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International Professional Development: Lessons Learned

Kania Greer
kagreer@georgiasouthern.edu

Lisa Michelle Stueve
Georgia Southern University, lstueve@georgiasouthern.edu

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International Professional Development: Lessons Learned

Abstract

In 2016 Georgia Southern University Institute for Interdisciplinary STEM Education (i 2 STEM e) was approached by a collaborative group of educators from India now living in the US. They noticed a need for teachers in India to have access to the Interdisciplinary STEM Education pedagogical techniques through focused professional development. Over the course of the next two years, the partnership developed and in September 2016 the first group of educators in India was given a professional development opportunity around the concepts of Authentic Teaching, including place-based education, problem based learning, and project based learning. This paper will discuss the approach the educators delivering the professional development took, the barriers and successes to implementing professional development in a new cultural setting, and the next steps to be taken. It is hoped that this information will provide future providers of PD, who are working outside their country of residence, with insights and ideas on working with a culturally different and diverse educational setting.

Keywords

international professional development

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Kania A. Greer *Georgia Southern University*

Lisa M. Stueve *Georgia Southern University*

Introduction

In 2016 Georgia Southern University Institute for Interdisciplinary STEM Education (i^2STEM^e) was approached by a collaborative group of educators from India now living in the US. They noticed a need for teachers in India to have access to the Interdisciplinary STEM Education pedagogical techniques through focused professional development. Over the course of the next two years, the partnership developed and in September 2016 the first group of educators in India was given a professional development opportunity around the concepts of Authentic Teaching, including place-based education, problem based learning, and project based learning. This paper will discuss the approach the educators delivering the professional development took, the barriers and successes to implementing professional development in a new cultural setting, and the next steps to be taken. It is hoped that this information will provide future providers of PD, who are working outside their country of residence, with insights and ideas on working with a culturally different and diverse educational setting.

Literature Review

There is no denying the potential impact of quality professional development experiences on teacher practice nor that professional development can come in a variety of settings. One such setting is international exchange programs which can provide teachers with the opportunities to work outside of their comfort zones, however, exchange programs can also provide researchers with the opportunity to provide professional development to culturally diverse participants. Much research has been done on the effects of international exchange programs for teachers during their pre-service training [1,3,4,6] and most concludes international exchange experiences can heighten cultural awareness, improve cultural sensitivity, and provide self-reflection opportunities [4,6] for teachers. Leutwyler [4] reports school administrators are cited saying that teachers who have participated in international experiences are much more likely to be culturally sensitive, have a greater degree of self-efficacy, and are more confident in their teaching. What has not been studied is the impact of an international exchange experience on in-service teacher practice. This is difficult to do in most cases of providing professional learning because the time commitment involved in the follow up of implementation but becomes even more difficult when looking at international exchange experiences.

When these exchange experiences follow the tenets of high quality professional development and include a reform focus, a consistent duration, collaborative participation, active learning, consistency and a focus on content, as suggested by Desimone, Porter, Garet, Yoon, and Birman [2], it stands to reason teacher practice should improve. However, few long-term studies have been conducted with teachers who participated in international teaching experiences. Therefore it is unknown, what the long-term impacts are of such programs on teacher practice. In addition, while most study abroad programs focus on individual participant experience, there is a need to discover if there are any "common reflections and observations" [1] from teachers, which requires "inquiries of greater depth and breadth" into their experiences.

In our increasingly global society, these skills and traits could be of great value to teachers especially those who have limited opportunities to interact with different cultures and communities. However, whether teacher participants change teaching practice remains to be seen.

When first approached to develop the collaborative with India, researchers were told that Indian education was not keeping pace with the United States in Interdisciplinary STEM education, particularly in the areas of critical thinking and problem solving. The opinions of the educators who approached the researchers were that students in India were smart, knowledgeable, and graduating and obtaining professional degrees but were not able to apply their basic knowledge to critically solve problems of a more complex nature. In other words, if it required skills application in critical thinking and in looking at a problem from multiple lens, students floundered and were struggling despite having the "book" knowledge.

During an initial two-week trip to India, faculty educators were asked to implement professional development on authentic teaching practices to Indian teachers in four states. Each professional development experience lasted approximately one day. During that time, a focus on place-, problem-, and project- based learning was used to open the dialogue with educators and government officials about the work towards a shift in pedagogy in the United States and how this shift might benefit educators in India. The audience was primarily government officials, higher education and private school administrators and teachers. All the PD was conducted in English as all teachers speak English because that is the language of all formal education in India. The first step was to develop a common understanding of the practices of project-, problem-, and place-based education with the teachers.

Authentic Teaching Practices

Project-based Education

While project-based and problem-based are often used interchangeably, a key difference between the two is project-based can be even less structured than problem-based, as there is no set outcome, and allows for students to demonstrate learning in a variety of ways [10]. Project-based learning often focuses on problems with no simple solutions which can be derived from controversial or significant issues that appeal to the student. Done correctly, project-based learning uses extended inquiry [10] to allow students to work on projects throughout the learning process rather than as an extension of learning in the classroom. All learning is focused around a "driving question" [10] that is consistently referred to throughout the learning. However, in practice, project-based learning is typically discipline specific and falls within the parameters set by the teacher.

Problem-based Education

Another method, which can be used in conjunction with place-based education, or as a standalone, is problem-based learning. Problem-based learning focuses on having students seek to address ill-structured, open-ended "messy" real-world problems. Students are given a problem at the beginning of the learning process [9] and work in cooperative teams to address the problem and construct knowledge together. Resources are provided by the teacher after the students have had the opportunity to engage with the problem and are designed to assist the student with problem solving. By focusing on real-world scenarios students can make connections between learning future professional practice. The problems are open-ended meaning that students will likely not solve the problem in one semester as the learning itself is

the major output of this type of approach [9]. However, there is still some structure provided by the teacher and a set outcome (research presentation) expected.

Place-based Education

A third authentic teaching strategy which can be used in conjunction with project - and problem-based education is through place-based education because it lends itself to the idea of students becoming a part of a community focused on the problems of today rather than passive observers. It involves asking questions that impact the student's place, whether that be the classroom, school, or community in which they live [7, 8]. Place-based education has the capacity to improve student motivation, reduce student alienation, and improve overall academic performance [7] because it engages students into a problem that is relevant, real-world and that they can have an impact in solving. As with most teaching methodologies though teachers need help in figuring out what their place is, how it impacts a broader region, and how they can implement a learning strategy with limited resources. One way to implement place based education that also allows students to work on global issues is through Grand Challenges. Most disciplines have Grand Global Challenges that focus on issues facing the world today from water quality to global health care. These challenges can often be scaled down to allow students to look at them from the perspective of their own community.

Discussion of the program and the plan

In the 21st century, scientific and technological innovations have become increasingly important as we face the benefits and challenges of both globalization and a knowledge-based economy. To succeed in this new information-based and highly technological society, students need to develop their capabilities in STEM to levels much beyond what was considered acceptable in the past. [11]

To help meet this goal in India, the Institute for Interdisciplinary STEM Education was asked to focus on how to use project-, problem – and place-based learning to address Indian Certificate of Secondary Education (ICSE), Central Board of Secondary Education (CBSE) and International Baccalaureate (IB) curriculum standards through illustrations in a conference style setting with educators and by modeling the introduction to small, manageable, hands-on components with students at local schools. Through this ongoing partnership, STEM Academy USA seeks to address the need for educational institutions in India and the student community by producing effective innovators, leaders, collaborators and thinkers yielding maximum benefit from Prime Minister Narendra Modi's ambitious "Startup India" movement (2016) and Make in India campaign (2014).

The goal of STEM Academy USA is to launch Centers of Excellence in multiple cities/states throughout India to support this pedagogical shift in education. The team of educators from Georgia school systems alongside Georgia Southern University researchers are actively supporting this initiative by creating ICSE, CBSE and IB aligned modules in grades 4 – 10 complete with lesson plans and supports for teachers, as well as necessary resources and equipment to execute the included hands-on activities to facilitate the learning. The intention is to shift pedagogical practices to incorporate, at a minimum, interdisciplinary STEM days that provide opportunities for students to investigate complex problems in teams based on their unique interests. In addition, it is hoped that the pedagogical shifts will create professional

learning communities of teachers across disciplines that become a part of the school culture. In addition, STEM USA has a strong focus and mission on empowerment of girls and women through STEM education.

To meet these goals, STEM Academy USA asked Georgia Southern University's Institute for Interdisciplinary STEM Education (i^2STEM^e) to collaborate in developing a one-day launch with a team of educators from K-12 schools (DeKalb and Newton County Schools) and an executive from a technology think tank from Oklahoma, NextThought. The marketing executive from STEM Academy USA, Dr. Amitabh Sharma relayed that

> *Indian School/College Principals, Directors, Owners, Teachers have dabbled with STEM yet akin to the US, there is no structure. So, our unique proposition would be to lend a semblance of structure to the STEM implementation that we are purportedly endeavoring to usher in India and this would have to be our concerted and emphatic drive thru the 4 sessions in Mumbai, Hyderabad, Chennai and New Delhi. This will attract attention and hopefully enable us to graduate to the next step of bringing our STEM solutions to Indian academia.*

The project was launched in September 2016 with the first group of researchers conducting a 2-week professional development tour in India. After a successful visit in September 2016, an after-action review was held for the team at Georgia Southern University. Decisions were made to offer a follow-up webinar for schools interested in moving forward after the initial introduction and to provide tools to define projects and problems to meet their specific needs. The team identified modules to focus development energies from grades 4 – 10. Modules were selected that addressed standards across CBSE and IB curriculum. In addition, the decision was made for the team to embark on a second trip to India, based on interest from schools and government officials in various states, for a more intensive professional development.

During the course of the next several months, i^2STEM^e began work to expand the team of invested researchers in the project in preparation for additional professional development both directly to educators and for the creation of a train-the-trainer model to support the centers for excellence in tandem with providing support and oversight of curriculum development. The strategic vision for the STEM Academy USA centers for excellence in India is aimed towards providing a cadre of trained STEM instructors, India based Master Trainers to collaborate directly with India school teachers during implementation, and facilitate educational institutions to adopt STEM methodology in a student-centered authentic teaching and learning environment.

In July 2017 a second team was sent to Mumbai, Kolkata, Chennai and New Delhi to conduct a more intensive, 3-day professional learning sessions with teachers. The 3-day experience provided time for teachers to engage in Grand Challenges directly linked to their place. For example, in Kolkata teachers engaged in a challenge to improve one habitat in the Alipore Zoological Garden. Through this process, teachers developed lesson plans which they then introduced to their students with assistance from the STEM Academy USA team. During both of these professional development deliveries, the team dealt with barriers and successes along the way.

Barriers and successes to implementation

Schools around the world are faced with similar barriers to education and India is no exception. Just like in the United States while there are pockets of excellent STEM teaching and learning taking place, more often than not, STEM teaching is done is content isolation, with little time for teachers to co-plan. In addition, many schools and students are under pressure to improve testing scores which leaves little time for students to fully explore, engage, and examine topics before moving on to the next one. Knowing these barriers and similarities exist allows the researchers to develop a professional development that would challenge the teachers but also be respectful of the idea that change does not happen overnight.

Working with a foreign culture can be both a rewarding and stressful experience. There are subtle nuances of culture that must be lived to be understood. As educators familiar with one system and way of communicating is critical that providers adopt an ability to "go with the flow" and make every effort to adapt to the culture of the host country. In a country like India where, despite modernization and western world views, the residual effects of a centuries old caste system may still be felt, understanding ones place becomes even more crucial. Expectations of both providers and hosts can seem at odds with getting the work done in some instances when dealing with a system unfamiliar to the Western world. However, this same barrier can provide a great success when approached with a desire to understand and a respect for the culture.

In addition, to the cultural barriers, communication is a key factor that can be both a barrier and success. Making sure expectations are clear from the outset, listening to both the needs and desires of all parties involved, and planning in advance are crucial for a successful implementation.

Perhaps one of the biggest barriers faced in the implementation is the time factor. The team of STEM Academy USA hosts desires to bring this teaching to as many teachers as possible and therefore the educators were jumping between states in India every three days and at times felt rushed to provide the PD. Efforts to indicate that more time is needed in each state have been met with mixed reactions. However, the partners are listening, and it is believed they see the need for more time. This is an on-going discussion between the partners as there are competing priorities for different team members (some want to seek funding, some are concerned with curriculum development, some are focused on teacher PD). Making sure that clear goals and objectives are outlined, and action steps are clear helps to minimize these barriers from the front-end.

There are many more lessons learned from starting a program like this from the ground up. Primarily there are issues of funding, but there are also concerns of intellectual property in the development of curriculum, issues of compensation, resource allocation and mission creep to name a few. However, each of these can be addressed by focusing on a respectful partnership where questions can be asked, and lessons can be learned by all members of the team.

Next steps

A channel partner in New Delhi was secured and the development of the first 21 modules began with an anticipated delivery date of January 2018. Since its inception, the curriculum

development team has expanded to include six Georgia Southern University Faculty, seven K-12 educators from a variety of Georgia school systems (DeKalb, Newton, Gwinnett) and two industry partners. STEM Academy USA keeps as a part of their core mission the development of curriculum resources that reflect customization and flexible adaptation to varying needs in Indian schools. A next trip to India to reveal the modules and provide the initial train the trainer development in the first Center of Excellence, in New Dehli, is in the planning stages.

In addition, the STEM USA team is anticipating bringing 20 teachers to the United States for a month-long intensive professional development experience in May 2018. It is important to have teachers experience learning in an environment which will give them time to adopt the new ways of teaching and go in-depth in the planning stages for students.

Conclusion

International partnerships bring the world to teachers in many countries. Learning to embrace the barriers and successes to implementation allows the work to be conducted in an environment of trust of respect. There are still ongoing lessons being learned in our partnership with India but the outcomes are rewarding and provide evidence that with strong commitment international professional development programs can be successful in preparing all students with the skills they need to be successful.

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