups and teens in on-traditional educational experiences.

e. What is the population of your annual audience or school (estimates are fine) With visits to all local middle school and high schools, most local teenagers see me at least once a year, even if they don't know who I am or don't talk to me. It is also the goal of the library to reach all of at least one grade in each middle school.

f. School Ethnicity:
1 % - American Indian or Alaska Native
1 % - Asian
1 % - Black or African American
12 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
85 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: Up through last year, 7 of the 20 schools in Springfield qualified all students for free/reduced lunch. With a change this year to individuals having to apply, and some families wary of the paper trail, current numbers are uncertain.

h. Average class or audience size 15-20 for in-library programs, 30 for class visits, and 200+ for lunchtime visits to schools.

i. Total number of students/audiences you teach in a year Weekly teen programs at with an average attendance of 15-20, plus outreach too schools.

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Working in the public library, we take programming breaks four times a year in Late May/Early June, Late August/Early September, Late November/Early December, and Late February/Early March. We do special programs for children during shorter school breaks and for all ages during traditional summer vacation times.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Religion

Bachelor's Degree (Minor):

Masters Degree (Discipline): MSIS in Library Science and MS in Multidisciplinary Studies (Education)

PhD Degree (Discipline): Working on an Ed.D. in Educational Technology

Other Degree:

b. How many years of education experience do you have?: 16

c. How many years have you been working at your current institution?: 1.25

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
ESOL Certification (120+ Hours) Leadership Certificate Buffalo State Washington State Public Library Certificate New York State Public Library Certificate Former head of LITA Imagineering Interest Group, running large program at yearly American Library Association meetings for several years. Former Head Sagebrush Award Committee for one year appointment. Former reviewer for School Library Journal. Guest presenter at several conferences and training days, including book-talking and talking about reaching teen audiences in school and public library settings.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8), Secondary (Grades 9-12), Informal Education (Science or Nature Center, Museum, etc.), Librarian, Other (Describe Below)

Other Primary Assignment I work with all ages at the library, but my primary assignment for programming and collection development is with teens ages 12+.

b. What subjects do you teach? Check all [webform_submission:values:subjects]

Other Subjects In the past, working in schools, I have taught Primary and Middle School French, Middle School Study Skills, High School Religion, High School Yearbook, and independent studies in language learning.

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I have a passion for information literacy. As someone with a decade working in schools and years in public libraries, I'm interested in discovering how the public library can best support both the students and the educators in our community, especially as very few local schools have trained librarians and that problem is increasing nationwide. My experience teaching has shown the importance of learning skills in context. I feel that this experience will allow me to combine personal research with academic research in a way that I can share with students so they can understand the realities of "Real Life Research" (as I'm calling it), essentially, how to approach finding information, from the mundane to the scientific.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I want to turn this experience into a teaching exercise on "Real Life Research". I'm picturing curriculum/lessons, an article/book, and perhaps an online learning experience. While leading students to think about how to approach answering a question, I can show the different types of research including everything from Google skills to peer-reviewed articles. Information literacy in real life might mean something like figuring out how to get from point A to point B, or it might mean very deep study on the topic of personal study. It might mean a quick answer to "who was Queen Anne" before deciding to go to a movie, or it might mean a college-level research paper. I feel that this experience would allow for different levels of information literacy practice in action! My school district has 1 trained librarian in the 4 middle schools and 1 in the 4 high schools. The support staff who work in the other libraries are looking for ways to get their students interested in reading. I want to find a fun way to get them interested in information literacy.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I would first use the experience to reach out to students, teachers, and library staff on the way research can be fun, exciting, and relevant. It's hard to teach information literacy in a vacuum, and this gives a very real experience upon which to focus. I would then want to turn this experience into something I could share more broadly.

The ultimate goal would be a book that talks about something like Real Life Research, but even if that goal were never achieved, I would want to share my experience with other librarians through publications or conference sessions so they could then take what I had learned and apply it for themselves.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I currently have a weekly program with teens. While some are fun or zany activities, I make sure to include certain topics in the regular schedule, including STEM, Adulteen (skills they'll need as adults but might not learn in school), and social action. I run a teen volunteer program and organize a local volunteer fair to connect teens to other organizations for volunteer opportunities. I teach information literacy workshops to classes from local high schools, middle schools, and homeschool groups. I create flyers and handouts to advertise resources.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I think my particular strengths include a passion for information literacy, a love of exploring new experiences, and a great desire to find new ways to reach teens and give them an opportunity to explore their own passions. In this world of information overload, there is a myth of the digital native that sees youth as being fully capable of finding the information they need. The reality is they have more access and fewer skills than ever. The skills they would be exposed to in following a polar research project and my experience could help them better understand how research skills are transferable to life skills and personal research.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

My concept of working with others is that there’s no one way to work with others. When I work with classroom teachers, I’m happy to be the teacher, co-teach, or just be a support person in the room, for instance. I approach teams the same way. Some teams choose to divide and conquer the task, others choose to work together through the entire problem. I’m open to whatever works based on the team makeup and strengths of individual members. I know myself though, and I’m never a completely passive member of a team. I don’t have to be the leader and I don’t have to have things done my way, but I will always be an active participant in ideas and discussions.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

The best laid plans. After much planning, the cake decorating workshop for teens had arrived. I had 36 cupcakes, even though average attendance is 15-20. I had extra frosting, gum paste, and fondant materials, because over-prepared is better than under-prepared. When the doors opened, we had 40 people waiting. I didn't panic. We had enough supplies, and the teens could choose to work with gum paste or make their own fondant. After giving them information and choices, all but 4 of them chose the same activity and the lines were long. I still didn't panic. The first person let the marshmallows boil over. I didn't panic, but I started to be concerned. I thought back to the last time I'd had a larger-than-expected group, and made a quick decision. A quick run back to my supervisor, and within minutes two of my colleagues came out to help. Sometimes the right answer to a problem isn't to work it out for yourself, it's to enlist help. I may be the teen librarian, but the whole library staff supports me, and they were amazing at giving me a hand.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I have a preference for the Antarctic because of both the time of year being better for missing work (summer is peak season at the public library, although April and May of the Arctic research season could work. Although if there were ever an opportunity to go to Wrangel Island, north of Russia, that would be amazing, since it's named after a relative and it's impossible to get to!

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
Realistically, Mid June-August would be a difficult time to request leave from my work because of the peak season at the public library. Although personally I would love any length of time on an expedition, a shorter expedition would make more sense for unpaid leave or an attempt to use vacation time. Also, the ability to share my experiences does not absolutely require a longer period in the field.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My area of scientific interest lies in the field of information science and technology, and where these two intertwine. Information literacy and research skills are applicable in every day life, long after people stop doing academic research, but it's hard to get across the importance of critical thinking and application of good habits. I like being a librarian because I feel that I can try to help students find the fun in learning. As a librarian, I am legitimately interested in almost everything, even if a topic is not my passion. I think that a good match with a researcher for a PolarTREC experience would connect with at least one of the following elements 1) the researcher would like me to do research for them, including exploration of existing information and literature and/or 2) the topic or experience is such that there is sufficient non-academic research that can be done in conjunction with academic research to demonstrate different research skills. This non-academic element can be as simple as preparing for a polar expedition!

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

n/a

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have had a gun license since the age of 12, but have not shot a firearm in the past 20 years. Experiences as a teenager include shot guns and rifles, but not hand guns. I grew up around boats including small sailboats (420s and lasers) as well as spending extended vacations (3-5 weeks) on both a 21 foot sailboat and a 26 foot powerboat. I have experience crewing such craft through locks and being asked to tether and untether craft. I have limited camping and hiking experience.

b. Provide a basic statement of your general health and physical condition.
I am in basic good health including the ability to walk long distances in flat areas. I have no major health issues and no serious allergies.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am almost equally familiar with Macs and PCs due to having jobs and educational experiences that have had me regularly switching back and forth between the platforms. I currently use a laptop from each operating system for graduate school work. I currently use PCs more frequently than Macs because my job supplies PCs, but as more and more applications are cloud-based, I have found the differences between the platforms have become less noticeable.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Regular Use: Outlook Google Apps (gmail, drive, etc.) Microsoft Suite (particularly word, publisher, and excel) Facebook (personal and professional) Intermittently Regular Use (not a regular part of my job or life but used with enough frequency to keep in practice): Digital cameras (Cannon and Nikon). Adobe Photoshop Green Screen technology Website maintenance (Google Sites and Wix) Adobe Premiere (for video and/or audio editing) I am familiar with far more tools, explored professionally, personally, and through graduate school programs. I use technology tools in my work for communication and advertising/outreach. For school, I am in an entirely online doctoral program on the topic of educational technology, which means both using technology to learn, and learning about using technology to teach. Personally, I find myself using technology to help my brother with his online business presence and for personal hobbies and entertainment. I consider myself talented at learning new technology skills quickly and ably.

e. List any additional skills or information that you wish to be considered.

I speak German with a conversational fluency (although grammatically incorrectly). My French is passable for travel and basic conversation. I can no longer always tell the difference between Brazilian Portuguese and Spanish, but my experiences living in Brazil means I’m willing to make an effort to be understood and to understand speakers of either language.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Marianne Karplus

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name LuCinda Gustavson

Title and affiliation Library Associate Manager, Springfield Public Library

Email Address lgustavson@springfield-or.gov

Phone Number 541-726-2287

Reference 2

Name Carrie Schindele-Cupples

Title and affiliation Library Manager, Springfield Public Library

Email Address scupples@springfield-or.gov

Phone Number 541-726-2237

Reference 3

Name Kevin O'Dea

Title and affiliation Teacher/Librarian at Briggs Middle School, Springfield School District

Email Address kevin.odea@springfield.k12.or.us

Phone Number 541-744-6350

2020-2021 PolarTREC Educator Application

Elaine Krebs

1. Contact Information

Name: Ms. Elaine Krebs

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Home Phone: None

Cell Phone : 630-687-2277

Institution Name: California Science Center

Institution Address:
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Institution Phone: 213-744-7444

Classroom/Office Extension: 2093

Institution Fax: N/A

Institution Website: https://californiasciencecenter.org/

Other relevant websites:

Supervisor's Name: Gretchen Bazela

Supervisor's Email Address: gbazela@cscmail.org

2. Demographic Information

a. Gender: Female

Race: Hispanic or Latino, White, Multiracial

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): As Lead Educator, I work with K-12 students on field trips from variety of schools (charters, public, homeschools, etc.), ethnicities, and socio-economic statuses from various cities in the Greater Los Angeles area. In my role with outreach and special programs, I see mostly 3rd-8th graders in from our surrounding community of South Central Los Angeles. Most of these students attend Title I schools, are on the free or reduced lunch program, and identify as Black/African American or Hispanic/Latino.

d. Type of School (or students you work with): Other (describe below)

Other Type of School I work with many types of schools both private and public, in addition to religious schools, homeschool co-ops, and other alternative learning programs. I also work with groups not affiliated with a school such as Girl and Boy Scout Troops, Boys and Girls Clubs, after-school programs, etc.

e. What is the population of your annual audience or school (estimates are fine) 2.4 million visitors annually, 450,000 school-aged children

f. School Ethnicity:
% - American Indian or Alaska Native
% - Asian
% - Black or African American
% - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
% - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch:

h. Average class or audience size Field Trips: 25-40 students, Special Programs: 25-1,000

i. Total number of students/audiences you teach in a year 25,000

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Fall Programs: September 1st - December 15th Spring Programs: January 15th - May 31st Summer Programs: June 1st - August 15th

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Health and Humanities

Bachelor's Degree (Minor): Science Visualization

Masters Degree (Discipline): Marine and Environmental Biology

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 4

c. How many years have you been working at your current institution?: 5

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Elementary Education, Middle School Science, Secondary Chemistry

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

As a former researcher turned educator, my primary motivation for applying to PolarTREC is to reconnect with research, this time with an educator's perspective. While studying for my master's degree, I spent minimal time in the field, and I was not focused on sharing my findings with others. Being out of the lab for five years, I am eager to head into the field and contribute to a research team, with the intention of educational programming. PolarTREC provides a perfect opportunity to write curriculum and expose my audiences first-hand to scientific research from exciting and critical locations. Secondly, since many of my students attend my institution's programs for multiple years, I am excited at the prospect of forming long-term relationships with research teams and tracking their progress with my junior scientists. Lastly, as a scientist myself, I am fascinated with research being done in different environments compared to my Southern California home base, and I look forward to the challenge of bringing cold-climate research to my warm-weather audiences.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

First, I intend to share my experiences by writing curriculum for various programs we offer at my institution. I would like to write a full-day summer camp curriculum for our 7th and 8th graders that puts them in the shoes of field researchers and allows them to conduct experiments over a week-long program. The camp would include hands-on activities, a self-designed research project, and a “Talk to a Researcher” component. Additionally, I would like to create a Polar Science Series for our “Science on Tour” program, where we visit schools once a week over a four-week period. Each week would explore a different topic of polar science, while tracking current research being done at the poles over the course of the month. I would also like to include my experiences in permanent installations in the institution’s galleries. I will work with our floor programs to develop an interactive cart that allows guests to explore polar research hands-on with gear, journals, and other items from my experience. Lastly, I hope to take long-exposure and time-lapse footage while in the field to replace the stock photographs in our current “Polar Zone” Research Station exhibit.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

In my professional communities, I will present my experience at our departmental and museum-wide All Staff meetings. Ideally, I would present both before and after I go on the expedition to allow my coworkers to track my experience while I am there. Depending on the technology available at my field site, I would love to share video footage of my experience in real time via a web service such as Facebook Live or Instagram Live in order to include my personal communities as well. In addition to exhibit updates, I intend to organize programming at my institution during special events such as National Chemistry Week, Antarctica Day, etc. The events would include interactive activity stations, “Ask a Researcher” presentations, and take-home activities, I also intend to bring this programming to the public at various outreach events and involvement fairs such as City of Stem, Engaging Girls in STEM, etc. In addition to work through my museum, I hope to include my research experience in personal projects for use by educators and parents, such as writing a children’s book, animating short videos, and creating free, accessible 3D models for downloading and printing.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

First, I start by assessing prior knowledge and asking my students what they know about a topic. Then, I introduce a phenomenon, show an object, or find another engaging aspect to hook my students’ interest. Next, I ask them to share their observations and questions they have about the object. I allow time for students to touch and explore the object, and then assist them in designing and carrying out an experiment. Afterwards, I invite students to share their discoveries, successes, and failures with the whole group. If applicable, we then redesign and carry out more trials of the experiment. Lastly, I clarify the concepts we learned, and try to connect the concepts with global issues or other relevant topics. Every age group and audience are different, and this process may undergo modifications in the moment, but no matter what, I make sure the lesson is learner-focused and student-driven.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

First, I work in a diverse and changing environment. Each day is different, programs occur at varying times, and special events may occur with minimal advance notice.

Secondly, I have lived on an island and traveled in remote locations for upwards of three months. This flexibility and mental stability make me well suited for field research, where many factors are out of our control. Additionally, I have animation and 3D design skills to create unique visualizations, educational videos, 3D models, and other graphics for educational and outreach purposes by both PolarTREC and my research team. Lastly, I am an extremely organized person, a quick learner, and I have prior research experience, all of which will help me integrate with an existing research team.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

In most scenarios, I work in a service-leadership model. This means I am happy to help in anyway that benefits the overall group. When my institution hosted the California State Science Fair, I was new to the team and everyone already had designated roles. I looked to help anywhere I was needed - from photocopying papers, to directing guests, to handing out medals on stage when someone else was called away. If a group needs a leader, I am able and excited to take on that role. For example, when my friend wanted to start a dance team, I took on all the logistical aspects of running the team, so she could focus on the choreography and creative aspects. Three years later, I still collect dues, schedule practices, book studios, pay sound designers, register for competitions, and anything else that needs to be done. Lastly, as director of an outdoor education camp, I managed staff and oversaw operations, but I would also help my staff clean, or jump into a role to give someone else a break. Whether the group needs a leader or a follower, I will do all that I can to make sure the goal is accomplished.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

4:30am - Good morning! It’s an earlier start than usual, but I’m heading to the airport to catch a flight from Chicago to Los Angeles. After an amazing trip home, there’s a lot waiting for me back in California. The weather is slightly chilly here, around 50℉ - fall has arrived! 10:30am - We made it! Yay! It’s slightly warmer here, around 85°F. Apparently, the message about fall hasn’t made it west. Anyway, now to the Science Center! 12:00pm - After grabbing lunch, I traverse my building searching for supplies for upcoming events. I pick up Polyvinyl Alcohol, Sodium Borate, and Zinc Sulfide. (Any idea what we’re making? Stay tuned for tomorrow’s entry!) 7:00pm - I came home, unpacked, and made it to my Lindy Hop class. Fun Fact! Lindy Hop is a style of swing dancing that melds African dancing with tap with European ballroom. It was popularized in the 20’s and 30’s in New York, but has a huge scene in modern Los Angeles! 9:00pm - Class is over, but we’re headed to a nearby dance hall to practice our new moves! With a great band and great food, it’s going to be hard to leave… maybe just one more song….

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
While I am open to either in terms of location and research topics, I prefer the Antarctic expedition due to correlation of the season dates and my availability.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
First week in June - Labor Day

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
On my eighth birthday, I asked for two things, a microscope and a telescope. By day, I would collect water samples from the river, and at night, track the planets. To this day, my favorite scientific topics are the ones that take the unseen, and make it seen, such as in marine biology and space sciences. As a marine biologist, I love learning about microscopic organisms and their impact on the big-picture food web. I especially love when we discover organisms doing crazy things like regenerating body parts, producing light, or defying everything we have ever known. Working at an institution which houses the Space Shuttle Endeavour, I also love discoveries about outer space, such as imaging that tells us how the universe was formed, or a planet in a distant galaxy that might have liquid water. These “wonder and awe” topics are usually inexplicable, or raise more questions, reminding me that there is always more to discover. In both my professional and personal life, I never get tired of taking these far away, invisible topics, and making them relevant and understood.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have spent most of my life participating in outdoor activities and sports. I am very comfortable both on, and in the ocean as a surfer, rower, and PADI Certified Scuba Diver. As part of my work as an outdoor educator, I lived on Catalina Island, CA for three months, and at a mountain camp outside of Big Bear, CA for six months. At these camps. I taught outdoor skills such as orienteering, shelter building, and fire starting. Personally, I enjoy hiking and camping, and I have backpacked through multiple National Parks for as long as a week. I have also hiked El Camino de Santiago, an ancient trail through northern Spain over the course of a month. Lastly, I have received training in Wilderness First Aid and Survival, and I am an Open-Waterfront Certified Lifeguard with the American Red Cross.

b. Provide a basic statement of your general health and physical condition.
Generally, I am very healthy and I have no major health concerns. In terms of physical health, I live an active life, train regularly, can participate in manual labor such as lifting, carrying, pulling, etc.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am equally comfortable with both Mac (through version 10.14) and PC Computers (Windows 8 and Windows 10). I am competent with basic usage, troubleshooting, and program capabilities on both systems.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Professionally, I work on a DELL Desktop computer and use both Microsoft Office and Google Suite programs. I am very familiar with Microsoft Word, PowerPoint, Excel, as well as Google Docs, Sheets, Slides, Forms, Photos, and Calendar. Personally, I use a 2-in-1 ASUS Touchscreen Laptop for my graphic design programs such as Adobe Suite and Autodesk. For 2D images, I have intermediate experience with Adobe Photoshop, Illustrator, and Lightroom. For 2D animation, I am extremely comfortable with Adobe AfterEffects. For 3D modeling and animation, I have a basic familiarity with Autodesk Maya and Blender. Additionally, I use my iPhone for both work and personal tasks and often utilize mobile applications of many of the aforementioned programs. Lastly, I have an Olympus Tough Underwater camera for recreational photography while diving.

e. List any additional skills or information that you wish to be considered.

I have an active CPR Certification with the American Red Cross and intermediate Spanish abilities (comprehension, reading, writing, and speaking).

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information N/A

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
N/A

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name
DJ Kast

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Dr. Karla Heidelberg

Title and affiliation Professor of Biological Sciences and Environmental Studies, University of Southern California

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Phone Number 213-740-0951

Reference 2

Name Gretchen Bazela

Title and affiliation Deputy Director of Education, California Science Center

Email Address gbazela@cscmail.org

Phone Number 213-744-7444

Reference 3

Name Rayelle Miller

Title and affiliation Executive Program Director, Mountain and Sea Adventures (Past Manager)

Email Address rayellem@gmail.com

Phone Number 262-384-1529

Joseph Landrum

1. Contact Information

Name: Mr. Joseph Landrum

Email: joseph.landrum@marion.k12.fl.us

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4161 sw 110th lane
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Home Phone: (352)-502-2610

Cell Phone : (352)-502-2610

Institution Name: Horizon Academy at Marion Oaks

Institution Address:
365 Marion Oaks Drive
Marion Oaks, FL 34473 US

Institution Phone: (352) 671-6290

Classroom/Office Extension: 57276

Institution Fax: (352) 671-6293

Institution Website: https://www.marionschools.net/ham

Other relevant websites: N/A

Supervisor's Name: Don Maier

Supervisor's Email Address: donald.maier@marion.k12.fl.us

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Horizon Academy is a public school located in Marion, County FL. Out of the approximate 850 5th-8th grade students, the population of the school and community is very diverse with the student population being evenly divided between Hispanic, African American and Caucasian. The surrounding community has a similar diversity with the school having attendance from the local area. Currently the school operates as a Title one school with 88 % of the students receiving free and reduced lunch. The surrounding community is a mix between urban and rural residence that has a high poverty rate, with about one third of the students lacking regular access to internet.

d. Type of School (or students you work with): Public

Other Type of School N/A

e. What is the population of your annual audience or school (estimates are fine) 850

f. School Ethnicity:
Less than 1% % - American Indian or Alaska Native
Less than 1% % - Asian
33% % - Black or African American
33% % - Hispanic or Latino
Less than 1% % - Native Hawaiian or Other Pacific Islander
33% % - White
Added to race they identify with % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: N/A

g. Percentage of students who receive free or reduced lunch: 88%

h. Average class or audience size 22

i. Total number of students/audiences you teach in a year 100

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation

periods. i.e. Christmas break, summer break, etc.

Below is the 2019-2020 school schedule for major breaks. The 2020-2021 calendar will be similar with dates adjusted acoriding to holidays. August 5 All Teachers Report August 12 First Day of School November 25-29 Thanksgiving Break - No School December 19–January 5th Winter Break – No School March 16-20 Spring Break (No School) May 28 End of School

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Marine Biology

Bachelor's Degree (Minor): N/A

Masters Degree (Discipline): Sports Management: Outdoor Adventure Sports

PhD Degree (Discipline): N/A

Other Degree: N/A

b. How many years of education experience do you have?: 8 Years

c. How many years have you been working at your current institution?: 8 Years in Marion county 1 year at current assingment

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Gifted Endorsement, CPR and First Aid certification (American Heart Association), School based Teacher of the Year (2018-2019), Marion County STEM teacher of the Year (2018-2019), Project WET instructor, Project Learning Tree Instructor, Cival Air Patrol Senior Officer

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8), Gifted, Other (Describe Below)

Other Primary Assignment I am also the STEAM coordinator to help integrate STEAM education into the school's magnet program.

b. What subjects do you teach? Check all Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Staying out of the field and in the classroom for too long can cause a disconnect from what I am teaching, compared to what is currently expected by the scientific community. When reflecting on my teaching it is important to me that I not only teach the concepts/standards, but that I prepare students for the expectations and grow their interest in science. Many of my young men have a great interest in science and I ensure that I foster that interest so that it grows into a possible profession. In addition to this, I see that same spark in the young ladies. If I can get them hooked on science at an early age than I can do my part in bridging the gap of gender equality in the profession. Far too often our female geniuses move on to something else because they felt like a STEM career was not for them. If we can get them moving towards it, then they could help to generate that next big thing that could change/save the world. By having connections to real scientists and real world experiences in a field, I can better relate the importance of research to all my students.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

The integration of real world science is essential in building the base for today’s learners. In order to do this you have to "speak their language" in terms on how you relay this information. To get their attention and spark their interests I would create short video clips on the various topics throughout the school year. At the completion of the expedition I would use these clips to create informational segments that correspond with my teaching segments. In essence, the students would go on the journey with me through these clips as the year progresses. For faculty, I would integrate this into the STEAM training and develop cross curricular lessons that could help to create a stronger STEM culture at the school. With the STEM program relatively new I have been working hard to build a base that the other teachers can stand on. Many continually request STEM lessons that can help integrate more science into their standards and classrooms. Having this experience would give me a much needed different perspective on working in modern day STEM careers.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

At the school I assist in developing the professional development for the STEM program. In order to share the experience, I envision making content specific lessons based off my expedition. By providing the information, teachers would be able to integrate my experience into their classrooms, as well as build their understanding of STEM education. In regards to the community, I am currently working on developing an on campus science conference for students and families. After the expedition I would develop a program to share my experience at the conference with the community members in attendance. Additionally, on campus we do a day that is dedicated to having in guest speakers in classrooms and students participating in targeted STEM activities. I would be able to utilize this day to be a guest speaker and educate students, I do not teach, about the expedition and its relationship to STEM based careers. I would be able to use the information gained in my teaching, planning, collaboration, and while teaching workshops. I have learned through field expeditions that hands on learning is the best way to gain knowledge. Using the knowledge I would generate more in-depth learning opportunities for others.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Whether I am teaching young children or adults it is essential that information is scaffolded so that everyone is brought to the desired understanding together. Through scaffolding it learners are able to see concepts from different prospective along the pathway provided. In the process, it is essential to highlight different learning elements so that the participants have some reading, visual, audible and hands on components. Utilizing fun tools such as songs and hand movements can also help bring complex concepts to simplistic understanding. When educating adults it is important to learn what will drive them to allow them to engage and think beyond their own idealism. Last year I struggled with getting teacher to utilize new learning tools on campus. To get teacher involvement, I first taught my science club students about the new items, I then had the students come to the training and work at stations with the teachers to find ways to integrate it into their curriculum. After the training the teachers were able to generate ideas by having that interactions with the students. The opened conversation allowed them to have a different perspective, and deepened their understanding.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

When interacting with the PolarTREC team I would bring a different perspective to the field research. With a strong science education background in marine biology I

understand how the process of field research works in the marine biology. When combine this with my 8 years of classroom experience I have been able to develop a sense of understanding that approaches science from the viewpoints of a professional and the viewpoints of a young learner. As an educator and a learner on the team, I would be able to gain valuable information from the researchers, and share with them how that information could be used to educate 21st century youth. In essence, I would be a bridge between the researchers and the classroom. With my excitement to learn and participate in the process I would be a valuable asset to the team. I have learned through my degree in sports management: outdoor adventure sports, experiences training disaster relief/wilderness first aid and my own mistakes, that it is also essential to assess any danger prior to continuing onward with an expedition. It is also important to voice your concerns. Understanding this is a necessity to being a part of a team in the field.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

After my junior year of high school I was selected to work with an EarthWatch research team in the Northern Cascades. That was my first real experience as a researcher on a team. This experience taught me the core values of having a briefing every day before and after gathering data in the field. In the pre-day briefing we went over the plan for collection and assigned groups and jobs, during this time any questions or concerns were shared. In the field we stayed in communication with the use of satellite phones and walkie-talkies, communication was key to the overall safety of the group and the validity of the data, in the post briefing we were able to share any concerns. These basics have helped me through working on teams during natural disaster relief, field research in college, as the physical fitness officer for the local Civil Air Patrol cadet squadron, and working as a team member in my school. As a team member I always make sure I listen to/help develop the overall goal, communicate progress, ask if I need help or don't understand, and collaborate before any final decisions are made.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

9/28/19 The Big Scare This morning I had a slow start to the day. Although I had big plans it was hard to build the excitement until I had some food to satisfy my hunger. With the rest of the household asleep I decided to motivate everyone by preparing a breakfast feast of bacon, eggs, hash browns, and toast. The aroma drifting through the air seemed to do the trick in waking everyone up from their slumber. Now that everyone was awake we could prepare for our journey to Universal Studios for Halloween Horror Nights. The navigation to the park went as planned with no delays. The same can be said at the entry of the park. The good, however, quickly turned to disappointment after a race across the park yielded unexpected results. Hagrid's Motor Bike Adventure was shut down due to BEES!!!! With spirits momentarily crushed, we hopped on the Hogwarts Express and headed to the other side of the park to prepare to be scared. In the park we surveyed our surroundings and found the location for the pizza fries and the twisted tators, we made sure our drink was filled. The big scare... to be continued!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I would prefer to participate in either location. Regardless of location I will have to get district approval for the time off after the selection process is complete and I know exact dates. With their biggest concern generally being cost, with the sub stipend being provided it do not anticipate a problem for district approval.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
My desired participation would be three to four weeks. I will not be able to participate in an expedition from June 24th - June 29th 2020 due to traveling for my wedding.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
In general I am interested in most scientific topics. If I were to go back into the science field, rather than in the classroom I would like to focus on limnology and coastal ecology. I really enjoy seeing that connection and transition of species as one journeys from fresh water inland, to brackish, and then out to the coastal region. In addition to this I have an interest on how various cultures interact with the wildlife in this area, and the conservation efforts that the local communities have in place to sustain their food supply. Another interest that I would like further knowledge on, is whether overfishing is having an impact on the genetic size variant of fish populations. I would like to see research into whether years of pulling the largest fish is having a genetic impact on the maximum adult size of species that are not indeterminate growers. Given that climate change is having major impacts on all topics that is also an interest is research whether these impacts are by direct human interaction, indirect human interaction, or a natural cycle.

Atmospheric Systems I do not want to be considered for an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
N/A

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
N/A

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have basic outdoor skills. I am a recreational camper, kayaker, mountain biker, and hiker. I have participated used a snow mobile and participated in both cross country skiing and downhill skiing, although living in Florida I do not get that opportunity often. While I am not currently certified I used to be an instructor for the American Red Cross for disaster relief infant/child/adult CPR/First Aid, and Wilderness First Aid. I have participated in research in the Northern cascades and research during college with the Gulf Coast Research Laboratory. In addition to this I have participated in various workshops that have been outdoor science related. During the summer SEAS program with the Florida Aquarium we were in the field and the classroom from 9AM to 9PM during the week to collect and analyze data.

b. Provide a basic statement of your general health and physical condition.
I am in overall good health, although I am currently on a prescription antacid. In general I workout in the gym at least three days a week and try to walk at least 5km each day that I am not at the gym.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use both a Mac and a PC. I am very familiar with each operating system. I generally utilize my MacBook to create presentations and edit videos. I utilize my PC to generate documents that need more than one computer screen. This is due to my set up of each device not due to the editing capabilities of either compared to the other.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
On a regular basis: I utilize PowerPoint to create presentations for teachers and students. I utilize Microsoft Word to generate handouts, reading materials, interactive notebook lessons, and various other types of materials used in professional development, my classroom, and home. Microsoft publisher is utilized to create newsletters for students. Photo Shop, Final Cut Pro and Adobe Premiere are utilized for movie editing and picture editing (not a professional level). Cameras are utilized to capture still images and video recordings. Excel is utilized to create spread sheets for class/home, and basic math calculations.

e. List any additional skills or information that you wish to be considered.

I have gained leadership experience through my positions at Horizon Academy, and my previously assigned school, by serving in positions such as the science lead teacher, cross country/track coach, STEAM lead teacher, athletic director, STEAM coordinator, and through Civil Air Patrol cadet leadership. These skills help me be a part of a team and lead a team through developing, growing, and sustaining a program. My experience in disaster relief helped develop skills of quickly accessing a situation and to act quickly. Last of all my experience as an educator helped to lead me to an understanding how to communicate and look at things from every perspective.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information I have participated in an EarthWatch internship, but it was as a student in 2003 and not as a teacher. I also participated in FCR-STEM which had follow up research after lessons were implimented.

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
The PolarTREC PD will help to strengthen and deepen my understanding about the program and polar research. It will also help to establish more confidence in sharing my experiences with others and integrating more real world examples into my curriculum. Integrating real world science is necessary to keep students interested in what may generally seem like a boring topic for a kid. When they get to hear stories and feel like they were a part of the research they get involved in the learning process. Having this experience will enable me to build on the professional skills of bringing to life the subjects I am teaching. This will build on my previous research experience by allowing me to get back in the field and have hands on training in new techniques and technology. It is important to me that I stay up to date and that I challenge myself to learn more and build on my personal knowledge. Without growth the mind becomes stagnant. Continued research opportunities will help to increase my own personal understanding of science in the world, so that I can have more experiences to share with others.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain N/A

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
A colleague (Diana Fye) passed the information on.

Former PolarTREC, TREC, or TEA teacher. Please provide their name
N/A

From a website. Please list the website name and URL
N/A

Conference or presentation. Please list the venue and/or presentation title
N/A

Other (please explain)
N/A

b. Please suggest other places we might advertise this opportunity for teachers
To trickle the information down to the teachers it could be shared with FAST (Florida Association of Science Teachers). They would then be able to share it with district contacts, who would send it to the science leads at each school, and then they would forward it out to the teachers. This could be done with each respective state to get the information out there. This is an amazing opportunity, that I feel many teachers would be interested in if they were given the information.

12. References

Reference 1

Name Jennifer Bonet

Title and affiliation Marion County Schools (Osceola Science Teacher)

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Phone Number 352-362-5588

Reference 2

Name Don Maier

Title and affiliation Marion County Public School (principal Horizon Academy)

Email Address donald.maier@marion.k12.fl.us

Phone Number 352-438-9319

Reference 3

Name Alexei Bellow

Title and affiliation Marion County Public Schools (science teacher North Marion Middle)

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Phone Number 352-870-6343

Christopher Leonhard

1. Contact Information

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Institution Name: Keystone Academy, Beijing

Institution Address:
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Beijing, 101318 CN

Institution Phone: +86 10 8049 6008

Classroom/Office Extension: Room 1540

Institution Fax:

Institution Website: https://www.keystoneacademy.cn/

Other relevant websites:

Supervisor's Name: Baldeep Sawhney

Supervisor's Email Address: Baldeep.Sawhney@keystoneacademy.cn

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): International school in Beijing, China. K-12, urban, many other international schools in the area, relatively affluent compared to general Chinese population.

d. Type of School (or students you work with): Private

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) Currently +1300 students, but will increase to 1400-1500 next year.

f. School Ethnicity:
% - American Indian or Alaska Native
90 % - Asian
2 % - Black or African American
1 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
6 % - White
1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 1

h. Average class or audience size 15 students

i. Total number of students/audiences you teach in a year 60-80 as classroom teacher, but I am responsible for service learning for approximately 650 students.

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Start of Year: August 10 Fall break: October 1-9 Christmas break: December 20 to January 4 Chinese New Year break: January 20 to February 4 Spring Break: April 1-8

End of Year: Jun 15

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology and Psychology

Bachelor's Degree (Minor):

Masters Degree (Discipline): Biology Education (MA)

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 14 years

c. How many years have you been working at your current institution?: 2 years

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Biology Teacher Certification Geography Teacher Certification Psychology Teacher Certification Nashville Teaching Fellow Google Educator Certification First Aid Certification (current) Several certificates for IB workshops in Biology, Environmental Science, and Theory of Knowledge

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8), Secondary (Grades 9-12), Other (Describe Below)

Other Primary Assignment In addition to my science classroom teacher responsibilities, I am also the Service Learning Coordinator

b. What subjects do you teach? Check all Middle School Science, Secondary Biology, Secondary Earth Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I believe bringing authentic science into the classroom engages and inspires students. Much of middle and high school science involves completing prescribed experiments that will be discarded at the end of the year. Working with actual scientists and connecting with my students through this medium will break that mold and allow students to see how actual science is performed. During my time as Science Department Head at my previous school in Switzerland, I worked with local universities to introduce a long-term citizen science program investigating the effects of climate change on the local forest ecology. The program is integrated into the school's Alpine Institute and has been expanded to include area high schools and university students from the Université de Neuchâtel in Switzerland. As a result, the school is a leader in integrating citizen science into the classroom and a member of the faculty is currently leading the Education Group of the European Citizen Science Association. The experience of building this program is the highlight of my career because it allowed my students to experience working with scientists on real world problems. It is my hope that the PolarTREC experience will be every bit as fruitful for my students.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I will pursue four separate avenues for sharing my experience in PolarTREC. First, all three of my subjects (IB Biology and Environmental Science and Grade 9 Science) have units on climate change, biodiversity, energy, and nutrient cycling. The Environmental Science class also has units on ocean, atmosphere, and soil systems. I will use my experience in the field to create interesting and authentic lessons for the relevant units. I will share these lessons with colleagues. Second, as my school's Director of Service Learning for Grades 6-10, I have the opportunity to engage students in service topics related to the field research. I will use my experience as a hook to engage students in the area of service related to the research. Third, I will give presentations within the school about my experience. The presentations will help inspire student interest in the polar region and the effects our lifestyle have on these areas. Finally, the school website could be used to publish information about the trip. My school also publishes several magazines and books about topics of

interest within the school. Being awarded one of the PolarTREC posts would certainly be of enough interest to be included in these publications.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

As a result of the citizen science program mentioned above, I gave presentations at a European Citizen Science Association conference about our success integrating citizen science into our school curricula. This was followed by presentations at the Educational Collaborative for International Schools about building citizen science programs in schools and their effects on student learning. I could do something similar with my experience with PolarTREC. Presentations at US and European citizen science conferences would seem to be a natural way to engage people in these research topics. I also co-wrote a book chapter on turning students into citizen scientists for the European, US, and Australian citizen science associations. It may be possible to do something similar with this experience, possibly combined with others who have completed the PolarTREC program. My school is one of many international schools in Beijing. I am connected to most of the schools through my service position and I could give presentations to the public at many of these other schools. Finally, I will communicate with teachers through the Teaching Fellows program. There is a network of thousands of these teachers throughout the US. I will offer lesson plans, videos, and webinars to interested teachers.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Engaging the audience and facilitating learning is a conscious process, particularly if the content is complex and foreign to the audience. I begin this process in my classroom by building good relationships with my students. When it is time to learn a difficult concept, I do my best to simplify and introduce the material in more than one modality. For example, I might start with a 5-minute video and then have them read a short article. I would follow that with discussion in small groups. All of this is designed to engage the audience in the topic and get them thinking about the concepts. I also often use storytelling. I find an interesting story surrounding the topic and begin there. Students are quickly engaged by an interesting story and it helps make the topic accessible. I also try to connect the unknown new topic with a topic there already know. Making connections helps build deeper understanding and makes the difficult topic less scary. Finally, once students understand the basics, I design a task to apply their learning. This gives me a chance to assess their

understanding and I can then circle back and clear up misunderstandings or missing insights.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I have four primary strengths that I feel will make me particularly useful to the program and research team. First, I have field research experience. I worked on a gypsy moth eradication project at Penn State University for a year after university. I also worked on a NASA funded project to combat space sickness. I am a careful researcher and I understand the care needed to properly collect and protect data. Second, I am a quick learner. I understand I may need to use unfamiliar equipment or techniques and it is rare for me to need to be told something twice. Time is money on these trips and I will not be a drain on these resources. Third, I am an excellent teammate. I do not mind long hours and I am always willing to lend a hand. I enjoy being part of a team and working towards a goal. Fourth, I believe I will be an asset after the trip. I have a good bit of experience with community outreach and making connections in the scientific and educational communities. This should help raise the profile of the program, as well as the research undertaken.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I have been involved in many teams over the years, but the team experience that gives me the most pride is the small group of teachers that created and developed a long-term citizen science project at my previous school. While I was technically the leader of that group as the Science Department Head, we functioned together as equals. We met once a week throughout the year to plan, gather materials, and prepare for the two days a year that the event took place. Everyone contributed their time and everyone’s ideas were taken seriously. This gave everyone in the group the confidence to contribute. Egos were checked at the door. If one member made a mistake, we all pulled together to fix the problem. For example, on the eve of one of the events, we were all up to 3am rethinking ways to do some of the needed data recording. One member of the group had made a mistake, but instead of blaming him or throwing up our hands, we all worked together to find a solution. It was this approach that allowed the project to improve and grow each year.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

The large fortune-teller spiders and their webs have been cleared from the pathways and the Manchurian scorpions have been swept from the yurts. It is time to do some science! Forty senior students from Keystone Academy in Beijing are arriving to complete their Group 4 project, a required part of the International Baccalaureate curriculum. Students from different sciences are organized into small groups and their task is to investigate some aspect of the area surrounding the Miao Liang Environmental Education Center. The small groups have met once a week over the last month to devise a research question and prepare the materials needed to investigate their question. Each group is carrying boxes filled with sensors, wires, and equipment tailored to their specific area of inquiry. One group has shovels and sieves to examine soil and another group has tape measures and clinometers to measure tree height. At the end of three days, students must present their findings to an audience of their teachers and peers. Along the way, there will be surprises, mistakes, and lots of learning. One last check for scorpions and then the data collection begins…

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
There are projects in each location that would greatly interest me. I am happy to go wherever I would be the most useful.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am happy to go for as long as I would be useful. Longer is better.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I find that I gravitate towards scientific topics that investigate complexity in systems and the interactions that occur in those systems. The environmental science course I teach touches on many systems that occur on our planet and I find all of them interesting. Global climate is obviously one of these systems, but I find soil and marine systems equally interesting. The interactions between the biotic and abiotic parts of our planet are compelling to my students and I find these topics the most fun to teach. I see a simple beauty in the balance created by feedback mechanisms and the dangers of throwing these systems out of balance is a compelling story to tell. I also enjoy examining the elegant adaptations that living things make to live in extreme conditions. Life finds a way. I think this is something my students also enjoy.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I am somewhat interested in this subject area

Other Areas of Scientific Interest
I am very flexible with my research interests. I believe any of the topics would be useful to my students and I generally become engaged by the scientific process.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have extensive camping and hiking experience in the Alps and Appalachian Mountains and some experience in Alaska. I led hiking activities and trips for four years. I have a moderate amount of wilderness survival training and I am current with my first aid training. I have shot a gun at a target, but it was many years ago.

b. Provide a basic statement of your general health and physical condition.
My health and physical condition are good. I have no known medical issues and my BMI is within the normal range.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I currently use a Mac, but I have used a PC in the past. I am a Google Educator, which basically means I can learn programs and systems fairly quickly and apply what I have learned.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use a laptop for my teaching position and regularly use a variety of programs, including Excel, Powerpoint, Microsoft Office, Google Suite of programs, and photo software. I also use datalogging equipment and software and I have experience with a few statistical programs. I teach Biology, Environmental Science, and General Science, so I am familiar with the type of equipment you would see in a well-stocked high school lab (spectrometers, circuits, scales, etc).

e. List any additional skills or information that you wish to be considered.
Experience with oscilloscopes. Soil, water, and atmosphere testing kits Macroinvertebrate collection Biological keys – plant and animal identification

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni.

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL
The PolarTREC website. I was looking for citizen science programs that allow teachers to go to polar regions and a Google search provided your website.

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
Teacher accreditation and professional membership websites

12. References

Reference 1

Name Malcolm McKenzie

Title and affiliation Head of School

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Phone Number +86 10 8049 6008 – ext 2000

Reference 2

Name Baldeep Sawhney

Title and affiliation Head of Science Department

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Phone Number +86 10 8049 6008

Reference 3

Name Paul Magnuson

Title and affiliation Head of Middle School

Email Address pmagnuson@las.ch

Phone Number +41 79 376 4765

Rachael Lewandowski-Sarette

1. Contact Information

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Home Phone:

Cell Phone : 7637728086

Institution Name: Pathfinder Ranch

Institution Address:
35510 pathfinder road
mountain center, CA 92561 US

Institution Phone:

Classroom/Office Extension:

Institution Fax:

Institution Website: http://pathfinderranch.com/

Other relevant websites:

Supervisor's Name: Ryan Mayeda

Supervisor's Email Address: oedirector@pathfinderranch.com

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): We accommodate mainly 5th and 6th graders from Southern California (Riverside, Hemit, Murrieta Valley and Coachella Valley). These students are predominantly from socioeconomically disadvantaged communities and a majority qualify for free and reduced lunch. Some have disabilities and many speak English as a second language.

d. Type of School (or students you work with): Other (describe below)

Other Type of School Both Private and Public schools come

e. What is the population of your annual audience or school (estimates are fine) 65 schools, 5000 students

f. School Ethnicity:
% - American Indian or Alaska Native
% - Asian
% - Black or African American
% - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
% - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: Since we serve many different schools the populations vary with each school.

g. Percentage of students who receive free or reduced lunch:

h. Average class or audience size 15

i. Total number of students/audiences you teach in a year 65 schools, 5000 students

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

August-20-December 13, Jan 12- May 22

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Environmental Science

Bachelor's Degree (Minor): Mathematics

Masters Degree (Discipline):

PhD Degree (Discipline):

Other Degree: Master's Certificate in Environmental and Sustainability Education

b. How many years of education experience do you have?: 3

c. How many years have you been working at your current institution?: less than 1

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Youth Mental Health First Aid Wilderness First Responder Wilderness water safety Small Craft Safety- Canoeing

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Middle School (Grades 6-8), Informal Education (Science or Nature Center, Museum, etc.)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science, Middle School Social Studies

Other Subjects Outdoor and adventure education

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Before I started pursuing a career in education, I wanted to be a researcher, but I moved on from that career possibility because the lab work that I got into made me feel isolated. I felt like I was a “people-person” who had more to offer the world if I could get outside the lab. Slowly I came to the realization that research and education are not opposites existing in isolation from each other, but can work together to create wholistic solutions to problems facing our world. So, my teaching has changed to try to break down these barriers that we create in our minds. Science and education, science and art, science and the community do not need to be separate. I love engaging my students to cross these barriers, engage in citizen science, and create art/poetry to represent science. Besides doing this for the community of learners that I get to engage, I personally want to be a part of this experience to rekindle my passion for research and discovering new things that I have neglected since I became a teacher. We can’t take care of others if we don’t take care of ourselves.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I find that many of my students have preconceived ideas of what it means to be a scientist and to be smart and often these ideas exclude them from science and narrow their possibilities in life. I aim to open their eyes to the opportunities that are possible for them, and I love to do this through verbal storytelling and cross-content activities like art and science. So, I think this experience will give me more antidotes and examples of who real scientists are to inspire them with my storytelling. I also hope through this experience I will be able to document it through nature journaling and come back with engaging visuals that will pique their interest in STEM fields.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Communities in my experience are transient as my fellow environmental educators and I move between seasonal positions. This lifestyle means that I get to meet a lot more people in a large sprawling network which creates a wider impact. In this field I also often work with brand new educators who are still developing their teaching

pedagogy. I envision that this experience will help my express my personal teaching pedagogy with my fellow educators as I develop more research skills and create conference presentations from this experience. At my current job, we have weekly in-services where we train on a variety of topics, so that would be the perfect place to educate my co-workers, and with the weekly turnover of students and adults, the message could be widespread through the general public. This experience could be shared through a formal presentation for students or fellow educators, or through embedding this message in a variety of different classes in more informal methods like storytelling, posters or research methodology.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I believe that if you can't explain something simply, you don't understand it well enough. I work really hard on reading many different books and sources in order to understand the complete picture so that I can explain it to my students. During explanations I like to use analogies, do hands on activities and make sure my students are ready to receive the information, like making sure they are not tired, antsy or dehydrated. For example, if I were leading a class on food chains, I would first play a tag game with individuals being different animals, then I would tell a story on a real world example, then facilitate a group discussion before ending with a journal prompt. Depending on the students, different parts of the lesson plan could be adjusted to fit their needs like additional time to run, moving indoors or journal prompts that allow for more creativity like drawing or poetry. I spend a lot of time figuring out how to modify lesson plans so that my students can be set up for success.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

My work in informal education has allowed me to experience many things outside of my comfort zone. Just a month ago, I learned to ride a horse for my job, and about a week later I was teaching children to ride horses. Through horses and other teachable moments I have learned to pay attention to details, admit when I don't know things, and connect to a diverse group of individuals very quickly. Beyond those soft skills, I have many technical skills including spending a week on lake Winnipeg winter camping and learning skills necessary to traverse to the North Pole, spending four years in college working part time doing IT work gaining computer and problem solving skills, and using my personality and creativity to write blog posts, social media posts and take photos for my last job. Finally, I do have experience

doing research in college, where I worked on 3 big projects with professors studying the effects of forest fragmentation on ants in the rainforest, studying plant fitness and survival on green roofs in chicago and fitting sinusoidal functions to flower phenology data.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Throughout my life I have realized that I am a fast processer when faced with problems or when asked questions, but my teaching has made me realize that not everyone processing information as fast as me. So, when I work on teams I am acutely aware of the amount of space I take up and the amount of wait time I give before jumping in to help because I know that others might want to contribute but need that extra time before acting. I want to be a part of the team without necessarily being the leader or the center of attention I also thrive on a little bit of chaos and that means in classes I love setting up stations so that everyone can be working on something different at the same time, which on a team translates to me wanting to multitask and do a little bit of everything at once.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

This week I was exploring echolocation with some students while on a night hike. Echolocation is an adaptation frequently found in bats so that they can navigate at night. To use echolocation bats release sounds waves, which travel out and are reflected back at the bats, enabling them to see the world around them. It’s kind of like a continuous game of Marco Polo. While hunting, bats can use echolocation up to 200 times per second so that they know exactly where their pray is. One thing bats hunt are moths, but some moths have evolved sophisticated defensive techniques so that they aren’t helpless. Certain species of tiger moths have developed their own sounds, which disrupts the bats echolocation and helps the moths evade being captured. These tiger moths can make these sounds up to 4,500 times per second. Who knew that bats and moths could have such loud hunting battles? Besides yelling at the bats to avoid capture, other moths have evolved sound absorbing wings and fur to make themselves invisible to the bats. So the question for the future becomes, what will the next adaptation be to help either the bats or the moths beat their opponent?

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
With an extensive summer and winter break, either could fit into my schedule.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
This year, my work breaks extended from around Dec 9th to Jan 12 and May 22 to August 20, and I imagine that next year would be similar, so those would be the best dates to go, but other dates could be discussed. Currently I have been reading many books about space science and love being able to talk to my students about space during our night hikes or astronomy classes because there is currently so much happening in this field, and with the advancement in the quality of photos being taken of objects in space, it is easier to pique the interest of my students. I also enjoy learning about plant ecology and the way that they adapt to survive in different ecosystems, especially since I just moved from Northern Minnesota to Southern California. Finally my last interest is in anthropology, especially since I feel like as I grew up I learned a lot about American history, but less about the history of other people or Native Americans, so I love learning about different people’s perspectives of the world.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Currently I have been reading many books about space science and love being able to talk to my students about space during our night hikes or astronomy classes because there is currently so much happening in this field, and with the advancement in the quality of photos being taken of objects in space, it is easier to pique the interest of my students. I also enjoy learning about plant ecology and the way that they adapt to survive in different ecosystems, especially since I just moved from Northern Minnesota to Southern California. Finally my last interest is in anthropology, especially since I feel like as I grew up I learned a lot about American history, but less about the history of other people or Native Americans, so I love learning about different people’s perspectives of the world.

Atmospheric Systems

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
no

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
Growing up in Minnesota I learned to boat and fish from a young age. Since then I have been a wilderness trip leader in the boundary waters of MN and surrounding areas, received my wilderness first responder, and took a course on travelling to the north or south pole on ski. I also teach classes on rock climbing.

b. Provide a basic statement of your general health and physical condition.
For my job I hike about 6 miles a day and often lift up to 50lbs. at an elevation of 4500 ft. So I would say I'm in good health.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I have a Mac, but after spending 4 years working in IT in college I am familiar with both.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
With students I utilize ipads with citizen science apps such as iNaturalist, and ebird. I utilize a variety of google drive features to collaborate with colleagues on google chrome and I take photos with a Nikon cool pix and edit videos in iMovie.

e. List any additional skills or information that you wish to be considered.
Proficient with skill saw and jig saw, painting with acrylics, and working with individuals with disabilities.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Joe Walewski

Title and affiliation Director of Naturalist Training

Email Address joe.walewski@wolf-ridge.org

Phone Number 218-353-7414 ext. 158

Reference 2

Name Jason Colvin

Title and affiliation Manager of Program Development

Email Address jasonc@truefriends.org

Phone Number 952-852-0101

Reference 3

Name Ryan Mayeda

Title and affiliation Outdoor Education Director

Email Address oedirector@pathfinderranch.com

Phone Number 951-659-2455 ext. 12

2020-2021 PolarTREC Educator Application

Katie Lodes

1. Contact Information

Name: Ms. Katie Lodes

Email: klodes@stjosephacademy.org

Home Address:
645 Highland Drive
Ballwin, MO 63011 US

Home Phone: 636-394-9622

Cell Phone : 314-852-9754

Institution Name: St. Joseph's Academy

Institution Address:
2307 S. Lindbergh Blvd
St. Louis, MO 63131 US

Institution Phone: (314) 394-4300

Classroom/Office Extension: 314-394-4083

Institution Fax: (314) 965-9114

Institution Website: www.sja1840.org

Other relevant websites: I started a blog to highlight the workshops and conferences my students and I attended http://midwesternmusingsscienceandsuch.blogspot.com/ , however, in the past two years, I have used my personal Facebook and Instagram pages more than the blog. I found the entries are shorter or more people access them than going to the blog. St. Joe Facebook: https://www.facebook.com/SJA1840 St. Joe Instagram: https://www.instagram.com/stjoeangels/ St. Joe Twitter https://twitter.com/StJoeAngels

Supervisor's Name: Mrs. Jennifer Sudekum

Supervisor's Email Address: jsudekum@stjosephacademy.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): St. Joseph's Academy is a private, Catholic, all-girls, college preparatory, high school in suburban St. Louis, Missouri. Traditionally, all of the senior class goes on to pursue a college education (each of the past two years, we have had one student postpone college for a gap year to go on a mission trip). We are a 1:1 laptop school. Although most of our students are from middle to upper class families, we do have students from lower social economic areas of St. Louis. For five years, I have AP Biology and Marine Science students partner with grade school students. These students are from Ferguson and the city of St. Louis and we teach them about monarch butterfly biology and migration (bringing in samples we collect from around school) as well as leading a shark dissection. Over the last six years, I have taken groups of students to present their work at the American Geophysical Union or Ocean Science scientific conferences.

d. Type of School (or students you work with): Private

Other Type of School Although not contact with students directly, I have other contacts with those in the science community. I am currently the David and Marilyn Kirk Fellow at Washington University, St. Louis and help plan the monthly Blue Skies and Beyond teacher talks open to all K-12 teachers in the St. Louis Metropolitan area (https://schoolpartnership.wustl.edu/2019/09/04/isp-announces-fall-stem-discussion-series/) This position also organizes an annual Darwin Day education event https://schoolpartnership.wustl.edu/2019/02/15/isp-celebrates-darwin-day-names-new-kirk-teacher-fellow/) where 50-100 educators attend. I am also on the Educators Council for the new St. Louis Aquarium Foundation (the non-profit, educational arm for the soon-to-open St. Louis Aquarium https://www.stlaquariumfoundation.org/). I participate with my students in the St. Louis Academy of Science. We attend talks and my Independent Research students entered the Honors Science Fair. Last year, all student entries made it to the final round (Top 10) and one student earned 3rd place. Each summer since 2003, I also have attended the E.A.R.T.H. teachers workshop hosted by the Monterey Bay Aquarium Research Institute. This ever-expanding group of educators and scientists is an invaluable resource (it is how I

learned about PolarTREC). Finally, I am involved with the St. Louis Chapter of Biology teachers who meet most months to discuss novel research in the field and how to improve our classrooms.

e. What is the population of your annual audience or school (estimates are fine) 480

f. School Ethnicity:
0 % - American Indian or Alaska Native
2 % - Asian
2 % - Black or African American
1 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
92 % - White
3 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 3

h. Average class or audience size 20-24 students

i. Total number of students/audiences you teach in a year 5 classes each semester, 11 Blue Skies and Beyond meetings a year (10-30 teachers per meeting)

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
2020: Spring Break, March 14-March 22, 2020 2020: end of school year: May 22, 2020 2020: approximate start of school year (we started classes on August 12, 2019, classroom set up and meetings start the week before) 2020: approximate Christmas Break (break for 2019-20 will be December 21-January 2)

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): University of Missouri -Columbia BS in Animal Science, 1988 and Secondary Education, Biology, 1989

Bachelor's Degree (Minor):

Masters Degree (Discipline): Washington University, St. Louis MA in Biology, 2005

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: I am currently in my 30th year of teaching.

c. How many years have you been working at your current institution?: I am currently in my 18th year of teaching at St. Joseph's Academy.

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
1. Career CPC Biology 7—12 (State of Missouri) 2. 2017 Presidential Medal of Excellence in Science and Math Teaching national finalist (awards are in Washington, DC from October 16-18, 2019). One of 3 Missouri State finalists for the Presidential Medal of Excellence in Science and Math Teaching (awarded in February of 2018) 3. Mentored and accompanied students to present their work at the Ocean Science conference (2014, 2016 and 2018) and the American Geophysical Union conference 2016 and 2018). Also have three students who submitted abstracts for the Ocean Science 2020 conference, awaiting acceptance. Also have presented myself at both oral and poster sessions about the importance of student/scientist interactions (OS 2014, OS 2016, OS 2018 and AGU 2018); 4. David and Marilyn Kirk Teacher Fellow from February 2019 through February 2021 https://schoolpartnership.wustl.edu/evolution-education/kirk-teacher-fellow/ . This position has morphed into the teacher contact for the Blue Skies and Beyond https://schoolpartnership.wustl.edu/2019/09/04/isp-announces-fall-stem-discussion-series/ 5. Polar ICE Sci-I project that allowed my freshmen Honors Biology to work on developing a testable question and then using polar data to present their findings to fellow students and researchers at Washington University, March 2018 (sponsored

by Rutgers University, The Ohio State University and Washington University, St. Louis). Presented this work at the Polar ICE Summit in Moss Landing, CA in March of 2019. 6. Education and Research: Testing Hypothesis (EARTH) workshop each summer from 2003 through this past summer. The website for the EARTH workshop can be found at www.mbari.org/earth. Here is the link to a blog article about the EARTH workshop this past summer. My contributions are on Geraldine Fauville and Adam Merry and Craig Mink https://www.marine-ed.org/news/developing-ocean-literacy-through-virtual-reality-and-distance-learning . 7. Presented lesson plans at National Science Teachers Association national conference 2011, 2012, 2013 and 2015. Presented at the National Marine Educators (NMEA) Share-a -Thon in March 2019. Also scheduled to present at the NSTA NMEA strand in Boston, April 2020. 8. Biological Sciences Curriculum Study, Planting Science/Digging Deeper photosynthesis unit with student teams and botany scientists 2017, 2019 and 2020 9. St. Joseph’s Academy Toward the More award winner, 2016 10. Two-week internship at C-MORE, University of Hawaii-Manoa, July 2013 and nine-week, Summer Internship at Monterey Bay Aquarium Research Institute, Moss Landing, 2010

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology

Other Subjects Secondary Independent Research and Marine Science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Every PolarTREC teacher I know has said that her/his experience was life-changing. I want such an experience for myself, my students and the greater community in which I live. During the past year it has been made apparent that climate change is a global threat and that the poles are ground zero. Lots of discussion in the news, on social media and in professional circles have centered on how we as educators and scientists combat the misinformation that surrounds this global hazard. While I do believe that learning must be hands-on and not passive, I also understand the power of storytelling to bring the heart and the head together. In my first teacher evaluation, the principal stated that my students were captivated and engaged because I was a storyteller. I know that working with polar scientists, support personnel and indigenous people will equip me with stories to bring empathy to the science. I am confident, as well, that a PolarTREC experience will enable me to use polar phenomena to bring concepts to life in my classroom (in line with the NGSS). Finally, I need ideas for science investigations for my students who conduct independent research.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I will develop activities for my own classes before the actual expedition to pique my students interest and to connect Polar TREC with the curriculum. I will ask all students to share what they want to know as well as what they think they know (to address misconceptions) and then share what I find out. I will also reach out to other teachers at my school to tie in their course content to what I am doing. I use this technique when I attend conferences with students so that my colleagues in other disciplines understand that the trip connects to their curriculum, and, thus, they support these students missing their classes. I will work with students conducting independent research to incorporate what I have learned into their projects as well. Our school has a global learning initiative as part of our five-year plan and simply sharing the logistics of participating in a PolarTREC expedition will tie into that initiative. I will make short videos by interviewing everyone (support personal and scientists alike) who are part of the expedition to share when I return (PolarTREC logo included).

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I would present at informal settings like faculty and club meetings. I will encourage the teachers in my professional networks to use my experience in their own classrooms by meeting with them to co-develop Polar phenomena that will work for them. I have reached out to the St. Louis Academy of Science, the St. Louis County Library and Blue Skies and Beyond to work PolarTREC into their “talk circuits.” They think it would be best if a scientist could team up with me to present the experience, but also were open to a live presenter/Skype-type hybrid. If the PolarTREC expedition has an evolution bent, Darwin Days includes a keynote speaker (and pays traveling expenses and a stipend for that person). After the keynote, I could lead a classroom activity. Scientific meetings such as AGU, host oral and poster talks about educational outreach, and I can submit abstracts to encourage scientists to include educators in their grant proposals. The St. Louis Aquarium Foundation would like to highlight local people involved with wide-ranging marine topics. My Zoology class juniors won their Instagram video contest and our Art Department worked after school to construct a jelly out of discarded materials for display.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200

words maximum)

I think it is always a skill in development to find the balance between core content, teacher interest and student interest. It is all about relationships. I work hard to make connections with my students: asking and listening to how they are doing, having an open door and attending after school activities. I love that science does not have all the answers even though many of my students think they can Google anything. I admit when I don't know something and then model to my students the process to find out more about that something (which often is not a black and white answer). I admit that I have failed sometimes from lack of planning and sometimes despite the best plans. I explain why what we are studying is important to the world (which is much bigger than any of us as individuals). I pay attention to questions asked during and after class and then develop activities to address those questions. I think the longer I teach, the more hours I put in. Just today I spent time developing an activity using marker chips to make energy moving through different trophic levels more concrete for my students.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I have an enthusiasm that is rather contagious. In my early years of teaching, I would hear "enthusiastic and passionate" in my yearly evaluation meetings, think that those were "cotton-candy" descriptors, and be disappointed. The longer I teach, the more I realize that enthusiasm, passion and hard work are vital for teaching and for long-term, positive impacts with those in my community. I also am patient, helpful, welcoming and work hard to make sure everyone in my circle recognizes their importance. I do not mind doing any task (cooking, cleaning, or sitting with someone who is ill, collecting scientific data, etc). I would not shy away from new experiences. I think with age, I have lost my need to be good at everything. I am okay with being a novice and having to learn a new task or concept. I am not afraid to ask questions. I also think that coming from the education side, I would bring a fresh perspective to the research work. Also, as an educator, I have had plenty of experience of things not working out as planned. I can keep the big picture in focus and work to salvage the silver lining.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I am adamant that the best learning happens outside of the classroom. The capstone of this belief is mentoring students to present their research work at international science conferences (AGU and Ocean Science). Although each group I mentor is

unique, the basic checkpoints remain the same. First connect student interests with a worthwhile yet doable project. For instance, when a current student was interested in elevated levels of cancer in those people living by a creek in St. Louis where radioactive waste had been dumped during WWII, I connected her, an environmental coalition representative and the Danforth Plant Science Center to have her project look at ionizing radiation from UV light and its multiple generational effects on Volvox, a colonial green alga. Students work on projects in my room before and after school and on weekends. We work together to analyze the results, create posters, practice presenting and secure funds to attend the conference. I also work on connecting us with worthwhile fieldtrips to help spark students scientifically. This formula has enriched both my students and me. It is worth noting that each student has used the experience when writing their college essays.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I have always heard if you want to really learn something, teach it. Perhaps this is why I am a teacher, but more importantly it is why I want my students to teach others the concepts they are learning. This past Thursday, my AP/ACP Biology students helped me pack up adult monarch butterflies, monarch eggs, chrysali and larva that they collected around school as well as milkweed, parsley and dill plants they have been growing in recently discarded yogurt containers. We threw in some swallowtail caterpillars and some pictures, maps, field guides and Monarch Watch tags and drove to a Litzsinger Road Ecology Center to work with a group of 5th grade girls from a city school. The academic goal was to get these students outside and use monarchs as a model to teach them about lifecycles, food webs and migration patterns. The end goal surpassed all our expectations! The fifth graders were not the only ones laughing and shrieking, and my AP crew reflected that they now understand the AP ecological concepts better because of the fifth graders questions. The folks at LREC asked both groups to blog about our experience (for future reference https://litzsinger.org/).

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
The PolarTREC experience would be life changing for me (and my students present and future), thus I would take any opportunity if I was chosen. I lean strongly towards the Arctic, however, for a few of reasons. One, there is culture in the Arctic communities. People have lived their lives in these areas for thousands of years. I teach in a predominantly white culture. I think being around people with ideas and lifestyles different from the ones I experience daily, would prepare my students for success in college and beyond. Also, the field work time would fit in better with my teaching schedule. Most school years, I start or end the year with either ecology or a survey of the kingdoms of life, both of these would tailor themselves well to me being in the field and communicating with my students. Finally, my school is in the northern hemisphere. I think my students would have a deeper connection with the work going on in the Arctic and would find changes in the Arctic more relevant (they hear about polar vortexes in the winter months).

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I think three weeks would be my first preference, but I would be open to a longer expedition as well. Our youngest daughter graduates from high school this May so the two weeks around her graduation I would not be available: May 10-24, 2019. I would, however, be available before or after that.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
When discussing interests in polar research, two hundred words is a tough parameter for any teacher to follow. Thus, in Part D below, I give reasons why my No. 2 and No. 3 choices would also be good fits. Hopefully, this is not cheating, more like asking the genie for one of the three wishes to be ten more wishes. The internet and other technologies have made it apparent that it is impossible to cover all the “facts” of science in a given discipline. I focus on relationships, and Ecology is an integral part of every course that I teach. St. Louis is surrounded by rivers, but most of my students have background knowledge only with terrestrial ecosystems. It would be

worthwhile to scaffold what they know about other terrestrial systems and thus there would be an advantage to an expedition on land. Every time there is a cold spell, many of my students mimic their parents and some of my coworkers by saying, ‘see Climate Change is bogus’, I want to use real-world examples to lead them down the path of using evidence to make claims. Students need to understand that the scientific process brings integrity to claims made.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I am somewhat interested in this subject area

Other Areas of Scientific Interest

I suspect that most applicants have this same conundrum but, I had a difficult time picking only 3 areas for a #1. I am primarily a life science teacher; however, I hope that high school science is moving towards more integrated classes as opposed to Biology, Chemistry, Environmental Science, Physics, etc. In the same vein, a great science course should also include English, math, art, etc. Thus, I chose my three #1s for areas that I could immediately implement in my classes. Almost everything else is a # 2. Here are my reasons for each of my #2 above to have made the cut as a # 1, in the order they are listed above: • Atmospheric Sciences: I think like most youngsters want a horse, most science teachers are enthralled with the weather. It is the best example to use with students when discussing real-time data and modeling. Working on a PolarTREC project with atmospheric science would equip me with the tools to address the basics of climate change on a level that most people have some basic knowledge. • Cryospheric Systems: I have always wanted to go to Greenland and experience day to day life on an ice sheet. My family and I went to Alaska (two weeks as vacation and a week at the EARTH workshop). While we were there we hiked the Harding Ice Trail. I still can visualize the awe when we looked out from the

top of the trail and saw nothing but ice. This is an area where I am a novice and would gain much needed knowledge to bring back to my school and professional circles. • Human and Social Systems: Although I am a science teacher, science is the work of people. I have always enjoyed traveling both because I like to experience the beauty of our world but also because of the locals that I meet. The interactions with people make me rethink my place in the world. I would enjoy collaborating with teachers at my school in the social science department (we offer a course called Cultural Geography). • Marine Systems. This should be a #1 as well, but with my current course-load, I could not justify it in my top three. I have always lived my life in the Midwest (Columbus, OH, Chicago, IL, Kansas City area—Kansas side, and St. Louis, MO). We do not have easy access to an ocean, however, that is what makes marine topics engaging for my students. My first year of teaching 30 years ago, I was assigned a Marine Science course. I had zero background knowledge, but that course has spring-boarded my passion for the ocean. I brought the Marine Science course from my first school to St. Joe, have students who pursue independent research topics with the ocean every year, am on the Educators Board of the new St. Louis Aquarium that is to open in December 2019 and have a daughter who is pursuing a marine science career (at least for now). • Adaptations to Life in Extreme Cold and Prolonged Darkness: I think this would be a perfect fit for my overarching theme in my classes of evolution and natural selection but again can only list 3 #1's. One of my students' favorite units in Marine Science is one we cover on bioluminescence and life in the deep. Monterey Bay Aquarium Research Institute (MBARI) has vast resources of organisms from the deep which enthrall my students. Also, I use a chapter from Into the Jungle by Sean Carroll on the ice fish without hemoglobin as a wrap-up unit on Evolution (for a short period of time, Breyers Ice Cream had product with Ice Structuring Proteins in it). As temperatures heat up, the icefish could be a poster child of climate change (though they lack the fur of polar bears). • Physics or Space Sciences. This is the only 3 on my list. I just don't feel that I have the background knowledge to be a productive member of a team for such a short period of time. Perhaps, however, this is what would make it a good fit. • Engineering and Technology: STEM (or better yet STEAM) is all about engineering and technology. This is another Achilles Heal in my teaching toolbox. I use technology and reference engineering, but it would be a great benefit to my students if I could authentically incorporate engineering in my courses (NGSS). Also, my time as an intern at MBARI showed the benefits of engineers and scientists working collaboratively.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I enjoy being out in nature both active (like hiking) and more passive (like sitting on a rock outcropping and observing). I have experience backpack camping, although not in the past five years. The last five years, my family has been car camping (driving to the campsite). We also have hiked every summer usually picking a 4-5 mile daily hike when on vacation.

b. Provide a basic statement of your general health and physical condition.
I am in good health. I bike 10-15 miles, three times a week in the summer (about once a week during the school year). Currently, I am on no medications.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am most familiar with the PC operating systems, but feel confident that I could adjust to the MAC system as well (I use an I-phone for personal use). I use Microsoft Office suite (Word, Excel, etc). We also have been switching over to Google Drive and I am familiar with it as well. I am confident that I would be more than proficient with either operating system and would have time to practice before an expedition.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Although I am not a digital native, I am proficient with computers and flexible to learn new programs. Every year new technological tools are introduced to the St. Joe classroom. Last year, we switched from BlackBoard to Canvas for our students' platform. This year we have moved away from SmartBoards in our classrooms to ScreenBeam T.V.s and Dell tablet/laptops. Thanks to the 2019 E.A.R.T.H. summer workshop, our school will be participating in the Stanford Virtual Human Interaction Lab to use their Stanford Ocean Acidification Experience to collect data on how Virtual Reality impacts education of environmental issues. The equipment arrived the first week in October and we are looking to start collecting data in the next three weeks. Students have told me that they appreciate how I organize class information and upload relevant files on Canvas. I enjoy learning new ways to do things. I have used Skype and Facetime to have scientists from across the country (and out in the ocean) talk with my classroom. I have my students graph with Excel, Google Sheets and Vernier LoggerPro so that they will have flexibility when they move on to college and beyond. I use VoiceThread to allow students access to content ahead of time or for review. I use PowerPoint, Microsoft Word, email, Facebook and Instagram on an

almost daily basis. I also follow Twitter, but rarely Tweet myself.

e. List any additional skills or information that you wish to be considered.
I have a basic grasp of the French language (spent 6 weeks at Laval University in Quebec back in the late 1990s). Although it has taken me a long time to acknowledge this as a skill, I am a connector. I enjoy bringing people and concepts together. For instance, for the 2018 Ocean Science meeting in Portland, OR, we used our off day to tour the tsunami center at Oregon State University, attend a class at the Hatfield Marine Science Center, eat at a sustainable seafood restaurant and explore tide pools at a local beach. All of this was made possible because of the people I met during multiple EARTH workshops in Newport, OR and talking with locals as we moved around town. I enjoy bringing people together who have similar interests and motivations.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
George Matsumoto (MBARI), Kristin Hunter-Thomson and Janice McDonnell (Rutgers)

Former PolarTREC, TREC, or TEA teacher. Please provide their name
These are also friends/colleagues: Elizabeth Eubanks, Jillian Worssam, Deanna Wheeler, Joanna Chierici. Finally, I met Kevin Dickerson at the Polar ICE workshop in Columbus, OH in June of 2018 and reconnected to hear about his PolarTREC Antarctic adventures at the Polar ICE Summit in Moss Landing, CA in March 2019.

From a website. Please list the website name and URL
PolarTREC's website https://www.polartrec.com/ As part of the PolarTREC website, I have subscribed to the MOSAiC expedition (and have encouraged students to sign up as well) https://www.polartrec.com/expeditions/mosaic

Conference or presentation. Please list the venue and/or presentation title
2019 National NSTA conference in St. Louis, MO. Dieuwertje Kast presented on PolarTREK and her experience in Alaska.

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
I think getting an article in The Science Teacher or Science Scope would build interest in the program. Also presenting at regional and national conferences would increase publicity (but having multiple sessions so that people would have a better opportunity to attend). Along the same lines, hosting a booth at national and regional conferences would allow people the time to chat. Continued exposure on social media platforms such as Instagram, Facebook, Twitter and newly emerging ones.

12. References

Reference 1

Name George Matsumoto

Title and affiliation Senior Education and Research Specialist at the Monterey Bay Aquarium Research Institute

Email Address mage@mbari.org

Phone Number (831) 775-1757

Reference 2

Name Janice McDonnell

Title and affiliation Science Agent, Department of Youth Development at Rutgers University

Email Address mcdonnel@marine.rutgers.edu

Phone Number (848) 932 3285

Reference 3

Name Jennifer Sudekum

Title and affiliation Principal of St. Joseph's Academy

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Phone Number landline school ((314) 394-4333), cell (314)406-4490

Gillian Luevano

1. Contact Information

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Institution Phone: 19136276150

Classroom/Office Extension: 6112

Institution Fax: 19136276152

Institution Website: https://central.schools.kckps.org/

Other relevant websites:

Supervisor's Name: Fred Skretta

Supervisor's Email Address: freddrick.skretta@kckps.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work at an urban district that is 99% free and reduced lunch. Central is working to become 1 to 1 with laptops, but currently we have enough for students to share a laptop with a partner.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) almost 900 students

f. School Ethnicity:
% - American Indian or Alaska Native
6 % - Asian
10 % - Black or African American
80 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
2 % - White
2 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 99

h. Average class or audience size 30

i. Total number of students/audiences you teach in a year 170

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Spring Break: March 14-22 Summer Break: May 22 - August 3 Winter Break: December 21-January 4

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Environmental Science

Bachelor's Degree (Minor):

Masters Degree (Discipline): Curriculum and Instruction in Secondary Science

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 15

c. How many years have you been working at your current institution?: 7

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
5-9 Certified Science Teaching License K-12 Certified ESOL Teaching License Noyce Scholarship Recipient KSDE ESOL Scholarship Recipient Honeywell Educator at Space Academy ASM Materials Camp Participant National Geographic Certified Teacher People Places Plants Patterns Participant ShareSpace Giant Map Recipient

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I am driven to apply for PolarTREC because I believe I will grow through the experience as a teacher. I have attended Space Academy, ASM Materials Camp, P4, BioTech, and am NatGeo Certified. These opportunities to learn from scientists and collaborate with teachers from all over the world have continually informed my perspective and development as a science teacher. My motivation is for my participation in PolarTREC to have a long-lasting impact on how I develop as a teacher. In the classroom, I regularly reference scientists and their work when introducing new concepts. However, I have realized that, beyond the basics, I am unfamiliar with what scientific research and work actually look like on a day-to-day basis. I want to participate in PolarTREC so I can develop lessons that could share first-hand knowledge of scientific research and work with my students. Finally, I want to help in any way possible with scientific research in the polar regions. As climate change worsens, I feel helpless to stop it. I believe PolarTREC would allow me to participate in researching how climate change affects the polar regions. Furthermore, I can bring that information back to continue to emphasize the importance of climate change.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I plan to share my experiences with my students through hands-on, realistic activities based on what I learn on the expedition. My goal is to engage the students and allow them to understand how scientists work. Over the past year I have revamped my classroom to be more engaging by having students analyze and interpret real data. I would use PolarTREC resources to create a year-long theme for the class that lets the students see what they’re learning applied in real scientific research. I will start each lesson with a phenomena from the expedition blogs and videos that I can supplement with my own experiences and observations. Then, students can research the phenomena throughout the lesson. By incorporating an unknown phenomena I engage students’ innate curiosity. By having the phenomena tie back to the polar region I give students a concrete environment to picture as well as a connection to the world around them and the importance of protecting it. Finally, I will use my classroom Twitter and Instagram accounts to keep in touch with

current and former students, parents, and educators from around the world.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I envision sharing my experience with other educators in my district by holding a workshop during our district learning time. I will share my experience with teachers in the metro area through PrepKC, a local program I work with that brings career experiences to the classroom. I will also reach out to the Stowers Institute, a research facility which is currently looking to partner with local science teacher, to propose hosting a workshop for teachers in the area. Finally, I will share with educators across America through the NGS Navigators podcast. It is a podcast for science educators I was lucky enough to be featured on this summer which could explore my experience with PolarTREC in a future episode. To reach the general public, I will take a more creative approach. I will present my experience as an art show incorporating photographs with supplemental information. This will make the information more accessible to a wider audience than a science presentation. I will reach out to libraries, community centers, and art galleries to host a show created by me and/or my students, using materials and photographs gathered during the expedition.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

To best engage learners I begin teaching every new topic by showing a phenomena. I have learners work on their questioning skills and ask everything they can think of. Through the mystery created with the phenomena I engage learners' innate curiosity and they become more engaged through daily lessons, hoping to find the answers to their multiple questions. I also tie everything in the classroom, school, and community to their lives and, most importantly, their choices. I begin the school year with a lesson about the challenges in today's world and the student's to think of solutions. We talk about how the students are in the best position to help improve the world. Throughout the year I tie lessons back to them, asking how they can use the information to change tomorrow. This helps the students relate to what they are learning, how this knowledge applies to their future, and how they are capable of bettering the future. I also create hands-on lessons to keep the students engaged. I find creative and available resources to have students create projects. When the students create their own project they absorb the material better and have a more personal investment in their work.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Multiple circumstances in my life have helped me become adaptable. Living in Japan for four years, I acclimated to a new language, new career, and new customs on top of also adapted to living without the same comforts I depended on previously. There was no central heating or cooling, so I was uncomfortable until I adapted to the new climate by learning to live more like my neighbors. Working in a historic building in an urban school district in Kansas, I often find myself without some of the same resources as I would have elsewhere. I have learned to be adaptable in both my expectations and my execution. I have learned how to find and apply a variety of different available resources. For example, no books? I have sourced online articles for every subject I teach and started writing grants for science equipment for my classroom to ensure my students can experience hands-on learning. On the top of my scientific knowledge and eagerness to learn, I believe the most important strengths I bring are my adaptability and resourcefulness as they are applicable in almost any situation.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Throughout my career I have often worked in a supporting role on teams. I can identify gaps and take on tasks to supplement and support the work of others to ensure we are working cohesively and everyone’s needs are met. Although I prefer a supporting role, I have assumed leadership positions when needed. For example, as I stay at the same urban school with a high turnover rate, I have started to take over roles where needed. I have mentored new science teachers in the building, helping with both content development and classroom management. I took lead on the Student Intervention Team in our school. Through the district I have also taken on a new role. I am helping create a new pacing guide for science teachers. We are using the Next Generation Science Standards and breaking them down into targets. I work as part of a small team who all have equal impact in what we write. Sometimes we do get into debates over what the standards mean or what the best steps to teach them are. In these situations I make sure to listen to my coworkers, but to also make my voice and opinion heard.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I attended a workshop where I took the place of a student to learn the importance of the Next Generation Science Standards and how to implement them. TI designed investigations and began to ask questions around planaria to understand how to most effectively teach our classes. Planaria are small worms, not longer than a fingernail stretched out. The impressive thing about them is that they can regenerate any part of their body. That means, if their head is cut off, the head grows back. Also, their cut off head will grow a body! This regeneration could have amazing effects for human regeneration. That is why Dr. Alvarez is asking, how does the planaria know to grow a head back and not another tail? Alvarez's research consists of chopping planaria in half and then manipulating, or messing with the genes that tell them to grow back a certain way. So far he has been successful in creating planaria with 2 heads and planaria with 2 tails. This is an important first step in understanding what genes tell cells what kind of cell to be and where. Can you imagine how humans could heal if we had the regenerative power of planaria?

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I would be honored to be chosen to go on an expedition to either location.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am able to participate in a field expedition at any point during the year. I would like to participate from 3 to 6 weeks. I can participate longer if needed.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I hold a bachelor's degree in environmental studies and I focused on ecology. I am still very interested and most comfortable with ecology. However, since I teach various scientific topics I have started to learn and enjoy them as well. I especially enjoy teaching weather and climate because they will always impact on my student's lives, both daily and long-term, and I enjoy seeing when this clicks for them and they can make the bridge between classroom knowledge and how it applies to them directly. I also teach biology and physics and am interested learning more about both subjects.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I go hiking and rock climbing on a regular basis and know basic wilderness first aid. I have canoed and camped in the past.

b. Provide a basic statement of your general health and physical condition.
I'm healthy and exercise on a regular basis with both strength and cardiovascular training. I am not required to take any medication.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I have used computers since I can remember and have learned technology my entire life as it continues to advance. I believe it puts me in a good position to be able to troubleshoot most technology. I am proficient with computers, tablets, phones, etc. We use Chromebooks and an iPad with an Apple TV in my classroom. All of my grading is online and my classroom uses Google Classroom for online assignments and assessments.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I have a Sony a6000 camera for my personal use to take landscape and wildlife photos. I edit my photos using Photoshop and comparable software. I also bring my camera into the classroom to document labs and workshops via classroom social media accounts. I have a laptop and prefer to use Chrome, but can use any browser. I am proficient in Microsoft Office suite. Recently my classroom obtained a 3D printer and I have been using Tinkercad to develop models to print. I am slowly learning coding. I have a basic knowledge of HTML and want to begin to learn other languages.

e. List any additional skills or information that you wish to be considered.
I can speak basic Japanese and Spanish.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information n/a

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
n/a

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Emily Goering

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Cassy Kincaid

Title and affiliation Assistant Principal

Email Address cassy.kincaid@kckps.org

Phone Number 19136276150

Reference 2

Name Lori Martin

Title and affiliation Gifted Teacher and Co-teacher

Email Address lori.martin@kckps.org

Phone Number 19136276150

Reference 3

Name Spencer Martin

Title and affiliation Science Instructional Coach

Email Address spencer.martin@kckps.org

Phone Number 19136274385

Renee Mahoney

1. Contact Information

Name: Ms. Renee Mahoney

Email: birdie127@live.com

Home Address:
86 PARK BROOK GDNS
MIDDLESEX, NJ 08846 US

Home Phone: 9734527353

Cell Phone : 9734527353

Institution Name: Ramsey High School

Institution Address:
256 E. Main street
Ramsey, NJ 07446 US

Institution Phone: 201-785-2300

Classroom/Office Extension:

Institution Fax:

Institution Website: https://www.ramsey.k12.nj.us/Domain/8

Other relevant websites:

Supervisor's Name: Holly Falcone

Supervisor's Email Address: hfalcone@ramsey.k12.nj.us

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My primary audience would be my students, colleagues and community members. I teach 9th grade environmental science in Ramsey, NJ. This is a small suburb of New York City, containing around 15,000 people. There is a K-12 school district, with three elementary schools, one middle school and one high school. The high school is an integral part of the town's community and focuses on academics, sports and other extra curricular activities. In addition to reaching my own students, I would be able to report out to the entire district and community through outreach events. Additionally, I work as an adjunct professor at Raritan Valley Community College, in Branchburg, NJ. This school serves over 8,000 students, of which 36% identify as racial minorities. At this school I teach Introduction to Geology, Astronomy and, my personal favorite class, The Nature of Science. The Nature of Science is a class that many non-science majors take. It focuses on honing scientific skills, such as evaluating the credibility of sources, solving problems using the scientific method, asking good questions and analyzing data. Teaching at both the high school and community college ensures that my experiences will be shared with a large, diversified audience.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 1,500+ students/community members/faculty members

f. School Ethnicity:
% - American Indian or Alaska Native
7 % - Asian
% - Black or African American
9 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
83 % - White

1 % - Multiracial

If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 3

h. Average class or audience size 24

i. Total number of students/audiences you teach in a year 100 students (wider audience through district website)

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Start- 9/3, End 6/22, Breaks 12/24-1/1 and 4/19-23

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Earth Science and Teacher Certification K-12

Bachelor's Degree (Minor):

Masters Degree (Discipline): Earth and Environmental Science

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 7 years

c. How many years have you been working at your current institution?: 7 years at the high school, 2 years at the college

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12), Community, Vocational, or Technical College

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Earth Science

Other Subjects Electives in Astronomy and Meteorology

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

PolarTREC is an amazing, one-of-a-kind experience. Since I was a young girl I've loved the earth and striven to understand how it operates. I've studied the way in which humans affect the earth system for years, but a chance to observe it first hand, and contribute to the research, would be beyond rewarding. Professionally, I hope to gain an authentic experience that I can bring to my classroom to help motivate my students to care about and get involved in science. Being able to draw from a real- life experience will enhance my ability to connect with my students and convey my subject matter. Furthermore, I hope that seeing a woman engaging this type of work will inspire my young female students to see themselves in the sciences.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

To share this experience I would love to work with my school's environmental club in hosting an activism night. Since climate change will likely be addressed by the research taking place, we can use that issue as a focal point for the event. During this event we can invite parents and community members to attend a meeting where we discuss some of the impacts, and propose solutions. I would also organize a pledge drive within the school community to encourage students to set and achieve, small, realistic goals. Additionally, I would set up a time to speak with students at the elementary and middle school levels. I would focus these guest lectures on the rewarding nature of working in the sciences, in an attempt to encourage more students to choose STEAM careers.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

In addition to what is mentioned above I would also work with my local Girl Scout council to reach members outside of my school. Girl Scouts has long been a proponent of women in power and women in science. Part of the Girl Scout Gold Award involves creating a program or event that will have a long-lasting and sustained impact. With environmental activism at the forefront of so many young people's consciousness, it is easy to envision myself working with scouts to reach a broad audience while having a meaningful impact.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My classroom is modeled after the three-dimensional framework laid out in the Next Generation Science Standards. Moving towards a completely 3-D classroom takes time, but my district has been working on this transition for several years, and has made significant progress. As such, my classroom looks very different from a traditional science classroom. New ideas are introduced as phenomenon. Once the phenomenon is introduced, we engage in a variety of science and engineering practices to attempt to understand the causes and mechanism of said phenomenon. Usually this involves asking good questions, analyzing and interpreting data, and communicating information in a succinct model. By making models students gain a deeper, longer-lasting understanding of their content.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

While I do not have a lot of field work experience, I do have many traits that would classify me as highly qualified for this type of work. I am an excellent team player. I know how to get along with people. I know how to take charge when needed, and when to hang back and follow orders. I am also an extremely quick study. Once I run through an operation once or twice I am confident of my ability to do it efficiently, accurately and with little supervision. I am flexible and willing to work hard at any task I am assigned. I am not afraid to ask questions when clarification is required, and to make decisions when it's not. Lastly, I am very mindful when it comes to risk-management. I mitigate the possibility of potentially dangerous or disruptive errors. Overall, I know I would be an asset to any team to which I am assigned.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a

member of a team. (200 words maximum)

As stated above, I am a team player, through and through. In my professional life I often assume the role of "leader", as I have the initiative to tackle a problem. This being said, I am very comfortable stepping back and allowing others to take charge, especially when they have a higher level of knowledge or training than I do. My best asset as a team player is my ability to recognize and leverage the strengths of each member of my team (including myself). Not everyone has the same abilities, but everyone can do something well. I also excel at conflict resolution. Should a conflict arise, I can utilize techniques honed through years of working with teenagers to help reach a peaceful compromise. Working in the harsh conditions of the Arctic or Antarctic ensures intense physical and emotional stress; having a peace-keeper around can help people moderate and manage this stress.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Week of 9/30-10/6 When deciding the most exciting day of this past week, there is no contest. On Friday, 10/4/19, my best friend Katie welcomed a beautiful baby girl into the world. Zoey Rose was born at 3:56 am, via cesarean section. For those scientists who think primarily in terms of quantitative measurements, here are the stats: Weight- 6 lbs 10 oz Length- 19 inches Head- 11.75 inch diameter Sex- female If you prefer a more qualitative assessment, all I can say is she is precious! For the past 38 weeks we have been prepping for her arrival. We painted the nursery, assembled the crib and stocked the closet with the cutest little outfits, adorned with unicorns and mermaids. Everyone was so excited to finally meet her. Now Zoey, the very tiniest of thieves, has arrived and promptly stolen all of our hearts. Even though Katie only has three sisters, Zoey has eleven aunts. From here on out we will all teach her, hug her, and definitely spoil her! Be sure to check back next week for more updates on the world's most loved baby!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
The idea of travelling to either pole (or close to it) is a dream. I would be most ecstatic to visit Antarctica, but would be thrilled to be a part of either expedition. My district is very supportive of the continued education of the faculty and, therefore, I do not anticipate any problems with needing to take time off for either expedition and associated training.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
Completely open availability.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I love all science, but my passion is in earth and environmental processes. I would love to see how native marine and terrestrial species have been impacted by the changing climate. Human beings have altered these regions in many ways. Whether it is the acidification of ocean water, the loss of sea ice, or fluctuating sea surface temperatures, these changes to the earth system are bound to impact life in the region. Understanding how lifeforms are adapting to deal with the variation in their environments will help inform decisions about the best course of action to mitigate these impacts. We share this world with many besides ourselves, and it is our responsibility to keep them safe.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have some experience with camping and hiking through Girl Scouts. I have engaged in primitive camping and am quite comfortable with limited amenities. I have also been a trained lifeguard for over a decade. This has given me an above average level of training in first aid and emergency response. I have First Aid, CPR, AED and asthma/epipen certifications. I am comfortable working and residing outdoors, and know how to responsibly interact with wildlife.

b. Provide a basic statement of your general health and physical condition.
I am in excellent health. I take no daily medications (besides vitamins) and have no physical limitations. I rarely ever get sick.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am most familiar with a PC, using windows operating system. I can use a Mac but may require a brief acclimation period. I consider myself proficient in general computer processing. If I encounter an issue I can quickly learn to resolve it.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use most of the software in the Microsoft suite on a daily basis. I am highly proficient in Microsoft Word, PowerPoint and Excel, along with the Google analogs (Docs, Slides, and Sheets). I also have a personal podcast and utilize audio recording equipment and web hosting on a weekly basis. I have a good eye for photography, as well, and can capture images on a wide variety of cameras.

e. List any additional skills or information that you wish to be considered.
I have some experience with Arc GIS and MatLab, although I would likely need a refresher before independently utilizing these programs.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
I was at a professional development institution for Model-Evidence Link assessments. Here I met a woman who described how she has engaged in research opportunities similar to this one. I completed a Google search and found the amazing opportunity that is PolarTREC.

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
I would consider advertising on social media apps like Facebook or Instagram.

12. References

Reference 1

Name Erika Scanel

Title and affiliation Biology Teacher/ colleague

Email Address escanel@ramsey.k12.nj.us

Phone Number 201 264 9576

Reference 2

Name Daryl Van Ry

Title and affiliation Chemistry and Physics Teacher/ colleague

Email Address dvanry@ramsey.k12.nj.us

Phone Number 973 885 2741

Reference 3

Name Holly Falcone

Title and affiliation Science Supervisor/ Supervisor

Email Address hfalcone@ramsey.k12.nj.us

Phone Number 201 785 2300

2020-2021 PolarTREC Educator Application

Natalie McGrath

1. Contact Information

Name: Ms. Natalie McGrath

Email: natdavis@livingston.k12.mt.us

Home Address:
4 Hidden Ridge Road
Livingston, MT 59047 US

Home Phone: 4062240221

Cell Phone :

Institution Name: Park High School

Institution Address:
102 View Vista Drive
Livingston, MT 59047 US

Institution Phone: 4062220448

Classroom/Office Extension:

Institution Fax: 4062229404

Institution Website: http://www.parkhigh.org/

Other relevant websites:

Supervisor's Name: Lynne Scalia

Supervisor's Email Address: Lynne.scalia@livingston.k12.mt.us

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Livingston Montana got its start as a railroad community in the late 1800s. It was known as the Gateway to Yellowstone National Park. Due to Livingston's location, we have always drawn an eclectic group of individuals to our community. Livingston is a rural, blue collar, community with the next closest city being Bozeman, MT. Approximately 12% of our community is below the poverty line. Our community does an amazing job connecting needed support opportunities with locals in need. Our school and town are not hooked into the high speed fiber optic cable, but it does not limit our ability to gather information. Science rooms all have a classroom set of computers. Park High school is considered a low income school with one third of the population on free or reduced lunch. I am proud to say, currently have one of the highest graduation rates in the state of Montana. Each year, even with our demographics, we send 1-2 students to Ivy League school. It is a wonderful place to live and teach!

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) ~425

f. School Ethnicity:
1 % - American Indian or Alaska Native
22 % - Asian
1 % - Black or African American
11 % - Hispanic or Latino
1 % - Native Hawaiian or Other Pacific Islander
378 % - White
14 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: none

g. Percentage of students who receive free or reduced lunch: 35%

h. Average class or audience size 28

i. Total number of students/audiences you teach in a year 145

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Known time off 2019/2020 Winter Break-Dec 23-Jan 3 Spring Break- Mar 23-Apr 27 End of the Year-June 2 2020/2021 calendar has not been determined for our district

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Environmental Geoscience and Secondary Science Education

Bachelor's Degree (Minor):

Masters Degree (Discipline): Science Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 15

c. How many years have you been working at your current institution?: 14

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
National Association of Geoscience Teachers- Outstanding Earth Science Teacher Award 2018 Montana Science Teacher Association-Board Member, State Earth Science Liaison Montana Environmental Education Association- Outdoor Educator of the Year 2017 First Aid & CPR Certification Certified to teach: Earth Science, Chemistry, Physics, Biology Montana Educator Association-State Conference Presenter

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Chemistry, Secondary Earth Science, Secondary Physical Science

Other Subjects Outdoor science: avalanche safety, plant identification, water purification, shelter building

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

This opportunity would be a dream come true! I am excited to get out of my classroom and into the real world. STEM education is highly important in today's education system this opportunity to teach my students while in the Arctic or Antarctic is unbelievable. The impact of real world science in my everyday teaching would change my students lives. What an incredible way to motivate my own students to continue to study science and hopefully, one day, change the world. Many of the students I teach are in family situations where parents are unable to drive their children to the next town, let alone travel to a distant continent or country. This could be a way for those students to see, what is out there in the world. With global climate change affecting all of us, it would be great for students to see for themselves how daily choices are affecting global ice and Earth systems. I hope to gain personal experiences and knowledge that will make me a better teacher and human. This is an incredible opportunity to work with scientist in the field to better understand applied science. I look for opportunities to get into the field to work on deepening my own understanding of science.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I think it would be inspiring to make videos of this experience to share with all my future students. I actually think it would be incredible to create a virtual reality segment for my students to really view science in action. Park High School is currently working with Montana PBS. We have a PBS technology trainer who comes to our school with the sole purpose of helping teacher’s better use technology in the classroom. I see this as an incredible opportunity to pair with PBS and create a lasting student experience. It would also be amazing to tone down the content of my study to create a game or activity that could be used on PBS kids. This would be a great way to create interest in a younger audience in addition to my high school students.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I would want to present at our State Conference and National Conference to reach

other educators. I would love to share what I learn in our local elementary schools to increase interest in science. Livingston has a community lecture series that would be a great opportunity to speak about my research teams finding. I would also reach out to public newspapers to give interviews on the experience. I would host a town hall meeting to share my experience with the Livingston community. It would be wonderful if I can continue my work with my professor to incorporate projects into my curriculum and the curriculum of my colleagues. We host a STEM astronomy community night and I would love to expand this to include my new area of expertise after this expedition.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Students today are different learners than my own generation. The way I was taught does not always resonate with my current students. I always try to connect our topic to their daily life. I implement NGSS into my curriculum and have recently tried to add a larger modeling piece into my teaching. Students like to create or investigate concepts on their own, so I try to use this as a teaching tool. I will always present a formal lesson in addition to a project, model or research to deepen their understanding of the concepts. I have been trying to loosen my control over projects and have been allowing the students to show me the learning target in any way they’d like. This has been amazing because they often shock me with their creativity. In the end, the learning results are the same but each student reaches the finish line differently. When students buy into their education I see better outcomes and understanding. Learning is doing. When students see their teachers excited and engaged the learning becomes contagious.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I would say that I am a hard worker, easy to work with, focused under pressure, I am organized and I have positive outlook on life. I am not a complainer and enjoy spending time outdoors. I worked at Old Faithful for a winter and had to ski a mile to work every morning in subzero temperature. I will work hard to research and learn as much about my assigned team as possible before we leave on the expedition. I love to learn about new concepts, technology and to meet new people. During my master's program I was able to take many field classes and I feel that I always learned the best while working in the field. I take criticism well and work easily with other. Being a team player in a remote location would be vital to any expeditions success. I would be willing to serve in any capacity needed.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I work on several committees within my school and statewide. I think when I work in a group it is imperative to be cooperative and encouraging. It is important to share your opinions and knowledge but it is also important to never dominate or put down other for their thinking. I can take the lead when needed and I am also happy to support my leaders. I have been a track coach for 10 years and I have worked with many adults in the community and children over the years. If it's a team of scientist or students athletes it is important to always remember to be kind to one another and remember that everyone has unique ideas and life experiences that can deeply benefit the group as a whole. I always learn more when I stop talking and listen.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I woke up and for a moment forgot where I was. I felt a sharp tug on my hair, then saw the smiling face of my daughter. She was excited to head down to the hotel pool with her bother. When I rolled over and looked at the clock it was only 5:30am. What it would be like to be able to sleep in to 7am, well I certainly can’t remember. I convinced my children to wait until Dad and I have a cup of coffee. I barely took the last sip when I was dragged out of the room and off to the pool. I knew we were getting close because the scent of chlorine was becoming stronger with each step. When I opened the door I saw what must have been my children’s dream come true. Two water slides towered above the 25 meter pool. Thirty, Thirty-one, Thirty-two, we had to count each step as we climbed to the top of the platform. When we arrived my son immediately threw himself into the enclosed slide and off he went winding down the tunnel. I stood at the top laughing at his enthusiasm. His laughter was echoing in the pool area, magnified by the enclosed slide. Next, my daughter and I cautiously entered the slide. I pushed us off the platform and down we went, together. Building speed, blindly zipping around each turn, laughing hysterically and then it happened, a huge nose full of water. Without any hesitation we headed for the stairs again.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am absolutely fascinated with current changes that are occurring in the Arctic and Antarctic. I would be privileged to assist scientist in any region.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am open to any length and time!

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I love the Earth Science field. I am fascinated with geomorphology, water, erosion, ice, snow and geologic history (in relation to climate and evolution of species). I also am interested in krill and the global impact the species is having on communities of animals.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
I love Earth Science in all aspects. I love when it is applied through chemistry or

changing evidence of geologic history. I also enjoy learning about biologic interactions that are changing due to atmospheric changes.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
One thing I always knew I would continue to love through my adult life was being outdoors. I lived and worked in Yellowstone National Park for four summers during college and for a winter immediately after graduation. I spent every weekend in the backcountry, hiking, skiing, camping and exploring. I currently teach a class called Survival science where I am able to teach outdoor skills to my students. I understand wilderness first aid and have taken general classes on the topic but don't currently hold a certification. I have kayaked extensively in Montana and Wyoming. I own a raft, this is what I mainly travel on now, so I can take my own children. We often go on several day river camping trips. I am very comfortable in water and in very cold weather. I also can start a fire with a match and bow drill. I have not had formal firearm training, but I am comfortable using handguns and shotguns. I have been enjoying the backcountry since I was a child. I currently teach a Survival Science elective course at Park High School and I am working on my avalanche level one certification this winter.

b. Provide a basic statement of your general health and physical condition.
I am in good dental, mental and physical health. I do not have any ongoing health problems. I am healthy and run daily.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I feel confident and proficient when it comes to the use of computers. I have been using technology in my personal life and in my classroom daily. I was a school wide trainer on the use of Google Drive and extensions. I enjoy learning about new technology and I would consider myself a fast learner when it comes to new programs. I am also a member of our schools technology committee.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I have advanced proficiency in the use of Google and all Google Drive Applications, Microsoft Office, Excel, Publisher, PowerPoint, GPS, Digital SLR camera, Vernier probes, PhET modeling, Anamoto and iMovie. I am comfortable using ArcView. I use Google and Microsoft applications daily. I am trying to help make our school a Google school so I will be able to go nearly paperless with my students. I collaborate with colleges across the state using Google docs and hangout. My students share classwork with each other in this program as well. My students frequently make

videos and share them with the class. I like to use the programs for personal videos. I have taken several photography classes and enjoy taking nature photographs. I use electronic probes for Earth Science and my Survival class. We have small units that we can take into the field with us. This allows or collection of data to be more accurate.

e. List any additional skills or information that you wish to be considered.
I have an extremely supportive family. My husband and children are excited for this potential opportunity and will be comfortable with my time away. I have traveled with students to Japan, Germany, Spain, Costa Rica, and Yellowstone National Park. I adapt well when I travel and can lead a group if needed. I really love learning about science. I will be a positive member of any team and I am often told that I am easy to work with. I can navigate with a map and compass. I am handy around my house and I like to try to build or fix things on my own. I can sew well and know a handful of useful knots.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Ken Keenan Leidos and Antarctic Service Contract

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
Montana Teacher Conference or Montana Office of Public Instruction

12. References

Reference 1

Name Lynne Scalia

Title and affiliation Doctor of Education Park High School Principal

Email Address Lynne.Scalia@livingston.k12.mt.us

Phone Number 4062220448

Reference 2

Name Randy Mogen

Title and affiliation Masters of Science Education College/ mentor

Email Address Randy.Mogen@livingston.k12.mt.us

Phone Number 4062220448

Reference 3

Name Shari Kepner

Title and affiliation Master of Mathematics College/co-woker while working in YNP

Email Address shari.kepner@gmail.com

Phone Number 4062220448

Brittany Meeks

1. Contact Information

Name: Brittany Meeks

Email: Brittany.Meeksa@gmail.com

Home Address:
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Palm Bay, FL 32908 US

Home Phone:

Cell Phone : (315) 243-2364

Institution Name: Central Middle School

Institution Address:
2600 Wingate Blvd.
Melbourne, FL 32904 US

Institution Phone: (321) 722-4150

Classroom/Office Extension: 5611

Institution Fax: (321) 722-4165

Institution Website: https://www.brevardschools.org/CentralMS

Other relevant websites:

Supervisor's Name: Todd Scheuerer

Supervisor's Email Address: Scheuerer.Todd@Brevardschools.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I currently teach at the largest middle school in Brevard County, Florida, which is an urban public school. There are several computer labs on campus and portable computer carts, all with wifi access. My school is an AVID (advancement via individual determination) school, which supports college readiness. As stated previously, Central Middle School is the largest middle school in Brevard County and located in one of the fastest-growing communities. As a result, the student population is socioeconomically diverse with students from upper-class, wealthy families to families struggling with homelessness. Brevard County, or “The Space Coast,” is well-known for being home to Kennedy Space Center and has a large technical and scientific workforce. The community also has over 70 miles of coastline, significant lagoon and marsh area, and a number of wildlife preservation sites. Due to this, the preservation of these natural environments is a part of life in the community.

d. Type of School (or students you work with): Public

Other Type of School I also work with the Brevard Zoo delivering a STEM-focused curriculum to a broader audience in an informal setting.

e. What is the population of your annual audience or school (estimates are fine) There are approximately 1200 students at my middle school.

f. School Ethnicity:
0 % - American Indian or Alaska Native
3 % - Asian
14 % - Black or African American
15 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
58 % - White
10 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 30%

h. Average class or audience size There are approximately 22 students per class.

i. Total number of students/audiences you teach in a year In a formal classroom setting, I teach roughly 130 students each school year. Additionally, I educate 12 participants in the Harris STEM club as well as 1,200 with the Brevard Zoo.

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Start Date: August 11, 2020 Last Day: May 26, 2021 Winter break: December 22, 2020 – January 6, 2021 Spring break: March 15-19, 2021

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Bachelor of Science in Natural History and Interpretation from State University of New York College of Environmental Science and Forestry, 2011.

Bachelor's Degree (Minor):

Masters Degree (Discipline): Master of Science in Biology with an Emphasis in Education from Grand Canyon University, Expected Date of Completion is February 5, 2020.

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: This is my sixth year as a formal educator, but have been an informal educator since 2011.

c. How many years have you been working at your current institution?: This is my first year with Central Middle School. Previously, I served as an educator at Sabal Elementary.

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
FDOE Elementary Education K-6 FDOE Middle Grades General Science 5-9 FDOE ESOL K-12 USAFA Civil Air Patrol Teacher of the Month, April 2018 NASA Lunar and Meteorite Certified Kagan Cooperative Learning

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I am applying to PolarTREC to gain field experience. As an undergraduate, I had little opportunity for this type of experience and, as I am currently earning my Masters in Biology through an online program, this is still an area I am lacking. Field experience will improve my overall STEM knowledge and inspire best practices within my curriculum. This opportunity will strengthen my confidence when I am facilitating hands-on labs, which will enhance the experiences of my students. I will also gain first-hand experience to share with my fellow teachers and provide mentorship. In my classroom, I have a section of the wall dedicated to #actuallivingscientists. Scientists from all over the world post on Twitter using the hashtag to share what they were accomplishing. My students have become inspired by what these scientists are doing and want to communicate with them. Building on this, I plan to use this opportunity to start another hashtag and interact with teachers and students from all over the world. Each day I tell my students about the fantastic things they can do within the science field. This opportunity will give me the experience to SHOW students that these opportunities are real and attainable.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

If selected, I would have my students complete research on where I will be going and why the research is essential. I want them to feel that they are gaining experience through my participation in this program and take pride in the research and process. This is an excellent opportunity for them to see real-world connections and their influence on the world around them. I plan to create hands-on activities that can be completed in our local environment where we can analyze and compare our data. I would encourage the research team to do a question and answer session about their lives and how they got to where they are now. With my audience at the zoo, I can post on the zoo’s Facebook page. I will be able to hold additional webinars specifically for them. Upon completion, I can host events open to the general public and lunch and learn events for the staff at the zoo to share the research and experience. I can also present at the annual Youth Environmental Summit, where I can educate hundreds of emerging scientists who are ready to take on the world.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general

public. (200 words maximum)

Brevard Public Schools provides many opportunities I can use to present the research, experience, and resources. Our Brevard Research Rules would allow me to present to students and teachers on Polar Topics. With Brevard County being the "Space Coast," a majority of the research that is shared with schools focuses on aerospace. This opportunity would allow students to not only be exposed to other fields of study but see how aerospace and these fields can intersect. Additionally, I can apply to present at local, state, and national science teacher conferences. I have a network of teachers and other colleagues in several different states. I would advertise myself and offer to share the expedition with their classes, enhancing their curriculum. My school would allow me to post on their website to share the experience with our community as well. Finally, I would reach out to my alma mater, SUNY ESF, to do an alumni spotlight on me along with the research team, which would provide more exposure.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I am a very passionate teacher. My students ask me often how I can always be so excited about science topics. I try to make learning fun and engaging for them by planning hands-on activities and assignments that keep them engaged. I do room transformations, review games, along with giving students a choice of activities. I also try to engage in whole brain teaching by integrating movement with sayings when it comes to complex topics and concepts. This allows the students to have fun in their learning, along with more ownership in the experience. Another way I teach complex topics and concepts is by using real-world applications. This gives students a personal connection to the topic. It not only makes the problems more relevant to them but forces students to look at things differently. They become global citizens. Often, they are unaware that their actions have consequences, sometimes global consequences, and through meaningful conversations and activities they reflect and become advocates for those topics.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

My strengths include being an action-oriented, enthusiastic problem solver. In meetings, I ensure we are getting the work done that we need to, make sure everyone is focused on solutions rather than the problem, and share out of the box ideas. I am flexible with change; I can think quickly, and pivot if needed. Teaching has provided me with many challenges to overcome, which has strengthened my

patience and flexibility. I am just as comfortable being task-orientated and do well in situations where expectations are clearly identified, and processes need to be followed.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

While teaching in Palm Beach County, I was part of a STEM-IE Curriculum Integration Institute collaboration with the University of Florida and the school district. There was a small team of teachers who worked together to create project and problem-based lesson plans using the state adopted standards. We would work together on the brainstorming, dividing up the sections of work, along with editing. When the lesson plan was finished, we would come together and review and update the entire lesson plan as needed. We helped each other to be successful, providing guidance and support throughout the process. I would often check in with my teammates to see how they were doing and if they needed help along the way. I would also provide encouraging words and positive feedback. This school year, I am part of a MESH (math, English, science, history) team. We often check in with each other about our students' overall well-being. I have created documents where we can easily share information about our students, and volunteer for tasks that the other team members do not want to do, such as creating bulletin boards and being in charge of the student of the week.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

This past weekend, my friends and I went to Discovery Cove! We had no clue what to expect but were excited nonetheless. When we got there, we were blown away. Discovery Cove is beautiful! It is like an incredible tropical island that you would only see in the movies. As soon as we stepped in, we were greeted by the local flamingo population. Did you know flamingos aren't born pink? They turn pink over time due to their diet of shrimp and algae. After that warm welcome, we visited the aviary with birds from all over the world. Next, we visited some marmosets (small monkeys from South America that are about the size of a squirrel) and otters in the freshwater oasis. Then, we decided yo visited the Grand Reefs to snorkel. The water was freezing, but we were in the animals' habitat, so we persevered. There were a total of 7,000 animals living in the reef, and we were able to swim right alongside them! I kept thinking to myself that this was a fantastic experience, and I hope one day, everyone can experience it. If they did, they could not help falling in love with our marine animals.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
The weather and climate of the arctic influences the weather and climate for a majority of the world. By conducting research on this area, we can make better predictions of how climate change will continue to affect the arctic region, along with the rest of the world. The fact that the Antarctic holds about 70% of the Earth's freshwater and the sheer amount of ice in this location is incredible. The Antarctic is a hostile environment but shows the effect that humans have on the environment even from a distance. Both are incredible.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am available the entire year, with no blackout dates. I would be excited and happy with any expedition but would prefer to spend the most amount of time possible working and acquiring new knowledge and skills.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
As an environmentalist and an animal advocate, my scientific interests are centered around habitats, biotic and abiotic factors, and the interactions therein. I first heard about climate change as an undergraduate student and quickly became passionate about it; specifically, how it is affecting animals and the overall environment. The current mindset of our country needs to change. One way to make this change is to start with teachers gaining first-hand experiences. Teachers can impart their knowledge and wisdom to the future students/leaders of this country.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I do not want to be considered for an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I do not want to be considered for an expedition in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
Understanding Environmental Change in the Polar Regions

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I grew up as a girl scout, always camping and hiking. As an adult, I continue to camp and hike in a variety of places. This summer I was camping in Kruger National Park, in South Africa. I am CPR and first aid certified.

b. Provide a basic statement of your general health and physical condition.
I am healthy and complete all preventative care as necessary. I currently work out several times a week doing a mix of cardio and strength training. My most recent physical was this past July.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am most familiar with the Windows operating system. My skill level is intermediate with 15 years of experience utilizing Microsoft Office Suite.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use a mix of computers both at work and at home. I have a personal Nikon digital camera that I use as a hobby. I use a variety of internet browsers and use all of the Microsoft products, along with Google Suites. I have used Excel sheets for calculations and keeping track of quantitative data.

e. List any additional skills or information that you wish to be considered.
Overall I have an inviting, bubbly, and easy-going personality. I am not afraid to work hard and am intellectually curious. I love learning, new experiences, and doing good for the world. I was also a foreign exchange student in Poland for one year, living with a host family.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
I've been searching for teacher field experiences to enhance my science teaching and this program came up. I attended the webinar, did research on previous expeditions, and became hooked.

b. Please suggest other places we might advertise this opportunity for teachers
Teacher facebook groups. Also, sending out an email to the science district personal who would be able to share with all the teachers.

12. References

Reference 1

Name Meg Szczesny-Pumarada

Title and affiliation Education Manager at the Brevard Zoo

Email Address MLieth@brevardzoo.org

Phone Number (321) 254-9453 X227

Reference 2

Name Michelle Ferro

Title and affiliation Science Content Specialist with Brevard Public Schools

Email Address ferro.michelle@brevardschools.org

Phone Number (321) 633-1000 ext. 11329

Reference 3

Name Trisha Borgen

Title and affiliation 4th-grade science teacher at Pine Crest School

Email Address trisha.borgen@pinecrest.edu

Phone Number (561) 350-7188

Christine Mihealsick

1. Contact Information

Name: Ms. Christine Mihealsick

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Home Address:
1916 Autumn Fire Drive
Cedar Park, TX 78613 US

Home Phone: 5129229664

Cell Phone : 5129229664

Institution Name: Westwood High School

Institution Address:
12400 Mellow Meadow Dr.
Austin, TX 78750 US

Institution Phone: 512-464-4000

Classroom/Office Extension: 512-464-4103

Institution Fax: 512-464-4020

Institution Website: https://westwood.roundrockisd.org/

Other relevant websites: My personal classroom website:
https://sites.google.com/roundrockisd.org/mihealsick/home

Supervisor's Name: Adrian Ramirez

Supervisor's Email Address: Adrian_ramirez@roundrockisd.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I teach science at Westwood High School, a suburban 9-12 high school in Austin, TX. Westwood is a public high school that is ethnically and culturally diverse, with over 30 languages spoken in students homes. Many of our students' parents are immigrants, and there is a generally supportive atmosphere from the parents for the education of their children. Westwood is an International Baccalaureate (IB) school, offering a program of study that emphasizes cross-curricular projects, interdisciplinary thinking, and an appreciation of world cultures. Our school is almost at 1:1 access for computers. My primary classroom audience is AP Environmental Science students. I teach 7 AP Environmental science classes on a 6 of 8 block schedule – I am teaching an extra section this year. I am incredibly fortunate as a teacher because my students are highly-motivated, curious, hard-working, and a portion of them are inspired to go on to study environmental science in college. Just with the students I teach, 13 different languages are spoken in student homes, and there's a wide variety of student cultural backgrounds, economic levels, and learning differences.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 2,823 students in my school, 186 students total in all of the AP Environmental Science classes I teach.

f. School Ethnicity:
1 % - American Indian or Alaska Native
34 % - Asian
3 % - Black or African American
19 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
38 % - White
5 % - Multiracial
If your school uses other categories to describe race/ethnicity, please

describe:

g. Percentage of students who receive free or reduced lunch: 10

h. Average class or audience size 27

i. Total number of students/audiences you teach in a year 186

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
2019-2020 School Year Spring Break – 3/14/20 – 3/21/20 Last day of school - 5/22/20 2020-2021 School Year Start of School Year – 8/10/20 – first day teachers are back 8/20/20 – first day students are back Thanksgiving Break 11/21/20 – 11/29/20 Christmas Break 12/19/20 – 1/3/21 Spring Break 3/13/21 – 3/21/21

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): BS Biology, University of Texas at Austin

Bachelor's Degree (Minor):

Masters Degree (Discipline): MA Science Education, University of Texas at Austin

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 18 years teaching public high school

c. How many years have you been working at your current institution?: 13 years

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
1. Nationally Board Certified Teacher - National Board for Professional Teaching Standards; Adolescent/Young Adult Science – Chemistry (passed 2009, recertified 2018) 2. Fulbright U.S./Japan teacher exchange program for Environmental Sustainability– 7/2014 One of 24 teachers chosen from a pool of 350+ nationwide applicants for a two week, fully funded Fulbright exchange program in Japan. Activities and professional development experiences all environmentally themed. 3. Northrup Grumman EcoClassroom Teacher, Costa Rica Field Research Trip, 7/2013 Team leader for one of four national teams selected for a 10 day, field research trip to Costa Rica. Team leader duties included research project proposal, four-teacher team selection and coordination, and curriculum development from field research. Field research involved carbon sequestration in rainforests. 4. Toyota International Teacher, Costa Rica Trip, 11/2011 One of 26 teachers chosen from a pool of 400+ nationwide applicants for a two week, fully funded trip to Costa Rica. Activities and professional development experiences all environmentally themed. 5. Research Experience for Teachers, NSF $10,000 grant (1/04-11/04) The Research Experience for Teachers (RET) program is a nationwide program that affords high school teachers the ability to conduct research in the university setting. I was selected to conduct a yearlong research program on water quality and recharge of the Edward’s

Aquifer under the supervision of Dr. Jay Banner, director of the Environmental Science Institute at the University of Texas at Austin. My original research on groundwater recharge was presented at the Geological Society of America's annual conference in a conference talk. My abstract can be found here: https://gsa.confex.com/gsa/2004AM/finalprogram/abstract_80271.htm 6. University of Texas at Austin Alumni Inquiry Based Teaching Award • R.L. Moore Inquiry Based Teaching Award, May 2011 • R.L. Moore Inquiry Based Teaching Award, May 2005 7. National Math and Science Initiative (NMSI) Consultant (2013 – present) – Certified as a presenter for NMSI sessions. NMSI's overall goal is to increase student and teacher success in higher level AP classes in traditionally under represented areas, such as urban and rural districts. Duties include presenting student study sessions and two day teacher training workshops over AP Environmental Science content. Have worked with students and teachers in Austin, Houston, Dallas, Fort Worth, the Rio Grande Valley, Baton Rouge, Pittsburgh, and San Diego. 8. Lead Teacher, Teacher Advisory Council, Switch Energy Alliance (SEA)– Tasked with developing a teacher advisory council, running advisory meetings, and facilitating a summer conference to develop AP Environmental Science curriculum that aligns with non-partisan energy documentary and video resources of the 504c non-profit SEA. 9. Selected presenter AP National Conferences, July 2016 and 2019 – Presented a breakout session about integrating AP Environmental Science and AP World History projects in 2016. Presented a breakout session about Switch Energy Alliance curricular AP Environmental Science resources – Solar video content, questions, and solar lab activities. 10. Teaching Certificates – Certified 6-12 Composite Science Teacher, State of Texas (certified to teach any secondary science) Certified 9-12 Teacher; Biology, Chemistry, and Physical Science, State of Wyoming

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary General Science

Other Subjects AP Environmental Science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

The PolarTREC program is a once in a lifetime opportunity to do hands-on research and translate that experience into inquiry-based, higher level projects for my students. I would love to be part of a scientific field research team, doing cutting edge polar research. This is my eighteenth year in the classroom, and I haven't done original research in over twelve years. While I love being an educator, at my core I am a scientist. And the heart of science is actually doing research. Effective science education, the type that sparks passion in students and inspires students to major in science and become the scientists of tomorrow, involves students doing real inquiry-based science. Having a field-based research experience will allow me to translate that research heart of science into experiences that authentically inspire students. Climate change is the biggest issue we are facing as a society, and the climate is changing fastest at the poles, specifically in the Arctic. We need more polar research and more publicity about the research happening in the poles. In my own small way, I would like to contribute to building our polar knowledge base, and publicize the work as far and widely as I can.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Besides the program requirements, I want to build multiple curricular activities from the experience. I will develop at least two major labs from the experience, and would also like to develop a data analysis activity using actual data collected from the field (with permission from the research team, of course, if the data hasn't been published yet). I would like one of my lab activities to involve students collecting local data with the same techniques used or learned in a polar setting. Within my school community, I'd like to host a "Polar Night" where I am an after school speaker to whatever students and parents in the community would like to come. Instead of sharing lessons, I would share my experience as a researcher and person. I envision a more personal account of what it's like to do research in an extreme environment – many of the students in my school beyond my classroom are interested in pursuing careers in science, and I'd like them to share my experience of doing research in the field.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general

public. (200 words maximum)

I envision sharing my experience with my professional community in four ways – presenting new lessons with teachers I currently train as a NMSI consultant, presenting activities as a presenter at the AP national conference, sharing my lessons and experience at the AP Environmental Science (APES) reading, and presenting outreach talks to schools in my region. My work with APES teachers across the nation as a NMSI consultant would be an easy platform to share additional lessons developed from this experience. I have presented twice at the AP national conference, so am familiar with the application procedures to present a session. The AP Reading is a gathering of over 400 APES teachers around the nation to grade students' AP essay tests, and at night there are professional development sessions. I presented curriculum last year at a PD night, and shared my activities with over 100 teachers from around the nation. Finally, I collaborate with five other APES teachers in my district, and would talk at their schools about my experience. Additionally I am friends with several of my children's teachers, so could speak at their schools as well. I estimate I could reach an additional 1,000 students with outreach speaking.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I have a three-pronged approach to engaging students in new and complex topics. First I try to spark student interest and engagement with a short hands-on activity or news article. Then I transition into multiple ways to dive more deeply into the concept – this could be inquiry-based labs, article or data analysis, and sometimes Socratic Seminars. For complex concepts I always do several major activities. Finally I'll do a wrap-up that will include some sort of assessment, but not always a formal test or quiz. Assessments could include a lab write up, project, or even a group quiz where students can talk out their thoughts with peers. An example of how I facilitate this is the way I teach climate change – many of my students have heard things in the news, but have not had the topic formally in any of their other classes. First, I have students do a mini lab modeling both albedo and the greenhouse effect. Then students do three major labs – data analysis from Antarctic ice cores, an ocean acidification activity, and measurement of trees to calculate carbon sequestration. I wrap up the concept with a group quiz, which includes multiple graphs for data analysis.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I am adventurous, curious, flexible, enthusiastic, hard-working, and a perpetual

optimist. I love being outdoors whenever I can. I have field research experience in varied, remote, and adventurous locales. As part of a research lab studying groundwater recharge (Research Experience for Teachers program) I crawled through caves in central Texas guided by only my headlight to collect water samples. For my grad school research I spent the summer living in Brownsville, on the Texas-Mexico border, traveling to remote tuberculosis clinics in Texas and Mexico gathering data for statistical analysis. For the Ecoclassroom teacher research program, I spent days in the drenching rains of the Costa Rican rain forest measuring trees, calculating forest carbon sequestration, and avoiding snakes and bullet ants. My past field experience shows I'm not afraid to brave small dark spaces, travel to other countries in the presence of infectious disease, and encounter painful wildlife in the name of science. I work hard to get projects to completion, and am very flexible when research objectives change or the role I need to fill changes. I feel my combination of personality type, outdoors background, and field research experience in unique areas would be a beneficial addition to a research team.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

When working with teams, I believe that equity is key and organization leads to success, and these are core values of teams I lead. To me in a team, equity means all voices are heard and respected. Organization is critical to making sure things actually get followed through to completion. My recent work with the Switch Energy Alliance (SEA) illustrates these principals. I collaborated with filmmakers, a lead scientist, an education specialist, and the IT department of the non-profit SEA to help bring to fruition their vision of supporting their energy documentary and other video resources with AP level curriculum. Through discussion and lots of work our teacher team wrote a series of questions and activities to support the video content. My role was to recruit quality teachers to start the teacher group, run the online meetings, and organize and execute a summer conference to build lab activities. Often directing meetings was a balance of working with differing teacher voices, and IT and budget reality, yet making sure all stakeholders were heard equitably. Additionally running a summer conference required a tremendous amount of organization, yet equity as well when brainstorming, presenting, and bringing to fruition curriculum ideas

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

The school day dawns in room D2316, hot and muggy. The AC is out today and it’s owl pellet dissection day. I borrow a fan and know we’ll carry on - this is one of my students’ favorite labs of the year, and neither squeamish teens nor broken AC will stop our pursuit of science. Students dissect an owl “hairball” or pellet and determine the prey items the owl ate, based on identifying the bones found in the pellet the owl spits up. Then, students make calculations to construct a biomass pyramid, energy pyramid, and food web for the owl’s ecosystem. Fifth block is an especially eager class – quickly getting on the neon color goggles and snapping on gloves. They don’t ask the usual questions about the pellets being poop and no one seems the least bit reluctant. They are eager, businesslike, and especially ready to go. Students often surprise me during this activity, and fifth block proves the rule – several of my most introverted students take the lead in dissecting, or eagerly debate if found rodent pelvic bones belong to rats or shrews. I’m proud of the way students have handled themselves in this activity – working hard to explore and build ecological meaning from the grey furry lumps.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I would slightly prefer the Arctic so I wouldn't have to miss school or as much school, but honestly would be thrilled with either. It would be fun to blog/Skype with a current class if I was in the Antarctic

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer to participate for three to four weeks. I have no major obligations scheduled that can't be moved to accommodate participation in an expedition.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am extremely curious about changes in ice cover and permafrost. Melting permafrost is a huge variable in the global carbon balance, and rate and volume of released methane and carbon dioxide from melting permafrost is a huge unknown variable in global climate predictions. How fast ice is melting, and ice sheet dynamics is also a very interesting area of research. I think changes in cryogenic systems are a critically important area of research for the planet. I'm also very interested in tundra ecology – how organisms are adapted to survival in the Arctic, and how these adaptations are helping or hindering overall survival and species fitness of organisms as the climate is changing. I do a large project with my students using the Cornell Lab of Ornithology's national eBird website, looking at how climate change has impacted timing and locations of bird migration. Even this high-school level project looks at changes in bird migrations to the Arctic, and the changes in migration timing have been dramatic.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I do not want to be considered for an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I do not want to be considered for an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No, I am willing to work with anyone!

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.

I have tent camped since I was 3 years old, and continue to currently do so on weekend trips and multi-week tent adventures in national parks with my family. I am also the “camping mom” for my middle school daughter’s Girl Scout troop – leading them once or twice a year on a weekend tent camping trip. I’ve guided the 14 girls in the troop from 2nd grade “outdoor phobic,” girls in a tent in our back yard for the first time to girls that actually enjoy what the wilderness has to offer and request to bring our tent to certain state parks and look forward to the trip each year. I like to hike and am a regular runner. I occasionally open-water kayak as well, but don’t have white water kayak skills. I grew up in Green Bay, WI and grew up cross country skiing (classic, not skate-skiing) and snowshoeing. While I’ve lived in a climate without snow for 20 years, I still cross country ski and snowshoe when I visit my family for winter break. I’ve rock climbed for over 20 years, and ice climbed several times – definitely not proficient by any means at ice climbing, but I’ve done it before and could do it on top rope if needed, with a bit of a refresher with ice axes. I had a wilderness first responder (WFR) certification, and guided hiking and rock climbing trips while in college as a paid guide for the University of Texas Outdoor Recreation program. I also worked at the UT Rec Center climbing wall for several years while in college. My WFR certification is long expired, but if selected I would get my Wilderness First Aid certification – it seems like critical background knowledge to be prepared in a remote field setting.

b. Provide a basic statement of your general health and physical condition.

I feel I am in very good health, have no medical conditions, take no medications, and had excellent blood pressure on my most recent physical. I am a regular runner – pretty slow, actually, especially compared to my high school running days. 9 minute miles are a good day, but am consistent at getting in 10-15 miles a week. I try to do yoga once or twice a week, to help with flexibility for running and stress.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.

I work on a PC at work and a Mac at home. I usually use Microsoft word or Google Docs, and Power Point. I have my class website on Google Sites and my students use my Google Classroom site to turn in major assignments. I would say I’m pretty proficient at technology in the classroom setting.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.

I use Microsoft Word, PowerPoint, and Excel weekly, if not daily. I use Google sites for my class website, and Google Classroom for students to turn in large assignments. I use a digital camera frequently, and upload photos to friends and family, as well as classroom photos of class data or lab techniques to my Google Classroom.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information Northrup Grumman EcoClassroom Teacher, Costa Rica Field Research Trip, 7/2013 Team leader for one of four national teams selected for a 10 day, field research trip to Costa Rica. Team leader duties included research project proposal, four-teacher team selection and coordination, and curriculum development from field research. Field research involved carbon sequestration in rain forests. Research Experience for Teachers, NSF $10,000 grant (1/04-11/04) The Research Experience for Teachers (RET) program is a nationwide program that affords high school teachers the ability to conduct research in the university setting. I was selected to conduct a yearlong research program on water quality and recharge of the Edward's Aquifer under the supervision of Dr. Jay Banner, director of the Environmental Science Institute at the University of Texas at Austin. My original research on groundwater recharge was presented at the Geological Society of America in a conference talk.

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
I see the PolarTREC opportunity as a chance to build on and really refresh my previous research skills. This would be my longest intensive research experience, and in an area of the world that I have never been to. I feel I have the skills currently to develop curriculum from my field experience, but would grow in documenting my experience and interacting with students digitally while in the field. I did brief blogging for the EcoClassroom project, but would like to grow these skills, as well as create more interactive digital student experiences while still in the field. A longer research trip would allow more direct interaction with students while I am on site.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
I saw a brief article in my local teacher magazine, ATPE (Association of Texas Professional Educators) about a participant from the Austin area.

b. Please suggest other places we might advertise this opportunity for teachers
The Facebook groups for national AP Environmental Science teachers and AP Biology teachers would be a good place to reach thousands of teachers that might be interested and have the skills to successfully complete the program. I am a member of the national AP Environmental Science teachers, and would be happy to post something.

12. References

Reference 1

Name Ms. Erin Campbell

Title and affiliation Associate Principal and Dean of Instruction and AP Programs, Westwood High School

Email Address erin_campbell@roundrockisd.org

Phone Number 512-464-4158

Reference 2

Name Natalie Wieland

Title and affiliation Science Department Chair, Westwood High School

Email Address natalie_wieland@roundrockisd.org

Phone Number 512-464-4158

Reference 3

Name Jim Corboy

Title and affiliation Education Specialist, Switch Energy Alliance

Email Address jjcorboy@gmail.com

Phone Number 253-225-5165

Elana Miller

1. Contact Information

Name: Ms. Elana Miller

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32646 Omar Rd
Frankford, DE 19945 US

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Cell Phone :

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Intersection of First Al Khail and Hessa Street Opposite the Saudi German Hospital- Al Barsha 1
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Classroom/Office Extension:

Institution Fax: +971 4 395-0008

Institution Website: www.asdubai.org

Other relevant websites:

Supervisor's Name: Nadine Richards

Supervisor's Email Address: nrichards@asdubai.org

2. Demographic Information

a. Gender: Female

Race: Black or African American

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I primarily support HS students with learning differences across grades 9-12 in a multitude of subjects. While I co-taught English and math during my first year at The American School of Dubai, I am currently co-teaching biology. The American School of Dubai is a private not-for-profit K-12 school. The use of technology is integrated throughout our classrooms across all divisions and students enjoy a variety of on-campus and off-campus activities. Middle and high school students also have the unique opportunity to partake in service-learning experiences around the globe. Our community is committed to embracing sustainable practices and our campus includes multiple gardens including a bee garden and a pond.

d. Type of School (or students you work with): Private

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) Our school has approximately 1900 students and 175 faculty.

f. School Ethnicity:
% - American Indian or Alaska Native
% - Asian
% - Black or African American
% - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
% - White
% - Multiracial

If your school uses other categories to describe race/ethnicity, please describe: At the American School of Dubai, our students are comprised of over 70 different nationalities across K-12. More than half of our student body holds either a U.S. passport or dual citizenship. In regards to our faculty: 63% are from the United States, 16% are from Canada and 21% are from other countries.

g. Percentage of students who receive free or reduced lunch: 0

h. Average class or audience size My co-taught classrooms have an average size of 20 students. My Supervised Study Support classes have an average size of 5 students.

i. Total number of students/audiences you teach in a year Approximately 55 students will receive my direct instruction throughout this year, but I also provide indirect support when planning alongside other teachers or departments that helps facilitate learning in other classrooms.

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
School Year: August 19, 2019 - June 18, 2020 October Break: October 4-12 Christmas Break: December 13-January 4 Spring Break: March 27-April 4

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Business Management

Bachelor's Degree (Minor): Business Law & Ethics

Masters Degree (Discipline): Special Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 5

c. How many years have you been working at your current institution?: 1 year 3 months

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
-New York State Teaching License: Grade 7-12 Multi-subject Certification in Special Education -Fordham University - G.L.O.B.E. Program Participant (The Global Learning Opportunities and Business Experiences program) -American School of Brasilia - Presenter at 2017 AASSA Conference in Rio De Janeiro (Association of American Schools in South America - At the 2017 AASSA Conference in Rio De Janeiro, my presentation titled "Fidget Toys in the Classroom" focused on teaching educators when and how to use self-regulation tools in the classroom more effectively.)

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12), Special Education

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary English, Secondary Math

Other Subjects Supervised Study Support - During this class, I provide a wide range of supports to HS students with additional learning needs by re-teaching instruction, providing scaffolds and tailoring learning to help them meet their individualized goals.

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

As a multi-subject certified special educator, I have had the privilege of teaching across disciplines. Through my teaching experiences in NYC and abroad, I have become fairly adaptable to various teaching practices, curriculums, and standards. However, my confidence was put to the test when I found myself teaching biology in an NGSS classroom. While PolarTREC's Teacher Research Experience would not only provide me with the unique opportunity to take part in relevant and critical research, it would allow me the chance to journey through the same inquiry-based learning process my students experience daily. NGSS challenges students to synthesize what they know with what they observe to formulate their conclusions. When thinking back to my own experiences as a student, I don't ever recall truly "discovering" my understanding. This experience can redefine what "learning" means to me and, consequently, allow me to provide my students with more authentic classroom experiences. I heard about PolarTREC's program two years ago while working in Brazil as the MS/ HS Learning Support Specialist however I wasn't in a position to capitalize on this experience. Today, I am thrilled to find myself teaching science and am excited at the prospect of participating in your program.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

If admitted into PolarTREC's program, I envision students partaking in all phases of my journey: from planning to reflection across varied subject areas. I have the opportunity to co-teach and co-plan alongside educators from various contents and engage other departments, in addition to science. During the preparation stage of my experience, students could conduct research that connects to different perspectives of my project to provide us with a multifaceted understanding across contents. During my research, I plan to communicate with classrooms through discussion boards so that we can continue to communicate as a collective team. After returning from the excursion, I envision integrating concrete data from my research into classroom activities where students can make connections and formulate conclusions. By translating my experiences into learning modules across disciplines students would have the opportunity to learn science through the lens of other contents. I would also use this experience as the focus for my teacher-led flex

group in which students engage in a variety of activities and learning opportunities throughout the year based on their interests. I'd also use our school Instagram page, bulletin, and school magazine as a platform to share my journey and further engage our school community.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

All teachers at my school participate in one of six Research for Learning (RFL) groups which fosters the development of various learning strategies. As a member of the "Inquiry" strategies team, I aim to use my PolarTREC experience to model our understanding of how we can better integrate inquiry-based learning opportunities within our curriculum and service-learning trips. During a speed geeking session, I'd share my experience with teachers at my school with the hopes of inspiring others to explore experiential learning opportunities within or outside of their discipline. Throughout my participation, I plan to engage all members of our science department by providing them with authentic data to incorporate into inquiry-based learning activities that will be easily applicable to the Next Generation Science Standards framework used to guide our planning. I also aim to collaborate with teachers across various departments to further cultivate a multidisciplinary approach to learning within our school. I have enjoyed participating and presenting at international teaching conferences in the past. After this experience, I envision showcasing how PolarTREC's program provided us the opportunity to improve our understanding of inquiry-based learning and collaborative teaching at the NESA Spring Educators Conference on behalf of my school.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

When starting a new unit in our biology class, students partake in a demonstration of a scientific phenomenon that quickly engages their curiosity. This curiosity helps to stimulate an inner desire to understand how things work. While I understand my role as their science teacher, I view myself as a science coach guiding their inquiry through real-world applications. As a learning support specialist, I understand the importance of ensuring that every student can reach their full potential by tailoring instruction to meet their individual needs and interests. In our biology class, there are many different methods in which students can be exposed to new topics. For example, when synthesizing background information on Biosphere 2, some students may opt to silently annotate an article while other groups of visual learners can

analyze a documentary or reference a visual model to discuss their understanding. I also enjoy collaborating with other teachers and finding opportunities where instruction can overlap across different classes. For example, when students read Behind the Beautiful Forever by Katherine Boo, I collaborated with one of our history teachers to provide our English classes with a historical context of the Great Partition and the caste system.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

As an avid traveler, I enjoy visiting remote parts of the world for work and pleasure. In addition to being able to easily adapt to a new environment, I am no stranger to getting my hands dirty (thanks to growing up in the countryside), and I am confident I'd work hard to meet the demands of an intensive field research task. While I can analyze details with a critical eye, I also understand the importance of considering the big picture, which allows me to better prioritize my responsibilities. Before becoming a teacher, I worked in a corporate environment for many years and am extremely proficient with computers and data literacy. I have also developed the ability to efficiently multitask and manage administrative duties. In addition to being a strong communicator, I value collaboration. The most authentic learning experiences happen when we interact with our peers. My school community values inquiry-based learning, and I am very fortunate to work alongside a collaborative group of teachers that would be receptive to incorporating my experience into their classrooms. I view myself as a lifelong learner, and I would be motivated to make the most out of the PolarTREC Teacher Research Experience.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

While serving as the MS & HS Learning Support Specialist at my previous school, I collaborated with the Elementary division to finalize our Learning Support Handbook. Throughout the year we met to streamline our support program across grade-level divisions and I made meaningful contributions by engaging in active discussions, posing questions and challenging my thinking. I also led initiatives on behalf of our department that resulted in the hiring of a new position and restructuring of our Study Block classes. Before presenting our initiatives, I collaborated across multiple departments to be mindful of minimizing the negative impacts our suggestions could have on other classes. After careful consideration, the “Study Block” workbook I had created in the past was adapted to meet the needs of my current high school’s program. LSS teachers were given a draft and shared ideas on how they felt it could

be modified to better support our students. Our modified workbook is currently being used across all Study Block classes. This year, I am striving to grow my leadership skills and am excited to be working alongside one of our Teaching & Learning coaches, who was a former science teacher, to guide differentiation strategies in science classrooms.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

As they fled towards the windows to search among the seemingly endless rows of planted jars and recycled water bottles, a rush of excitement flooded through the room. Today was the day my biology students were conducting their first observations on the terrariums they built. Some students began to cheer at the sight of their first sprout while others gasped in shock to find that their seedlings had shifted or bent. A few hadn't noticed any change at all and exchanged theories to understand why. Students were given the freedom to construct their terrariums using a variety of inputs, some even experimented with fertilizers and the mixing of soils. Regardless of their observations, all of my students were the most engaged I'd ever seen them. At that moment, they all seemed to grow towards becoming autonomous learners: comfortable with taking risks, making mistakes and asking thought-provoking questions. As I am writing this entry and thinking about my students, I find myself in a similar spirit for learning. I am currently driving four hours away from my camp in the Maasai Mara where I will be living and learning among the Maasai tribe for the next several days.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
I would prefer to attend an expedition that overlaps the winter break holiday that is provided by my school. It is typically at least three weeks in length and would occur during an Antarctic expedition. Aside from being the most remote place on Earth, I believe I would be more intrigued by the possibility of exploring the effects of extreme weather that are found in Antarctica however please note this is merely a preference as I am sure the Arctic research opportunities provide an equally invaluable experience.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer to participate in an expedition for approximately 3-4 weeks. I would NOT be able to participate in an expedition for the following TENTATIVE dates: November 1, 2020 - December 3, 2020 (Antarctic Field Season) May 1, 2021 - June 18, 2021 (Arctic Field Season)

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Prior to becoming a teacher, I considered a career in microbiology. I have always been fascinated by the ability of microorganisms such as the tardigrade, algae, and bacteria to adapt and survive in extreme conditions. Understanding the roles and dynamics of microbial communities can help us better address both environmental and health concerns. I have recently been interested in understanding how melting permafrost around the globe will alter our future and compound the negative effects of global warming. As a former docent at the NY Aquarium, I would love to learn more about arctic animals, particularly penguins, seals, and other marine mammals. In addition, I have always had a strong appreciation for plants. Both my father and brother work within the horticulture industry, and it amazes me how plants have evolved the ability to cure, communicate and compete for survival over millions of years. While I would love the opportunity to expand my understanding of these familiar topics, I would be equally excited to engage in the area of physics or cosmology as these are subject areas in which I would like to expand my knowledge

and expertise.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I do not want to be considered for an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
Microbiology, Evolution, Adaptation in Extreme Weather

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I currently hold a valid Adult and Pediatric First Aid/CPR/AED certification. I have experience camping, hiking, horseback riding, and rock climbing. I was a junior marksman in JROTC during high school and have traveled to remote parts of the world to participate in service projects. I am excited to be attempting to earn my scuba diving certificate for the third time next summer as I have had complications with my ears in the past.

b. Provide a basic statement of your general health and physical condition.
I am a healthy and fit adult with no current or past medical conditions.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am highly proficient with Mac operating systems and currently use a MacBook on a daily basis. While I currently do not use Windows PC, I am very familiar with this operating system.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I have experience using Macbook Suites which includes Pages, Numbers, and iMovie to create material for my classroom. I enjoy travel photography and am familiar with various photo editing tools. I have used the following educational programs for curriculum planning and student management: Rubicon Atlas Curriculum Mapping, NWEA MAP, NAVIANCE, PlusPortals, Powerschool, Hapara Workspace, and Google Classroom.

e. List any additional skills or information that you wish to be considered.
Languages: Intermediate Spanish, Basic Portuguese

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
I learned about the PolarTREC program through my own online research for unique learning opportunities for educators.

b. Please suggest other places we might advertise this opportunity for teachers
International teaching conferences and hiring events would be an excellent way to reach educators around the world.

12. References

Reference 1

Name Rick Vezzoli

Title and affiliation Middle School Principal at The American School of Brasilia

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Phone Number +55 61 3442 9700

Reference 2

Name Nadine Richards

Title and affiliation High School Principal - The American School of Dubai

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Reference 3

Name Elizabeth Mitchell

Title and affiliation Science Co-Teacher and Department Chair - The American School of Dubai

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Phone Number +971 4 395 0005

Scottie Mobley

1. Contact Information

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Home Phone:

Cell Phone : 404-488-8956

Institution Name: Falmouth Academy

Institution Address:
7 Highfield Dr.
Falmouth, MA 02540 US

Institution Phone: 508-457-9696

Classroom/Office Extension: 110

Institution Fax: 508-457-4112

Institution Website: www.falmouthacademy.org

Other relevant websites:

Supervisor's Name: Jill Reves

Supervisor's Email Address: jreves@falmouthacademy.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): 7-12

d. Type of School (or students you work with): Private

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 216

f. School Ethnicity:
1 % - American Indian or Alaska Native
5 % - Asian
3 % - Black or African American
2 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
85 % - White
5 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch:

h. Average class or audience size 35

i. Total number of students/audiences you teach in a year 50

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
8/27-6/13 school year 12/20-1/4 holiday break 3/13-3/26 winter/spring break 6/14-8/26 summer break

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Marine Biology

Bachelor's Degree (Minor):

Masters Degree (Discipline):

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 8

c. How many years have you been working at your current institution?: On my 5th year

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
NAUI Scuba- Open Water certified, From Darkness to Light certified, and ALICE certified.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Math, Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

The PolarTREC program would be an enriching professional development opportunity for my career. This experience would enable me to create lesson plans useable in my classrooms, as well as shareable materials for other educators. More Specifically, I'm looking forward to learning about the Alaskan and Arctic regions and sharing this knowledge with my students. I am good friends with Leah McRaven, a researcher collaborating with Dr. Donald Anderson at the Woods Hole Oceanographic Institution (https://www2.whoi.edu/site/andersonlab/). Dr. Anderson is an expert in Harmful Algal Blooms who will be leading a research cruise (together with Dr. Robert Pickart) next summer on the USCGC Healy in the Chukchi Sea region. Given the relevance of Harmful Algal Blooms to our native Cape Cod waters, this is a topic that I would love to incorporate into my classwork. This research cruise would be an excellent opportunity for me to learn more about Harmful Algal Blooms in the Arctic. This research cruise would enable me to develop lesson plans, classroom lab work, and field trips, all supported by hands-on experience with the subject. I am also excited to contribute to groundbreaking research at sea as marine science is a field that I am passionate about. In addition, this opportunity would allow me to network with more scientists for future classroom collaborations.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Living and working in Falmouth, MA, I am very close to the scientists that will be a part of this endeavor. This will provide my students and me the opportunity to have classroom visits and/or lab field trips before and after the research cruise next summer. I will also develop curriculum for my Marine and Life Science and Pre-Algebra courses based on data collected at sea and laboratory experiments used in data analysis. In my Marine and Life Science class, I take the students out on an oceanographic research vessel for a cruise utilizing various equipment. I certainly hope to incorporate more science from the PolarTREC cruise into this exciting field trip. This material that I develop will be available to other educators as well. As the Administrator for the Woods Hole Science and Technology Education Partnership, I will also promote this opportunity and share curriculum and data with other Cape Cod teachers, scientists, businesses, and other community members.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Curriculum materials will be made available to any teachers interested, particularly those within communities that are close to the field location. As the Administrator for the Woods Hole Science and Technology Education Partnership, I will also promote this opportunity and share curriculum and data with other Cape Cod teachers, scientists, businesses, and other community members. https://web.whoi.edu/whstep/ I would love to take pictures, write a blog, and also shoot videos while aboard the PolarTREC cruise. I think it would be really neat to not only capture the science being done on board the ship, but to also interview the scientists and crew members. These short videos could include their bio's and other information students might like to know if they are interested in that career field.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I love incorporating real data into hands on lesson plans that speak to my students' interests or provides them the opportunity to learn more about their local surroundings. For instance, over the summer of 2019 I worked with Dr. Steven Zottoli at the Marine Biological Laboratory in striped bass research. During this time, I

developed curriculum from his fish tagging data. This year students mapped striped bass migration patterns, found their rate of travel, and solved an energetics problem in order to determine metabolic rates and estimated food consumption needed for migration. I am excited that this at-sea research opportunity would inspire me to continue developing future curriculum using real data.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I've built my career in a variety of roles, sectors, and industries where I've gained experience in teaching, science research, customer service, event/program management, environmental advocacy, science outreach management, social media communications, data entry/records management, building customer relationships and loyalty, and multi-tasking and prioritizing workload. I've had experience working at sea, in aquariums, museums, hospitals, and universities, and have enjoyed being exposed to a variety of STEM subjects (biology, oceanography, engineering, chemistry, bio-medical, marine biology, aquaculture, etc.). I enjoy wearing different hats and thrive in positions that challenge and expose me to the various approaches to marine science outreach. I have an unwavering commitment to the education that I provide and am ready to re-invent my curriculum in a new position that'll let me take on new challenges.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Every day I am a part of a team of faculty and staff members that devote our careers to enriching the lives of students. I'm a teacher, mentor, class advisor, chaperone, substitute teacher, proctor, colleague, and friend. Our school is a small community where everyone pitches in to help. We're all devoted to the school and have the students best interests in mind. As the Administrator for the Woods Hole Science and Technology Education Partnership, I'm a part of a team of educators, scientists, and community members that work together to connect the Cape Cod educators with the groundbreaking research that takes place right in their backyard. It's my passion to work with others on marine science research and to teach the exciting findings to others, so that we can all work as one big team to spread the message of protecting these special environments.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Provided below is a blog post that I recently wrote about my classroom that was featured in the Falmouth Academy weekly online publication, the Mainsheet. Provided below is the link, which also features photos. The 7th grade jumped right into hands-on science at the beginning of the year with squid dissection as part of an Ecology block in Marine and Life Science on Friday, September 6. Ms. Scottie Mobley tasked them with finding the three "hard parts" of the squid, which you wouldn't think is so tricky given that squid, like the octopus, is soft-bodied. However, it was challenging as this was the first dissection for many students including Yasmeen Aubrey, who recalled, "It was kinda gross–there was squid juice everywhere!" She went on to say, "Finding the lens, beak, and pen was pretty easy but separating them was harder." Squid are cephalopods and have elongated bodies, large eyes, eight arms, and two tentacles. They are intelligent and versatile–able to make their homes in a variety of marine environments. Their "hard parts" are evolutionary adaptations, which helped amplify the lesson on changing ecosystems and the need for organisms to modify to survive. Ms. Mobley applauded her students and said, "They enjoyed learning more about this creature who lives in our local marine waters." https://www.falmouthacademy.org/news-detail?pk=1040718&fromId=252499

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
I'm open to any length of time, but would prefer a research cruise around 3 weeks. I'm also open to any time period, but would prefer the summer when I'm out of school (ideally late-July through August).

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I'm open to any length of time, but would prefer a research cruise around 3 weeks. I'm also open to any time period, but would prefer the summer when I'm out of school (ideally late-July through August).

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am most interested in marine biology. In my teaching, I could create curriculum surrounding various topics including: ecology, sustainability, cells, anatomy, diffusion and osmosis, bacteria and viruses, evolution, and watersheds.

Atmospheric Systems I do not want to be considered for an expedition in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
Understanding Environmental Change in Polar Regions

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
Donald Anderson, Woods Hole Oceanographic Institution, danderson@whoi.edu

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am very experienced in camping, hiking, swimming, and boating. I have many years of field experience in science research. I have limited experience in going to sea for science research. I've been trained and certified in the past in American Red Cross First Aid, CPR/AED, Lifeguard, and When Help Is Delayed.

b. Provide a basic statement of your general health and physical condition.
I am overall in great physical and mental health condition. I exercise weekly and maintain a healthy diet.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am familiar with both Mac and PC. I use them both on a daily basis, so my skill level is high.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use laptop computers, Ipads, Internet browsers, MS Office, Adobe, and cell phones on a daily basis. I utilize these tools personally and professionally for organization, grading, event planning, and for student projects. I occasionally use digital and game cameras for personal and professional use to observe natural surroundings (SCUBA diving, etc). I also occasionally use photo and movie software for personal and professional uses: organization of albums and student projects (Imovie and Adobe Spark).

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Leah McRaven, WHOI

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Jill Reves

Title and affiliation Falmouth Academy-Science Department Head

Email Address jreves@falmouthacademy.org

Phone Number 508-457-9696

Reference 2

Name Doug Jones

Title and affiliation Falmouth Academy-Math Department Head

Email Address djones@falmouthacademy.org

Phone Number 508-457-9696

Reference 3

Name Leah McRaven

Title and affiliation Woods Hole Oceanographic Institution-Research Associate II

Email Address lmcraven@whoi.edu

Phone Number 508-289-2804

Ryan Monahan

1. Contact Information

Name: Mr. Ryan Monahan

Email: ryanmonahan91@gmail.com

Home Address:
2100 N. 145th Ave #1029
Goodyear, AZ 85395 US

Home Phone: 623-203-7725

Cell Phone : 623-203-7725

Institution Name: Steven R. Jasinski Elementary School

Institution Address:
4280 S. 246th Ave
Buckeye, AZ 85326 US

Institution Phone: 623-925-3100

Classroom/Office Extension: 623-925-3124

Institution Fax: 623-327-2708

Institution Website: https://sites.google.com/besd33.org/jasinski-elementary/home

Other relevant websites:

Supervisor's Name: Donna Fitzgerald

Supervisor's Email Address: DFitzgerald@besd33.org

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Public K-8, Title I, Rural/Farming community, 1-1 technology

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 700

f. School Ethnicity:
% - American Indian or Alaska Native
% - Asian
17 % - Black or African American
53 % - Hispanic or Latino
3 % - Native Hawaiian or Other Pacific Islander
28 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 75

h. Average class or audience size 25

i. Total number of students/audiences you teach in a year 25

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Winter Break 2019: 12/23/2019 - 1/3/2020 Spring Break 2020: 3/9/2020 - 3/13-2020 Last Day of School 2020: 5/21/2020 Teachers Report: 7/29/2020 School begins: 8/5/2020 Fall Break: 10/5/2020 – 10/9/2020 Thanksgiving Break: 11/25/2020 – 11/27/2020 Winter Break: 12/21/2020 – 1/1/2021 Spring Break: 3/8/2021 – 3/12/2021

Last Day of School: 5/20/2021

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Astronomy and Physics

Bachelor's Degree (Minor):

Masters Degree (Discipline): Science Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 5

c. How many years have you been working at your current institution?: 5

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Pertinent Awards: Noyce Scholar (Graduate School), Teacher of the month (September 2016), Teacher of the Month (April 2019) Certifications/Endorsements: Secondary Education 6-12, Physics, K-12 Gifted

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8), Gifted

Other Primary Assignment

b. What subjects do you teach? Check all Middle School English/Language Arts, Middle School Math, Middle School Science, Middle School Social Studies

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I teach in a gifted program in a rural Title I school. My students are generally taught by teachers who live in the community and stay local their whole lives. PolarTREC will open up a new continent for me, which will help me open up the world for my students. Traveling to the Antarctic has been a dream of mine for some time and sharing an experience as unique as this one with my students will spark an interest in the kinds of science careers available to them. Participating in an authentic science research experience in an area not directly related to my expertise will allow me to connect to a wider range of STEM fields. In turn, these new connections will allow me to convey a wider variety of STEM topics to my students for years to come. I am always on the lookout for experiences that will expand my versatility and knowledge as an educator, and I believe PolarTREC is a phenomenal way to do that.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I would love to create some activities and lessons that will occur simultaneously with my expedition. My students will keep up with my blogging and photos and create their own mock expedition journals to practice their narrative writing. They will do research into the same or similar topics as the expedition and hold Socratic seminars about the implications and impact of our research. When I return to the classroom, I will share more photos and journals from the trip and integrate what I have learned about the Antarctic into our science units as much as possible. For example, as we learn about relative dating techniques in geology with rock layers, they could also be introduced to similar dating methods used in ice cores. When we learn about the Earth’s climate and how humans are changing it, I can include the information I learned in the polar region to enrich and enhance their experience. To share my experience more widely, I would prepare a presentation for each age group at my school and possibly the entire district.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I believe I should and must continue learning for the rest of my life. Professionally and personally, this is a goal I strive for every day. It is especially important for

educators, I believe, because we live and work on the frontier of knowledge – it is important to remain current in our content and practice in order to provide the best possible education for our students. After returning, I would volunteer to lead professional development sessions for teachers in my district – not just about PolarTREC, but about the importance of research opportunities available to teachers and the necessity of immersing ourselves in content in an authentic way. In addition to that, I would be talking about and sharing my research experiences at every opportunity. Parents, too, should know that their students are learning from a teacher who is actively engaged and growing in his profession.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

With all students, but especially with middle school students, it is paramount to connect the content they are learning as closely as possible with their lives. This could mean igniting their interests and passions or communicating the information in a way that they appreciate and understand. As a teacher of all subjects to gifted students, I work hard every day to find the right balance between ease of access and rigor. Imparting complex information about genetics and physics at their level, while simultaneously keeping it ever so slightly out of reach, ensures that they must grow to learn; it is one of the most challenging (and intellectually rewarding) aspects of being an educator. Breaking down complex vocabulary or equations, scaffolding new content on prior knowledge, and working at a developmentally appropriate but still challenging pace are all strategies I use every day to help students broaden their horizons.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

While I enjoy teaching every subject, science is my passion. As a student of astrophysics at Northern Arizona University, I worked with professors to study the chemical composition of icy bodies in the Kuiper Belt. During that project, I collected, distilled, and presented pertinent data and created a thorough guide for future student researchers. As a graduate student, I worked as a data analyst for the university’s philanthropic division. To say that I have experience working with a variety of data is an understatement. I believe that any data set tells a story to those with the ability to read it. Whether it is data relating to objects in the outer solar system or data on student achievement, I enjoy delving into the complex relationships all data reveal. With science as well as teaching, it is important to communicate and act on data attained through field work – a skill I am constantly

honing whenever I can. I am an extraordinarily quick learner and I revel in new challenges. I will bring experience and zeal to any research team to which I am assigned.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Since starting as a teacher, I have been constantly trying to find ways to innovate in my classroom, school, and district. From my first year, I involved myself in learning as much about gifted education as possible. As a gifted student myself, I wanted to make sure I was able to provide students like me with the same positive experiences I had. Over the last four years, I have helped to design and implement my district's gifted program, Learning Unlimited, from its foundations. Now that the program is off the ground, I am the leader of our gifted team, where I fight for what is best for students – from appropriate curriculum to enriching experiences. Not only that, I advocate for my co-workers both on my team and across the school, doing my best to help those who need it. Recently, I took concerns from my team about the direction of our program to district leaders, promoted a change in the way we were delivering content and experiences to students, and reached a compromise that both parties were happy with. Every day, I strive to be an effective, supportive, and vital part of whatever team I am a part of.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Wednesday, the 25th of September, was a long day. I woke up bright and early to get to school before the usual time so I could give my students feedback on their crime analysis essays Of course, both copiers were down for maintenance, so the lessons I'd planned (which required copies) had to be reworked on the fly. Instead of using figures printed on paper, my students practiced ratios and proportions by going outside and measuring the height of various objects and the shadows they cast – all in all not a bad bit of improvisation. Wednesday is our professional development day, so after the students' early release, I traveled to the district office to learn about different strategies for working with gifted students in social studies, taught by one of my favorite people. Ms. Oxford is a wonderful wealth of experience and I enjoy listening to her speak whenever I can. Normally, my day would have ended there but that night was our school's Title I/Curriculum Night. After giving several curriculum presentations to parents, I was finally ready to go home and call it a night. What a busy, productive day – can't wait for tomorrow!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
The timing of the Antarctic expeditions in the fall would allow me to attend my district's summer professional development seminars. These are opportunities I look forward to, growing as an educator and enhancing my practice. I would like to be one of the few people who visit that remote continent in their lifetime. Going to the Antarctic would also open up the best opportunities to engage my students. Through concurrent lessons, my students will be able to participate in my research and experiences as they happen. I will extend and enrich those experiences in the classroom when I return.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
Any length of time is acceptable. I have no significant obligations beyond my normal duties as a teacher during the next school year. I would want to avoid going on any expeditions that lasted much longer than 6 weeks, in order to get back to my students in a timely manner. However, I am open to all options.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I hold a degree in Physics and Astronomy and a master's degree in science education, so naturally my main interests lie in both astrophysics-related subjects and communicating them to others. I am fascinated by auroras and meteor impacts and the long-term survival strategies needed to endure in an inhospitable environment such as the Moon or Mars. However, in studying astrophysics, I was exposed to and learned to love many areas of science, including geology and chemistry. I find the idea of "going back in time" through ice core samples fascinating, as well as learning about the history of the continents and the ecosystems that existed before they separated and moved to their present locations. As a science teacher, I have broadened my scientific horizons even further and have become very curious about genetics and evolution. I would love to learn more about how life evolves to thrive in the Antarctic environment. Of course, I am also concerned about and interested in how the loss of polar ice due to climate change

will affect ocean currents and life across the planet. In short, my interests are varied and my mind is open to the possibilities.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I do not want to be considered for an expedition in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
Adaptations to Life in Extreme Cold and Prolonged Darkness, Understanding Environmental Change in the Polar Regions

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have a fair amount of experience camping (short-term) and hiking at various difficulties.

b. Provide a basic statement of your general health and physical condition.
My job requires me to be on my feet and moving around for most of the day. I lead a lightly active lifestyle and try to work out at least 3 times a week. I have no diseases or illnesses that would affect my ability to participate in an expedition.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am very familiar with both Mac and PC systems and use them equally well both personally and professionally.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am quite comfortable using all types of computers, internet browsers, and office software, and I use them all on a daily basis as a teacher to create lessons and presentations for my students and to analyze student data. I have used digital cameras and photo/movie software before but would likely require some practice to use professionally.

e. List any additional skills or information that you wish to be considered.
As mentioned previously, I am an extremely quick learner and quite comfortable with technology. I believe my ability to see patterns and analyze data would be an asset to any research team. I live with an open mind, and I am ready for adventure!

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
Searching for professional development/research/adventure opportunities and happened to discover PolarTREC via a Google search.

b. Please suggest other places we might advertise this opportunity for teachers
Directly to districts (flyers, etc.)

12. References

Reference 1

Name Donna Fitzgerald

Title and affiliation Principal - Supervisor

Email Address DFitzgerald@besd33.org

Phone Number 623-680-7892

Reference 2

Name Nate Cairney

Title and affiliation Supervisor in Data Analyst Position - NAU

Email Address natecairney@gmail.com

Phone Number 270-217-8858

Reference 3

Name Chryste Berda

Title and affiliation District Gifted Coordinator

Email Address CBerda@besd33.org

Phone Number 623-925-3445

2020-2021 PolarTREC Educator Application

Justin Moodie

1. Contact Information

Name: Mr. Justin Moodie

Email: justinbmoodie@gmail.com

Home Address:
4864 Bradshaw CT
San Diego, CA 92130 US

Home Phone:

Cell Phone : 8057057585

Institution Name: Oceanside High School

Institution Address:
1 Pirates Cove
Oceanside, CA 92054 US

Institution Phone: 7609018200

Classroom/Office Extension: x8267

Institution Fax: 7607572419

Institution Website: https://ohs-ousd-ca.schoolloop.com

Other relevant websites: Personal Website: http://www.justinbmoodie.com/ Video about "Visualizing the Poles" Project https://www.youtube.com/watch?v=eDSf7iIPFco&feature=youtu.be

Supervisor's Name: Teresa Collis

Supervisor's Email Address: teresa.collis@oside.us

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Oceanside High School is a large comprehensive public school in North County San Diego, serving grades 9-12. Founded less than a mile from the beach in 1906, we are a collaborative community of persevering critical thinkers, who are goal-oriented, life-long learners contributing to the global society. The student population is incredibly diverse by all measures. OHS is labeled a Title 1 school, as 67.5% of the students identify as coming from socioeconomically disadvantaged situations. The school provides a very high standard of rigor and programming to all students. Currently, we are in the second year of a school-wide Career Pathway program through which all students will receive college-level content in their industry field of interest, in addition to earning the necessary units to be university eligible.

d. Type of School (or students you work with): Public

Other Type of School n/a

e. What is the population of your annual audience or school (estimates are fine) School Population: approximately 2300 students

f. School Ethnicity:
0.5 % - American Indian or Alaska Native
1.2 % - Asian
6.5 % - Black or African American
63.1 % - Hispanic or Latino
4.6 % - Native Hawaiian or Other Pacific Islander
20.4 % - White
3.7 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: Filipino = 1.7

g. Percentage of students who receive free or reduced lunch: 71

h. Average class or audience size 38

i. Total number of students/audiences you teach in a year 200

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

8/19/19 First Day of School 11/23/19-12/1/19 Thanksgiving Break 12/21/19-1/12/20 Winter Break 2/15/20-2/23/20 Presidents' Week 4/4/20-4/12/20 Spring Break 6/11/20 Last Day of School

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): B.A. Art Studio (2004)

Bachelor's Degree (Minor): n/a

Masters Degree (Discipline): M.A. Educational Leadership (2017), M.Ed. - Teaching (2007)

PhD Degree (Discipline): n/a

Other Degree: National Board Certified Teacher

b. How many years of education experience do you have?: 15

c. How many years have you been working at your current institution?: 2

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
2019 - National Geographic Certified Educator 2019 - Teach for Innovation Award Finalist for Innovative Use of Technology in the Classroom 2018 - CDE appointment as VAPA Standards Advisory Committee Member 2016 - Digital Educator Certification - Leading Edge 2016 - Mindfulness Educator Certification - Mindful Schools 2015 - Expert Content Reviewer for NBPTS National Board Exam 2014 - National Board Teacher Certification - Early Adolescence through Young Adult: Art 2011 - Fulbright-Hays Fellowship: China Institute with Wuhan University 2007 - TESOL/TESL Certification (Teaching English to Speakers of Other Languages) 2004 - William Dole Memorial Award, Recognition of Outstanding Achievement in Art

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment n/a

b. What subjects do you teach? Check all Elementary Education, Middle School English/Language Arts, Middle School Science, Middle School Social Studies, Secondary Art, Secondary Biology, Secondary Earth Science, Secondary Economics, Secondary English, Secondary World and U.S. History, Secondary General Science, Secondary Geography, Secondary Gov/Political Science, Secondary Physical Science, Secondary Social Studies, Secondary Theatre

Other Subjects I currently hold ten professional educator credentials in the state of California, including: - Administrative Services Credential - Career & Technical Education Credential: Arts, Media & Entertainment - Multiple Subjects Teaching Credential - Single Subject Teaching Credential: Art, Biology, English, Geosciences, Health Sciences, Industrial Education, Social Studies

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Through my own future experiences in the PolarTREC program, I hope to design and deliver Project Based Learning (PBL) curriculum through which students can follow our Antarctic research project, creating parallel learning through data collection for students in San Diego. I have been applying to PolarTREC every year since 2010. Stemming from my own interest in polar science, I have long been developing cross-curricular projects for my students, through which they can develop an understanding of Antarctica and the continent's significance in their lives. Even while living amidst global climate change, most youth still have yet to develop personal connections to this faraway locale. They will first need an opportunity to creatively research the character of the Seventh Continent. Thus, I have taken it upon myself to build polar science content into the students' projects in my class, and I believe that the PolarTREC experience would enable me to provide a stronger connection between my students and the Antarctic.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

At Oceanside, I have the opportunity to collaborate with a cohort of teachers to develop new and unique curriculum. With CTE & STEAM concepts in mind, our role is to design and teach cross-curricular projects, through which students engage in hands on learning. Each of these projects enable students to build a web of knowledge as they connect concepts across content areas and ground the work in potential career applications. If accepted to participate in the PolarTREC program, my goal is to design a project in conjunction with teachers in all core departments to engage approximately 300 students at each grade level in data collection and polar exploration. An Antarctic research team could serve as a strong example while students lead investigations into parallel research at school. The ideal version of this course would have students following a team's progress in real time, via social media and through direct communication from us while on the other side of the globe. Yet, certainly, the curriculum would be adopted to serve additional students for years to come.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I’m confident that I can develop a strong following via social media for students and educators to connect with our experience in real time. Additionally, upon returning from a PolarTREC expedition, I would hope to share my experiences through a photography show(s). Ideally, these shows would not only include my photos from the research assignment, but also work completed by our students as well. Oceanside High School partners with a number of local community events and the public library to showcase student projects. I am confident that within such a public context, attended by many individuals from the community, I can continue to educate individuals about polar science on a scale well beyond my school campus. By reaching out the entire Oceanside community through the K-12 district, I would be able to connect with a wide variety of students, families, and educators about the PolarTREC program, as well as about what our students have been producing in the classroom. Ideally, I will eventually be able to share with other teachers, through local professional development, at statewide and nationwide conferences, and through the publication of articles, to spread ideas for polar science education well beyond the scope of my region.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

One of my primary goals as an educator is to help students build a web of knowledge through relevant and engaging projects. My students learn to connect new content to their own individual interests by tackling large complex challenges with validating results. The interdisciplinary projects I design will challenge students to not simply learn facts about polar regions, but also to creatively design their own research project and to publish their findings. The greatest opportunity any student will have to understand a complex topic will come when they are enabled to creatively express their own ideas and to have their individual interests validated by an authentic audience. Additionally, my students are asked to write daily, providing them with opportunities to get in touch with their emotional reactions and to reflect on their own growth throughout the process. When asked to speak publicly about their work, I find students are eager to share their findings even when challenged to use new and complex vocabulary. Student investigations culminate with an exhibition of their results and a direct connection with their peers, families, and professionals. Feedback from the community engages my students in a way that validates their knowledge and understanding.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

As a leader, I see my greatest strengths in enabling others to succeed and identifying areas of need that have yet to be addressed. I am confident working independently or with a team. My colleagues describe me as trustworthy and dependable. I am comfortable with information and training from many fields of study. Yet, I am always eager to learn new skills and concepts. My technical background is broad and includes experience with industry level, task-specific machinery. My photography skills have wide ranging value. Photo-documentation of our work could be used by PolarTREC as well as a research team for future journal publications and grant applications. I'm also capable of developing strong public awareness via social media. Comfortable amongst nature, I have often relished exploring the globe under extreme conditions. My easy-going demeanor does not inhibit a desire to work hard to help the group in any way possible. I enjoy acting as a leader when called upon, but am happy to find my way into a support position where I can best work to serve the group by completing the job to the satisfaction of all.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

When working with a new group, I value starting with positive team building. Working together in a small group environment requires honesty and a commitment to collaboration, but also a loving banter to balance the atmosphere. Experiences have taught me that trust between teammates is earned by actively listening, and asking questions whenever there is uncertainty. While working in Mexico, I often needed to double-check my understanding of the Spanish language in order to avoid conflict or dissatisfaction. Transparent communication can be critical to a team's success. I am not satisfied with my work unless the whole team is satisfied. With an inclination to think outside the box, I work to provide creative solutions to address lingering problems. I am never the team member who questions the status quo without also offering a solution. I believe working towards whole-team consensus is often the most important task at hand. I also feel confident in my ability to identify specific areas of support for individual team members. When my administrators are overwhelmed, I look to assist them by shouldering some of their responsibilities. Through such support the whole team benefits.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

This morning, as I got ready for class, my emotions were still running high from the evening before when I watched the volleyball team win their first game. Soon thereafter, I enjoyed taking my first period class out on a morning walk across campus. The students enjoyed the yellow light of the early-morning golden hour, and it benefitted their photographs as they spent time experimenting with new perspectives on familiar spaces. The air was crisp and cool for the first time after a long, hot summer. I am concerned that our local climate has gotten more humid in recent years. The growing presence of mosquitoes seems indicative of the larger climate changes we're experiencing, even here in San Diego. As the day progressed, and the heat rose, students were less happy to be "dragged" outside for data collection. Currently, the classes are tasked with documenting all of the different plant species growing on our campus. The process has been edifying, and I can't wait to see the final products as each cohort produces their own book for the library. It feels validating to provide the students with an audience and a task they feel to be authentic.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
Antarctica is held within my soul. The Seventh Continent has a pull on me that will never be satisfied until I find an opportunity to stand on its shore. While my preference may stem from personal interest, this passion has also been the driving force that has led me to study polar sciences for years, and ultimately to incorporate my learning into the curriculum of my art classes. For me, it has to be Antarctica.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I have zero calendar restrictions and would be willing to participate in an expedition of any length. I have already discussed this matter with my family and my administrators and they have assured me that, if I were to be selected for PolarTREC, we will work as a team will work to support one another and my classes during the time that I am absent.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)

With teaching credentials in Biology and Geosciences, among others, my scientific interests are wide-ranging and I would be extremely interested to participate in any scientific research opportunity. Most of the content that I teach related to polar sciences is built upon a discussion related to climate change. Thus, topics such as rising Antarctic temperatures, the breakup of sea ice coverage, glaciological changes, shrinking populations of sub-ice algae, etc., would all be examples of ideal research subjects for my growth as an educator. Also, because students tend to respond very strongly to animals, especially megafauna, I would relish an opportunity to study seals, penguins, seabirds or any other Antarctic wildlife. I'm immensely interested in the ecosystem that exists below the sea ice. As a certified diver, I would love to get under the ice myself, if at all possible. Research related to cryophiles or other extremophilic microbes would be fascinating. I'm also very intrigued by the prospect of human adaptation to such an extreme climate. I would be very interested in any research being done to plan for future exploration upon the surface of Mars, or beyond. I find all scientific areas fascinating.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I am somewhat interested in this subject area

Other Areas of Scientific Interest

Anything. I love learning about new areas of study.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words

maximum)

No.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have an extensive background with hiking, camping and backpacking in many different regions around the globe and hold an affinity for all outdoors activities. Some of these experiences have taken me to extreme climates in Alaska, Greenland, Iceland and Patagonia. Exploring these regions has provided me with confidence that I am now more prepared to accept the challenge of working in the extreme climate surrounding the South Pole. Additionally, I am a certified SCUBA diver, and I would relish an opportunity to earn my Ice Diver certification if necessary.

b. Provide a basic statement of your general health and physical condition.
I am happy to say that I am currently in a state of positive overall fitness and have zero concerns about limitations that might restrict my ability to participate in this program.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
Previously, in addition to teaching, I have served as the Director of Instructional Technology. I have been using computers for over thirty years (both Mac/PC). I teach in a computer lab that I built myself. My classes are “paperless,” and I confidently use tech tools to perform most of my professional work. My training is extensive, and I recently earned the recognition as a Digital Certified Educator. Yet, I also have skills with a wide variety of traditional and analog technology, including industrial machinery and hand tools. I can confidently say that I have an above-average understanding of most computerized devices and would be comfortable working with (as well as troubleshooting) any related software or hardware.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
The environment in which I teach is the sixth computer lab that I have designed and built for a school. I also recently helped to build an educational makerspace complete with laser cutter, CNC mill, 3D-printers, etc. The 40 Macs in my classroom are equipped with the Adobe Creative Cloud, which provides industry standard tools through which my students learn to express themselves creatively. I primarily instruct my students in the use of Photoshop and Illustrator, though we also use Flash, Acrobat Pro, Bridge, and Lightroom in a number of different ways. By teaching students to utilize Google Apps for Education, I’m not only expediting our learning but also providing them with marketable skills. My students are even taught to go

beyond Google Classroom and Sites, by publishing and sharing their work via Instagram (a tool that has become indispensable to professionals in many fields). In this way, I am able to teach my students about interacting with others online in a responsible manner as well as how to brand and promote their online identities. My preferred camera is my old Nikon D80, which I most frequently use with a 28-200mm lens and a 10.5mm fisheye. I have also recently adapted a GoPro into my photographic arsenal as well. A MacBook Air is my primary computer of choice for both personal and professional purposes. I also, use an iPhone concurrently as the two devices are rapidly becoming one-in-the-same. Between these two platforms I plan and prepare all of my curriculum lessons, and of course, communicate with my peers and colleagues. Lastly, I also have strong skills editing film; creating slide deck presentations; building websites; engineering software programs; and running data spreadsheets. I would be eager to learn and to use any new and available technology.

e. List any additional skills or information that you wish to be considered.
I would like to reemphasize my ability to bring strong photography skills to any team as both a documentary asset or a promotional service. Examples of my work can be viewed at justinbmoodie.com. Additionally, I am fluent in Spanish.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information n/a

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
n/a

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain n/a

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
n/a

Former PolarTREC, TREC, or TEA teacher. Please provide their name
I originally learned of the program when I met PolarTREC alumni, Christina Galvan, through a colleague in 2010.

From a website. Please list the website name and URL
n/a

Conference or presentation. Please list the venue and/or presentation title
n/a

Other (please explain)
n/a

b. Please suggest other places we might advertise this opportunity for teachers
Instagram

12. References

Reference 1

Name Juan Hernandez

Title and affiliation Science Teacher, current colleague

Email Address juan.hernandez@oside.us

Phone Number 7608227311

Reference 2

Name Corey MacGorman

Title and affiliation English Teacher, former colleague

Email Address coreymacgorman@gmail.com

Phone Number 5202351504

Reference 3

Name Kenneth Wright

Title and affiliation Assistant Principal, current administrator

Email Address kenneth.wright@oside.us

Phone Number 7605339321

Elisabeth Moore

1. Contact Information

Name: Ms. Elisabeth Moore

Email: bjmoorescience@gmail.com

Home Address:
1640 W Main St
Yadkinville, NC 27055 US

Home Phone: 336.679.2618

Cell Phone : 336.466.0447

Institution Name: Wiley Magnet MIddle School

Institution Address:
1400 Northwest Blvd
Winston-Salem, NC 27104 US

Institution Phone: 336.727.2378

Classroom/Office Extension: Room 314/790314

Institution Fax: 336.727.8412

Institution Website: https://www.wsfcs.k12.nc.us/Domain/2948

Other relevant websites: (Unfortunately, our classroom sites are restricted to student and parent access only)

Supervisor's Name: Lisa Bodenheimer

Supervisor's Email Address: lbodenheimer@wsfcs.k12.nc.us

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Our school is a Title I magnet middle school within the city of Winston-Salem, NC. Wiley's magnet theme is STEAM. Wiley is approximately 86% free/reduced lunch, with a student population of approximately 710 students. Demographics represented are approximately 1/3 white, 1/3 African American, and 1/3 Hispanic. We do have a small population of Asian and multiracial students. Unique to Wiley is that our school houses the Deaf or Hard of Hearing and Visually Impaired programs for the entire district. All middle school students that are DHH or VI attend Wiley. In addition, we are also the English as a Second Language school for our zone. Our school zone also encompasses the Children's Home and several homeless shelters. Although we are a largely free/reduced lunch population, we do not let that stand in the way of anything. Our community business partners and our strong Wiley Family Organization (like a PTA) have been instrumental in making things happen for our school. Diligent fund-raising and grant writing (by teachers) have helped us have a nearly 1:2 ratio for technology, namely i-pads and Chromebooks. With wi-Fi stations in every classroom, Apple TV in many, and document cameras in the rest, we let nothing stand in the way of making sure that our students have what they need for learning.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 710 (approx)

f. School Ethnicity:
0 % - American Indian or Alaska Native
5 % - Asian
30 % - Black or African American
30 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
30 % - White

5 % - Multiracial

If your school uses other categories to describe race/ethnicity, please describe: N/A

g. Percentage of students who receive free or reduced lunch: 86

h. Average class or audience size 29

i. Total number of students/audiences you teach in a year 120 - 124

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

For the 2019-2020 school year. Thanksgiving Break 11/27/19-12/1/19, Winter Break 12/21/19 - 1/5/20, Spring Break 4/10/20 - 4/19/20, Last day for students (depending on weather days) 6/10/20, Last day for teachers (depending on weather days) 6/12/20 For the 2020-2021 school year. First day for teachers 8/14/20, First day for students 8/24/20, Thanksgiving Break 11/25/20 - 11/29/20, Winter Break 12/19/20 - 1/3/21, Spring Break 3/26/21 - 4/4/21, Last day for students (depending on weather days) 6/8/21, Last day for teachers (depending on weather days) 6/11/21.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Management Information Systems

Bachelor's Degree (Minor):

Masters Degree (Discipline): STEM Education (will graduate in 5/20)

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 12

c. How many years have you been working at your current institution?: 8

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Academically Gifted License, Wiley Magnet Middle School – Teacher of the Year – 2017 (WSFCS District finalist), Inaugural Recipient – Sci-Works Innovation in Science Education Award – 2015, Henry Ford Institute (The Henry Ford Innovation Nation) - Teacher Innovator Award (June 2018) 1st place winner, Burroughs Wellcome PRISM Award - 2018

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Four years ago, I was reading a listserv message from a PolarTREC alumni. She spoke very highly of the opportunity and encouraged everyone to apply. Her excitement was obvious. Since then, I have read the blogs and postings of the participants and have met three teachers that have been PolarTREC participants. Their excitement and enthusiasm was obvious. In December 2018, my students had the chance to participate in a video conference with a scientist that had worked in Antarctica. My students were left amazed and curious about so many areas connected to the polar regions. Being able to do real life hands-on inquiry on location is very appealing to me. In my science curriculum, we teach ecosystems. This is one ecosystem that I have no firsthand knowledge of. When I teach, I like to teach from experience. I want my students to be excited about learning. The other part is because I am a lifelong learner. In addition, I have not had the opportunity to work firsthand with a researcher. This excites me as well. These are all experiences that I can carry back to my students and share the excitement, my passion for learning and my sense of adventure.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I love getting my students engaged in learning through inquiry-based lessons and hands-on activities. This includes using BreakOuts and problem-based scenarios connected to concepts we are learning in class. My new activities would be based around my experience with PolarTREC. In addition, after every one of my lifelong learning experiences, I have created a movie for my students. These movies are shown to my students as a way to help them understand that learning should be a lifelong experience. It is also to help them understand my passion for teaching, for learning, and for sharing. It also shows them that science is everywhere and impacts everyone. All of my learning experiences have been connected to my curriculum. The PolarTREC experience would connect beautifully to our 6th grade science curriculum and more.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

After all my lifelong learning experiences, I have created a movie for other educators. In addition to the movie, I take time to make a scrapbook of my experience. These scrapbooks are on display for potential families to look at, for visitors of our school to look through and for anyone else that may be interested in learning about my learning experiences. For the other teachers at my school, within my district, and in my personal network, I always share my experiences via social media, e-mail, Zoom, Skype, and in person. As an educator who is regularly used by the district as a professional development facilitator, I use the resources and knowledge acquired during these experiences in my workshops and help teachers find ways to incorporate resources into their lessons. In addition, I usually create a display of some type to share at our family events at the school. Upon returning from my last several experiences, the local newspaper has written a feature article that shares my experience with the community. Our district has also written articles for the district site and blog.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My classroom is a very active classroom. Students are engaged, focused, collaborating, and learning. Early in the year, I have all students take a student learning survey. From this gathered information, I customize my lesson plans to meet their needs. Not all students learn the same way, but all students can learn. I break things down, use lots of music, and help them understand with small group intervention. I also use visual dictionaries and other tools to help with understanding. Hands-on, real world learning is one of the best places to learn.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I am incredibly optimistic and exhibit perseverance in order to get something accomplished. I am a lifelong learner and very inquisitive. I have no problems getting my hands dirty and will jump right in to complete a task. I can put in long hours so that the task gets complete. I am a creative problem solver and have strong critical thinking skills. In addition, I am useful when it comes to interpreting technical documents and their content. My training as a cadet in Civil Air Patrol years ago is still information that I use to this day. If there is a need, I also drive a bus.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Being a part of a team and working as a team means that you are willing to do whatever is necessary to help the team succeed. This might include tasks that you are not fond of. Simply stated, team members will sometimes need to "get over themselves" so that the team can succeed as a team. Within our team (the four core subjects), we have students at many levels. During our daily time for remediation or enrichment, we all pitch it and work outside of our subject areas in order to help all students show growth. Helping our low math and reading students cannot be left exclusively to the math and language arts teachers. Because of my elementary school background, I work with the lowest performing students to help them with the basic skills. In addition, I am the science department chair and am also the Chemical Hygiene Officer for our school. These roles are in addition to my role as teacher. Because no one person is alike, there are different personalities that I deal with regularly. Being tactful is very important in order to be sure that the science department is always within compliance of safety standards.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

We have been learning about the electromagnetic spectrum the last two days. I was excited to think about the analysis students had made the day before when they were looking at the wave frequency on the electromagnetic spectrum. My students made amazing observations during class. Their questioning left me very excited and wanting to take them to the next level of learning. Students really enjoyed the stations that were set up in the room so they could get a hands-on and up-close look at each part of the spectrum. They were intrigued by the fact that the remote-control sensor could not be seen by the human eye, but was clearly visible with the camera. Suddenly, they made the connection. Infrared was lower in the spectrum than visible light. That's why we can't see it. They also loved reading my secret messages on my lab tables that I wrote with a pen that needs an ultraviolet light in order to be visible. Their journal entries were detailed. I am looking forward to seeing what my students produce for their EM spectrum projects and their lab reports as we focus on visible light and learn to use spectroscopes next week.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I would love to be considered for either. I am concerned with the change in climate and how it is impacting wildlife at the poles. The Conservation Science workshop that I attended in San Diego in 2017 got me really thinking about this. I've also been reading about ice shelves shrinking and its impact on wildlife and sea levels. Even though there is more than climate change being researched, the opportunity to work in one of harshest ecosystems thrills me and gives me opportunity to bring back firsthand experiences, regardless of the research that I would be assisting with.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am available for the duration of the research. I am very interested in bringing these experiences back to my classroom so that my students can understand the connections of the research to the real world. I am willing to participate in any research expedition that you feel that I am qualified for. At this time, I do not have any restrictions on dates.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My areas of interest in science include space science, soil science, weather, and ecosystems. I really enjoy physics and environmental science. I love connecting with science outside. Since attending a workshop on conservation science (San Diego, 2017), I have become very aware of impact on wildlife in the polar regions, especially with the significant changes occurring with climate. Soil science has always been an interest because if we don’t have healthy soil, we cannot grow crops, etc. Space science has been a fascination since I was young and looked through telescopes to view the stars and followed the space missions through the advances of technology. I have applied to PolarTREC in the past and have had my students read through some of the online journals. We were fascinated by the idea of weather stations in Antarctica because many students wondered if it ever got too cold to accurately record temperature. They were also interested in the study connected to climate change and the impact on the soil and predicting and monitoring the shift of

glacier ice sheets. I am also very interested in areas of STEM and the way these all connect together in the real world.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I do not want to be considered for an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
The effect that climate change has had on the soil in the regions. Does the soil recover from being in a permafrost condition? Can the soil support plant life?

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.

Since a young age, I have been camping. Growing up, our family did a lot of tent camping, usually heading out 3 to 4 times a year. As a teen, I was a member of the Civil Air Patrol in Pennsylvania and participated in search and rescue missions in the mountainous areas of the state. My training in CAP included summer and winter survival, first aid, rappelling, hiking, orienteering, and using equipment such as emergency locator transmitter devices. Into adulthood, I continued and still hike, backpack (winter and summer) and tent camp. On a regular basis, I pull out my ice cleats and hike in the mountains during the winter. Although I am not trained in wilderness first aid, I do keep my first aid and CPR certifications current. In recent years, I have discovered SCUBA and am working to get certified. I also enjoy snorkeling, although I cannot imagine snorkeling in icy cold water. With regard to firearms training, I have limited experience. We have several rifles in the house, but I can honestly say that I have used them only a limited number of times. I would be very willing to complete a firearms training course prior to the PolarTREC experience. There are plenty of training facilities in this area.

b. Provide a basic statement of your general health and physical condition.

I am in good physical condition, remain active on a regular basis, using a combination of free weights with my regular routine. I exercise at least three times a week. My classroom is located on the third floor of our building, so I make it a habit of using the stairs instead of the elevator. I strive for a minimum of 10,000 steps daily on my fitness tracker. My recent physical revealed nothing out of the ordinary and I was listed as being in very good health for my age. I am not a smoker, but do enjoy a glass of wine once or twice in a week. I do have an allergy to dogs that will sometimes require the use of an inhaler. I do not use any medications (except inhaler when needed), and eat healthy. My immunizations are up to date.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.

My home office and my classroom both run a Windows operating system. At home, I currently run Windows 10 on a PC and a laptop. At school, Windows 7 is the operating system of the school. We also use iPads at school. Prior to changing to my teaching career, I was in Management and Technology (IT). I would have to say that I am quite comfortable with a computer, although I will admit that I really miss DOS days. I have taken computers apart and have put them back together. I have had limited MAC use.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.

In my classroom you will find a wide variety of devices and software being used on a regular basis. Devices include, but are not limited to: I-pads, Chromebooks, laptops, ,digital cameras, Apple TV, Raspberry Pi, Lego NXT and EV3 robots, document camera, and Activ Slate. With regards to software, I would also have to include applications. Many of my differentiated lessons are delivered to students via Nearpod. I can customize the lesson to the student. Within class, students can be found using Nearpod, Pow-Toon, Microsoft Office products (Word, PPT, Excel), Movie Maker, Photostory, I-Movie, VoiceThread, Skype, Zoom, and FlipGrid. I am very comfortable with Google Classroom and Microsoft Office suite. Because I allow students choices (menus for their projects), they will select frequently from Pow-Toon, PPT, Word, VoiceThread, Movie Maker, Photostory, I-Movie. We actively use Skype and Zoom to talk to professionals in the field, and to collaborate with other classrooms around the world. For classrooms on the other side of the world (Australia, etc), we use VoiceThread, so we can deal with time zone concerns. Students can bring their cell phones when we do lessons outside that involve microscopes. Instead of taking our expensive school microscopes outside, I built a classroom set cell phone microscope devices (funded through a grant) that are less expensive ($10 per stand) and less fragile to use outside.

e. List any additional skills or information that you wish to be considered.
I am very handy with tools, both hand and power, and soldering. In 2014, I was selected to attend a Guitar Building Workshop, where I had the opportunity to build an electric guitar from the ground up. (I use the guitar in my classroom when I teach about sound and sound waves) Although I am sure this won't be needed, I do have a CDL (Commercial Driving License) with a P(public) and S (school) bus endorsement. I drive a bus several times each week.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Mike Penn

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Regina Brinker - Please note: I have never met Regina. She mentioned PolarTRECin a listserve email (see above) and talked about how amazing the experience was and what she learned and took away from the experience. Steve Kirsche DJ Kast Mike Penn

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
I could be incorrect, but I don't remember ever seeing this listed in NSTA Reports. They have a listing in the monthly newspaper for Learning Opportunities for teachers.

12. References

Reference 1

Name Seth Henley

Title and affiliation Teacher/7th grade science/Wiley Magnet Middle School

Email Address nshenley@wsfcs.k12.nc.us

Phone Number 704.798.3384

Reference 2

Name Michael Penn

Title and affiliation Gifted Teacher/Shaler Area School District

Email Address sgtpenn@gmail.com

Phone Number 724.622.5197

Reference 3

Name Harry Morley

Title and affiliation Teacher/EC Inclusion Teacher (Wiley Magnet Middle School)

Email Address hmorley@wsfcs.k12.nc.us

Phone Number 336.918.5958

Sue Morrow

1. Contact Information

Name: Sue Morrow

Email: smorrow@smcjuhsd.org

Home Address:
6265 Portola Road
Atascadero, CA 95124 US

Home Phone: 805-461-9125

Cell Phone : 805-610-6694

Institution Name: Portola Butler Continuation High School

Institution Address:
760 Broadway Street
King City, CA 93930 US

Institution Phone: 831-385-4661

Classroom/Office Extension: 183

Institution Fax:

Institution Website: https://www.portolabutlerhs.org/

Other relevant websites:

Supervisor's Name: Paige Leebrick

Supervisor's Email Address: pleebrick@smcjuhsd.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My students are 98% Hispanic and they are from low socio/economic communities. We are in a small rural area in the southern Salinas Valley. We have 1 to 1 Surfaces available to them at school, but at home many do not have internet access except on phones. I have a document camera and projector and three 3-D computers for them to use too.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 65 -85

f. School Ethnicity:
% - American Indian or Alaska Native
% - Asian
% - Black or African American
98% % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
1% % - White
1% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 88%

h. Average class or audience size 21

i. Total number of students/audiences you teach in a year 65 - 85

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
This year the first day of school was 08/12/19 and the last day of school is 06/04/20.

We have winter break from 12/23/19 - 01/10/20. We have spring break from 04/10/20 - 04/17/20. Next year should be similar.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biological Science with a marine emphasis

Bachelor's Degree (Minor):

Masters Degree (Discipline): Computer Science (incomplete) Teaching (incomplete)

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 15

c. How many years have you been working at your current institution?: 2

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Inspiring STEM teacher award, AVID certification, PBL 101 certification, SCUBA certification. Wellness employee of the month award.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary Chemistry, Secondary Earth Science, Secondary General Science, Secondary Math, Secondary Physical Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I am motivated to apply to PolarTREC because I was fortunate enough to participated in the Polar-Ice Sci I project with my students for two years. As part of this project, my students and I worked with Polar Scientist from the Palmer LTER station. We used their data, submitted proposals to the scientist, got feedback from the scientist, had a video conference with them and lastly, met them at a symposium where the scientist evaluated my students' proposals. It was a taste of real-world science for my students. This experience gave me an insight into what is happening in Antarctica and I would love to see the area firsthand. Professionally I hope to gain the experience of a lifetime, doing field research and then to share that experience with my students and community. To show them that if you are interested in something you should go for it. That they should not be afraid to learn something new. To show them that there is a big world out there and that they should be excited to try new experiences. I want my students use the data we collect to come up with new research proposals thus including them in the project.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I see this experience as a way of continuing what I have done previously with the SCI I program: My students and I will be integrating the authentic process of science into our classroom. This will provide a start-to-end process of an open-ended investigation for my students; helping them to be successful at finding and using online data. This experience will provide them with scientist's personal stories and perspectives on the process of science too. In addition, I have them propose a second investigation that they can do in our community. Where they will be the scientist, they will collect and analyze their own data. They will contact local scientist to get input and ideas, then they will present their findings to school administrators. This will give them the opportunity to work with different equipment, do hands on field work and meet scientist in our area. This will provide them with the opportunity to get involved in their community. Lastly, this will integrate NGSS Science & Engineering practices throughout the year.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I envision sharing my experience with other educators by presenting at local science meetings. I envision writing about my experience and creating a photo journal of my days. I would love to share this experience at my state and national science conferences too. I plan on contacting local newspapers and television stations to share my experience and promote awareness of the Antarctic area. I hope to link other educators with scientists to get them involved in doing authentic science in their classrooms as I feel this is important for not only the students, but the teacher as well. I feel it is important to make the general public aware of what is happening at the Polar regions and how that is affecting the whole world.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I think that the best way to engage my students is to get them to research a phenomenon. I present them with an idea or phenomenon and then we discuss it, we break down the ideas they come up with and put it into words they understand. I have them take the complex topic or concept and break it down into parts that they define. They generate the vocabulary that goes with the concept, they come up with the examples and then I have them model the topic. So, for example if they are learning about electricity, they research it, they break the word into parts, then they may build motors, generators, electromagnets turbines and circuits. Thus, I provide them the opportunity to follow a process where they have a question or identify a need, then they research it, imagine a solution, and then build a model or design an investigation to test it.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

During college, I was a SCUBA diver for the University of California, Santa Barbara where I helped professors and graduate students perform a variety of field work. Then before becoming a teacher, I worked with a group of field biologists. We did field studies on the marine environment near a power plant. I was assisting with the collection of algae and invertebrate data. I also assisted with the writing of reports, including the graphing of the data. I helped to manage the 14 miles of coastline around the power plant. As part of this team, we trained docents on local flora and fauna, did marine science outreach taking marine plants and animals into classrooms and we brought students and educators to our marine classroom at the power plant. I wrote a guide to the local plants in the area. I also had the good fortune of working with biologist from all over the world; we had lichenologists, geologists, falconers, and botanists that we escorted onto the property and assisted with their research. I

have a strong work ethic and am not afraid of hard work. I understand that field work happens at all hours of the night or day.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I am a very good team member. I communicate well and I am a good listener. I am detail oriented and able to help keep my team on task. I have experience working with different teams of biologists as mentioned above, but I have worked for the past 15 years with different groups of teachers. Including working with a multi-disciplinary team where we helped each other to organize events for our students. We worked together to integrate language arts and math into science and history. I have been part of the AVID team where we promoted advancement via individual determination. We worked to recruit our students into the program, we traveled together to conference, we trained our staff on AVID practices. Sometimes I was the trainer others the support. I have participated on a team with teachers from all over southern Monterey county sharing lessons that incorporated literature into NGSS. In addition, I was on the team of teachers, administrators, test writing companies, members of the community, and professors to help decide what we would like to see on the NGSS test and when it should be given.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Today I got to meet teachers from all over California. We participated in a Sand Crab monitoring workshop at the Natural History Museum in Pacific Grove. It was such a fun day, the weather cooperated, it was warm and sunny (a rare occurrence in Pacific Grove) We started the day inside where we learned about the sand crab, how to find it, measure it and how we would be looking for it at the beach. We got to take what we learned in the morning out to the beach in the afternoon. We ran 50 m transect lines and then broke into groups, each group ran a line down into the water and we collected 10 samples. See the attached picture (I would put a picture here of what we did) Then we looked through the samples and measured and sexed the crabs we found. The crabs are so wiggly and hard to measure, but it was so fun finding them. We will be putting the data into a shared database for future analysis. It was great to work with the other teachers and I look forward to doing this “Citizen Science” project with my students.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am willing to go the either the Arctic or the Antarctic, but would prefer to go to the Antarctic because I have worked with the scientist from the Palmer LTER in the past and would love to see and experience firsthand the area where that data came from.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am willing to participate in any field expedition during any of the above-mentioned times. I have June and July off from school and wouldn't need a substitute during that time. I also have time off for winter break in December so going during that time would decrease the amount of time a substitute would be needed.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My degree and my credential are in Biological Sciences with a marine emphasis. So Marine systems and the plant and animal life including the ecology and biotic systems there are what I am the most interested in. I am also interested in the engineering and technology involved in monitoring these systems. I have always been an ocean person, I really liked identifying the smallest plankton and algae in college. My favorite classes when I was in college were my classes on diatoms and phycology. But I also really liked working with and studying invertebrates and fishes. How these things interact and how the climate change is affecting these plants and animals and their interactions is fascinating and distressing to me. It would be exciting to be a part of current research in this area and it would be amazing to increase awareness of what is happening to my students and the general public.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I do not want to be considered for an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
Marine mammals, phycology, invertebrates, fishes and birds.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have been camping since I was a child, in both campgrounds and undeveloped areas, I also love to hike and boat. I take short (1-3 mile) hikes frequently. I have been on short term research expeditions on a boat (7-10 days) as well. I love being on, in and around the water so I will go out on a boat any chance I get, power boats, row boats, kayaks, ships it doesn't matter if I am near the water. I am SCUBA trained and enjoy snorkeling as well. I have been around firearms but have not been trained in the use of them. I have basic first aid training, but it is not specific to wilderness.

b. Provide a basic statement of your general health and physical condition.
I am in good general health and physical condition. My teeth are in good shape. I work out regularly. I have annual physical exams, and just received a clean bill of health. I also participate in my district's wellness program.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am familiar with both Mac and PC and I have worked extensively on both systems. I currently work on a PC system. I am familiar with Microsoft products and Google products too. I was a computer technician for a school district before getting my credential and I am very good at troubleshooting computer issues. And I almost finished my masters degree in Computer Science.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use both desktop and laptop computers daily. I have two laptops; one is a Surface and the other is a similar touchscreen device. I also use an iPad and iPhone daily. I have used digital cameras, but the digital camera on my iPhone is better than my digital camera, so I almost never use it anymore. I use Google, MS Edge and Safari daily as too. I use MS Excel and PowerPoint almost daily and have taught classes in both. I have used some photo and movie software as well. I have used Photoshop and photo collage and printing software. I have used some movie editing software, but mostly I just use movie software to view videos. I use all the above both professionally and personally. I also use some social media; Facebook, Instagram, Snapchat and Twitter.

e. List any additional skills or information that you wish to be considered.
I can speak basic Spanish, I am comfortable using tools including power tools; saws,

drills etc. I have done basic TIG welding

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Denise Hardoy

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Denise Hardoy

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title
Polar Ice Summit spring 2019

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Denise Hardoy

Title and affiliation Teacher, San Antonio School

Email Address dhardoy@sanantoniousd.org

Phone Number 831-682-0018

Reference 2

Name Paige Leebrick

Title and affiliation Principal, Portola Butler Continuation High School

Email Address pleebrick@smcjuhsd.org

Phone Number 831-385-4661

Reference 3

Name Claudia Arellano

Title and affiliation Director of Human Resources, South Monterey County Joint Union High School District

Email Address carellano@smcjuhsd.org

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2020-2021 PolarTREC Educator Application

Hannah Murphy

1. Contact Information

Name: Ms. Hannah Murphy

Email: murfskae@verizon.net

Home Address:
17 Noyes Street
Pearl River, NY 10965 US

Home Phone: 845-735-9331

Cell Phone : 845-282-1069

Institution Name: Nanuet School District

Institution Address:
103 Church Street
Nanuet, NY 10954 US

Institution Phone: 845-627-9800

Classroom/Office Extension:

Institution Fax: 845-624-5520

Institution Website: https://nshs.nanuetsd.org/home_page

Other relevant websites: https://nshs.nanuetsd.org/classes/36754

Supervisor's Name: Mr. Michael Mahoney

Supervisor's Email Address: mmahoney@nanuetsd.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Nanuet School District is a rural neighborhood located about 30 miles north of New York City. Nanuet is a very diverse and economically mixed community.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) There are approximately 800 students in the High School, and 800 in the Middle School.

f. School Ethnicity:
% - American Indian or Alaska Native
% - Asian
6 % - Black or African American
23 % - Hispanic or Latino
16 % - Native Hawaiian or Other Pacific Islander
53 % - White
2 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 24

h. Average class or audience size 25-28

i. Total number of students/audiences you teach in a year 110

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Christmas Break 2019: December 21 to January 1st. Winter Break 2020: February 15 to February 23rd Easter Break 2020: April 9th to April 19th Summer break 2020: June

26th - September 7th. Christmas break 2020 : December 23rd to January 3rd .

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Sociology

Bachelor's Degree (Minor):

Masters Degree (Discipline): Masters in Education: Earth Science

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 20

c. How many years have you been working at your current institution?: 15

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
New York State Certification for Teaching Earth Science Grades 7-12 New York State Certification for Teaching General Science 7-12

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8), Secondary (Grades 9-12), Four-Year College or Institution, Pre-Service Teacher Training, Special Education

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science, Secondary Earth Science

Other Subjects I am an adjunct professor at a local college and teach an Astronomy course and an Earth Science course.

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

As an educator of Earth Science, I believe it is important that in addition to the content, it is also critical to teach my students an appreciation for science and the world around them. I believe that success in STEM is not all brains; it comes from interest and an opportunity to learn. You do not have to be the top student to have a passion for science. All students regardless of race, gender, ability or socioeconomic status should have the opportunity to develop a love of science. Exposure is what can help foster this passion. As a teacher with a diverse student population, I am in a position where I can enhance my knowledge and curriculum to motivate my students who are the future of STEM. Participating in PolarTREC is a unique opportunity for me to be able to work with experts in the field to gain first hand, real world 21st century research experience that I can bring back to my classroom. Learning in the field will enhance my content knowledge while giving me a real life experience that will bring my lessons to life and inspire my students to want to learn more about this world.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I continue to teach and continue to learn about STEM because I love the WOW factor. Working in the field, actually doing real science is an exciting opportunity for any teacher and enables me to convey my excitement to my students. The experience of working in the field would also help me modify or develop new curriculum incorporating discovery, hands-on and experiential approach to teaching about polar science. I plan to create lessons which take students on virtual field-trips to polar regions. Creating hands-on interactive activities and giving students the opportunity to explore polar science can help spark an interest to continue exploration in this field. In addition to sharing with middle and high school students, I would like to develop several lessons and activities relating to polar science for elementary students. My plan would be to be a guest speaker in some of the elementary classrooms to share my lessons and experiences. It is important to expose young student to polar science to get them thinking, talking and problem solving factors affecting our polar regions. I can also share my experiences as a college adjunct, Science Olympiad coach and as volunteer merit badge counselor for the boy/girl scouts.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I can share the knowledge I gain from working with PolarTREC scientists at staff development days, during team/department meetings and share what I learn with other science educators in other districts. I would like develop a professional development workshop to share my experience to expose teachers to current research in polar science. In addition, this workshop would give me an opportunity to engage teachers by sharing lessons I create based on my experiences with PolarTREC scientists. I plan on creating lessons which include cutting edge polar research, engineering concepts and methods for teaching polar science through an inquiry, hands on and student-centered approach. I am a teacher of STEM but I also consider myself a full time student of STEM and I have participated in numerous professional development opportunities. My district has often asked me to present what I learned from these outside learning opportunities to faculty during department meetings and also give presentations to the general public at PTA and Board of Education meetings. In addition, I am a member of the New York State

Master Teacher Program. Through this program I could offer a polar science professional development workshop for teachers throughout New York State.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I plan lessons that are innovative and incorporate opportunities for students to problem solve and collaborate with one another. The classroom should be a place where students can learn real-world skills and a good teacher knows how to differentiate a lesson in an effort to meet the needs of all students in the classroom. A good teacher can identify struggling students and offer each child the opportunity to master skills at their own pace and add support when necessary. An example of this is an inquiry-based lesson where students learn and develop models to demonstrate how the Earth's layers formed. This is usually a topic students have a difficult time visualizing. To engage students in thinking, I first had them create density towers using liquids and solids of varying densities. Students share their thoughts and ideas to describe their observations and make claims for why the layers formed. Based on their claims, they designed a lab to collect data and measure the densities of each layer to provide evidence to support their claims about the densities of their varying layers. This activity allowed student to create, test and visualize a model which demonstrates the formation of Earth's layers

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I am flexible, resilient and have the ability to follow orders. These three characteristics are critical to the success of any mission with PolarTREC. Although these characteristics are critical, it's also important to acknowledge that planning and hard work is just as important working on a PolarTREC expedition. I am confident that I will be able to plan and prepare for any opportunity offered to me. Preparation would include understanding the conditions I will be exposed to while working with researchers. Research and planning is necessary to be able to deal with obstacles such as inclement weather, possible changes in route or schedule, being flexible and willing to change your original plan or move in a different direction due to unforeseen circumstances. In addition, I will come with a strong passion for knowledge. Since science is an ever changing field I am constantly challenged and continue to grow as an educator and I am continually updating my lessons based on new discoveries in science and technology. I am extremely effective in learning complex scientific concepts and being able to take what I learn and create engaging lessons where students can learn about science at a level they can understand.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I work regularly with grade and department level teachers to share best practices for teaching, organize student events, and analyze data regarding student performance to identify areas of weakness in the current curriculum. As a team, we look for ways to enhance or redesign our lessons to increase student performance. As a team member on any team it is important for me to understand the overall goals of the team and what my roll(s) or contributions will be. As a team member, it is vital to listen and respect other ideas and know that the contributions of all members help the success of achieving the overall goals. I have always been successful working with teams as I am a good listener and always willing to accept advice. In addition as a team player, I am always willing to offer guidance and support to other members. I'm not afraid to speak up and take initiative to tackle a problem. I maintain a positive attitude and offer solutions to help problem solving and overcome challenges. Being resourceful and having good time management skills are two qualities I possess which ensure I make meaningful and effective contributions to my team.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Today I woke up excited to go and explore some really interesting fossils which give us clues to past climates approximately 500 million years ago. The outcrop known as The Gingerbread Castle Stromatolites is located in Hamburg NJ. Stromatolites are some of the oldest fossils and are one of the key components in the process of creating the oxygen in the atmosphere. They are ancient mounds of layers of blue algae or cyanobacteria that have been around for 3.45 billion years. Walking from the top towards the bottom of the outcrop, the size of these magnificent stromatolites grew from a few centimeters in width to over a meter in size. These beautiful fossils were dome shaped with striking alternating light and dark layers. Some were connected and others were not. Since there are stromatolites present in this outcrop it allows us to paint a good picture identifying what the environment was like when these fossils formed. The presence of these fossils in this area tells us about a time when this region was part of a tropical shallow sea. This provided us with evidence that this section of North America was close to the equator approximately 500 million years ago.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am excited to learn more about polar science. Both the Arctic and Antarctic polar regions would be a great opportunity to be part of polar science research.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am open to participating in an expedition for any length of time. I would prefer to work on an expedition as close to school summer/winter holiday as possible in order to limit my time away from my students. However, please note this is only a request; I will be able to arrange time off of my school schedule to attend an expedition any time of the year. I have a family reunion July 24-27, 2020, however, please note If I am a match for to work with researchers during this time, I will be available during these dates.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My main scientific interest would be in the field of Earth and Space Science. I am particularly interested in geologic topics such as; weathering and erosion, river processes, glacial processes, Earth's history, polar science, atmosphere and climate studies. I am interested in learning about natural processes that have shaped and changed our world. I am also interested in learning more about climate science and how it is affecting Polar Regions (past, present and future) I enjoy learning about evidence of past climates and how that helps develop models for predicting future climate change. Although my background is in the geoscience, I am also interested in how biodiversity is changing in the arctic. I enjoy learning Earth Science hands on and getting out in the field using the outdoors as a natural laboratory. Field work is a unique opportunity for me to be able to learn firsthand, real-world 21st century research from experts that I can bring back to my classroom and school community. Learning from experts about their field experiences is an exciting opportunity for any teacher. Each time I have the opportunity to experience real science with scientists and other educators, the better teacher of Earth Science I become.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I am somewhat interested in this subject area

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
In my personal life I have set and accomplished many goals. I have hiked to the bottom of the Grand Canyon, overnight hikes on the Appalachian Trail, Death Valley, Yosemite, Yellowstone, Grand Tetons National Parks and trekking the Swiss Alps. I have also regularly participated in triathlons and running/cycling events. In addition to the desire to wanting to do these things, one of the reasons I have been successful is planning and training. From personal experience, planning was all about the training, which included clothing, nutrition, hydration, etc. While training and preparing for these hikes and events over the years with my family, I needed to be able to respond to the physical, environmental and mental needs of these challenges and be willing to adapt and make the appropriate changes to the plan when necessary. The more physically and mentally trained I am for any outdoor experience the more enjoyable the experience will be.

b. Provide a basic statement of your general health and physical condition.
I have no health related issues that would prevent me from working in a polar region and or in the field. I am in excellent physical condition.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am proficient in using both Mac and PC operating. I prefer to use a PC operating system, but I am proficient using both a Mac and PC.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am extremely comfortable using computers and other technological devices. Using computers and other forms of technology is something I use daily in my classroom and personal life. We live in a world where technology changes constantly, as a result I have been able to learn and adapt quickly to new programs. I am proficient in using Microsoft Word, Excel, PowerPoint, Google Docs, Blackboard, Smartboard, Vernier probeware and accompanying software. I also utilize various apps or devices such as GPS, geocaching apps, hiking apps, weather apps, and other science related apps such as Stellarium, geo-color, albedo apps, etc. I use technology in the classroom to enhance lessons, personalize learning for student and to engage students. I utilize various websites and apps personally to plan hikes and other outdoor adventures such as using my geocaching, EarthCatch and View Ranger to explore when traveling. I am also proficient in using social media such as Twitter,

Instagram and Facebook.

e. List any additional skills or information that you wish to be considered.
I have undying passion to always learn new things and tackle each new challenge as an opportunity to excel. Although I have earned her master’s plus 60 graduate credits I continue to seek out professional development opportunities. Professional Development • Received my Masters plus 60 credits by participating in both graduate and in-service courses. • School of Ice at Dartmouth College sponsored by the US Drilling Program • Real World Science Seminar at the National World War II Museum. • G-Camp, 18 day summer field study through Texas A & M • Summer Field Work and one week field study Seminar for Earth Science Teachers, SUNY Purchase. • DataStream , Weather, Climate, Oceans graduate coursework, University of Brockport. • Exploring Earths Integrated System, SUNY Oneonta • In-service coursework such as, Cooperative Classroom, The Human Brain, Adolescent Literacy, Grading and Reporting Student Progress, Teaching Middle School Physical Science, Integrating Differentiated Instruction, Strategies That Work, Teaching Reading in Science, The Art of Teaching Science, Socratic Circles: Fostering Critical and Creative Thinking, Weather and Climate • Summer on the Hudson, studying the Hudson River Watershed with the New York State Master Teacher Program. • Regularly participate in district workshops learning how to integrate technology into the classroom.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title
School of Ice Louise T. Huffman Director of Education and Public Outreach Ice Drilling Program Office

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
The New York State Master Teacher Program. https://www.suny.edu/masterteacher/
STANYS: Science Teachers Association of New York state https://stanys.org/ScienceListservs

12. References

Reference 1

Name Kevin McChill

Title and affiliation Superintendent Nanuet School District

Email Address kmccahill@nanuetsd.org

Phone Number 845-627-9880

Reference 2

Name Michael Mahoney

Title and affiliation Principal Nanuet Sr. High School

Email Address mmahoney@nanuetsd.org

Phone Number 845-627-9800

Reference 3

Name Rebecca Burnstein

Title and affiliation Colleague

Email Address rburnste@nanuetsd.org

Phone Number 845-627-4040

Kristi Neuroth

1. Contact Information

Name: Ms. Kristi Neuroth

Email: kristineuroth@gmail.com

Home Address:
417 Lively Way
Nolensville, TN 37135 US

Home Phone: 303-489-0785

Cell Phone : 303-489-0785

Institution Name: Ravenwood High School

Institution Address:
1724 Wilson Pike
Brentwood, TN 37027 US

Institution Phone: 615-472-4800

Classroom/Office Extension: 1209

Institution Fax: (615) 472-4821

Institution Website: https://www.wcs.edu/rhs/

Other relevant websites:

Supervisor's Name: Dr. Pam Vaden

Supervisor's Email Address: pamv@wcs.edu

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Ravenwood High School is an academically focused suburban 9-12th grade public high school located south of Nashville, TN in an affluent community with high levels of access to technology. 93% of students enroll in post-secondary education, 1% are English Language Learners, and 4% receive Free and Reduced Meals (FARMS).

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) Ravenwood High School has approximately 1,720 students and 100 faculty members.

f. School Ethnicity:
1% % - American Indian or Alaska Native
15% % - Asian
6% % - Black or African American
4% % - Hispanic or Latino
0% % - Native Hawaiian or Other Pacific Islander
71% % - White
3% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 4%

h. Average class or audience size 28

i. Total number of students/audiences you teach in a year 175

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Start of the school year (for teachers): at the beginning of August Fall Break (roughly 5 days over a weekend in mid-October) Thanksgiving Break: Week of Thanksgiving Winter Break: Around the 21st of December to the first week of January Spring Break: Usually the 3rd or 4th week in March End of school year: 3rd week in May

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Behavioral Science

Bachelor's Degree (Minor): Secondary Education

Masters Degree (Discipline): MAS Advanced Study in Geographic Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 13

c. How many years have you been working at your current institution?: 12

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
1. One of four teacher members of the AP Human Geography Test Development Committee. I was selected for the role of College Board Adviser to act as a liaison between the Test Development Committee and the College Board. I helped tailor the new 2019 course articulation and developed multiple choice and Free Response Questions for the AP Human Geography exam to be taken by over 200,000 students in the U.S. and abroad. 2. Tennessee’s Mid-Cumberland Region High School Teacher of the Year (2017) 3. Recognized as Ravenwood High School’s Teacher of the Year (2012; 2016) 4. Recipient of the 2014 National Council for Geographic Education (NCGE) Distinguished Teaching Award (K-12) 5. Received the 2014 Tom and Stella Mullane “Geography Teacher of the Year” award from the Tennessee Geographic Alliance 6. Awarded Nashville’s Channel 2 Educator of the Week 7. Selected from over 500 applicants to become a “National Geographic Grosvenor Teacher Fellow” and participate in research in Arctic Svalbard aboard the National Geographic Explorer ship in Norway in June 2017 8. Completed the National Geographic educator certification program 9. Selected from over 100 applicants to participate in the Texas World Affairs Council Teacher Fellow Workshop in the United Arab Emirates in March 2017 10. Participant in IREX Teachers for Global Classrooms program. Program included an online graduate course, two workshops in Washington, D.C., and an overseas field experience to Kazakhstan in April 2013. I developed a global educational blog and a website to inform my school community about resources to

promote global education and 21st Century Skills.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Geography, Secondary Social Studies

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

My desire to participate in PolarTREC began after my expedition to Arctic Svalbard with the Grosvenor Teacher Fellowship program in 2017. Observing experts and explorers in the field and reporting back to my students about the experience was the single most invigorating event in my teaching career. I was able to introduce my students to fascinating research happening in the Arctic. This sparked our collective interest in further investigating human impacts on high-latitude environments. PolarTREC provides hands-on experience and connections to the Arctic and Antarctic research community I long for. If accepted to the program I will gain assets and experiences necessary to enhance my teaching about STEM related geographic topics, building a more nuanced scientific perspective to share in my classroom and community. I hold a unique position as a geography educator to act as a bridge between the disciplines of science and social studies. My experience with PolarTREC would give me a platform to connect students, researchers, and educators from multiple disciplines. It would allow me to be an example to my students and fellow educators of how to approach learning with the spirit of an explorer, encouraging them to take the same holistic and curious approach.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

If selected, my plan for sharing this experience is two-fold: first, as I design curriculum for my AP Human Geography and Contemporary Issues courses, I will use my personal experience in this field-based excursion to provide concrete evidence of how actions we take locally can affect environments globally. For example, my travel experience in India and Kazakhstan inspired my lesson on t-shirt production and global resource use. In this lesson I lead my students on a virtual journey from cotton production in Kazakhstan (and its effects on the shrinking Aral Sea), to textile manufacturing in India, to U.S. markets, incorporating stories and photos based directly on my own research and experiences in the field. Second, I will harness the connections I build with PolarTREC to connect my students with the research community. After my involvement with National Geographic I connected digitally with one of the National Geographic explorers. We developed lessons together about his lion conservation work in Botswana. He Skyped with my class and it was one of

the most memorable lessons of the year for the students. I would be thrilled to continue that kind of collaboration in my classroom with members of the PolarTREC community.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

First, as the Williamson County curriculum team leader for all nine AP Human Geography high school programs, I will provide district colleagues with the curriculum I develop which can impact over seven hundred students each year. Second, my teacher travel blog and other social media will be a resource to introduce students and colleagues to professional photographers, naturalists, and researchers and will exhibit how comprehensive STEM education addresses environmental problems and aids exciting discoveries in the field. Third, I will enhance the digital global citizenship resource website I created for Williamson County, adding reflections and resources from my experience with PolarTREC. Fourth, I will use my previous experiences presenting about global education to develop a presentation for my professional community, utilizing my membership in both local and national professional organizations to provide a platform for sharing about my experience. Finally, I will have opportunities to leverage my position within the AP Human Geography community as a Test Development Committee member to share about PolarTREC with potentially thousands of AP Human Geography teachers through both in-person meetings (i.e. the AP Reading in June) and through digital platforms like AP Central.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My teaching is engaging because I recognize the unique needs of students living in an over-stimulated, over-scheduled society and I have distinct experience and passion to meet those needs. I teach through explorative learning, sharing from my experience to inspire students to learn through their own uninhibited adventuring. I grew up in rural Colorado wandering freely in the Rocky Mountains. By contrast, the affluence surrounding my students in suburban Brentwood, Tennessee can suffocate similar opportunities to connect to their local world. The core of my work as an educator is to introduce a sense of exploration to their highly-structured upbringing, teaching students how to pause, breathe, and learn with all of their senses. I encourage them to ask meaningful questions about what they observe in their everyday world. For example, students in my classes must take pictures from their

local community corresponding to vocabulary they study in each unit. Before this project many of them had no idea that there are Native American burial mounds and a vibrant habitat restoration project for birds of prey only minutes from where they go to school. I teach students to explore their world, lending credence to their learning experience and building life-long curiosity.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

The two most prominent strengths I bring can be categorized as my “book smarts” and my “street smarts.” With regards to the former, I hold a master’s degree in geography which provides me with some related background knowledge and experience with research. My “street smarts” are best illustrated with my experience as a teacher trainer for Education First Tours. Each year I lead 2-3 overseas workshops for teachers who are taking their students on an international tour for the first time. Education First Tours selects trainers based on their engaging personalities, presentation skills, advanced organizational skills, and extensive international travel experience with large groups. I am confident that these skills will translate well to the tasks I would be asked to accomplish if invited to participate in a PolarTREC expedition. Over the last decade I visited more than 20 countries with various groups of people (both adults and students). These experiences taught me to be as organized and prepared as possible while simultaneously equipped to “go with the flow” and think creatively when things don’t go according to plan. I adapt quickly to diverse physical and cultural environments and enjoy working collaboratively with many kinds of people.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Each year I organize educational travel experiences for my students through a geo-literacy explorer program I launched in 2015. Through this program I encourage students to investigate their world like explorers, whether they venture to another country or simply encounter their neighborhood with a new perspective. Four years ago, I worked with a team of teachers to assist students as they researched and crafted projects on local energy issues (our program focus for that year). I facilitated the research process, helping students reach out to local businesses and community leaders for expertise and support. The culminating event was a leadership summit in Iceland. At the summit we formed international teams to share students’ acquired knowledge about local energy issues to help address an energy topic of global significance. Most importantly, when they returned home, the students used their

new insight to enhance their local projects and reflect on their experience, sharing their newfound knowledge with their peers and community. My role in this team was to organize, connect, facilitate, and inspire. Educational travel poses many logistical challenges and as a teammate I enjoy problem-solving behind the scenes so my team can have the best experience possible.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I took a sigh of relief as my tires hit the gravel road. The raw wildness of the Warner Park Reserve is my reprieve from manicured lawns and concrete. I basked in the long shadows and crisp air feeling hopeful that the sweaty days of summer were finally over. I was lost in thought as I climbed the first hill when, seemingly from nowhere, I heard a voice say "Hi there. Would you like to see a golden eagle?” I was startled to see a very old man sitting on a tree stump beside the trail. Being a wildlife enthusiast who has never seen a golden eagle, I replied “Sure!” without hesitation. As we slowly ascended the incline, he reminisced about his time managing a Canadian logging company. He spoke fondly about various tree species and proudly mentioned his position on the board of the Nature Reserve. (Whether his newfound ambition of tree preservation is an irony or an absolution I will never know). After several minutes we reached the crest of the hill and, sure enough, in the highest branch of the tallest tree at the highest point of the park sat a golden eagle. My first golden eagle.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
I would be delighted to be asked to participate in either location. If given the choice I would prefer the Antarctic because I had the privilege of traveling to the Arctic in 2017 with National Geographic and part of my research interests lie in comparing what I learned in the Arctic with what I hope to learn in the Antarctic region. I am also more limited in the spring and summer months when it comes to my professional commitments which is another reason the Antarctic season is preferred.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer a shorter expedition for the sake of missing less time in my classroom but I am absolutely open to spending more time in the field and would be honored to be considered for any expedition. The only dates I am unable to participate in would be during the months of June or July due to previous professional commitments.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)

I am most interested in learning about the actual process of conducting scientific research in extreme environments. How do scientists secure funding for their projects? What challenges do they face in the field and how do they overcome those challenges? How do they draw conclusions from the vast amounts of data they collect and how do they communicate those conclusions to various audiences? What misconceptions do people have about what they do and what do they wish people understood about their work? What areas of research would they suggest my students pursue if they want to be scientists in the field in the future? My interests are in the process itself so I would be honored to participate in any project. With regards to personal interests I love the study of cryospheric systems. My uncle is a geologist and his research in this area inspired me from a young age. I am also intrigued by any study involving wildlife because that was a large part of my research when I was in Arctic Svalbard and I would love to continue that inquiry. Finally, anything involving remote sensing would be particularly applicable to what I teach in my geography courses.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words

maximum)
n/a

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
Prior to becoming a teacher I was on staff at an outdoor adventure camp for high school students. I was Wilderness 1st Aid certified (currently out-of-date but I would be willing to re-certify). I grew up in the Colorado backcountry so I have extensive camping and backpacking experience, some rock climbing experience, and I participated in various basic hunter/firearms safety courses.

b. Provide a basic statement of your general health and physical condition.
I am in excellent physical health. I eat a healthy plant-based diet, I am a trail runner, and I exercise almost every day. The only medication I take is a preventative medication for migraines.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I utilize a PC and Microsoft applications (word, powerpoint, excel) and the Google platform (Google docs, Google Forms, etc…) daily. I am required as a part of my job to be aware of and trained on new applications and technologies frequently and I am typically able to catch on very quickly. I was trained to use ESRI a couple of years ago. As a part of my participation in Teachers for Global Classrooms in 2013 I created a digital online global education resource guide for my colleagues and during my training with National Geographic I learned how to use 3D cameras and other technologies to capture and communicate our field experience.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Our school encourages a paperless classroom so I use a variety of digital tools in my work. I also taught online courses for a local university so I am very familiar with teaching through Blackboard and utilizing digital resources for student learning. I've been incorporating digital learning in both my undergraduate course and my high school courses extensively for the last 8-9 years.

e. List any additional skills or information that you wish to be considered.
I am familiar and comfortable with equipment used for backcountry exploration due to my time as an adventure guide in Colorado and Utah.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
n/a

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Wendi Pillars

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
I suggest getting a foot into the AP Reading where thousands of teachers gather each summer.

12. References

Reference 1

Name Dr. Bridget Gorokhovsky

Title and affiliation Assistant Principal, Ravenwood High School

Email Address bridget.gorokhovsky@wcs.edu

Phone Number 615-472-4800

Reference 2

Name Mr. Lance Wilson

Title and affiliation Assistant Principal, Ravenwood High School

Email Address lancew@wcs.edu

Phone Number 615-472-4800

Reference 3

Name Kurt Butefish

Title and affiliation Director, Tennessee Geographic Alliance

Email Address kbutefis@utk.edu

Phone Number (865) 974-4841

2020-2021 PolarTREC Educator Application

Christina Norberg

1. Contact Information

Name: Ms. Christina Norberg

Email: cn.norberg@gmail.com

Home Address:
1151 Rose Avenue
PASADENA, CA 91107 US

Home Phone: 6313320279

Cell Phone : 6313320279

Institution Name: Animo Ralph Bunche High School

Institution Address:
1655 E 27th St
Los Angeles, CA 90011 US

Institution Phone: 323-232-9436

Classroom/Office Extension: N/A

Institution Fax: N/A

Institution Website: https://ca.greendot.org/ralphbunche/

Other relevant websites:

Supervisor's Name: Ryan McDonnell

Supervisor's Email Address: ryan.mcdonnell@animo.org

2. Demographic Information

a. Gender: Female

Race: Hispanic or Latino, White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): K-12, public, urban, low socioeconomic status, high crime area

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 650

f. School Ethnicity:
0% % - American Indian or Alaska Native
0% % - Asian
0.1% % - Black or African American
97.9% % - Hispanic or Latino
0% % - Native Hawaiian or Other Pacific Islander
0% % - White
2% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 100%

h. Average class or audience size 34 students

i. Total number of students/audiences you teach in a year 200

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Start date of school year: First week of august Christmas break: starts Sturday before christmas, lasts for two weeks Spring break: two weeks off before easter End of school year: First week of june

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Physics and Philosphy (double major)

Bachelor's Degree (Minor): Education

Masters Degree (Discipline): Teaching

PhD Degree (Discipline): N/A

Other Degree:

b. How many years of education experience do you have?: 6

c. How many years have you been working at your current institution?: 6

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Teaching Credential, Highly Effective Teacher (3 years in a row)

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary Physical Science, Secondary Physics

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I am motivated to apply to this program due primarily to my love of the natural world and my love of science. I have created programs at my school in South Central Los Angeles to provide students with free opportunities to get outdoors to do science, to do trail service work, or to simply connect with the natural world around them. Through my own involvement in the PolarTREC program, I will be able to bring my experiences back into the science classroom to connect what is seen in the Arctic/Antarctic to our own activities in Los Angeles, and also draw comparisons from the way climate change can be seen at the poles versus closer to the equator (where we are located). My love of science motivates me as a science teacher and a passionate science enthusiast. Through my involvement in this program and by working directly with a field scientist, I will be part of first hand research and experimentation. This will help my efforts to transform my classroom into a true place of scientific inquiry and scientific thinking, where science is valued, understood, and used to solve the problems facing our globe.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

One way that I will share this experience in my classroom is through incorporating the skills and knowledge I gain into the lessons I teach. For example, given the program description I anticipate much of our research centering around climate change and subsequent impact on ecosystems in the Artic and Antarctic regions. Through my involvement in this program, I will be able to bring first hand data to the Environmental Science class at my school for student analysis. This will act as a jumping board to future student research towards finding solutions and taking action towards changing the “status quo" in areas such as Los Angeles. In addition, as the advisor and founder of my school's Wilderness Leadership Club, I will plan lessons surrounding the research and experience I gain through this program to reach even more students outside of the grade level I teach. Finally, I will dedicate a section of my classroom to information about the Arctic/Antarctic regions and consistently link our science content back to these regions.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

When I return I will present my findings to the teachers and staff at my school to emphasize the interconnectedness of all Earth's ecosystems, and encourage them to advocate within our own community by understanding the connections between our own actions taken in Los Angeles and the health of the Arctic/Antarctic. Although my school already has a strong environmental science program, there are many actions taken by both staff and students that are against the health of our oceans and the health of our planet. Through the lens of climate change in the Arctic/Antarctic, we will identify instances within our own school where we could be more environmentally friendly and enact change to pursue these goals. As a group of motivated educators, we will be able to turn these messages into action, and as each teacher brings them into their own classroom the impact on students will increase significantly. Within my personal communities, I will share my experience as a means to impart the urgency of action and the importance of environmental justice as a guiding force in all of our lives.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Usually when planning a lesson on a new and complex topic, I will follow the 5E model of planning. The "Engage" of this 5E model is most often a direct connection between the end goals of the lesson or unit, and the lives/experiences of the students. By combining culturally relevant practices and good science teaching, students become invested and engaged in the science. For the "Explore" I prefer to choose an student-driven inquiry based activity where students interact with the content creatively and with a scientific mind. I have found that this is one of the most effective methods of building science understanding, by making the learning relevant and giving the students ownership of their learning. My preferred style is student driven – for example, I designed curriculum for Yosemite National Park where students acted as scientific researchers gathering field evidence to assess the impact of climate change on Yosemite. This learning process was entirely student driven, through the use of scientific questions and field cards. By taking students through this process, I have consistently seen the impact of student centered learning on retention and perhaps more importantly, motivation.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

One strength that I would bring to the PolarTREC program and the research team is my proficiency in science. I have a degree from Cornell University in Physics which equips me to understand scientific language, processes, and research. In addition, I

have taught multiple types of science at my school (Physics, Integrated Science, and currently Biology) which allows for a wide knowledge of both the life and physical sciences and their applications in the classroom. My second strength is that I am a hard worker who is dedicated to achieving my goals. No matter what the research demands, I will be certain to rise to the challenge and support my colleagues along the way. Additionally, my extensive outdoor knowledge is an asset for any field research team. I have medical training for the backcountry (WFR) and have led many trips of students into the outdoors. My confidence not only being outdoors but also leading groups outdoors will allow me to assess risks, ensure safety, and also take action if needed while working in the outdoors. My final strength is my enthusiasm – I am a passionate advocate for nature and wildlife, and enjoy nothing more than experiences related to animals and the ecology of diverse landscapes.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Throughout my professional experience, I have consistently worked as part of a well functioning team. Frequently in my current role as teacher, I have recognized where a team based solution was needed, and took the initiative to create that team. One example of this comes from my early years teaching, when we were facing a large number of challenging students in one grade level. I was able to bring together the teachers of that grade level to create common practices across our classrooms to bring consistency and support to students. By the end of that year, behavioral concerns were reduced by almost 100% in our classrooms and many of our initially challenging students were finding success. Another example comes from my experience as a backpacking instructor in Shenandoah National Park. As a member of a six person team organizing and then leading a backpacking trip for international high school students, this required a lot of effective communication, compromise, and a true focus on the goal: the experience of the students. I have found that I work best in teams and prefer working with others, and have learned to prioritize team goals over my own individual goals for a team to find success.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

On Friday, I had the incredible experience of hiking the incomparable Paradise Valley trail in Kings Canyon National Park. Picture the scene: You're walking over 100-million-year-old granite. You're following the thunderous King's River, which every so often spills over into a magnificent waterfall so powerful that the mist obscures your view. And then you finally make it to your campsite, your home for the next 48 hours. You finally get to eat your lunch and rest your legs. This trail had so much to give, and just when I thought it had given its all – a bear appeared. And not just any bear – a golden black bear cub! I was careful, since black bears are most dangerous when a mother is with cub. I watched as the cub tramped through the woods, and as I turned to look back at camp, I noticed its mama bear walking directly towards our neighbor's messy campsite and poorly stored food. I shifted to position myself close to the poorly stored food – no bear was going to become acclimated to human food on my watch. Thankfully, the mama bear changed course, walked towards its cub, and they both disappeared together into the woods.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am fine with either option (they are both AMAZING) but would prefer to miss less school time with my students if possible. My summer corresponds most closely with the Arctic field season, but I will certainly arrange with my principal all necessary components if chosen for an Antarctic field position.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
If my expedition is during my school's summer (June and July) I would love to have a six week program, since this program will be such an incredible experience and I want it to last as long as possible! If the expedition is during the school year (August - May, I would prefer a shorter amount of time since I will be missing my classes for that entire duration. There are no dates or periods of time when I am not able to participate in a field expedition.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Ecology, environmental science, and physics are the fields that I am the most interested in. I am very interested in learning more about the evidence that can be found in the Arctic/Antarctic regions on how climate change has impacted ecosystems and organisms in those regions. I am a passionate advocate for wildlife and would love to do research related to animals living in these regions. I am also very interested in how certain populations of people are disproportionately impacted by climate change and I would love to learn more about how environmental justice relates to the research being done near the poles – I see a clear connection between this project, and the work I do at my school in Los Angeles. Additionally, during my summer spent working in Yosemite I learned much about the glacially carved valleys and would love to do research related to the glaciers in these regions and how they have shaped the land. Finally, I absolutely love atmospheric effects (like auroras) and would be interested in learning more about what they can tell us about the nature of earth's interior and magnetic field.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No, I am not applying to work with a specific researcher.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am a trained Wilderness First Responder (a 9 day intensive training taken through NOLS to learn how to respond to medical emergencies in the wilderness without access to cell phones or quick access to medical care). In addition to my own experience hiking and backpacking, I have led my current school on 14 trips that involved hiking, camping and backpacking. I have also co-led a group of international students on a 7 night backpacking trip in Shenandoah National Park where we successfully managed a student injury in the backcountry.

b. Provide a basic statement of your general health and physical condition.
I am in good health, I exercise regularly, and am consistently hiking and camping outdoors with students and on my own.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am familiar with both Mac and PC operating systems – my personal computer is a Mac, and my work computer is a PC. I would say I have the same high level of familiarity with both systems. I am very competent with computers, given that the majority of my work is done using computers.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use a laptop computer every day for work, and typically am working on Google Chrome (using the google apps such as Slides, Doc, Sheets, etc.). I also am proficient in Microsoft word (where I design my classroom resources) and PowerPoint (where I design my daily presentations). I have a lot of experience and a high proficiency with digital cameras. One of my primary hobbies is photography, and I have owned a digital camera for the past 15 years. I currently have the Canon 5D Mark IV, and since this is a complex DSLR I can apply these camera skills to a wide range of other models. I also am proficient in photo editing software (on my computer I use a program called “snapheal”) and I have made multiple videos in the past using video editing software.

e. List any additional skills or information that you wish to be considered.
I am nearly fluent in Spanish, I am skilled at designing worksheets and flyers to disseminate information, I am good at public speaking, and I enjoy building a supportive atmosphere for my colleagues.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL
Facebook - California Association for Outdoor and Environmental Education (AEOE)

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Christine Thai

Title and affiliation Teacher, former colleague

Email Address thai.christine@yahoo.com

Phone Number (562) 857-3033

Reference 2

Name Brian Gonzalez

Title and affiliation Teacher, Current Colleague

Email Address bgonzalez@animo.org

Phone Number (626) 825-3519

Reference 3

Name Erika Castaneda-Flores

Title and affiliation Teacher, Current Colleague

Email Address ecflores@animo.org

Phone Number (323) 445-2299

Jason Nord

1. Contact Information

Name: Jason Nord

Email: jason@prairiehill.com

Home Address:
2829 Arlington Avenue
Lincoln, NE 68502 US

Home Phone: (402) 477-9315

Cell Phone : NA

Institution Name: Prairie Hill Learning Center

Institution Address:
17705 South 12th Street
Roca, NE 68430 US

Institution Phone: (402) 438-6668

Classroom/Office Extension: NA

Institution Fax: (402) 438-6668

Institution Website: www.prairiehill.com

Other relevant websites: NA

Supervisor's Name: Jordan Hope

Supervisor's Email Address: jordan@prairiehill.com

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): We are a small school located on an old farmstead, about ten miles south of Lincoln, Nebraska. Our youngest students are eighteen months old. Our oldest students are fourteen years old. We receive students from Lincoln, as well as from the smaller surrounding towns and rural areas. Our students are primarily middle class to upper middle class.

d. Type of School (or students you work with): Private

Other Type of School We are a Montessori School with a strong focus on environmental sustainability.

e. What is the population of your annual audience or school (estimates are fine) 100

f. School Ethnicity:
1 % - American Indian or Alaska Native
7 % - Asian
2 % - Black or African American
1 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
89 % - White
0 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: NA

g. Percentage of students who receive free or reduced lunch: NA

h. Average class or audience size 18

i. Total number of students/audiences you teach in a year I work eight hours a day with a small group of middle school students— usually between nine and fifteen students per year. I regularly provide supplementary education to between fifteen and twenty students between the ages of nine and twelve.

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation

periods. i.e. Christmas break, summer break, etc.

Our students beneath the age of seven attend school year-round. For our older students, we begin school in the middle of August and end at the end of May. We have a holiday break beginning around December 20 and ending around January 5. We have a spring break in the middle of March.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Philosophy and English Literature

Bachelor's Degree (Minor): NA

Masters Degree (Discipline): Education

PhD Degree (Discipline): NA

Other Degree: NA

b. How many years of education experience do you have?: 16

c. How many years have you been working at your current institution?: 16

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Montessori certification through Association Montessori International National Geographic Grosvenor Teacher Fellowship CPR and First Aid certification

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Elementary Education, Middle School English/Language Arts, Middle School Math, Middle School Science, Middle School Social Studies

Other Subjects I also teach Middle School Art and Middle School Theatre.

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

True education is born out of awe, out of a craving to explore and immerse oneself in the mysteries of the universe. The polar regions fill me with that awe. This passion, and the willingness to follow it, infuses and inspires a classroom. When a teacher pushes their limits— whether that be physically, culturally, or intellectually—they set an example for their students. I hope that PolarTREC can teach me more about how the scientific method is employed in the field so that I can bring that learning, paired with this sense of wonder, into my classroom. I want my students to learn scientific knowledge and techniques while feeling amazed by the wonders of science. I want them to dream about the adventures that they could go on as adults, while pondering the different ways that they could push human understanding in new directions. I want them to understand, through my example, that education overall, and science in particular, is a form of exploration that all of us should embrace and hold on to for the entirety of our lives.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I work in an environment where I am responsible for teaching all disciplines. An opportunity like this could affect my work in many ways. From a scientific standpoint, I encourage students to plan their own experiments, helping them to understand that science is a discipline, not just a set of facts to memorize. They plan out their own independent and dependant variables, keep and analyze data, ponder what conclusions they can draw from the data, and plan follow-up experiments. Working with professional scientists in the field would help me to fine tune my own understanding of these methods and impart that knowledge to my students. This year I have been combining science education with activism, helping my students to understand global climate change so that they can take part in local efforts to educate the public and push lawmakers to take action. Personal experience in the polar regions would help me to assist students in their advocacy, making them stronger agents for change. I think interdisciplinary work is very important. The scientific opportunities offered by PolarTREC could lead to creative writing prompts, art projects, video editing, speech and debate projects, or ideally, student-led projects that combine a variety of skills.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I would begin by planning educational outreach for the teachers at my school. By planning activities at our inservice meetings, I could provide them with ideas for how they could incorporate what I've learned into classroom presentations. Such presentations would also offer an opportunity for me to visit their classrooms periodically, helping to reinforce the work that they are doing with my own firsthand experience. As a Montessori school, we also have many avenues for collaboration with similar schools in our area. I'd be happy to plan outreach events aimed at educating and supporting teachers from those other schools. More broadly, I would be excited to explore the possibility of presenting at one of the larger Montessori conferences that take place throughout the United States. I already have connections with activists working with different environmental organizations in the area, and I envision planning events talking with their current membership—and the community at large—about how my experiences with PolarTREC dovetail with larger environmental issues. In the past I've helped to organize public educational

opportunities at coffee shops and churches. I'd be happy to organize opportunities for the general public to hear me speak about my experiences with PolarTREC.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

One of the primary jobs of a middle school teacher is to translate complicated and profound topics into terms that younger people can understand. Just yesterday I was teaching my students about the basics of DNA. I explained that the four nucleotide bases form a sort of code that, in the human genome, is around three billion "letters" long. A twelve year old can write the number three billion, they can do math with it, but in many ways the number still doesn't make sense. So we started doing some calculating. We quickly found out that if we were to print a four letter code into books and stack them on our classroom's bookshelf, it would take 46 of our bookshelves to fit all of the data that is stored in the nucleus of each of our cells. With further calculations, we discovered that if we printed this code in a straight line, it would stretch from New York City to Galway, Ireland. Examples like these help to explain complicated topics while communicating a grandeur and beauty that leaves the students eager and excited to learn more.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Though my education has been primarily in the humanities, I come from a family of scientists. (My brother is a physicist at the John's Hopkins Applied Physics Laboratory, and my sister is a biophysicist at the French National Center for Scientific Research.) This background has provided me with a great love of science coupled with a desire to communicate its beauty and depth to those who find it opaque or unapproachable. Having been steeped in science since birth, I excel at communicating scientific topics to a general audience, and I would love the opportunity to help bring a field research team's work out into the larger world. Furthermore, I think teams work best when they possess a wide variety of viewpoints and perspectives. I think my training, as somebody whose studies have focussed on the humanities, could add valuable variety to a research team. Finally, I'm not afraid to get my hands dirty or take part in repetitive labor. I realize that the day to day work of science can sometimes be monotonous. I'm willing to work hard at whatever job is necessary to complete the research.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

My work is highly collaborative. I work well to help facilitate agreement and push projects forward. For thirteen years, I volunteered to represent our teachers on our school's board of directors. This work required cooperating with people from a variety of backgrounds—lawyers, accountants, business leaders, etc.—while constantly maintaining communication with the teachers I represented. My work on the board taught me how to work well with people whose training and expertise has led them to see the world in a variety of different ways. In my classroom, we make many decisions in a democratic manner, where students discuss and vote on everything from classroom rules to due dates for assignments. A large part of my work involves helping younger people understand other people's perspectives and cooperate together to make decisions. As an example, every spring I help two classrooms come together to perform a Shakespeare play. We form subcommittees to handle everything from lighting and sound to costuming and makeup. The whole project is collaborative—the students learn everything from public speaking to carpentry, but underneath it all is the constant practice of how to work as a team to achieve a common goal.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Today is the day— September 20, the Global Climate Strike. As we gather on the rug in the center of our classroom, the children's energy is palpable. Smiles are large and voices chatter, excited that the moment is finally here. They've been preparing for weeks: analyzing the rhetoric of Greta Thunberg, pouring over books and articles about climate change, communicating with the college activists who are spearheading the march, brainstorming the best slogans to put on their signs, then making their ideas real with tempera paint, markers, and colored pencils. After a short trip downtown, we arrive at the UNL campus. The crowd is already huge— perhaps a thousand high school and college students gathered near the Student Union. My students are amongst the youngest people there. Brittni, the leader of the college activists, approaches us with a group of her friends. After high fives and hugs she asks my students if they'd be willing to lead the marchers on their way to the state capitol. Stunned faces transform into beaming smiles. In what feels like an instant my students are marching, chanting, leading a parade that stretches for blocks while leading all of us towards a better future.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
I've been lucky enough to travel to the Arctic twice already. Though I would love to experience this region with a scientist that knows it well, I'd prefer a chance to work in the Antarctic so that I can bring a personal knowledge of both of the polar regions back into my classroom.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I could make myself available at any time, and would prefer a longer expedition, as it would provide me with more experiences to bring back to my community. My school supports my application completely, and will make sure I am available for any opportunity that presents itself.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Science in any form fills me with joy. I love to teach astronomy and physics. They open up the universe for children in beautiful ways. The fact that time is a fourth dimension, that black holes can be billions of times more massive than our sun, that looking through a telescope is actually looking back in time—all of this fills me, and my students, with awe. I am passionate about teaching climate change, both because the science is fascinating, and because I believe we all have an ethical duty to educate ourselves and act. We have very little time left to fix our mistakes; educators must know this science so that we can help advocate for our students. They need to have a stable planet to call home. Everything about animal life fascinates me—from ecology to questions about cognition or the potential for non-human culture. We are surrounded by millions of amazing species, and understanding them helps us to understand the brilliant potentialities of life. That said, I would be thrilled to have a chance to explore a branch of science about which I know less. I love finding new passions and obtaining new knowledge.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I am somewhat interested in this subject area

Other Areas of Scientific Interest
As I noted above, I'd be thrilled to take part in any research that ties into climate change related issues. My students' activism, and their desire to fully understand the science, inspires me greatly, and I'd like to be able to support them in whatever way I can.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have extensive outdoor experience. This past summer, my sister and I planned and executed a self supported eleven day backpacking trip through the Greenlandic tundra, starting at the ice sheet and working our way to the ocean. I've planned and carried out numerous wilderness trips of one hundred miles or more through Europe and North America. On these expeditions, I've camped in a variety of adverse conditions, including blizzards, thunderstorms, and hailstorms. I've taught backpacking and basic camping skills to children between the ages of nine and sixteen for the last sixteen years. I've led student expeditions in eight different states, including numerous trips were we have spent five or more days in the backcountry. I have successfully completed a backpacking course run by the National Outdoor Leadership School, have trained in wilderness first aid with the same organization, and plan to take my wilderness first responder course this summer. I have spent time in both a canoe and a sea kayak. I feel comfortable with either a rifle or a shotgun.

b. Provide a basic statement of your general health and physical condition.
I am in good physical health. As I mentioned above, I regularly participate in longer hikes where I am carrying large amounts of supplies. I have no known health issues that would interfere with me going on an expedition. I would be happy to train in advance to meet any requirements expected for the expedition.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am most familiar with PCs, and would consider my skill level to be intermediate.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I regularly use a laptop computer and an iPad for my job. I am proficient in the Microsoft Office suite, as well as Adobe Creative Cloud (Photoshop). I teach digital photography in the classroom, including the use of Photoshop. I also teach PowerPoint, Word, and Excel.

e. List any additional skills or information that you wish to be considered.
I have published two short history books targeted towards middle grade readers—The Silent Sentinels and To Dare to Tell the Truth: The Story of Daniel Ellsberg. I plan to someday write science books for younger readers. I have used a variety of basic

power tools and am quick to learn material skills. Every year for our school play I help my students build a stage and backdrop from scratch, then disassemble it again when we are finished.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni.

Program Information NA

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
NA

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

The president of our school's board of directors, Jill Fox, has lived in Antarctica, and drew my attention to the PolarTREC program.

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Jordan Hope

Title and affiliation Executive Director - Prairie Hill Learning Center

Email Address Jordan@prairiehill.com

Phone Number (402) 438-6668

Reference 2

Name Eileen A. Hebets

Title and affiliation Professor, School of Biological Sciences, University of Nebraska-Lincoln

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Phone Number (402) 450-9057

Reference 3

Name Mandie Cody Schadwinkel

Title and affiliation Assistant Head of School - Montessori in Redlands

Email Address Mandieschad@gmail.com

Phone Number (402) 570-6815

Sophia Oller

1. Contact Information

Name: Sophia Oller

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Home Phone:

Cell Phone : 8585317541

Institution Name: High Tech High International

Institution Address:
2855 Farragut Road
San Diego, CA 92106 US

Institution Phone: (619) 398-4900

Classroom/Office Extension:

Institution Fax:

Institution Website: https://www.hightechhigh.org/hthi/

Other relevant websites:

Supervisor's Name: Jade White

Supervisor's Email Address: jwhite@hightechhigh.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My primary audience is 10th grade students. I also advise groups of 9-12th grade students, and my high school is part of a K-12 network of sixteen charter schools. The schools use a zip code lottery system to recreate the diversity of San Diego county on our campus; the majority of our students come from an urban environment, but within that designation we have an extremely large spectrum of student experience, from living and commuting from Tijuana, Mexico, to the affluent suburb communities in La Jolla, California. Our schools are project-based, meaning that teachers develop projects (spanning weeks to years) that guide instruction, rather than textbooks and a list of standards.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 400

f. School Ethnicity:
1% % - American Indian or Alaska Native
10% % - Asian
9% % - Black or African American
47% % - Hispanic or Latino
2% % - Native Hawaiian or Other Pacific Islander
29% % - White
2% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 47%

h. Average class or audience size 26

i. Total number of students/audiences you teach in a year 150

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Approximate start date: 12 August 2020 Thanksgiving Break: 23-27 November 2020 Winter Break: 21 December 2020 - 4 January 2021 Spring Break: 22 March - 2 April 2021 Approximate end date: 18 June 2021

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Bachelor of Science - Chemistry

Bachelor's Degree (Minor): Education, Theatre, French Literature

Masters Degree (Discipline): Master of Education - Secondary Science Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 9

c. How many years have you been working at your current institution?: 4

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
National Geographic Certified Educator Dean's Undergraduate Award for Excellence in Chemistry/Biochemistry Research (UCSD)

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Chemistry, Secondary French

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I’m motivated by the interconnectedness of our world and I want to find ways to emphasize this in my teaching. Although my title is “Chemistry Teacher,“ I try to keep my curriculum scientifically open and guide my students to see connections between all their classes: to understand biology, we need chemistry; to understand chemistry, we need physics. We need literacy skills to help us understand and analyze scientific articles, and we need math skills for our chemistry calculations. We need to get outside the walls of our classroom to see the concepts and principles of our chemistry class in action. PolarTREC is a way for me to gain fresh ideas for how to teach this interconnectedness as well as hone my research skills, my science communication and storytelling skills, and connect with other educators and researchers as global resources in the years to come. Interacting with researchers on the leading edge of scientific discovery and bringing their work back to my students would be a powerful way to show the students how we ask and answer questions about our world - and inspire them to be the next generation to take up the inquiry!

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I am so excited for the opportunity to share a PolarTREC experience with my students and colleagues - I feel as though I'm bursting with ideas already, and I know that each day on the PolarTREC journey I'll uncover more ideas that I can't even anticipate yet! First off, since I work at a project-based (PBL) network of K-12 schools, I'd plan to make my experience into a project for my Chemistry students and share my project exemplar with the entire staff (over 400 people) as a way to use our personal teacher adventures to guide the development of important school projects. Many teachers already do this with museum trips or art projects they've seen, but there are very few projects based on travel/research in other parts of the world, and I believe I could develop and share a way to make this happen. For my students, I specifically want to create chemistry labs based on my experiences with the PolarTREC researchers' methods. Finally, I want to offer myself as a portrait of a woman in a STEM field that continues to push herself, especially as a role model for my female-identifying students, since the vast majority of their STEM teachers are male (especially in college).

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

At a project-based school, every project we do includes an aspect that is shared with our community; for instance, when studying the chemistry of food, we created and hosted a campus market of homemade international foods. I'd love to begin a similar, small-scale version of PolarTREC (since I'm based in sunny San Diego, maybe solar instead of polar?) - with our bay and ocean access; perhaps we could partner with local beaches or boat companies to offer onshore and offshore science experiences for local students. Also, at our High Tech High organization, a lot of our professional development is top down - being asked to attend conferences or using in-house colleagues as local experts. I think could inspire the rest of the faculty to think about their passions and how to invigorate or explore them as part of professional development. I plan on continuing the reflection through journaling and blogging not just as part of the PolarTREC requirement but as a weekly professional practice. I'm only a decade into my teaching career - I have so much teaching still to do, and I hope that a PolarTREC experience will guide my next several decades of student inspiration.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I focus on differentiation and connections. By blending lectures, practice, labs, modeling, readings, etc, I try to make sure every student in my classroom has multiple points of access to the material. Also, I cultivate a positive, open, cheerful attitude and hold weekly Office Hours so if a student's needs aren't being met, they feel comfortable approaching me and asking for help. Keeping an open heart and mind is so vital for working with any audience. When introducing chemistry concepts, I try to bring in articles, technology, or methodologies that are up to date in order to keep my class aware of the cutting edge science that is happening every day. Lastly, I try to make my class relevant in a very local sense, getting outside the classroom (such as participating in the California Ecoblitz), bringing in community members for talks/activities, and partnering with local university researchers (such as the UCSD Neural Engineering and Translation Labs). When working with adults as my audience, I let them know ahead of time what our goals are, solicit recommendations, keep notes, and stay on task, but I also allow space to connect personally and honor each other's opinions and expertise.

e. Describe the particular strengths you would bring to the PolarTREC

program and to a field research team. (200 words maximum)

Working with teenagers every day, I've truly honed the abilities to be flexible, social, adaptable, and patient. I find myself intuiting if someone has had a good or bad day; if needed, I can act as a personal mentor or push their academic thinking to a new level if they are feeling ready. As an educator, I'm reflective, energetic and driven. I'm proud of the deep chemistry knowledge I gained at university and continue to research and educate myself on my own. As part of my preparation for this application, I read the PolarTREC evaluations, and part of the success of the program is outreach to populations that wouldn't normally hear about polar science and adding polar science topics to curriculum. I intend to continue with this work at my school, especially with our diverse population in a non-polar region. I also noted in the evaluation that students didn't show a statistically significant increase in career interest or science efficacy - I'd like to work with our college advising team and science department team to focus on these as school growth areas.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I like to join a team by getting to know everyone and evaluating the team's needs. Does the team need an organizer? I've been partnered with teachers new to High Tech High for the past three years, and I happily serve as team organizer, scheduling parent conferences, sharing guidelines, explaining procedures, and organizing project timelines. Does the team need a positive communicator? Last summer, I participated in a two-week seminar to teach Buddhist monks and nuns about chemistry and neuroscience. I worked not only as a teacher, but stepped into a role of coordinating the day's activities by checking in with the program director about feedback, the other teacher about connecting our lessons, and the program evaluator about student interview timing. It ran smoothly and everyone had a great time! Does the team need someone to step up and be a leader? Our school's science department had loosely structured meetings that inevitably ended up in lengthy tangents. This year, I've coordinated and led our meetings, and as a result we have a new department vision statement, a cross-grade project, a three-day PD trip, and developed two yearlong goals with check-ins.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I think I wore at least four out of my five “teacher hats” today! Currently, my students are working on a project where they perfect and perform a chemistry demo with an accompanying presentation that analyzes the demo and connects it with real-life applications. This is a fun project for me as well - each day, I see students practicing their demos, and the classroom is a great blend of chaos and (safe) chemistry. For example, we discussed why the room smelled like marshmallows on a campfire when a student did a sugar combustion experiment and watched as a solution changed from orange to clear to black and back again. I guided students through the process of taking what they saw in their reactions and writing it, using symbols, in a chemical reaction equation that they’ll share in a slideshow with the class. Next, I drove directly to my previous school, since I’d been invited to speak to their Professional Development Team. We discussed project-based learning and shared some thoughts about how to emphasize school values throughout the year. While this may not have been the most exciting day, it was deeply professionally satisfying!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
Either - since my motivation is to find interconnectedness between high school science subjects and experience working with researchers, I would be happy working on any scientific inquiry.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
My yearly schedule is open and I have no preference in expedition time - I'm happy with any length of time!

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
First, I’m interested in the biogeochemical cycles, particularly carbon and nitrogen in the polar regions. These cycles are incredibly complex, yet the actual reactions taking place are simple enough to understand in the 10th grade. This balance of simple/complex means that students can access the material but can also push themselves to deeper levels of understanding and analysis depending on their skill level and choice. I also noticed that one of the PolarTREC expeditions studies neutrinos from cosmic events (IceCUBE and ARA). I find that my students are fascinated by nuclear chemistry and love the mental gymnastics required to understand the nuclear processes that produce particles like neutrinos. Lastly, I honestly would welcome the challenge of working with a research team who’s inquiry may not, on the surface, directly relate to my chemistry class. Exploring the connections could lead to such rich conversations and experiences.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
On weekends or school breaks, I enjoy hiking, camping, biking, and kayaking. I have no problem with altitude. I’m a moderately good swimmer, a terrible surfer, and I have first aid training. As part of a school trip several years ago, I went through outdoor survival training and have some basic outdoor survival skills.

b. Provide a basic statement of your general health and physical condition.
I’m an active, healthy, strong adult in her thirties.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
While I mainly work with Mac computers and would consider myself quite adept, there are several PCs and Chromebooks at our school, so I’ve become proficient in those as well.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Since I generally use a Mac at work, I'm proficient in most applications that come installed, such as iMovie, Pages, etc. Most of our work documents are stored in Google Drive, so I frequently use the Google suite of products like Sheets, Forms, Slides, etc when creating activities, assignments, or communicating with staff. Occasionally I will use installed software on the computer like Word, Excel, Numbers, Keynote, etc. When not at work, I am familiar with DSLR and SLR cameras and do some photography and simple photo editing. Very rarely I've used Illustrator or Photoshop to work with students on final products of posters or presentations. For some summer jobs, I've used Dropbox or other cloud storage applications to coordinate with colleagues.

e. List any additional skills or information that you wish to be considered.
I speak French, and I'm proficient in drawing/sketching (my minor in Theatre was focused on set design). I'm very organized and efficient; if you need your car trunk packed, your fridge stocked, your Google Drive streamlined - I'll happy put it in order!

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
I saw information about PolarTREC posted in a forum for National Geographic Certified Educators.

b. Please suggest other places we might advertise this opportunity for teachers
Local teacher training programs - they could pass it along to the teachers at their placements or keep in in mind for when they begin teaching full-time. Or, if they are certified teachers that are adding credits or re-certifying, they would be able to apply right away.

12. References

Reference 1

Name Jade White

Title and affiliation Director of High Tech High International

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Phone Number (619) 398-4900

Reference 2

Name Matt Martin

Title and affiliation Chemistry Teacher, High Tech High Media Arts

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Phone Number 8083518009

Reference 3

Name Bryce Johnson

Title and affiliation Director, Science for Monks & Nuns

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Tammy Orilio

1. Contact Information

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5537 Parade Place
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Home Phone:

Cell Phone : 561 504 0314

Institution Name: Marjory Stoneman Douglas High School

Institution Address:
5901 Pine Island Road
Parkland, FL 33076 US

Institution Phone: 754 322 2150

Classroom/Office Extension:

Institution Fax:

Institution Website: https://www.browardschools.com/stonemandouglas

Other relevant websites:

Supervisor's Name: Randi Peskin

Supervisor's Email Address: randi.peskin@browardschools.com

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Primary audience is 11th & 12th grade students at a public high school in Broward County, FL. The school is in the northwestern suburbs of Fort Lauderdale, in a middle-class to upper-middle class area. The majority of students have access to some sort of technology, whether it be a smart phone and/or computer (laptop or desktop) at home. Those without technology at home are encouraged to use computers in our school's media center, or laptops that individual teachers may have for student use.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 3200

f. School Ethnicity:
0.4% % - American Indian or Alaska Native
6% % - Asian
12% % - Black or African American
21% % - Hispanic or Latino
0.1% % - Native Hawaiian or Other Pacific Islander
58% % - White
2% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 24%

h. Average class or audience size 32

i. Total number of students/audiences you teach in a year 205

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Teachers report: August 12, 2020 Students report: August 19, 2020 Winter Break: December 21, 2020-January 4, 2021 Spring Break: March 22-26, 2021 Last Day of School: June 9, 2021

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): B.S. Biology, State University of New York College at Brockport, 1999

Bachelor's Degree (Minor):

Masters Degree (Discipline):

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 18

c. How many years have you been working at your current institution?: 16

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Marjory Stoneman Douglas Teacher of the Year, 2017-2018 Member, National Science Teaching Association National Geographic Certified Educator (to be completed 12/2019)

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all [webform_submission:values:subjects]

Other Subjects Secondary Marine Science Advanced Placement Environmental Science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

My main motivation for participating in PolarTREC is bringing polar science to my students & community. In South Florida, we're not exposed to much polar science, and I believe this experience could open a whole new world for our community, increasing awareness of the importance of polar ecosystems. I believe that students have a vested interest in content when someone they know is involved in it, so a local teacher immersed in polar science would be a great way to hook them in, and the resulting curriculum developed will maintain their interest. I'd like to work with other teachers (not just science) to create a polar ecosystem curriculum for varoius grade levels and/or content areas. I love the idea of collaborating with other educators to bring this experience to more locations! Traveling to new places, extreme environments, and collaborating with new peers- all of those things will help push me to become a better version of myself. A PolarTREC expedition will help me become not only a more knowledgeable teacher, but also a more worldly person. I believe that hands-on, experiential learning (whether formal or informal) is the best way to learn about a new topic/culture and improve yourself, and I look forward to this experience!

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I'd begin by having students do something similar to a KWL activity on polar ecosystems (but focus on either Arctic or Antarctica, depending on where the expedition is) to gauge their present knowledge levels. I have the benefit of no set curriculum in my marine science classes, so I can take time and delve into things- like Antarctic pinniped diving adaptations, or sea ice coverage in the Arctic. Ideally, I'd like to develop a curriculum for both marine science classes (upperclassmen) AND environmental science classes (underclassmen) that revolves around the PolarTREC expedition. Having both levels of classes learning about polar ecosystems would almost be like scaffolding, as they could cover the basics in their freshmen class, and then get into more details when they take marine science as upperclassmen. As upperclassmen, they'd already have a base knowledge and we could go into much greater detail. I would definitely want to get the researchers involved in the curriculum development and deployment- for both their expertise and "cool" factor.

The students would love to talk to scientists and see what they do on an average day. We could do this either through video chats or in-person visits. There are so many ways to get students involved & excited about polar science!

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

To share the experience even beyond my students, I'd begin by using my professional networks, which include district-level groups, national online teacher groups, and local media. Sharing in my networks will get more groups signed up for webinars and following the expedition, and hopefully will get them to tune in for other expeditions as well. Reaching out to local media contacts (and there are plenty looking for a good news education story) will allow me to (hopefully) get a short news segment (either written or video) to highlight the expedition's mission and objectives- it would also be great to get the scientists involved in the media productions down here as well. Social media will play a huge role in spreading the word, and I am well-versed in using Facebook, Instagram, and Twitter to promote science content. I think that by putting in work pre-expedition, we could really get the regional community excited about a South Florida teacher participating in a polar science expedition.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I like to introduce a new topic by bringing up a related current event- even if students can't immediately make the connection, we discuss to figure out how the news relates to the topic. I break complex topics into the simplest components first. This often requires a review of concepts they've already learned about, and then build up to the complex topic at hand. It takes time, but I'd rather have students take some extra time to fully understand a concept than rush through things just to cover X number of topics. My teaching style has changed recently, as I'm now doing less lecture in class, and doing more hands-on activities to reinforce the concepts they're reading about at home. One thing I've been doing more of is having students create videos as a form of assessment- to wrap up labs or review concepts. Being able to talk on a video means they're able to synthesize all the material into coherent statements, which demonstrates mastery of a subject much better than just a multiple choice question! Student engagement is much higher now that we take class time to do labs, projects, debates, etc. and the students tell me it's one of their only classes they "do stuff" in every day.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

One of my strengths is prior knowledge, in that I'm familiar with field work and am aware of how much planning, organization & collaboration are required for success. Having been part of field research in the past, I won't need as much time to acclimate to the hectic schedule when we get on site- I will be ready to go ASAP!. Another strength is curiosity-- I WANT to learn new things, and participating in a PolarTREC expedition will clearly be a whole new experience for me! I get excited by the idea of being in a new, extreme location, and being able to witness all that it has to offer, both in terms of the science, and the area itself. Another thing I offer to a team setting could be described as collegiality. I look forward to working with people whose area of expertise is nothing like mine (again, going back to my curiosity!). Another huge thing for me is that I want to help facilitate the connection between the scientists and the general public. Scientific communication is becoming more important nowadays, and I look forward to assisting the science team with getting their research out for the general public to understand.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

As part of any team, I can figure out my role quickly- whether it be a leader or follower (or both!) and complete whatever tasks are necessary for the team to be successful. I'm not the type of person to say, "that's not part of my job" when asked for help or if I see someone struggling. When I began working as a deckhand on sightseeing boats in Alaska, I was thrown into unknown territory with a group of others who were in the same boat (literally). We had a senior trainer with us, showing the ropes, but I realized someone had to step up and lead the group of newbies, so I made that choice. It wasn't a direct "I'm assuming leadership" role, but I caught on quickly and was able to share and translate my newly acquired knowledge with the rest of the team. My senior trainer noticed my leadership quickly, and after about a month on the job, recommended me for advancement. Being a team player is especially important in the type of setting a PolarTREC expedition will be in, as there are so many interplaying variables, and I hope to get to experience that some day!

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)
Saturday, 28 September 2019 We are at a workshop in Key Largo, learning about the Florida Bay ecosystem, which is all the water on the west side of the Keys. This ecosystem is home to massive seagrass beds and mangrove forests, both of which are important habitats for juvenile fish and shellfish, which we'll see in person later today. In the afternoon, we snorkeled a seagrass & mangrove habitat in FL Bay, and saw so much life! Upside-down jellies were everywhere (no one got stung!), we counted 5 different species of algae, and tons of juvenile fish darted around. Our instructor collected invertebrates for us to examine back on the boat- we had brittle stars, lettuce-leaf sea slugs, tulip snails, and even a tunicate! Tunicates (AKA sea squirts) look a lot like sponges, but are actually more closely related to humans than sponges, and they get their name because if you squish them, they squirt water! It was a great day out on the water: nice & calm, and I love seeing the things we're learning about IN PERSON! It makes learning so much more enjoyable :)

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
If I HAD to choose 1 location over the other, Antarctica would be my top choice, because it's a place I've always dreamed about, and not many people get the opportunity to go there. That being said, I wouldn't turn down an Arctic expedition, either!

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
No time preference or date restrictions.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
One thing I've become more interested in recently is marine mammals and how they might be affected by climate change- so something focusing on trophic levels in a food web would be intriguing to me. This past summer in Alaska, we noticed far fewer humpback whales than average, and noted that the water temperature was ~8-10 degrees warmer than previous years, so I'm wondering what the correlation is there (if there is any!). I've always had an interest in producers in a food web, as well, so looking at phytoplankton or plants would be good. I tend to focus more on the biological side of things as opposed to physical, but I'm open to learning about something unfamiliar!

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
N/A

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
Outdoor experiences include hiking & camping in environments ranging from Alaska (in the summer!) to Florida (in the winter). I have been working on boats (42ft - 100ft) in Alaska for the past 7 summers, so know the basics of engine mechanics and how to tie lines (among other things). I am First Aid & CPR certified, and have attended "Stop the Bleed" training as well.

b. Provide a basic statement of your general health and physical condition.
I'd say I'm in fairly good physical shape- I am a runner and have completed multiple 10-kilometer and half-marathon races. I lift weights when I can, and also do bodyweight exercises for muscle maintenance. I don't have any physical ailments that would prevent me from participating in any expeditions.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use both a Mac and a PC, and can switch between the two pretty seamlessly. The computers we use at Stoneman Douglas High School are PCs (specifically, Lenovo Thinkpads), but at home I prefer to use a Mac (as it integrates with my phone). I'm not a computer genius by any means, but I can do all the basic tasks required, and then some.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I'm a pretty standard technology user- proficient in Microsoft Office applications (Word, Excel, Powerpoint) and can convert those into Mac form (or vice versa) easily. I have a Recordex Simplicity Touch Panel in my classroom that I use as a projector, a drawing slate, and to cast video from microscopes & other peripheral cameras. In the classroom setting, I use Screencast-O-Matic to record my lectures and share to my YouTube channel, and also use Canvas as a learning management system. I am starting to utilize Canvas more and more for assignments, which cuts down on my paper consumption, which makes me a happy environmental science teacher. My students often use Flipgrid to record videos of themselves for lab conclusions or other formative assessments. Watching a video where the students can actually talk about what they learned is so much better than reading a lab report! I have a basic understanding of iMovie, but I would love to get better at that.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information NOAA Teacher at Sea Program, June 2011 E/V Nautilus Science Communication Fellow, May 2015 JOIDES Resolution Education & Outreach Officer, May-July 2018

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
Teacher research experiences like PolarTREC serve to make me a more effective teacher, because it helps to broaden my knowledge base, and reinvigorates my passion for science exploration and effective communication. Even though I've participated in other professional development programs in the past, I'm always looking for something new to give me that little boost of excitement that I can then share with my students. If I were selected for PolarTREC (and just to clarify, I've NEVER been to either the Arctic or Antarctica before!), my students & colleagues & local people will have a chance to see what's going on in the world far away from here, but have a real CONNECTION to it in the form of a local teacher. Participating in PolarTREC will allow me to expand my professional networks, and that is a HUGE benefit for educators- we are always looking for new ways to present information, and being part of an extended network of educators & researchers will be a boon for my science curriculum. In addition to professional benefits, participating in PolarTREC may allow me to make new friends that I otherwise would never meet, and see some amazing new sights.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Alejandra Martinez (friend) DJ Kast (friend) Adeena Teres (colleague)

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Randi Peskin

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Reference 2

Name Tanya Shober

Title and affiliation Captain, Alaska Saltwater Lodge & Tours

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Reference 3

Name Adeena Teres

Title and affiliation Teacher, Marjory Stoneman Douglas High School

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Phone Number 954 695 1714

Ashika Parker

1. Contact Information

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Cell Phone :

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Institution Address:
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Institution Phone: 512-414-4406

Classroom/Office Extension:

Institution Fax: (512) 476-2108

Institution Website: www.mathews360.com

Other relevant websites: https://www.austinisd.org/schools/mathews

Supervisor's Name: Grace Martino-Brewster

Supervisor's Email Address: grace.martinobrewster@austinisd.org

2. Demographic Information

a. Gender: Female

Race: Multiracial

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I teach 5th and 6th grade mathematics and science at a K-6 public urban elementary school in Austin, Texas. My school is situated in a historic neighborhood in Downtown Austin and reaches an extremely diverse group of students. In my classroom, I reach students of affluent backgrounds, students on free and reduced lunch, students who are homeless or transient and everything in between. This diversity creates an amazing background for my students to learn from each other and interact with many different types of peers.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 450 students

f. School Ethnicity:
0.2% % - American Indian or Alaska Native
9.4% % - Asian
5.5% % - Black or African American
33.1% % - Hispanic or Latino
0% % - Native Hawaiian or Other Pacific Islander
44.1% % - White
7.7% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 30.2%

h. Average class or audience size 30 students

i. Total number of students/audiences you teach in a year 90 students

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

~August 20-Dec 18 ~Jan 1-May 29

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): B.S. Applied Learning and Development

Bachelor's Degree (Minor):

Masters Degree (Discipline):

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 4 years

c. How many years have you been working at your current institution?: 3 years

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
EC-6 and 4-8 Generalist Certification Campus Gifted and Talented Advocate (2018-present) Team Leader (2018-present) Math Department Chair (2017-present) Teacher of the Year Nominee (2018) Austin ISD National Board Certification Cohort Candidate (Certification expected 2021) Austin ISD EDU Conference Presenter (2019) Superintendent Teacher Advisory Roundtable Member (2019-present) University of Texas MRSEC Research Experience for Teachers (2019) Cooperating Teacher to University of Texas Preservice Teacher (present)

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Elementary Education, Middle School Math

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

One of the reasons I love being an educator is that it is a profession that puts one in the position of learner, over and over again. I learn passion, kindness, patience and knowledge from my students every day and am constantly finding opportunities to grow my knowledge as a professional and whole person in order to bring back as much as possible to my students. Although I am always surrounded by learning opportunities, the PolarTREC program appeals to me as a completely unique, once-in-a-lifetime experience that would not only provide me personally with knowledge I would normally never be exposed to, but that would give me true knowledge of STEM fields and research to bring back to my students. Additionally, as a woman of color who teaches STEM subjects to students of varied backgrounds, genders, races and abilities, I would love to provide some representation to my students as they consider an eventual career in mathematics, research, or a scientific field. I hope to gain greater knowledge of what it means to be a field researcher and what the process of inquiry is like in a setting as unique as this, as well as meaningful experiences that will inform me as I move through my career as an educator.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

One of my goals as a teacher early in my career is to publish meaningful curriculum that provides equal access to engaging STEM learning opportunities to all students. If I am accepted into the PolarTREC program, I would love to create an inquiry based unit of study (or several) aligned to the national STEM standards that could be taught in schools. Last summer I participated in a research experience for teachers at the University of Texas where I worked in an engineering lab and am currently writing curriculum based off of that experience. I have enjoyed so much to be able to take real world research and translate it into a meaningful classroom experience for my students. It would be extremely exciting to be able to do this again on a larger scale. As a teacher, I have found that the most authentic learning comes from self-discovery of new concepts or ideas, or from strategic problem solving opportunities. I anticipate myself going through these processes if accepted to the program and this would provide me the foundation to create a similar design process project or research project to perform with my students and also disseminate to the greater

public.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I presented at my first conference this past summer for my school district and was so struck by how wide of an audience I was able to reach. I presented to other secondary math educators and later heard from them on how they implemented my methods in their classrooms and was so gratified knowing that I was not only able to reach the 90+ students that I teach, but hundreds of students across the district. I would love to bring my experiences from PolarTREC back to our Austin ISD Edu Conference or a national conference like NSTA. Additionally, if I were able to inspire other educators on my campus or in my district to apply to this program and continue to bring these experiences to children in Texas public schools, I know the value of the program would only be multiplied.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I believe that the best learning happens through discovery. I take pride in the fact that despite teaching a traditionally “notes and practice” subject like mathematics, I infuse discovery and exploration of new concepts into daily learning. In math, I introduce new concepts through “problem strings”—a strategic set of problems delivered to students in a whole class setting designed to inspire discussion of strategies and discovery of ideas as a math community, often using visual models or manipulatives. In science, I frequently engage my students in project based learning, engineering design projects and inquiry based experiments. I also believe that these hands on learning opportunities create a more grounded knowledge base for students and having the freedom to engage in productive struggle helps my students become critical thinkers and problem solvers—skills that will be very important in their eventual career. I work hard to provide a safe space for students to engage cooperatively on difficult concepts and know that if they are authentically learning and engaged, they won’t be afraid to tackle unfamiliar ideas and problems.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I believe that I have many strengths that would be valuable to a field research team. First and foremost, I always work to be an enthusiastic and engaged learner of new things. I am adaptive and a quick study. I know that if I were accepted to the

PolarTREC program, I would consume as much information as possible before and during the program. I am also extremely passionate and tenacious. I don’t believe in giving up and try to be relentless in my pursuit of excellence. I know that there will always be set backs when one is achieving new things or moving into unfamiliar territory but I would never let that deter me from gaining new knowledge. Finally, I love being active and working with my hands. As an avid hiker, kayaker, weightlifter, runner and yogi, I have experienced how having an active body can improve clarity, motivation, and mood. I think that this would translate very well to a field experience where hands on work and movement directly impact the learning and discovery that would occur.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I am thankful to work in a profession that values teamwork so highly among staff. I know I would not achieve anything without the support of my colleagues. On my campus, I have worked in a variety of different roles as a team member. As team leader of my grade level team, I work to disseminate information, create continuity for students and support teachers with regards to their concerns and questions. I also plan many events and facilitate grade-level learning opportunities. I also work in the role of leader as the math department chair, house committee chair, and GT advocate on my campus. I work daily to be a source of guidance, information and support for those working on these committees with me. Additionally, I work on a number of teams and committees as a colleague. I am a member of the STEAM committee and diversity council on my campus. I also work with teachers across grade levels to coordinate school wide projects and events. I am also a member of a cohort of candidates working towards National Board certification. I value my role as a member in each of these teams and utilize open communication, mutual respect and enthusiasm whenever working with others in a group to ensure success.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

If I learned one thing today it is that red powder gets...everywhere. As a Bengali Indian, today was one of the most important days of the year: Durga Puja. Puja is sanskrit for "prayer". It is the one day a year when Hindu people believe that the goddess Durga comes down to Earth to bless all of her children living on earth. Sounds a little far fetched? I think so too. But I love this day not for the religion or the prayers but because it involves family time, great food, culture, beautiful clothes and...red powder. As long as I can remember, every year on Durga Puja, my family and I would watch as all of the Bengali ladies engaged in an activity at Durga Puja called "shidur kela". Shidur is a red powder that, when smeared in the hair parting, signifies a married woman. My friends and I would watch as children as our mothers would laugh and dance to raucous music, rubbing this shidur, this red powder on each other. It always seemed so magical. We would whisper to each other about how we couldn't wait to grow up and engage in this centuries old tradition ourselves. This was a special year. My first Durga Puja as a married woman. I spent all day looking forward to the moment when the drums would beat, the women and I would dance, and I would get my first shidur. As I left the venue later today evening with red palms, cheeks, legs and everything else, I began to realize...maybe shidur kela wasn't all it was cracked up to be.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
3-6 weeks

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I find that the scientific topics that interest me most are topics that have to do with living organisms and the systems they interact with, as I can easily see the impact of the environment and the organisms on one another. I am most interested in how humans and animals may interact with the environment and what things could be done to improve the situation of the earth. Climate change is one of the most pressing issues of the earth and I know that I would feel so valuable being able to be a contributing member of a team committed to affecting the earth in a positive way. As a science teacher of young people, I know I am at a unique position to affect change on our earth starting with the next generation, and I would love to learn more about the process of climate change and what things could be done to promote longevity of life on earth.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have gone camping often throughout my life, hike and kayak frequently. I am able to perform basic first aid.

b. Provide a basic statement of your general health and physical condition.
I am in good health and very active. I hike, run, and weightlift 4-6x per week and enjoy being in the outdoors.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am most familiar with PC computers although have used Mac. I am a fast learner and good with technology.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use ipads, chromebooks, a PC laptop and a presentation TV frequently in my classroom. We use coding software, canvas for class assignments, and many online tools for instruction. I also have a desktop Mac computer that I myself use and use with students. Personally, I use a PC laptop and apple iPhone daily.

e. List any additional skills or information that you wish to be considered.
N/A

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
Austin ISD Science Department Professional Opportunities Webpage

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Grace Martino-Brewster

Title and affiliation Principal, Mathews Elementary

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Phone Number 512-414-7150

Reference 2

Name Robin English

Title and affiliation Counselor, Mathews Elementary

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Phone Number 512-414-7153

Reference 3

Name Faye Holland

Title and affiliation Teacher, Mathews Elementary

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Phone Number 512-841-1520

Jonathan Pazol

1. Contact Information

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Email: jpazol@leyden212.org

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Home Phone: 847-715-9155

Cell Phone : 847-858-7650

Institution Name: West Leyden High School

Institution Address:
1000 N Wolf Road
Northlake, IL 61064 US

Institution Phone: 847-451-3616

Classroom/Office Extension:

Institution Fax: 847-451-3180

Institution Website: www.leyden212.org

Other relevant websites: Fulbright Teachers for Global Classroom/Armada Project Blogs http://pazoltravel.blogspot.com Global Education Resource Guide http://pazoltgc.blogspot.com/ Illinois Global Scholar (Project Developer) global-illinois.org/

Supervisor's Name: John Kmet

Supervisor's Email Address: jkmet@leyden212.org

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): West Leyden is a suburban high school serving the “blue-collar,” industrial communities that surround O’Hare Airport in Chicago. Approximately 55% of our students attend college (primarily 2-year), and approximately 50% of the parents graduated from high school. 70+% of our students are Hispanic, but we have 54+ languages spoken in the district. 60+% of our students are on free/reduced lunch. Although our personal property tax base is low, our school has excellent technology access and lab facilities supported by taxes from industry. We were one of the first three schools in the nation to go 1-to-1 with the Google Chromebooks.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 1575

f. School Ethnicity:
1 % - American Indian or Alaska Native
2 % - Asian
2 % - Black or African American
78 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
16 % - White
1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 63

h. Average class or audience size 20

i. Total number of students/audiences you teach in a year 125

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation

periods. i.e. Christmas break, summer break, etc.

2020-21 Start 8/10/20 Christmas 12/20/20-1/4/21 Spring 3/29-4/5/21 Summer 5/27/21

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): BA - Biological Sciences/Chemistry - Northwestern University

Bachelor's Degree (Minor):

Masters Degree (Discipline): MS - Environmental Studies - Bard College; MS - Educational Administration - Northeastern IL University

PhD Degree (Discipline):

Other Degree: Teaching Certificate - Secondary Education; ESL Endorsement

b. How many years of education experience do you have?: 31

c. How many years have you been working at your current institution?: 31

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
1. Secondary Certification – Biology and Chemistry, ESL Endorsement 2. Type 75 Certificate - Educational Administration/Supervision 3. Fern Award (3x) – Outstanding Teacher – West Leyden High School 4. Those Who Excel Award of Merit – Illinois State Board of Education – Semifinalist for Illinois State Teacher of the Year 5. Fulbright Teachers for Global Classrooms – US State Department – Training in global education and fellowship for teacher exchange in Indonesia – 2012-13; IL Global Scholar Certificate Developer – 2016-19; Application Reviewer – 2017-19; Fulbright Scholarship Board Presentation - US State Department - 2018 6. Teacher Research Fellowships: American Association of Immunologists – 2010; ARMADA Project – 6 weeks aboard the US Coast Guard Icebreaker Healy in the Arctic Ocean - 2009; International Institute of Nanotechnology: Nanoscale Science and Engineering Center – Northwestern University – Department of Chemical Engineering – 2006 and 2007 7. Northwest Passage Project – 2018 – URI Graduate School of Oceanography - Facilitated a student team in a multi-day Arctic conference; Engaged with scientists; hosted a live community climate change tele-conference with the InnerSpace Center. 8. Author – Barron’s ACT 36: Aiming for the Perfect Score – 1st, 2nd, & 3rd eds. 9. EcoCasting Computer Modeling Curriculum Development and Teacher Training – NetLogo – Northwestern University – 2010-2012 10. National Conference Presenter –

National Science Teachers Association (2x); American Geophysical Union, American Association of Immunologists, Ecological Society of America, Asia Society

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

This is one of my last opportunities to demonstrate to my students that “those who teach science, do science.” I am 3 years from retirement and am at the point in my career where it would be easy to sit back and go through the motions; however, that is not whom I am as a teacher, scientist, or person. Since my initial Arctic trip 10 years ago, I have incorporated polar themes into my curriculum. I have shared data and connected students with research and researchers. I have helped past students take advantage of polar opportunities (JSEP and URI’s Northwest Passage Project). I would like to be able to provide additional frameworks and experiences for my current students and colleagues and hope to inspire them to expand their own personal and academic horizons.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

PolarTREC has some powerful ways of connecting students to research; however, like many classroom teachers, I have had difficulties integrating the expeditions into the classes on a regular basis because of curricular demands. I would capitalize on the students’ connectedness. Because I have email access to the 3400 students in the district, I could do blasts to their inboxes. Leyden does regular Video Announcements, so the researchers and I could be interviewed via Skype. The Ecology Club sponsors quarterly assemblies, which would allow video conference Q/A sessions with researchers. We have a Freshman advisory system and could establish an inter-advisory contest for watching the blog video posts and engaging in International Polar Week activities/campaigns. Using our #leydenpride Twitter, I could tweet to help maintain involvement. Students can try to have a Facebook post go viral by asking for “10000 Likes” and then sharing. We could also have posts where students see how “global” our reach is by adding a comment indicating where they live and sending it to people in other towns/countries. In addition, Snapchat would provide a way for me to connect with the students and post daily pictures/videos to my Story.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

As a developer of the Illinois Global Scholar Certificate, I have helped to establish a broad national network of professionals who are focused on global issues and could incorporate PolarTREC experiences as a means of meeting certificate requirements, especially in STEM. Illinois Global Scholar and our coordinator Seth Brady won a $100,000 Farmers Insurance Thank America's Teachers grant to fund our program. As one of 15 national finalists, we needed daily votes to win. To accomplish this, we developed a variety of methods to reach a wide audience, which could be modified for PolarTREC. In addition to social media posts, we created a sign-up form to automatically generate an email reminder. We could do this for blog updates and PolarConnect events. We contacted professional organizations, the unions, and university alumni groups for support, and they have all shown interest in global education and have been instrumental in facilitating the Global Scholar Certificate program. Being part of a national and international cohorts through the Teachers for Global Classrooms and Northwest Passage Project programs have enabled me to expand my contacts across the US and with seven other countries. Adding PolarTREC experiences and connections with Jim Thomson from UW to this network will broaden the program's impact.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Homeostasis is a difficult topic for students to understand, especially beyond the sweating/shivering example. Because we are in the process of incorporating NGSS into our curricula, we like to expose the students to phenomena and then have them use a variety of methods and models in their learning. We begin our study with a news clip entitled, "Hold your Wee for a Wii," reporting how a woman died from water intoxication while trying to win a radio contest. The students collect evidence from the video, formulate a set of unanswered questions, and then develop a model of how she might have died. As they investigate the processes of osmosis and homeostasis, the students experiment with eggs soaked in vinegar and a variety of other solutes (syrup, oil, salt, etc.) to simulate cell conditions and then use their data to reformulate their models. Throughout the unit, students end up exploring a wide variety of topics. Last year, in addition to the systems physiology connections, they investigated kidney dialysis, the effectiveness of sports drinks, sodium content in fast foods, and even tested samples of performance clothing. The variety of experiences has resulted in a much deeper level of understanding of homeostasis.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

My particular strengths are in the areas of flexibility, adventure, intellectual interest, and personal drive. Having lived on a ship, I worked the midnight watch, dealt with rough weather, and spent hours doing repetitious and dirty work – and I loved it. In the Arctic, few things went as scheduled. Whether it was lost equipment or having to climb off the ship because of a grounded helicopter, I understand the necessity of being flexible and creative. As a teacher for 31 years, I am used to working with many different types of people and managing different personalities – few things get me flustered; most get me to laugh. Intellectually, I am a geek. The excitement of learning and new experiences totally motivates me. Every day, I have my students present and discuss a current science article. While they are clearly becoming more scientifically literate, I am consistently learning new information and growing. I am driven to continue to pursue opportunities for both student and personal growth – if I was not I would have stopped seeking professional development opportunities like PolarTREC and would not have sought to work with a specific researcher.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I have been on “teams” in a variety of settings - academics, sports, and as a symphony cellist; however, my most important contribution to a team came as Union President. When I first assumed the job, I was responsible for negotiating multi-year contracts for more than 500 faculty and support staff with a novice negotiating team. I was expected to be in charge, but I realized that I could not accomplish the task without team support. I made it a priority to work collaboratively with each of the other members. We made sure that we were organized and well-planned. We divided duties based on people’s strengths and interests. I realized what we knew, and even more importantly, what we did not know. Therefore, we were able to remedy any deficits. In this role, I had to be a leader, but I also had to know when to just sit back and listen. I was faced with belligerent opposition, so I gained even more experience working with difficult people. The end result was that we agreed on a contract that met the needs of the membership and the District, while simultaneously enhancing the educational experience for our students.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

“Mr. Pazol, I think this slide is AML – some kind of leukemia. It could be what my cousin Hector has. He’s Hispanic, and overweight, and there are more than 20% of these purple cells. I looked it up on the NIH site. That’s a good site, not like WebMed, right?” What should have been a routine morning in Biology suddenly came to a halt. My students have been studying mitosis and understand how the process helps organisms grow, heal, and replace worn-out cells. They were engaged in an activity that we developed in which they look at paired, unknown microscope slides of human tissue. They make qualitative observations about the way the cells look and make quantitative observations about the number/size of cells. They develop claims about the differences and support these with evidence. Students do not know that one of each pair shows cancer. During several periods, students look at several sets and compare with their classmates. Generally, a few make the connection between mitosis and cancer (uncontrolled cell division), which motivates most of them to revisit their slides. We continue the unit with some cancer research project, but Daniela’s comment has taken this class in a new direction.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
I am applying to work with Jim Thomson from the University of Washington aboard the R/V Sikuliaq. He is studying the wave-ice interactions along the North Alaskan Coast. The research focuses on quantifying the role of reduced sea ice in causing increased wave action along the Arctic coast, understanding the wave-ice dissipation and scattering occurring in the seasonal ice zone along the coast, and developing hindcast climatology and forecast capability for coastal wave conditions, circulation, and water temperature.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I have a very supportive family and school district who were able to accommodate a previous 6 week absence. I am flexible in the amount of time I am gone, and I do not have any known conflicts for this field season.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)

As a child, I was drawn toward living systems, which is why I majored in biology; however, I realized that my scope was limited and that research is rarely compartmentalized. As technology progresses, these boundaries blur further, which has allowed me to explore areas “outside” the strict realm of biology. I did nanotechnology research in a chemical engineering lab, involving proteins. I researched the economics of the waste paper recycling process in a manufacturing plant. I learned how under-ice acoustics could be used to both physically map the sea floor and demonstrate the effect that changing sea ice had on wildlife. I connected with Jim Thomson through a colleague from the Healy because I wanted to be able to gain a new perspective on the changing Arctic. This project utilizes some similar procedures and technologies (moorings, satellite imaging, buoys) to collect data, but it focuses on wave-ice interactions close to shore, which is a new facet of the changes in the area. Adding on this level of exploration and being able to document some of the changes in the region after an 11-year span will allow me to demonstrate first-hand the realities of the changing Arctic for my students.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words

maximum)

Jim Thomson, PhD Senior Principal Oceanographer, Applied Physics Lab Professor, Civil/Environmental Engineering Dept. University of Washington 206-616-0858 jthomson@apl.washington.edu

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am a recreational camper and hiker. I also enjoy biking, kayaking, rafting, and canoeing. I have my PADI Open Water scuba certification and plan to earn my Advanced Open Water certification. I spent 6 weeks aboard a Coast Guard icebreaker.

b. Provide a basic statement of your general health and physical condition.
I am in good general health and have no medical issues that would limit my participation. I take no regular medications.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am most familiar with PC/Windows technology, but I am very comfortable with existing technology and in learning new technology. I have been using computers (both Mac/PC) for many years and have experience with a variety of programs, as well as with automated equipment. I have developed many lessons/projects utilizing the Chromebook and Google apps and am in the 7th year of a 1-to-1 environment.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use a variety of standard Microsoft and Apple programs – Office, Excel, Word, Publisher, PowerPoint, iMovie, etc. for both office applications and data analysis. I use LabQuests, miniPCR, electrophoresis, and data probes for laboratory experiments and have written units incorporating NetLogo computer modeling software and MyWorld GIS. I own a laptop and have used a variety of peripheral devices (cameras, scanners, video cameras, microphones, the Sony Bloggie, etc.) to make presentations and to produce journals. I have used a satellite phone and on-line applications – Facebook, Blogger, Twitter, Snapchat, GoogleSites, etc. to implement curriculum, as well as for professional and personal communication.

e. List any additional skills or information that you wish to be considered.
During my research experiences, I learned protein synthesizers, PCR, cell counters, fluoroscopy, multibeam sonar, Fledermaus mapping equipment, as well as a variety of lab-specific techniques and procedures.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information 2009 - 6 weeks aboard the US Coast Guard Icebreaker Healy in the Arctic Ocean - ARMADA Project: University of Rhode Island Graduate School of Oceanography/NSF

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
My teaching continually evolves. I can honestly say that no two years have ever been the same, and with each increased opportunity, I have more to bring to my students. Having the opportunity to spend time in the Arctic let me put my degree in Environmental Studies into active practice. I worked with scientists, business people, military personnel, and government employees who had common, but sometimes conflicting interests in the Arctic mapping data. Successfully navigating these perspectives gave me a much broader understanding of these very complex issues and allows me to help my students understand them in a much more nuanced way. In addition, I now have experience in geology, oceanography, acoustic engineering, research, and even military life that I have been able to share with my students. On individual levels, they have been able to contact former science colleagues at NOAA, the University of Hawaii, Stanford, and UNH. One also participated in JSEP. Most recently, I collaborated with the University of Rhode Island’s Northwest Passage Project. 6 teams of teachers and students spent time learning about Arctic science at the Inner Space Center. We then hosted a student-led, school-wide live broadcast with the scientists. The teams have continued to collaborate and are working on connecting our students with scientists aboard the R/V Laurence M. Gould on its Antarctic transit. PolarTREC also aligns with the IL Global Scholar initiative and would let me provide additional perspectives for my students pursuing the Global Scholar Certificate and/or Capstone, especially in STEM areas, which are more limited than social science ones. With 1-to1 in the district, there are now even more ways for me to “reach my audience” and to incorporate polar science and the scientific research process into my curriculum.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Jennifer Henderson – NOAA Betsy Turner-Bogren - ARCUS

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title
NSTA - Boston; AGU - San Francisco

Other (please explain)
Poster at BASC (Barrow Arctic Science Consortium) in Barrow, AK

b. Please suggest other places we might advertise this opportunity for teachers
The Global Education Conference Network - globaleducationconference.org Illinois Global Scholar - global-illinois.org

12. References

Reference 1

Name John Kmet

Title and affiliation Science Department Chair - Leyden High Schools

Email Address jkmet@leyden212.org

Phone Number 847-451-3631

Reference 2

Name Dr. Tatiana Bonuma

Title and affiliation Assistant Superintendent - Leyden High Schools

Email Address tbonuma@leyden212.org

Phone Number 847-451-3021

Reference 3

Name Betsy Devlin-Foltz

Title and affiliation Program Officer - Bureau of Educational and Cultural Affairs - US Dept. of State

Email Address betsy@devlin-foltz.com

Phone Number 201-632-6334

Katherine Pierce

1. Contact Information

Name: Katherine Pierce

Email: kmpierce@buffalo.edu

Home Address:
42 Applefield Drive
Williamsville , NY 14221 US

Home Phone:

Cell Phone : 716-341-4376

Institution Name: Allegany-Limestone Central School

Institution Address:
3131 Five Mile Road
Allegany, NY 14706 US

Institution Phone: 716-375-6600

Classroom/Office Extension: 2242

Institution Fax:

Institution Website: www.alcsny.org

Other relevant websites: https://www.alcsny.org/Domain/371

Supervisor's Name: Cory Pecorella

Supervisor's Email Address: cpecorella@alcsny.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I am the only physics teacher in my district serving a group of 55 students in an underprivileged area. Around 1/3 of our students are eligible for free or reduced lunches. All students in our district borrow a computer from the school. I teach science and mathematics. The science courses I teach are Regents physics, Regents physics lab and Anatomy and Physiology. I also teach Non-Regents statistics and Non-Regents algebra.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 360

f. School Ethnicity:
1 % - American Indian or Alaska Native
1 % - Asian
2 % - Black or African American
0 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
95 % - White
1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 27%

h. Average class or audience size 20

i. Total number of students/audiences you teach in a year 55

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Our professional development days start the Thursday before the Labor Day holiday (September 3rd, 2020) . We will end late June. For Thanksgiving we have off Wednesday, November 25th 2020- Sunday, November 29th 2020. Christmas break usually spans between Christmas Eve and New Year’s Day probably Thursday, December 24th- Sunday, January 3rd. We also have a week off for President’s Day in February, February 15th 2021-Febrarury 19th 2020.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Physics

Bachelor's Degree (Minor): Mathematics

Masters Degree (Discipline): Physics Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: The 2019-2020 school year will be my 5th year teaching.

c. How many years have you been working at your current institution?: This will be the start of my 5th year at Allegany-Limestone for the 2019-2020 school year

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
New York State Adolescent Physics 7-12 teaching certification with 5-6 extension
New York State Adolescent Mathematics 7-12 teaching certification

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Math, Secondary Physics

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

What motivates me to apply to PolarTREC is the ability to help with research in the science field. I have a passion for teaching and helping my students to become the best they can be. I know that what I learn during PolarTREC, I can bring into my classroom to help motivate my students to pursue a science field. In my classroom I stress hands on learning and helping my students to answer their own questions to understand new concepts. I hope to gain a lot from this experience, including help with understanding and implementing the Next Generation Science Standards. These standards revolve around modeling and PolarTREC allows me to learn about how scientists model, research and discover. I want to be able to connect my research with the NGSS science standards for my students as well as become a better physics teacher to better help serve my 55 students. I believe that it will help me to stay up to date in my own field and allow me to pursue science as my passion. I would like to be part of a sustainable learning community and stay involved after the trip. I want to learn from other teachers and share what I learn and have learned from others.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

In order to share my experiences, I would like to speak at local physics teacher and NYS Master Teacher conferences. During this time, I can share information about the program with other educators including my own experiences and the process for getting into the program. I would also like to stay in contact with my classroom. In order to do this, I would set up a SnapChat that my students can follow and keep in touch with me on my journey. The SnapChat account would be considered an account they would “follow” rather than friend, this way I could post for them to see, but they could not post to me. My live videos and pictures with descriptions would be available for them to see and discuss. Also, SnapChat allows for a mapping feature where students can see where I am posting these videos in relation to their own location. This will allow students to understand the great distance between our home and my research as well as help them to track me in my journey.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I envision being about to share my experience with my own colleagues during faculty meetings. My principal will allow faculty to speak during meetings and I would ask him if I could do a presentation during this time. I would share pictures, experiences, stories and information about what we did and how we gathered data and helped scientists. I would also like to discuss my experiences with the local physics teacher community of which I could ask to speak at the Western New York Physics Teacher meetings. I learned about PolarTREC from the annual New York State Science Teacher meeting, but I had missed the deadline to apply. This was a great way to get the information out and allow teachers to see the opportunities they have besides being in the classroom. For public outreach, I will make sure that my blogs are public and include contact information for those interested in what I have done.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

In order to introduce concepts to my classroom I always start with some sort of demonstration to get my students interested. For example, when I teach static electricity, I bring out a Van De Graff generator. Before I turn it on, I always discuss with my students about how it works and what will happen. We even take it apart and look at what is inside and what is happening. Next, I turn it on and allow students to come close and even touch it if they are comfortable with it. I also take out a florescent tube light and we discuss how the light will light up as the tube gets closer to the Van De Graff generator. From here, students will then answer a series of their own questions about static electricity using pith balls, electroscopes and balloons. I will assist students in constructing their own questions and walk around and ask them additional ones as they are discovering on their own. At the end of the lesson, students will come up with some sort of drawing, graph or chart that helps them to understand electrostatics.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I would bring a lot of strengths to a field research team in many ways. I have research experience, including collecting data, interpreting data, looking for trends and measuring information. During undergrad, I was accepted into a Research Experience for Undergrads (REU) and spent time working under an advisor and graduate student. The graduate student I was working with was studying if galaxy brightness (flux) and the size of the black hole in the middle of the galaxy exhibited a pattern. I spent a lot of time gathering information for her and using the program Image Reduction and Analysis Facility (IRAF). I would take each of the galaxies she

was studying and determine the flux and size of them using the software program. I always pay attention to detail, as I am very careful when copying or reading data.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I generally find myself as a leader in a team effort, while not taking over the whole operation. I help to divide up roles for a certain task and always make sure those roles are even and fair. I take pride in my work and if I find that a team member is not doing their job, I have no problem with approaching them and talking to them about it. I would not talk ill of any member of the team, even if they were not pulling their weight and I was frustrated with them. I grew up playing ice hockey and I understand the importance of working together to accomplish one goal. In my past research experiences, I have been part of a team as well.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Today I woke up, not in the comforts of my bedroom, but in a small tent in Northern New York. Instead of an alarm startling me up, a gentle song from a bird softly filled the tent. My boyfriend, Matt and my Dalmatian, Chadwick are also awake and we get ready for our today. The reason why we are in Ray Brook, NY is because Matt, Chadwick and I love to hike. It is the perfect late summer morning and the sun slowly fills our campsite with its golden rays. To start the day, we start a campfire and begin to cook our breakfast. The smell of pancakes and breakfast sausage makes my mouth water and I eagerly await to eat. We set out for hike with full bellies and eagerly await the view at the top of Bear Den Mountain. As we start to hike, the leaves crunch under our feet and the sound of water floods the trail. Chadwick is pulling us forward on his leash almost like he knows where we are going. Finally, after gaining 1,479 feet we reached the bald stone summit. Looking around we admired the beauty around us, Whiteface Mountain, Algonquin, Colden and Mount Marcy. Looking further into the distance we could make out the Olympic Ski Jumps from Lake Placid. After a well-deserved snack of jerky, sunflower seeds and an apple, we trekked down with the satisfaction that we have accomplished something special today.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
Both would be exciting experiences for me. I have always wanted to go to either location and would enjoy and thrive in both situations.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
It would not matter how long I would be gone for an expedition or the dates. Anywhere between three and six weeks would work for me.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I would be interested in learning about neutrino and how they interact with neutrons and protons. The reason why I would be interested in this is that it is directly related to what I teach in my classroom. We discuss muons and neutrinos in my class and I try to give students real life examples as to why they are important and how we can study them. It is sometimes difficult for me to explain subatomic particles to students because they cannot see or observe them. By studying them at IceCube, I can give my students real experiences that are directly related to their studies. Another topic that I would be interested in would be studying a specific animal and their ability to survive in such harsh conditions. I would be interested in studying, observing, documenting and understanding any species. The reason why I'd like to research an animal is because I can bring these ideas and findings into my anatomy class. While anatomy may be focused on the human body, I find myself discussing a lot of comparative anatomy with my students. We discuss different species and how they have developed over time and we compare and contrast their anatomy with that of a human.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

N/A

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I enjoy camping and camp regularly. I live near a great state park where I have found myself hiking a lot. Hiking is one of my hobbies and I have experience with longer, full day hikes as well as steep, relentless upward grades. In the winter, I enjoy skiing and snow shoeing.

b. Provide a basic statement of your general health and physical condition.
I would consider myself to be in shape. I exercise more than 30 minutes vigorously about 3-4 times a week. Exercising for me is anything from hiking to biking to skiing. My greatest accomplishment so far is hiking Grouse Mountain in Vancouver. The mountain is 2,800 feet vertical and the trail is only 1.8 miles long. I have also completed the Saranac Lake 6 in 5 days. This a series of 6 mountains in Saranac Lake, NY totaling 37.8 miles and 8,928 feet in elevation.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am familiar with both Mac and PC. I can navigate the computer very well. I can use Microsoft PowerPoint, Excel, and Word with ease, as well as some scientific modeling programs. I have worked with LaTeX, Kuta, Maple, modeling projectiles in the Terminal and Image Reduction and Analysis Facility (IRAF).

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Every day I use PowerSchool to record attendance and fill in grades. PowerSchool is a web browser based program that allows me to log in and see my rosters. While I teach, I use PowerPoint notes on a projector and online simulations with my students. These online simulations are through phet.colorado.edu. I like showing my students simulations because it helps them to see phenomena that cannot be replicated or shown in the classroom. I also use PASCO Bluetooth probes with my students to find forces, temperature and light sensitivity.

e. List any additional skills or information that you wish to be considered.
N/A

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title
Science Teachers of New York State Conference in Rochester, NY (November 2017)

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Cory Pecorella

Title and affiliation Principal at Allegany-Limestone Middle-High School

Email Address cpecorella@alcsny.org

Phone Number 716-375-6600

Reference 2

Name Katherine Cooke

Title and affiliation Earth Science Teacher at Allegany-Limestone Middle-High School

Email Address kcooke@alcsny.org

Phone Number 716-375-6600 ext. 2244

Reference 3

Name Ron Johnson

Title and affiliation Chemistry Teacher at Allegany-Limestone Middle-High School

Email Address rjohnson@alcsny.org

Phone Number 716-375-6600 ext. 2238

Andrew Plunkett

1. Contact Information

Name: Mr. Andrew Plunkett

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Home Phone: 7323307005

Cell Phone : 7323307005

Institution Name: Allentown High School

Institution Address:
27 High Street
Allentown , NJ 08501 US

Institution Phone: 6092597292

Classroom/Office Extension: 504

Institution Fax: 6092590881

Institution Website: https://www.ufrsd.net/

Other relevant websites:

Supervisor's Name: Lynn Folino

Supervisor's Email Address: folinoL@ufrsd.net

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My primary audience is 9-12 grade environmental science including AP Environmental Science. My public school school is located in a suburban/rural area. We range from lower middle class to upper middle class. We are still a farming community but much of the area has transitioned to large suburban homes.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) My school has 1,200 students.

f. School Ethnicity:
1 % - American Indian or Alaska Native
10 % - Asian
5 % - Black or African American
10 % - Hispanic or Latino
1 % - Native Hawaiian or Other Pacific Islander
68 % - White
5 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 5

h. Average class or audience size 22

i. Total number of students/audiences you teach in a year 130

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
School start date: First day after labor day End school date: June 20 Winter break:

December 23 - January 2 Spring break: 3rd week in April. Around April 20 - April 28 Summer break: June 20 - First day after labor day

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Psychobiology

Bachelor's Degree (Minor):

Masters Degree (Discipline): Environmental Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 11

c. How many years have you been working at your current institution?: 11

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
1. CASE (Curriculum for Agriculture Science Education): Environmental Science and Natural Resources and Ecology certificates 2. AP Environmental Science Reader: Grade AP Exams 3 Rutgers Wetland Identification and Delineation Certificate: Will earn certificate after final class October 22-25 4. Have earned $30,000 in grant money for Vernier lab equipment, native and vegetable garden, and CASE environmental classes 5. Greenbirds advisor: Implemented the environmental club at my high school 6. AP Environmental Science: Implemented the AP Environmental program at my high school. I needed to get certified for this as well. 7. National Center for Case Study Teaching certificate

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology

Other Subjects Secondary Environmental Science and Advanced Placement Environmental Science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I have a passion for the outdoors and environmental science and have been looking for an opportunity like this. I would love to participate in authentic scientific research that will allow me to better myself as educator. By immersing myself in scientific research, I am bringing back an knowledge and expertise that will allow me to provide more authentic learning experiences to my students and surrounding community. Students need to see that their teachers have a passion for what they do. Students are more engaged in their learning if they see their teachers truly care about what they are doing. Polar regions are something I never been to and we discuss frequently in my environmental science courses.. By engaging in this research, it allows me to me to inspire more interest and therefore awareness and understanding of environmental issues surrounding polar regions and interest in STEM related fields in the polar regions. I hope to be a life-long partner with PolarTREC and continue to use their research and professional community to strengthen my knowledge and science identity. This is will also allow me to continue to provide my students with the most current polar STEM experiences in the classroom.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I plan on using the data and methodology of the research I participate in to create a case study for my environmental science students. I earned my "National Center for Case Study Teaching in Science" certificate several years ago. I used case studies in my class to ensure my students learn the scientific process, can organize and analyze date, and draw conclusions from that data. I think it might be a good idea for PolarTREC to use their data and research to partner with National Center for Case Study Teaching in Science. By observing and participating in ongoing research, I can better facilitate activities and labs by using the expertise gained from this experience. I would love to share my experience with NJEA (teachers union). They have a massive following in NJ and it would be great to get the PolarTrec experience in their emails and magazine. This will hopefully inspire other NJ science teachers to participate in the program.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general

public. (200 words maximum)

I found out about PolarTREC from a teacher in my AP Reader community. I plan on sharing this experience with the 400+ AP Environmental Science Readers after my experience. I plan on creating a case study based on my experience and sharing it with the National Center for Case Study Teaching in Science (with approval from PolarTREC). I will run a PD session with my science department about my experience and will continue to search for other opportunities like PolarTREC. I will use my Twitter presence to share my experiences. Whenever I share my professional development experiences on Twitter, parents always respond positively and it helps create a better relationship with the community. When the community sees your passionate about what you do, it creates a positive relationship where parents have more trust in teachers providing them authentic learning experiences through expertise gained by these opportunities like PolarTREC. Hopefully, by sharing my experiences, it will inspire future generations of scientists and science literacy in my community. I would share my experience with the NJEA (teacher's union) to help get the word out about PolarTREC in their emails and magazine. I would also love to stay connected with PolarTREC after my experience to support the future PolarTREC educators anyway I can.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I will tell you about what I have been doing since the start of the school year and plan on doing for the next month to demonstrate on how I engage my students on new and complex topics, concepts, or issue. Our environmental science classes have been engaged in completing the following activities since the start of school 1. Meadow conversion: Students have been learning how to convert a yard to a meadow. Researching appropriate native plants by determine soil characteristics, microclimates, beneficial insects that have been in decline. 2. Sustainable agriculture: Students have been working on starting plants in the greenhouse, determining soil characteristics, ammending soil using compost after analyzing soil, becoming experts on their vegetable/fruit and adjusting soil, watering to most effectively grow. I am taking them on a class trip to two sustainable farms to see it in action 3. Vegetiation Releve: An in depth study on plant communities. We use previous years data to compare and discuss vegetative succession. 4. Water Quality Testing: Students use Vernier equipment, previous data, topo maps, USGS maps to analyze and asses water quality. Soil Lab: Ion exchange, analysis of free ions, etc. Enviro Sci is a multidisciplinary subject (STEM) and I engage them in activities that

demonstrate that.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

1. Advocacy: I strongly advocate for experiences that will make teachers betters teachers. I will share my experience within all my professional communities and parent/student community. I will be life-long partner with PolarTREC to assist in whatever capacity you need. 2. Collaboration: For the CASE classes I teach, I am in constant contact with the CASE community to discuss ideas on how to make our activities and labs better and more authentic learning experiences for our students to make sure we are creating the next generation of science literate citizens. 3. Passion: I am excited to work with a field research team and will complete tasks as asked and make sure to do the best possible job for the research team. I want to support the research team to more effectively complete their study. 4. Conversation: I enjoy doing many outdoor activities, I am well-read, and I love learning from others. I hope to enhance the field research team experience by being someone they want to be around, hold enjoyable conversations, while making sure the work gets done effectively.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

During my CASE certifications, we were all learning new activities and labs that we were going to bring into our classrooms. I was part of a group of passionate teachers who were there to learn how to be more effective teachers by facilitating authentic learning experiences for students. I listened to other teachers ideas, shared my own ideas, and collaborated to effectively get the activities done. I didn't sit back passively. I shared the load with my team making sure we all effectively completed our part. Communication skills are crucial in a team effort. Verifying you completed your task and verifying how the task should be completed is crucial to a team effort. I made sure to ask the CASE lead teacher questions to verify I was understanding goals, directions, etc. correctly. Mistakes in a team effort can be costly. Communication and verification are key. We still communicate to this day in an online forum on ways to improve labs. I am passionate about projects and tasks I take on. That passion allows me to more effective as a team member and creates a positive atmosphere that is crucial to team effort and a life-long learning community.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I would have video and pictures attached to my journal entry to provide the audience with a snapshot of what is going on. September 16, 2019: Vegetation Releve As the sun rises over Allentown High School (picture would be attached showing students doing work), students performed a Vegetation Releve. Students were designated a plot representative of the ecosystem as a whole. Plant, soil, and insect data were recorded. This data will be compared to previous years data. This information will help us understand how this plant community and soil characteristics and insect population is changing over time from turf grass to a meadow. Replacing turf grass at homes with meadows is a great way to help our decreasing insect population while adding beautiful scenery to your home. (I would also post pictures from previous years so the public can see the progression from turf field to current meadow).

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I chose either because it will hopefully increase my chances to get this amazing experience. However, I would prefer an expedition between June 20th and Sept 3rd since it is my summer break.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
3-6 weeks. I can participate anytime.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am most interested in topics dealing with wildlife. I have a passion for plants and animals and observing them in a scientific setting has always been something I wanted to do. We discuss climate change in my classroom frequently. Going on an expedition studying any wildlife and impacts from climate change would be my ultimate expedition.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

Anything that directly studies wildlife

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

NA

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am an outdoor enthusiast. I go on week long winter hikes in New England and tent camp. These are serious winter hikes in the middle of winter with just the gear we bring. I am section hiking the Long Trail one week at a time in the summer and tent camping while doing it. I have rock climbing experience. Avid fisherman. Whitewater kayaking. Avid gardener. I just love being outdoors to connect with nature. I don't need technology and love the idea of roughing it. I am adaptable to harsh weather conditions and have endured blizzard conditions while on multiday winter hiking trips.

b. Provide a basic statement of your general health and physical condition.
I am a runner. I run 3-5 miles a day. I used to do marathons. I do week long hikes covering 50-70 miles while tent camping I eat healthy and can get by on eating small meals I am 6'3" and 190 lbs. I do pushups, pullups almost everyday

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am 33 so I am comfortable with both. I have own a MAC for personal use for 15 years. I use a PC for work for 11 years.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I've used all internet browsers. I used to teach Excel, Powerpoint when I started teaching HS. I still use both for teaching and coaching soccer. I use iMovie for personal use from my hiking trips and teaching. I am going to have my students use video editing software to create a PSA for our community about the Spotted Lanternfly and Tree-of-Heaven. I use almost all social media platforms for personal use, teaching use, coaching use. I use social media to bring awareness to what I do in the classroom to other teachers, admin, and parents. This helps me build science identity and trust from parents that their children are getting a great scientific education. I use my personal social media to share my outdoor experiences and hopefully inspire family and friends to get outside and enjoy nature. I also promote environmental activism on my personal and professional social media and emails to my parents. I plan on using all these tools with PolarTREC to log my experience to better share it with my teaching community, PolarTREC community

e. List any additional skills or information that you wish to be considered.

I am a quick study and can learn skills necessary for the expedition.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Colleague from the AP Environmental Reading (grading) Conference

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
Teacher unions. They send out magazines and emails. The teachers who read them are the teachers who typically care about continuing the education for the profession and bettering themselves.

12. References

Reference 1

Name Connie Embley

Title and affiliation Principal

Email Address embleyc@ufrsd.net

Phone Number 6092597292

Reference 2

Name Robert Tackett

Title and affiliation Former Science Supervisor

Email Address bobtackett@gmail.com

Phone Number 9086724383

Reference 3

Name Lynn Folino

Title and affiliation Vice Principal

Email Address folinoL@ufrsd.net

Phone Number 6092597292

Rebecca Pruim

1. Contact Information

Name: Ms. Rebecca Pruim

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6601 KIMBALL AVE
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Home Phone: N/A

Cell Phone : (630)605-8723

Institution Name: St. Raphael Catholic School

Institution Address:
1215 Modaff Road
Naperville, IL 60540 US

Institution Phone: (630)355-1880

Classroom/Office Extension: (630)615-7679

Institution Fax: (630)615-7734

Institution Website: https://st-raphaelschool.org/

Other relevant websites: N/A

Supervisor's Name: Mavis DeMar

Supervisor's Email Address: mdemar@st-raphaelschool.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): St. Raphael is a private catholic school in suburban Chicago. The school serves students in grades preschool-8. Students attending the school come from nearby suburbs and from diverse economic levels and backgrounds. All students in kindergarten through 8th grade have one-to-one devices. K-2 have iPads in the classroom, 3rd and 4th grade have Chromebooks in the classroom, and 5th-8th grade have laptops. Every classroom in the school is equipped with a SMART Board. The school also has a computer lab. Parents and students are required to complete a certain amount of service hours for the community.

d. Type of School (or students you work with): Private

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 224 school, 4,200 in the parish

f. School Ethnicity:
% - American Indian or Alaska Native
10 % - Asian
1 % - Black or African American
10 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
74 % - White
5 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 0

h. Average class or audience size 24

i. Total number of students/audiences you teach in a year 50-70

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation

periods. i.e. Christmas break, summer break, etc.

Christmas Break: December 21st-January 5th (2019-2020) Spring Break (2020): March 28th-April 5th Summer Break (2020): June 4th-August 16th School Year 2019-2020: August 19th-June 3rd School Year 2020-2021: August 17th-June 2nd

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology

Bachelor's Degree (Minor):

Masters Degree (Discipline): Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: Three years in the classroom, five years as an informal educator.

c. How many years have you been working at your current institution?: Three

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Professional Educator License (grades k-9) with endorsement in Middle School Science. CPR/First Aid Certified (American Red Cross) Certified in Mental Health First Aid (National Council for Behavioral Health) Certified Illinois Master Naturalist (University of Illinois Extension) Certified Interpretive Guide (The National Association for Interpretation)

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Math, Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

My passion for learning about science and the environment is what motivates me to apply for PolarTREC. I am constantly seeking opportunities to expand my knowledge of the sciences so I can bring new information to the students, teachers and parents with whom I work. I have always wanted to ensure that my students receive the best science education I can offer. In order to do this, I feel it is important to be a well-rounded educator who is constantly striving to learn more about the world by trying new experiences and connecting with others. Professionally, I hope to be connected with a larger group of like-minded individuals who share a passion for teaching, research and science. I also hope to gain a deeper understanding of how field research is implemented in polar regions and how climate has affected the flora and fauna of these regions.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I will share the experience in the classroom by including additional STEM concepts from the field experience into the curriculum I have already created. I also plan to develop new curricula centered on knowledge obtained throughout the course of this experience. For example, I can add to pre-existing science curriculum by having students interpret real data from scientists in the field in order to gain a deeper understanding of the scientific process. Student-led discussion with an emphasis on polar ecology, climate change and animal adaptations will be used to engage students prior to beginning a lesson and prepare them for what they will learn in the lesson. Students will also be empowered to make connections between polar ecosystems and local ecosystems to develop an awareness of how all ecosystems are linked to each other. My classes will research ideas on how to prevent land use and environmental problems within their own community. They will be encouraged to share their research and ideas with their family and friends.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I envision sharing my experience with others by sharing photos and journals through presentations. I will present about my experience at staff and district meetings with

the goal of discussing how my peers can extend the excitement of field research into the classroom. I will also discuss with my peers how they can engage students in the scientific process by using real-world data and technologies. In addition, I plan to speak about my experience to our community (parents and parishioners) with the objective of deepening their perspective about our polar regions and the field research that takes place there. The presentations will also encourage environmental awareness and stewardship of natural resources within local communities.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

When educating my audience on new and complex topics, my goal is to always meet my audience where they are at. The use of pre-assessment questioning strategies provides me with insight about what my audience already knows and what they may want to learn. I often use short video clips and pictures so my students are able to visualize the topic. When a topic is complex, I break it down into smaller units and encourage the students to make connections to concepts they already understand. Students also share their thoughts about complex topics through writing short essay responses and peer reviewing the work of others. Through the use of peer review, students are given an outlet to build on their own thoughts in an open and encouraging environment.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I will bring dedication and enthusiasm to the PolarTREC program. I am very passionate about the sciences and I thrive in new environments. I enjoy working with people from all different backgrounds and I am able to clearly and efficiently explain procedures to others as well as follow procedures communicated to me so the team can work together to meet a common goal. In addition, I have excellent organizational skills and I can work well under stressful conditions. My strength in communication will help the PolarTREC team meet their objectives of developing long-term professional relationships between educators and research communities.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

As a member of a team, I often find myself in three roles. I always play the role of encourager, helping to move the team forward with positive feedback and enthusiastic support for all team members. I provide positive verbal feedback to my

teammates on a regular basis. I frequently play the role of active contributor in a team setting. As a member of a junior high team, I regularly offer my time to assist other educators with their own project goals. For example, I recently applied for and was awarded a grant for supplies and curriculum that provided eight different classrooms in our school an opportunity to learn about technology and design as it pertains to transportation and green energy. Lastly, I contribute creativity by thinking out loud and sharing innovative ideas. For example, at a staff meeting I have made the suggestion of how our school could use a pre-planned holiday as a fundraising event.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

It’s 2:30 in the morning and I am wide awake running alone in the forest. My headlamp provides a small, narrow beam of light for me to follow. With each stride I take, I can hear my feet crunch leaves and twigs on the trail. While my pulse is quick to allow blood to fuel my organs and body, my mind is calm. I am completely at peace running by myself in the forest, I have become a part of nature. Though it is dark, the trees lining my path prevent me from veering off course. I can hear the trill of the gray tree frogs, their songs seem to match the rhythm of my own steps. I could stay here forever in this moment listening to my body run peacefully through the sounds of the forest. Up ahead, I see a light. It brings me out of my moment in nature and I realize I am running my first Ragnar Trail Relay. The light is the headlamp of my teammate waiting patiently for me off in the distance to exchange our relay baton. I look forward to the next time I can run in the forest at night.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
The Arctic expedition is my preference as it is the preference of my administration for me to participate in a field season between April and August.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would be fine with an expedition of any length of time. Although my administration is very supportive and willing to be flexible, they would prefer that I participate in a field expedition during summer break (June 4th-August 16th, 2020).

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My main scientific interests are centered on Ecology. More specifically, I am interested in Behavioral Ecology and Community Ecology. I would like to learn more about how climate change has affected animals and plants individually as they adapt to a changing climate. Similarly, I am curious to know about how interactions between plants and animals have changed with the climate. I recently read an article with my students, “Half of All Species Are on the Move-And We’re Feeling It” (C. Welch 2017). One part of the article talked about how flowering willows in the Alaskan Arctic once grew only a little over three feet, but warming temperatures have caused these shrubs to grow almost six feet tall. As the shrubs grew, they drew moose. As the moose moved north, the moose became part of the diet for indigenous hunters, who originally relied on seals but could no longer do so due to melting sea ice. This article not only interested my students, but it piqued my interest because I have also noticed changes in my own local environment. For example, I am an avid gardener and have noticed that monarch migrations have varied greatly in the past few years.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have a broad range of outdoor experience relating to camping, hiking and kayaking in mild weather conditions. I frequently snowshoe and ski (downhill and cross country) in the winter months to stay active outside.

b. Provide a basic statement of your general health and physical condition.
I am in excellent health and physically fit. I have no underlying medical conditions nor do I have any known environmental or food allergies.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use a Windows based laptop for personal and professional use. I am very skilled in using common PC software.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am familiar with Microsoft Excel, PowerPoint and Word in addition to Google Sheets, Docs and Slides. I incorporate this software on a regular basis in my lessons and I am accustomed to teaching students how to use this software. I use Microsoft Excel and Google Sheets on a regular basis for personal organization. I use Microsoft Word and Google Docs as tools for everyday communication.

e. List any additional skills or information that you wish to be considered.
I have been a classroom teacher for three years. Prior to becoming a classroom teacher, I spent five years as an informal educator. Three of those years I was an Environmental Educator with Kendall County Forest Preserve (Yorkville, IL), followed by two years as a Museum Educator with The Peggy Notebaert Nature Museum (Chicago, IL). During my undergraduate studies, I was involved in field research with several different projects. I received co-author credit for two articles that were published based on the work I contributed during the field season.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL
http://michaelrwing.com/teachers/all-expense-paid-teacher-travel-opportunities/

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Lauri Riggen

Title and affiliation Jr. High Team Leader

Email Address lriggen@st-raphaelschool.org

Phone Number (630)248-9886

Reference 2

Name Mavis DeMar

Title and affiliation Principal

Email Address mdemar@st-raphaelschool.org

Phone Number (331) 229-2181

Reference 3

Name Jason Porod

Title and affiliation Teacher

Email Address jporod2@live.com

Phone Number (708) 305-0335

Jeffrey Robbins

1. Contact Information

Name: Mr. Jeffrey Robbins

Email: jeffrobbins24@gmail.com

Home Address:
862 leland ave
plainfield, NJ 07062 US

Home Phone: 9089280549

Cell Phone : 908-358-9205 after 3 pm est

Institution Name: Roosevelt Intermediate School

Institution Address:
301 Clark Street
Westfield , NJ 07090 US

Institution Phone: 908-789-4560

Classroom/Office Extension:

Institution Fax: 908-789-4193

Institution Website: https://roosevelt.westfieldnjk12.org/

Other relevant websites: Google sites https://sites.google.com/s/1YFz_FRQIy_JSTjsIvGDhneCEGcyd69iU/p/1yMNmSIV2GJ4HRgdSeUlX9Gpzjyb/edit Instagram @jeffrobbins24 Youtube channel https://www.youtube.com/channel/UCIVP6rbXS5whwXkKhIgDG8A?view_as=subscriber Personal Website https://sites.google.com/view/wsgwebsite/home

Supervisor's Name: Thomas Patterson

Supervisor's Email Address: tpatterson@westfieldnjk12.org

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work in a grade 6-8 Intermediate school, we are about 10 miles (40 minute train ride) to the west of NYC. We are a suburban district and have very good technology access. All of the science classrooms are equipped with Chromebook carts, and it is fairly rare to have a technology failure. The science classrooms are also equipped with interactive whiteboards as well. The community is fairly affluent, and most of the students have the latest smartphones.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 753

f. School Ethnicity:
0 % - American Indian or Alaska Native
5 % - Asian
2 % - Black or African American
2 % - Hispanic or Latino
1 % - Native Hawaiian or Other Pacific Islander
90 % - White
0 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 2

h. Average class or audience size 26

i. Total number of students/audiences you teach in a year 125

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

We start after labor day (usually with two professional days) and end before July 1, we have 182 student contact days This year we have the following breaks 9/30,10/1 10/9,10/14 11/7,11/8 and 11/28,11/29 12/21-1/1 1/20 2/17 4/4-4/12 5/25

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): BA in Biology from Rutgers University

Bachelor's Degree (Minor): Philosophy (Rutgers University)

Masters Degree (Discipline): MA Science Education, GSE Rutgers University

PhD Degree (Discipline):

Other Degree: AS Math with a Science Option, County College of Morris

b. How many years of education experience do you have?: 24

c. How many years have you been working at your current institution?: 23

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
NJ Biology License for grades 6-12 Teacher of the year in 2007

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Last spring I was able to take my family to the Maryland Science Center at Inner Harbor. At the science center was a polar exhibit, and a size XL big red parka, I pulled it on, and it felt like a cape. Our scientists doing work at the poles need to be our kids super heroes, there is an unprecedented assault on science, when we should be investing more time, people and money in science. I want to go to the Antarctic, work impossibly long days and stream information off the continent back to my classroom and other classrooms, and inspire my students and others to think objectively about data and ask hard questions about the science being done, and the potential conclusions from the research. I want to inspire the next generation of scientists by sharing what is being done right now.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I would like to create lessons around the science and the experiences and then share them openly with colleagues and teachers from other districts. I am planning on making heavy use of our districts tech and pr people to help me set up times to skype/google hangout back into classrooms while on expeditions, and reach out to contacts in other districts and schools to reach into their classrooms as well. In my classroom I will build and use units based on the experiences, and also work with my middle school team to help supplement existing curriculum

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Once invited into the program, I can reach out via my supervisor to the network of science supervisors to see how I can use the PolarTREC program to help provide content to help support their existing programs. I have some contacts in private schools in NJ as well and I can reach out to them as well. I have presented at regional science conferences, and national conferences, and would like to take the experiences from the program on tour in the years following experiences. I would also like to reach out to my regional science centers (Liberty Science Center and Franklin Institute) to see if I could set up seminars/talks or other programming with them.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I use a variety of techniques to engage my audience and facilitate learning, in the classroom we start each unit with anchoring phenomena that we will build and explore. During the start of the unit students will also work on primitive individual models and class consensus models to help make their thinking visible. Depending on timing, I will ask for and collect questions to try and elicit prior knowledge and then build plans based on what the audience knows. I think it is very important for learners to get their hands dirty, and when studying ice cores, we made primitive cores with Pringles cans, wax and PVC and even plaster, using dirt, coffee, and sawdust to help show the annual deposits.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I bring flexibility, problem-solving and an expedition mindset to the PolarTREC program and to a field research team. I am willing to brew a decent cup of coffee for the team and work long and hard hours to accomplish the expedition goals. In my department, I am the guy with a few power tools in the cabinet, and the ability to build a demo, modify a thing, or design a doohickey to help get the concepts across, armed with a leatherman multitool, and a few bits and pieces I can make things work. I can follow instructions, and work as part of a team. With the PolarTREC program, I would like to work as an advocate hitting the conference circuit and using social media to gain awareness. I would like to put together high school, middle and elementary programming and get our students excited about the polar science, and

get them to talk about the poles with the same excitement the little kids talk about pokemon.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I am a whitewater boater, it is my verb, and every trip is a bit of a mini-expedition, we need to assess the weather and conditions, we need to decide on the team of boaters, the running order, setting safety, and shuttle. I am comfortable making decisions, and following others lead, and think it is important to be able to do every job from hauling the loo, to picking the lines through the rapids, to making dinner. I enjoy working with a team and seeing what can be done together and being able to celebrate accomplishments and failures together. On the river with my crew, I am the guy that is trusted with the first-timers and weaker boaters because I work hard to keep them in the boat and have them experience a challenge that leaves them better than when they started.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Photos from the expedition have been posted on my instagram @jeffrobbins24 The four members of the expedition team elected to go back out from base camp after a long and strenuous day in the field. The team was hunting the elusive plastic bag that had been stalking about the park across the street. The team hiked for hours (or minutes) to the survey site and then Lily the expedition leader directed the team's deployment., she instructed the expert climber, firefighter and robot repairman Teddy to head to the swingset area, she directed the team medical expert and cook, mommy to the lake, and daddy was instructed to proceed towards the woods. Even though the expedition leader was exhausted from a full day of kindergarten she pressed on. Within a short period of time, the team bagged the plastic bag and discovered that the study area was teaming with other exotic species that needed to be tagged and bagged for transport back to basecamp for further study. All members of the team will be retiring early tonight, and we will be reporting our findings in the blog posts going out tomorrow along with pictures of what we found!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
I would like to go to the Antarctic and see a southern hemisphere summer. I have read and admired the work of Shackelton and would like to set foot on the Southern Continent. I would like to see the furthest human outposts from the equator and cross the Drake Passage.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
Nothing over 7 weeks

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am very interested in how life is adapting to the current rate of climate change and evidence of the rate of the change., I want to know more about how plants and animals are changing, and have concrete examples of how things are changing. I want to know more about how the temperature is changing, and how it is impacting ocean circulations, upwellings, and speed of ice movement and ice coverage. I am also interested in plastics and microplastics and how they are finding their way into the food chain and the impacts that they are having. I am a generalist in my classroom and want to know more about everything!

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest
I am very interested in materials and engineering.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
During and after college I worked in outdoor retail, and in addition to selling gear (and buying too much of it), I led backpacking, kayaking, and biking trips. I have been playing (and working in the outdoors for a few decades now) I have experience sleeping in tents, caves, rafts, and back of trucks. I have spent up to 18 days without proper plumbing or electric sleeping in the outdoors I can cook on electric, gas, wood, charcoal, and diesel. I currently have a valid Wilderness First Aid through NOLS Trip leader on a 16 person 18-day raft trip through the Grand Canyon in 2017 I have a bit of mountain bike experience I have been winter camping and have slept in snow caves at temps as low as -25 f. I have experience snowshoeing with and without crampons, and snowshoeing carrying a 40 lb pack.` I have been ice climbing, but have no need to do it again. I downhill and cross country ski I have done a bit of hiking, and although I am not the fastest I can go for a long time in rough terrain I have completed a Swiftwater rescue class I have been a raft guide for about 25 years I have practice in repairing neoprene and PVC inflatables I have run chainsaw mills and created lumber from round logs I have repaired outdoor gear in the field and in the shop and can sew with a decent machine or hand stitch without I have spent a good amount of time sea kayaking, and comfortable in rough conditions I have worked as a kayak escort for marathon swimmers, and have spent up to 13 hours in the kayak straight. I can rig climbing ropes and set belays, and have a very good understanding of solid anchors. I can rig mechanical advantage systems I have experience sailing smaller boats (sub 30 foot) but not going to win any races!

b. Provide a basic statement of your general health and physical condition.
I am 6’2” and 220 lbs I have a resting heart rate around 62-67, bp is 120/68 and good eyesight and hearing (I always wear eye and ear protection when needed) I have orthotics in my shoes, but consistently get over 10000 steps per day. I am older than I was last year but have very good stamina. I can run about 1.5 miles straight but can walk with a pack for hours. On Labor Day I was part of a 4 person raft team that won a 4-mile downriver raft race, beating the next closest team by 6 minutes. I can push an 18-foot raft into a headwind all day. I have plenty of scars on my body, but it still works. I am allergic to Phenergan (cough suppressant) and tend to get really nasty poison ivy when exposed to it.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I currently use a Windows 10 equipped pc and have used a Ubuntu equipped laptop

as well. I spend about 4-5 hours in front of a screen each day and tend to be able to figure most things out on my own, but I am not afraid to ask for help when I am in over my head. I consider myself fairly competent with the computer. Not as good as our district tech gurus, but, I can also email them for help quick!

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
For work I use an HP Probook with windows 10, we are a Google school, so I primarily google sheets, slides, and docs. I am most proficient in chrome and firefox, I can use Word, Excel, and Powerpoint. I use chrome and firefox as browsers, and am comfortable uploading videos and photos, embedding videos and photos, and I am working on becoming more adept in GoPro and Lightwerks video editing. I am using google sites for both my school website and my personal site, and I am uploading video up to my youtube page. I am also using Instagram and maintaining a small social media presence. Cameras Point and shoot Fuji xp90 (tough camera for shooting in bad conditions) Sony NEX-5 for high res, better pictures 50-300mm prime lens Video GoPro Hero 5 Black for action and interviews Git UpGT2 for action and interviews, kind of cheap, so it could be sacrificed for good enough footage If I am selected, I will get a gimbal rig and better mic set up as well, my current rig is garbling the sound a bit. Other Tech Garmin InReach for waypoints and sat communications, to be able to send information out when other systems are not working Cobra VHF for communicating with other marine vessels

e. List any additional skills or information that you wish to be considered.
I have worked with and as a general contractor, so I have experience framing, sheathing, finishing, running electric and plumbing, anchoring to concrete, tiling, plumbing, flooring and finish work. I would rather not paint, but can I have experience running chainsaws and using them to fell trees and mill lumber (I have run up to a 36-inch bar on a 65cc saw) I have a PADI open water one dive certificate I have experience using West systems and Raka epoxy, to make paddles, prototypes, and bed and reinforce fasteners I can cook and enjoy cooking, worked as a short-order cook for a bit, I have cooked meals for up to 45 people for a sitting.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni.

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Mentioned at a conference

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
national middle school conference/ national science conference

12. References

Reference 1

Name Melissa Czerwinski

Title and affiliation Science Teacher and colleague

Email Address melissa.czerwinski@gmail.com

Phone Number 908-812-8579

Reference 2

Name Thomas Patterson

Title and affiliation Science Supervisor

Email Address tpatterson@westfieldnjk12.org

Phone Number 908-789-4400 ext 4541

Reference 3

Name Brian Gechtman

Title and affiliation Principal

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