A Potential for Interest Driven Learning to Enhance the Inquiry Based Learning Process

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Abstract

Interest driven learning has the potential to enhance the inquiry based learning process by contextualizing curriculum as students investigate scientific questions, collecting and analyzing data, and construct reasonable conclusions relative to their interests. This paper presents a project and its findings that involved preservice elementary teachers developing science lessons from student career interest information gathered from a class of second graders. How might interest driven learning enhance preservice elementary teachers' ability to teach science through inquiry based learning? How might interest driven learning influence elementary students' perception of science in their future careers? The preservice teachers reported positive attitudes toward teaching science while connecting student career interests with science content. The project also reported having a positive impact on the second graders' perceptions of science associated with their chosen careers.

Introduction

Inquiry based learning is a teaching and learning strategy where students mimic behaviors displayed by those in the scientific community in order to construct scientific knowledge (Keselman, 2003). Inquiry is used to construct scientific knowledge through a process of asking questions, conducting experiments, making observations, and formulating conclusions (Pedaste et al., 2015). Students involved in the inquiry process are focused on being active discovering knowledge that is new to them (de Jong & van Joolingen, 1998) by investigating scientifically oriented questions, developing and testing hypotheses, collecting and analyzing various forms of data, and constructing reasonable conclusions (Wolf & Fraser, 2008).

Students enrolled in classrooms that engage in scientific practices of generating questions, evaluating evidence and explanations, and understanding the development of scientific knowledge report higher learning outcomes when compared to students in classrooms that use more teacher-centered direct instruction methods (Granger et al., 2012). Furthermore, students engaged in inquiry based learning show increases in problem-solving and critical thinking skills (Avsec & Kocijancic, 2014), are more involved in learning and knowledge acquisition (Zafra-Gómez, Román-Martínez, & Gómez-Miranda, 2015), and express more positive attitudes toward science and science careers (Gibson & Chase, 2002).

In classrooms, educators seek to enhance the inquiry process and maximize student development of science processing skills. One possible method of enhancing the inquiry process is by exploring students' own questions and interests that arise within the classroom (Edelson & Joseph, 2004). The exploration of students' questions and interests contextualizes learning by connecting curriculum to students' real-world experiences (Brown & Adler, 2008). Additionally, students appear to be more engaged and willing to participate when they can connect their interests to curriculum within the classroom (Palmer, 2009). Interest driven learning, or the process of connecting curriculum content to student interests, has the potential of creating environments where student engagement persists toward mastery of a skill or acquiring knowledge (Azavedo, 2013).

This paper presents a potential for interest driven learning to enhance the inquiry based teaching and learning process by focusing on a project and its findings that involved preservice elementary teachers developing science lessons from student interest information gathered from a class of second graders. The specific interest involved in this study targeted students' career interest. A detailed description of the project format is provided along with examples of project artifacts and lesson plans. In addition, the research findings highlight potential benefits interest driven learning has on preparing preservice teachers to teach science and impacting second graders' perception of science associated with their career interests. The research questions for this paper are as follows:

1. To what extent does interest driven learning enhance preservice elementary teachers' ability to teach science through inquiry-based learning?

Keywords: interest driven learning; inquiry based learning; preservice teacher preparation

2. To what extent does interest driven learning influence elementary students' perception of science in their future careers?

Framework

The overall goals of the interest driven learning project were to create an opportunity where preservice elementary teachers could collect career interest data from elementary students, and in turn, use the career interest data to develop and teach their own science inquiry-based lessons. Specifically, this project used student interest as a medium of conducting and driving the development and teaching of science inquiry based lessons. Interest is a phenomenon that emerges from an individual's interaction with his environment (Renninger, Hidi, & Krapp, 2014). Developing characteristics of a learning environment that captures the interests of many individual students can have positive impacts on learning. Edelson and Joseph (2001) developed the Interest-Driven Learning Design Framework (IDLDF) which suggests that robust understanding comes from authentic, interesting tasks where students find themselves motivated from the natural appeal of the activity, drawn toward mastery through persistence, and more connected to acquiring knowledge. The IDLDF also speaks to the challenges of addressing the wide breadth of interests across student populations as well as maintaining the motivational strength of activities over time (Edelson & Joseph, 2004). The IDLDF was used as a guide in the creation of this preservice teacher project, as a lens to interpret how to enhance preservice elementary teachers' ability to teach science through inquiry-based learning, and as a way of connecting science with future career choices for elementary students.

Project Description

As a project overview, a class of preservice elementary teachers were asked guiding questions, tasked with collecting career choice information in a method of their choosing from six second grade classrooms at a nearby elementary school, and charged with interpreting and grouping the career choice data. In turn, they were responsible for developing and teaching science learning activities, using inquiry based teaching and learning methods, that addressed the second graders' career interests. These learning activities offered the same opportunities to the second graders that the preservice teachers experienced: answering research questions, collecting data, interpreting data, arriving at conclusions.

Interest Driven Learning Project Outline

Step 1: Data collection planning and preparation period

Step 2: Data collection day at the elementary school

Step 3: Class discussion and reflection

Step 4: Organization of data

Step 5: Development of inquiry based science lessons

Step 6: Science teaching day and post-activity question

Step 7: Class discussion and reflection

Step 1: Data collection planning and preparation period

The preservice teachers were initially asked to find the answers to two guiding questions: What do a class of second graders want to be when they grow up? Do the second graders think they will use science in their future career choices? They were given an open structure to develop a method by which to gather the first data collection point (career choice) from each student in their assigned classroom. While the preservice teachers were given the freedom to create their own data collection method, they followed a direct procedure to obtain the second data collection point (science in their future career). All preservice teachers were required to ask each second grader the 'yes or no' question "Do you think you will use science in your future job?" The second graders were also required to explain their answers in an open-ended question format.

Step 2: Data collection day

The preservice teachers taught their 20 minute data collection lessons, making sure to account for answers from each student in the classroom. All collected data from the two questions from each second grade student in each classroom were then brought back to be discussed and analyzed.

Step 3: Class discussion and reflection

A guided discussion took place during the first class after the data collection lesson to allow the preservice elementary teachers to openly reflect on their teaching experience. A few of the guiding questions were as follows: Did you feel prepared prior to teaching your data collection lesson? Was your method of collecting the needed information effective? Would you keep or change any part of your data collection lesson? Did other issues or situations arise for which you hadn't planned?

Step 4: Organization of data

The preservice teachers were responsible for organizing the career choice data. The preservice teachers used an inductive approach (Thomas, 2006) to develop categories that emerged from the career choice data. In addition, they were required to whittle down the data into six career categories to match the six individual second grade classrooms. Upon their return to the elementary school, a different career science lesson would be taught in each classroom.

Step 5: Development of inquiry based science lessons

The preservice teachers were then tasked with creating inquiry based science lessons (Olson & Loucks-Horsley, 2000) that addressed each of the six career category themes (See Table 1). Each inquiry based career lesson had to show evidence of the second graders 1. engaging in a scientifically oriented question, 2. giving priority to gathering data and evidence in responding to questions, 3. formulating explanations from the evidence gathered, 4. connecting explanations to scientific knowledge, and 5. communicating explanations (NRC, 2000). The preservice teachers were encouraged to embed science processing skills, such as students questioning, hypothesizing, predicting, observing, measuring, inferring, experimenting, and communicating (NRC, 1996) within their lessons. They were also strongly encouraged to scaffold

Table 1. Career Category Information.

Career Category	Driving Question
Sports	In what ways can we understand laws of motion in sports?
Medical	How do doctors gather information about their patients?
Crime Center	How does a detective investigate a crime scene?
Explorer	How do botanists categorize leaves?
Entertainment	How is sound produced?
Culinary	How do chefs use their senses while cooking?

their scientific investigations where the second graders could gather data on their own in a structured or guided inquiry environment (Bell, Smetana, & Binns, 2005).

Step 6: Science teaching day and post-activity questions

Each group of preservice teachers taught their 30 minute lesson six times as second grade classes rotated rooms after each lesson. Once the second graders experienced all six lessons and rotated back to their original rooms, they were each given a personalized card with their name and originally stated desired future job on it. On the card, the second graders were then asked again to answer and explain whether they thought they would use science in their future jobs. All second grader student responses were collected.

Step 7: Class discussion and reflection.

During their next science methods class, preservice teachers, again, openly discussed their experiences preparing and teaching through an interest driven learning method. The discussion was guided through questions that sought to understand whether they felt prepared prior to teaching their lesson, if they made any adjustments to their lessons during the science teaching day, and if they had a more defined perspective of using interest driven learning in the classroom.

Research Methods

The research arm of this project explored two areas: the potential impact of participating in this interest driven learning project had on preparing preservice elementary teachers to teach science through inquiry based learning, and the possible effect this project had on the second graders' perception of science associated with their career interest. A concurrent nested mixed methods approach was used to address these two areas (Creswell, 2003) giving priority to the class discussion, science inquiry lesson products, and interview data that focused on the more dominant research question regarding preservice elementary teacher preparation to teach science. The nested quantitative data centered on understanding whether the preservice elementary teachers' science lessons had any impact on the second graders' perceptions of using science in their future careers.

Participants and School Settings

A class of 18 preservice elementary teachers participated in the interest driven learning project while enrolled in a science methods course at a major university located in a Gulf of Mexico U.S. coastal state. All the preservice teachers were part of a cohort of education majors in the second semester of their third year of college. In addition, all of the preservice elementary teachers were female and white, non-Hispanic.

The interest driven learning project was performed at a public Pre-K-4 elementary school located within five miles of the university. The total enrollment of the elementary school at the time of this project was 701 students. The demographics of the students were 46% White, 42% Black, 5% Hispanic, 4% two or more races, and 3% Asian. Furthermore, 55% of the students were considered to be from low income families. There were 126 second grade students enrolled during the year of the project. However, only 120 second grade students were present on both the initial data collection day (Step 2) and the science teaching day (Step 6). The other six students were dropped from the study as either their pre or post science lesson 'yes or no' response to the question "Do you think you will use science in your future job?" was not obtained.

Relationships were created and fostered with the local elementary school, specifically with the second grade teachers, prior to the introduction of this project in order to receive approval to conduct the project, address logistical and schedule items, and ensure all parties were aware of the data collection and science teaching objectives.

Data Sources and Analytical Approaches

The data from the preservice teachers originated from lesson plans, observations during class discussions in Steps 3 and 7, and face to face interviews after Step 6. All 18 preservice teachers were present in the class discussions and each participated in the interviews. Class discussions covered broad questions on whether they felt prepared ahead of their lessons and allowed for open reflection on how their lesson actually occurred.

Interviews with preservice teachers were conducted, recorded, and transcribed. The interviews began by asking them to describe their science lesson. The interview then continued by asking them to describe how their preparation and teaching experience progressed throughout the project, what factors led to any success or failures within the project, and if they made any changes during their teaching experience. The interview continued by asking their perspective on the benefits and/or drawbacks of using interest driven learning as a method of teaching and whether they would use this method of teaching in their future classrooms. The interview concluded by asking them if this project helped in their preparation to teach science, and, if so, how.

The research questions, the IDLDF, and inquiry based learning lenses shaped how we coded the preservice elementary teacher response data. Coding resembled two factors that were the focus of this project study: *teacher preparation* and *interest driven learning*. Coding for *teacher preparation* involved combing the data for preservice teachers learning new science teaching skills, acquiring a

new perspective, acknowledging a personal strength or weakness, or recognizing where they are in becoming a full time teacher. Coding for *interest driven learning* involved combing for benefits, drawbacks, or future use of the interest driven learning as a method of teaching.

The response data from the second graders were composed of their personal responses before and after their participation in the inquiry based science career lessons. A McNemar's statistical test was used to monitor consistency in responses across the two variables (McNemar, 1947), with one variable being the second graders' responses before the inquiry based science career lesson and the other variable being the second graders' responses after participating in the inquiry based science career lessons. More specifically, it was used to determine if the inquiry based science career lessons had an effect on the number of second graders' responses changing from 'No' before the lessons to 'Yes' after the lessons (or from Yes to No).

Project Lesson Plans

It is important to note that the lesson plans presented in this section are a result of this particular project and will most likely not resemble lesson plans or products produced from future preservice teachers participating in this, or other, interest driven learning projects.

Data collection approaches (Steps 1 & 2)

The preservice teachers participating in this interest driven learning project were given a more open structure to develop methods of collecting career data before creating their inquiry based science lessons. There were five different approaches to gathering the career choice data between the six groups of preservice teachers.

- Two groups had the second graders fill in the blank at the top of the page "When I grow up I want to be a/an _____." Then, they had the second graders draw a picture of their future job in an open space below the fill in the blank. The preservice teachers used questions about what an individual and their working environment looks like in their future jobs to guide the second graders with their drawings.
- One group handed a piece of paper with an outline of a human figure and asked the second graders to draw what their future jobs would look like. The preservice teachers encouraged the second graders to also draw their future job's working environment in the background of the picture. At the bottom of the page, the second graders were asked to write the title of their future jobs as well as a one sentence description of what they will do in their future jobs.
- One group produced a comic strip method where the second graders drew or wrote in answer requests in each box. In the first box, students filled in the blank "When I grow up I want to be a/an_____. In the second box, they were asked to draw the type of clothes they would wear at their future job. In the third box, they were asked to draw the place where they would work. In the final box, the second graders were asked to draw the tools they would use at their future jobs.
- One group had their class of second graders fill out a diploma congratulating them for becoming a professional in the career of their choice. Each student filled in a series of blank spaces indicating his or her name, future job, and date of completion.
- One group of preservice teachers used a writing exercise method. In addition to using the fill in the blank "When I grow up I want to be a/an _____" method, they required students to write a few sentences explaining why they chose a certain career and why it is important.

After the preservice teachers collected their career choice data, they asked the second graders the 'yes or no' question, "Do you think you will use science in your future job?" They also asked the second graders to explain their answers.

Career categories and lessons (Steps 4, 5, & 6)

Six inquiry based science lessons were created, each associated with one of the six career categories (See Table 1). Specifically, each lesson was driven by a question, and had students collect various forms of data through observations and experimentation before formulating a conclusion. The career category lessons were as follows:

- In the 'sports career' science lesson, the second graders were asked an initial engaging question, "In what ways can we understand laws of motion in sports?" The preservice teachers had their students testing physical strengths of pushing and pulling objects of various sizes in an Olympics role-play lesson.
- The 'medical career' science lesson, the students were asked "How do doctors gather information about their patients?" The activity had the second graders gather their own pulse rates, vital signs, height, and arm spans to begin understanding how those in the health and medical fields gather data on individual patients.
- In the 'crime center career' science lesson, the students were presented with the question, "How does a detective investigate a crime scene?" The preservice teachers had students make observations and collect evidence (e.g. thumb prints) to determine who caused the infraction.
- In the 'explorer career' science lesson, the initial question asked students, "How do botanists categorize leaves?" The second graders were challenged with categorizing a pile of leaves into groups. Later, the students compared their classification methods with strategies experts use to classify leaves.
- In the 'entertainment career' science lesson, the second graders

were asked, "How is sound produced?" In this lesson, students tested and experienced a series of sound models to determine how sound is produced and travels.
- In the 'culinary career' science lesson, the second graders were asked, "How do chefs use their senses while cooking?" The second graders used their taste and smell senses to determine flavors that are found in foods. The preservice teachers had students test individual and combination flavors in a kitchen and chef role-play lesson.

Findings

The following section presents the findings from the preservice elementary teachers' responses during their one-on-one interviews and from the McNemar statistical analysis of the second graders' science in career responses before and after participating in the inquiry based career lessons. The findings refer to both the IDLDF and inquiry-based learning to further explain the interpretation of the interview and science in career responses.

Interview Response Data

The interview responses from coding for *teacher preparation* and *interest driven learning* revealed the project contributing to an increase in preservice teachers' attitude toward teaching science, awareness of teaching various groups of students, and motivation to connect with students.

Teacher preparation. Two themes emerged from coding for *teacher preparation:* project-to-attitude and planning-versus-actual. Through the emergence of the project-to-attitude theme, the preservice teachers expressed aspects of the project that led to some change in attitude toward teaching science. The aspects of the project that led to some attitudinal change included teaching their science lesson multiple times, facing various classes, and teaching science through inquiry.

The preservice teachers expressed the process of teaching the same lesson multiple times led to an increase in their level of confidence in teaching science. As one preservice teacher said, "*I know this lesson back and forth. I'm confident I can teach this lesson again in my own class one day.*" Another preservice teacher said, "*I became more confident teaching science, because we got to teach the lesson six times.*" The structure of the project allowed the preservice teachers to repeat their lesson six times, each time to an entirely new class of second graders. The repeat format of the project created opportunities for the preservice teachers to quickly reflect and adjust their teaching approach accordingly, which appeared to have contributed to some increase in their confidence level in teaching science.

The repeat format of the project also allowed the preservice teachers to teach to different groups of students.

> *Each class was different in behavior. It was like after the third time teaching the lesson I started to notice that we weren't really changing the science lesson but adding more guidance for the crazy energetic classes and backing off for the more independent behaved students.*

Some preservice teachers were discovering that they were adjusting the level of scaffolding to match the students' behavior and ability without changing the learning outcomes of the science lesson. This understanding by some the preservice teachers is analogous to how teachers can differentiate their science instruction. Teachers can adjust the level of scaffolding, or differentiate their science instruction, either by providing additional productive questions (Martens, 1999) or by adjusting the level of inquiry between confirmatory, structured, guided, and open inquiry (Bell, Smetana, & Binns, 2005).

Preservice teachers also said that teaching their lessons using an inquiry-based learning approach, a requirement of the project, had an impact on their perspective of teaching science. For example, one preservice teacher said, *"Coming from a background where science information was spewed at me and I was expected to retain it, this showed me that it is better to have the students be like scientists up, active, and engaged in questions.*" Another preservice teacher provided a different perspective of teaching through inquiry, "*There is a level of mystery for the students using inquiry cause they have to look for clues and find out the answers for themselves without me lecturing them.*" Their lessons were required to have their students investigate scientifically oriented questions, develop and test hypotheses, collect and analyze various forms of data, and construct reasonable conclusions. It appears some preservice teachers saw that using an inquiry-based learning approach as beneficial to enhancing their instruction and improving their interactions with students.

All but one preservice teacher referenced at least one aspect of the project that led to some attitudinal change toward teaching science. Furthermore, the project-to-attitude theme showed an overall positive attitudinal direction as preservice teachers gained confidence teaching their lesson multiple times, facing multiple student behaviors, and using an inquiry-based learning approach.

In the planning-versus-actual theme, the preservice teachers compared what they had planned to happen within their lessons to what actually occurred when they taught their lessons. The preservice teachers discussed time, materials, and interactions with students as points of differences between what they had planned and what actually occurred.

> *We spent so much time planning and getting ready and then it's like we over planned because we didn't get to some of the stuff cause we ran out of time. But, I guess that's how it is when you teach something for the first time. You think it's going to be perfect but then something happens and it changes the outcome.*

Some preservice teachers began to realize that even though teachers place a fair amount of effort into planning their lessons, the actual outcome is sometimes different due to unforeseeable circumstances.

Other preservice teachers were more specific about the challenges they faced. For example, one preservice teacher said,

"*We planned this exciting lesson, but the students were almost too excited at times to even do the activity, so we had to come up with ways to calm them down just to prepare them.*" Another preservice teacher shared, "*My science materials fell apart, so I had to improvise and come up with new questions to ask them and still get to the learning goals.*" The project requirements of both planning and teaching their science lessons provided opportunities for the preservice teachers to gain practical experience while becoming more aware of unforeseeable circumstances. This awareness became known as preservice teachers expressed learning things while teaching that they did not previously consider. 12 of the 18 preservice teachers compared their to lesson planning period to their teaching

Interest driven learning. Two themes emerged from coding for *interest driven learning*: motivational factors and limits. The motivational factor theme described preservice teachers expressing a desire to use interest driven learning as a method of teaching in their own classroom. The preservice teachers described themselves as being more motivated to plan and teach their lessons to students' career interests. One preservice teacher added that using interest driven learning gave more meaning to their teaching responsibilities, "*Taking student interests into account makes the lessons not only more meaningful for them but more fun for me to plan.*" Another preservice teacher shared a similar perspective, "*Teachers need to find a way to connect to students' lives. I believe more learning will occur if the lesson is based off of both the student interests and effective instruction.*" Some preservice teachers expressed a desire to plan and teach lessons with students' interests in mind, as seen through the IDLDF, where students find themselves motivated from the natural appeal of the activity and drawn toward mastering skills and acquiring knowledge (Edelson & Joseph, 2001).

Several preservice teachers provided richer descriptions behind their desire to use interest driven learning in their future classrooms by noticing that their students were beginning to connect their interests, or careers, with the science skills and content. For example, one preservice teacher noticed the elementary students not only making science connections to their career interest but also across disciplines:

> *It was exciting to hear the students talk about how the science content related to the career they want to go into, but what was more exciting was them seeing how science content is used across many careers and not just the one they want to go into when they get older. There were many times we would hear students make connections between our activities and their job choice. We never said, 'You'll use science in your job.' It just happened.*

Interest driven learning uses student interests as the foundation for curriculum decision-making, focusing more on the strengths and abilities of the students leading to a higher level of engagement within the classroom (Palmer, 2009). The preservice teachers that participated in this project found this experience more motivating in both planning and teaching, and also saw their students making connections between their interests and the science content. 17 of the 18 preservice teachers mentioned that recognizing and knowing student interests can be used to motivate their own planning and instruction, and can improve classroom engagement.

The limits theme emerged from preservice teachers expressing concerns, drawbacks, or limitations in using interest driven learning as a method of teaching. Several preservice teachers were concerned about not meeting each student's interests, "*As the only teacher, and a possible outlier interest in the classroom, you might not be able to include every student and they might feel left out.*" Their statement echoes the challenges within the IDLDF of addressing the wide breadth of interests across students while still maintaining classroom motivation (Edelson & Joseph, 2004). Other preservice teachers were concerned about meeting standards. As one mentioned, "*If we focus solely on interest driven learning, we might miss out on other necessary learning opportunities and standards. There needs to be a balance or a way to merge interests and standards together.*" Only 6 of the 18 preservice teachers expressed a concern about using interest driven learning in the future giving further evidence that overall this group of preservice teachers possessed a positive attitude toward interest driven learning.

The IDLDF (Edelson and Joseph, 2001) and inquiry based learning (Keselman, 2003) provided a foundation for creating the project and a framework for interpreting how an interest driven learning project might improve preservice elementary teachers' ability to teach science through inquiry based learning. The preservice teachers in this project stated they saw an increase in their own confidence toward teaching science, motivation toward meeting student interests, and awareness of teaching different student behaviors and skill levels. They also stated they developed more foresight of potential circumstances and an ability to handle changes. A few preservice teachers expressed concerns about reaching a balance between student interests and standards. However, overall, the preservice teachers held a positive disposition toward using interest-driven and inquiry-based learning to connect with students and teaching science.

Statistical Analysis on Using Science in Careers

One hundred and twenty (120) second grade students participated in a series of six thirty-minute inquiry based career lessons that were based off of their expressed career interests. These same second graders were also asked before and after the inquiry based career lessons if they thought they would use science in the future jobs (yes or no).

As shown in Table 2, a McNemar's test determined that there was a statistically significant difference in the second graders responses before and after the inquiry based career lessons (McNemar test chi- square = 39.0244, $p < .001$), meaning these lessons had a positive impact on the second graders' perceptions of science associated with their career choices. Furthermore, from the first to

Table 2. Second graders' response to use of science in their future career.

	After Lessons	
Before Lessons	No	Yes
No	22	41
Yes	1	56

McNemar test chi- square = 39.0244, $p < .001$

the second round of questioning, 41 of the 120 students changed responses from No to Yes while only 1 student changed their response from Yes to No. Twenty-two (22) of the 120 students perceived science not to be part of their future job before and after the inquiry based career lessons, while the remaining 56 second grader students maintained the perception that science will be part of their future career before and after participating in the inquiry based career lessons. These results also align with preservice teachers recognizing their students making connections between their career interests and the science skills and content. Only 47.5% of the second grade students perceived science to be part of their future career prior to participating in the interest driven inquiry science career lessons. After experiencing the lessons, 80.8% of the second grade students perceived science to be part of their future career.

Limitations

The qualitative nature of the preservice teachers' interview response data represents perspectives after having participated in a project at a particular time and place. Recreating a similar project with similar factors and variables may prove difficult. In addition, the preservice teachers' interview response data were from 18 individuals and may not represent the entire preservice elementary teacher population. Additional investigations of the impact of embedding interest driven learning within inquiry based learning has on preservice teachers' ability to teach science are recommended.

Discussion and Conclusion

Teachers are given the challenging task of developing individuals who firmly grasp the concept that science is a process of constructing new knowledge and understanding the real world around us. This task may even appear more daunting to preservice teachers as they may not yet possess the pedagogical or science content knowledge needed to address to their students the importance and existence of science in our everyday lives. However, educators have developed various learning strategies to enhance and facilitate teaching the inquiry process. Problem based learning, an instructional method in which students learn through problem solving (Hmelo-Silver, 2004), project based learning, an approach to learning where students' choice and voice drive the inquiry process through a sustained, real-world project (Bell, 2010), and active learning, a teaching method that promotes student involvement in the learning process (Freeman et al., 2014), are just a few learning strategies that attempt to enhance inquiry. The example presented in this paper of enhancing the inquiry process by embedding student interests within curriculum may help teachers and educators introduce essential components of scientific thinking. Career choice, as a specific example of student interest, can be used as a theme to link personal student interest to scientific thinking through rich classroom science experiences.

The interested driven learning project presented in this paper had preservice elementary teachers participate in sustained inquiry as they addressed questions and challenges, used their own voice and choice in developing curriculum, had time to reflect on their practice, and made real world connections by working with elementary students in formal classrooms. Specifically, the preservice teachers were presented with a challenge of investigating second graders' career interest and initial perceptions of science in their career choice. They developed a data collection method of their choosing before implementing it in a real classroom environment. They then applied the second graders' responses into developing and teaching their own inquiry-based science lessons. They were also given opportunities to reflect on their teaching experiences.

The preservice teachers reported positive attitudes toward teaching science and having learned practical, on-the-job teaching skills after participating in this project. In addition, the preservice teachers reported a desire to continue interest driven learning as a way of improving classroom environment. Finally, the project had a positive impact on the second graders' perceptions of science associated with their chosen careers.

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