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Integration of Place-Based Education Into Science Classes From Prekindergarten Through Grade 5

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COLLEGE OF EDUCATION

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2016

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MEd, Cleveland State University, 2002

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

In a large urban district in Ohio, 29.2% of Grade 5, 28.7% of Grade 8, and 45.7% of Grade 10 students passed the state test in science. School district administrators formed a community partnership with local science institutions in order to provide students with hands-on place-based learning experiences intended to improve science academic achievement in PK-Grade 5. The purpose of this qualitative program evaluation was to determine the level of implementation of that place-based program by examining the efficacy of the teachers' embedded professional development and their experiences with the training components. Bruner's theory of cognitive development was used to examine teachers' needs in facilitating the program. A stratified random sample of 659 PK-Grade 5 teachers from 73 district elementary schools was selected, and 57 teachers responded to an anonymous online survey of 5 open-ended questions. Data were analyzed using thematic analysis to identity factors that enhanced or impeded the implementation of place-based education programming based on their professional development. The key findings indicated that over half of the participants viewed resources as lacking, training as limited, and planning that is too time consuming, and complicated. Participants expressed the need for clarity regarding resources and more training on how to plan for and integrate the placed-based approach. The resulting project was an executive summary and interactive workshop for program stakeholders, such as administrators, teachers, and ultimately students, who would benefit from this project by improving the place-based program.

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Section 1: The Problem

Introduction

The federal law No Child Left Behind (NCLB) was enacted on January 8, 2002, with the intention to improve the quality of education and establish a provision for standards of accountability. An inadvertent result of the legislation was the increased emphasis states put on mathematics and reading to determine adequate yearly progress (AYP; Johnson, 2007a). Similarly, as in other low-performing urban districts pressured to make AYP and raise standardized test scores, the students tend to spend elementary class time otherwise scheduled for science reading from trade books and responding to vocabulary worksheets (Johnson, 2009).

Accordingly, in the district where this study took place, there had been a significant increased focus on reading and mathematics that had resulted in reduced instructional time dedicated to science education. Feeling pressure to meet demands for improved accountability and academic performance, school administrators would often give priority time and resources to reading, and mathematics, subsequently reducing time spent teaching science (Johnson, 2007b). This disproportionate emphasis is being challenged by distinguished science scholars who are leading a growing national movement concerned with educational achievement in science and the global demands of a knowledge-based society (Committee on Prospering in the Global Economy of the 21st Century, 2007). There is a need for improvements in K-12 science education, including those that promote student preparation for academia as well as the business sector (Committee on Prospering in the Global Economy of the 21st Century, 2007). One way

to improve the underperformance of students in the United States in mathematics and science is to develop engaging place-based interest in the content areas. This notion becomes difficult due to the general belief that the individuals within the teacher pools in science and mathematics are inadequately prepared and not particularly interested in the subjects. Knowledgeable and proficient science teachers are essential in providing effective learning environments in science education.

Definition of the Problem

In a 2013-2014 report that was prepared for the research district, the district's scores were indicated as being well below state standards. Within the report, the district placed last among a coalition of eight urban districts in the state having similar demographics (The Center for Urban Education at Cleveland State University, 2015). According to the Ohio Department of Education (ODoE), within the overall education environment of 610 total districts in the state, the district has a pattern of low test scores on state high-stakes tests, which are designed to confirm high standards and indicate a good school environment (ODoE, 2014). For 2014, the state report card designates a school district's performance quality on a scale of A to F. A district is scored using up to 10 measures, including a measure that is a predictor of college preparedness. In the overall achievement category, the research district received a 63.4 or a D on its performance index and an F for meeting 0.0% of the designated indicators. The indicators met category indicates the percentage of students who passed the state examinations, in which at least 80% of students must pass to receive credit for the indicator (ODoE, 2014).

In 2013-2014, the State Board of Education adopted new learning standards in

science education as the groundwork for a more rigorous curriculum. The new learning standards were to be fully implemented by 2014-2015 (ODoE, 2014). The adoption of the new standards exacerbated the problem of low scores further, as the new standards indicated higher expectations of students, who already were struggling in science. In the research district, 29.2% of fifth-grade students, 28.7% of eighth-grade students, and 45.7% of 10th-grade students passed the state test in science education (ODoE, 2014).

One potential factor leading to low scores in the district is the curriculum. District officials seek to receive an improved rating in all academic areas, including science education. As such, the new place-based curriculum was implemented. Research suggests that this curriculum could benefit students in multiple ways. The place-based programming, which is framed by the state's new learning standards, is intended to improve learning by providing more rigor and depth of learning.

Rationale

This evaluation had the goal of examining components of the place-based programming model and related professional development to determine the level of implementation and whether the programming as implemented is effective. Science performance is a problem, as evidenced by low test scores. Members of the district chief's leadership who govern the operations of the district believe that every child must be assured a high-quality education, and to that end, science performance needs to be improved. Place-based programming has been introduced in the district.

In 2012, The Learn, Protect and Stay Place-Based Program was pedagogically designed to complement the existing district curriculum, in part to

reform the school district's science curriculum. Teachers face challenges to implementation. Each grade level place-based experience is designed to include a professional development component to support teacher practice and a traditional standards-based unit of lessons that are to be integrated into the classroom curriculum. A community partnership was formed in this district to reshape science learning and awareness of environmental education through placed-based programming in prekindergarten (PK), kindergarten (K), and Grades 1, 2, 4 and 5 with the goal of improving student achievement. Place-based education has great potential to be an effective best practice if incorporated into the classroom (Etuk, Etuk, Etudor-Eyo, & Samuel, 2011).

The presence of place-based experience in the curriculum is no guarantee that the programming is being used in an effective manner or that the program will bring about change. Rather, change requires successful implementation of the program, which is impacted by multiple factors, including teachers' confidence in their science content knowledge, the perceived value of the place-based program, and teachers' ability to incorporate the program into the state's standards-based curriculum. In conjunction with factors related to teacher practice, teachers face additional changes within the district as they seek to use experiential learning effectively to increase science learning in this district (Johnson, Kahle, & Fargo, 2007a). Given that struggling urban schools withstand a lack of adequate resources and factors such as a challenged school environment, frequent layoffs, administrative turnover, and low student academic achievement, creating a thought provoking,

place-based learning environment is a challenge.

Theoretical Foundation

Two theories provided the basis for the use of place-based learning. First, Bruner's (1996) theory of cognitive development indicates that teachers need to provide children with experiences to facilitate their discovery of underlying ideas, concepts, or patterns. Second, constructivists, people who are guided by constructivism, propose that children learn as a result of their understanding of experiences (Tobias & Duffy, 2010). The fundamental role of a teacher is to help children make connections between what is to be learned and what is already known or believed. When science ideas and practices are understood, a child's cognitive potential to learn science strategies can be blended with efforts to improve science education in the school district through a constructivist approach. This approach to science teaching integrates the constructivist learning theory as it focuses on the interplay between what the child already knows and the experiences the teacher will provide.

Definitions

Formative evaluation: Describes the purpose of its data as useful to develop and improve the thing that is being assessed (Lodico, Spaulding, & Voegtle, 2010).

Informal science education (ISE): This sector involves learning experiences that occur outside traditional school buildings and classroom settings and that are delivered by informal science institutions (ISIs), including zoos, botanical gardens, museums, aquariums, science centers, nature centers and park systems (Bevan & Semper, 2006).

New Learning Standards: Adopted by the state board of education to guide the delivery of more rigorous content in classrooms across the state. Developed for all content areas, including English language arts, mathematics, science, social studies, world language and fine arts, the New Learning Standards frame a state model curriculum of teaching strategies and resources (ODoE, 2014).

Ohio Achievement Assessment (OAA): State-administered test given to students in Grades 3-12 used in the state report card system and in the evaluation of individual school district statewide. Data from the assessments determine student proficiency based on performance index. The state transitioned to new assessments in 2014-2015, which are referred to as the next generation of state tests. The new assessments are integrated into not only the district and school report card, but also the educator evaluation system using the same conceptual measure as the OAA (ODoE, 2014).

Place-based education: An essential approach that needs to be synthesized into education pedagogy, theory, research and policy, given that its practice affects the social and ecological places that people inhabit (Gruenewald, 2003).

Professional development: Refers to the ongoing learning opportunities available to teachers in the form of individual sessions or series of workshops, courses, or classes. Professional development allows teachers to work together on specific content, curriculum development, and instructional practices. Professional development is often provided by the school district that employs the teacher but can also be offered by outside organizations. Professional development should focus on district initiatives (Wei, Darling-Hammond, & Adamson, 2010).

Proficiency: In an educational context, proficiency is connected to specific set standards and measurement systems. Levels of proficiency are correlated to test outcomes and a set scale. Calculations of proficiency may vary from state to state (Abbott, 2014).

Significance

The curriculum program has the potential for improving science performance, but only if implemented appropriately. I examined the quality of implementation, as well as barriers and challenges faced during implementation. In doing so, I identified and addressed barriers to implementation in order to further facilitate implementation.

The firsthand experience of place-based learning broadens what a child knows. While broadening children's knowledge is one benefit of place-based learning, what children learn is applicable to other learning situations as well, including awareness of strategies for learning. Place-based education provides a foundation for knowledge as learning takes place. Etuk, Etuk, Etudor-Eyo and Samuel (2011) determined that student achievement and attitudes in the primary education science classroom are affected by experience. Etuk et al. compared two globally applied instructional strategies and found that, through the acquisition of instructional strategies, constructivism affords students an experiential learning experience. Etuk et al. concluded that in a primary science education setting, the constructivist strategy is an effective way to facilitate pupil achievement and attitude.

Revision of teaching is necessary in order to fulfill the mandate indicated in the Next Generation of Science Standards (2013), which states that students need to make connections between content learned in the classroom and their out-of-school lives.

Pursuing this further students produce metacognitive artifacts based on inquiry instruction, marking a deepened sense of understanding and ability to translate science content into their own knowledge base. Educators' ability to guide students away from common misconceptions and to advance student learning requires them, as teacher practitioners, to have a deep understanding of crosscutting concepts, disciplinary core ideas, and scientific and engineering practices (National Academy of Science Education, 2012). This improved instructional practice can result in a teacher having a more active and engaged role in deepening the meaning of science concepts.

Guiding Research Questions

Although place-based programming is a district-wide initiative, teachers may not be using the approach to its full potential as an educational resource. The research objective was to assess how PK-5 teachers are integrating the place-based programming into the science curriculum in their classrooms, to determine how professional development supports the use of the approach, and to identify the factors that lead to not integrating the programming.

The central research questions were the following:

1. How do PK-5 teachers integrate place-based education practices into the classroom science curriculum?
2. How do PK-5 teachers describe the role of professional development in the integration of place-based education into the classroom?

There was one subquestion:

1. How do PK-5 teachers describe what prevents them from implementing place-

based programming into their classroom practice?

Review of the Literature

In the literature review that follows, the following topics are presented: academic achievement, implementation factors, and professional development as it relates to instructional practice, teacher competency, and modeling how to better engage students. The relationship between the topics and place-based education will be addressed, along with how they affect the implementation of the approach. Place-based education is a teaching tool, and when used as such, it can have positive impacts on student learning (Walker & Molnar, 2014). Place-based programming was integrated into the research district's curriculum as a way to enhance the standards-based curriculum and deepen learning for students in Grades PK-8. Place-based education allows the teacher to extend what a child already knows by moving the student beyond the confines of the classroom, reconnecting the information back into the real world (Molnar & Walker, 2014). The challenge for the teacher is to make such place-based education relevant to each individual child, who brings a unique background and experiences to the classroom.

The National Academy of Sciences (2007) found race and ethnicity, language, culture, and gender and economic background to be among the factors that affect the knowledge and experience children bring to a classroom environment. Students learn science by actively engaging in the practice of science. Taking these elements into consideration, a range of instructional approaches is necessary to support the full development of science proficiency. Beyond age or grade, a child's abilities are influenced by maturity, prior knowledge and what the child is taught in a formal setting,

with prior knowledge, and experience being most important to learning science (National Academy of Sciences, 2007).

If educators are to better engage science learners, then they must know what is personally relevant to students and how that prior knowledge is contextualized within the science content (Bricker, Reeve, & Bell, 2014). As early as preschool, place-based programming can nurture and deepen a child's knowledge to a level of mastery of science processes including inquiry, communication, assessment and self-advancement to discovery (Klahr, Zimmerman, & Jirout, 2011). Best (2007) and Bozdogan and Yalcin (2009) determined that learning offered in places of informal education such as science centers enabled children to discover different experiences and learn from them. Extending learning outside the classroom can deepen student comprehension and increase participation (Best, 2007).

Consequently, by framing urban science within the context of place, experiential learning or place-based education could conceivably engage students and deepen cognition through the interaction that occurs between the student and the place (Calabrese Barton, & Berchini, 2013; Coughlin & Kirch, 2010; Hutson, 2011; Lim, 2010; Lim, Tan, & Barton, 2013). Specifically, Lim (2010) further theorized that during the mutual interaction, the student as a person will perceive the place as unique with a living meaning, resulting in the development of a deeper understanding of self. Such an understanding of self allows for greater foundational breadth and depth of knowledge in science for the urban student (Lim, 2010).

Academic Achievement

Research on actual impacts on learning and achievement. Numerous researchers have studied the experiences of urban and nonurban K-12 classroom teachers and students who accompanied scientists, explorers and researchers in real-world settings; findings have indicated that students acquired content knowledge, experience, and skills (Powell, Stern, Krohn, & Ardoin, 2011; Smith, 2011; Stern, Powell, & Ardoin, 2008, 2010; Stern, Wright, & Powell, 2012; Veletsianos, Doering, & Henrickson, 2012). Researchers have measured the benefits of environmental programming for students. For example, Powell et al. (2011) used a three-factor model to measure environmental responsibility, character change, and formation of leadership attributes to evaluate change in middle-grade students in an environmental education program in Maryland. Beery (2013) established reliable and valid measures for environmental connectedness (EC). Both Powell et al. and Beery found that science centers have a significant capacity to pique students' interest in science subjects and concepts, contributing to increased academic achievement. In contrast, other researchers have found only minimal changes in student motivation and achievement in science following visits to a university's children's science museum. However, impacts on student learning after visiting museums could improve through efforts to nurture prior content knowledge in activities and to plan postvisit activities that build on the experiences (Bozdogan & Yalcin, 2009; Soh & Meerah, 2013).

Environmental place-based education not only moves the student outside the classroom, but also gives the student the opportunity to connect to the community.

Thereupon, using a place-based environmental education approach sets the stage for deepening academic value by merging relevance, content and curriculum. Morgan, Hamilton, Bentley, and Myrie (2009) and Engel-DiMauro and Carroll (2014) stated that working or learning in a school garden inspires the interest of children. Applying a social constructivist educational framework, Morgan et al. (2009) concluded that Grade K-8 summer program participants who were from challenging school and home environments benefitted from a plant-based education gardening program facilitated at an informal science institution. Measurable gains included those related to science content and reasoning skills, with additional increases in environmental awareness and social-emotional growth (Morgan et al., 2009). McArthur, Hill, Trammel, and Morris (2010) confirmed overall grade point average increases of 3.45 and science grade increases of 3.69 points after students participated in the Youth Garden Project in Alabama's Black Belt region. In this rural region, which is characterized by poverty, high dropout rates, low test scores, and a largely African American population, the Youth Garden Project program involved student mentors from a nearby university. The objective of increasing interest and learning about science, agriculture and the environment for students aged 5 to 13 was achieved.

Gautreau and Binns (2012) suggested that three factors (i.e., inquiry pedagogy, science as inquiry, and science as content) should be considered when determining student attitudes toward the pedagogy and content of an inquiry place-based environmental program. The researchers also compared the learning in a traditional classroom setting to the learning within an inquiry place-based environmental program.

The researchers concluded that place-based education has the potential to be as effective as traditional learning and is better at engaging students to use deep critical thinking skills.

Factors that make achievement outcomes difficult to measure. Carleton-Hug and Hug (2010) cited several factors that make academic achievement a difficult outcome to measure when examining the implementation of educational programming in informal learning institutions. Due to the interdisciplinary nature of environmental education programming, one challenge is that a knowledge gain in one area may be difficult to measure, as it may be diluted across many subject areas. A second challenge to examining impacts on achievement is the compressed time frame in which evaluations are conducted. According to Carleton-Hug and Hug (2010), accurately identifying the impact that a specific program has had is difficult when the data collection is focused over a sustained period of time. The expanse of time increases the likelihood of other contributing and confounding influences beyond the programming itself. In contrast, too short a timeframe might be problematic, as change may not have taken place yet. Another challenge to knowing whether the program impacted the outcome arises from information and learning taking place outside the program itself. Students can learn information similar to what they might learn from the program from other sources to which they are exposed. Consequently, the information is learned not only from the program itself, but also from their other experiences, including outside media sources such as TV, the Internet, and personal visits to museums. More specifically, Carleton-Hug and Hug (2010) stated that students with more prior knowledge might have higher achievement

than others. The preparation of students academically prior to a place-based visit could have a lasting impact on the achievement outcome. Researchers have found it difficult to identify the extent to which programs impact achievement (Carleton-Hug & Hug, 2010).

Factors Related to Successful Program Implementation

The literature reviewed in this section focuses on professional development, data collection and teacher perception as the topics relate to the implementation of place-based education. There are barriers to fully implementing a specific curriculum program with fidelity, especially when the content is perceived as misaligned to the state standards or assessments (Penuel, Gallagher, & Moorthy, 2011). Successful implementation of new programs into a curriculum has been found to depend on a variety of factors. Place-based programs are no exception, as multiple factors impact their implementation or lack thereof.

Data collection. Durlak and DuPre (2008) provided evidence that the collection of implementation data is a fundamental feature of a program evaluation, along with identification of the factors that influence implementation. They argued that collecting data on implementation is important because this information can help in understanding why a program has or has not been implemented. For example, the implementation process of a youth prevention program was examined, and it was found that implementation of this program was influenced by 23 factors, including variables related to multiple stakeholders, communities, providers, training and technical assistance. The researchers concluded that the effective transference and maintenance of such programming into real-world settings is complex. In fact, long-term infusion was

dependent on the success of each stage of the processes of dissemination, adoption, implementation and sustainability. The implementation fidelity factor, which was strongly correlated to provider adaptation, was critical to determining program credibility and was therefore important to be reported in the program evaluation.

Teacher perception. Another aspect to consider is teachers' perceptions of the relationship between high-stakes testing and the teaching of science. Many teachers perceive science education as too test driven, which negatively impacts the flexibility of hands-on learning as well as reduces individuality in teaching styles and makes resourcefulness less appealing (Taylor, Jones, Broadwell, & Oppewal, 2008). According to Lorsbach (2008) and Lucey and Lorsbach (2013), teachers are more receptive to new curriculum adoptions when the addition is perceived as in accordance with meeting state standards and is able to adequately prepare students to pass high-stakes tests.

Henderson, Finkelstein and Beach (2010) explored the strategy for change and the potential impact of involving teachers of practice when change is intended for the individual and the environment. The researchers suggested that change is quite possible and that the outcome can be customizable and more prescriptive for greater success if any of the following four strategies for change is used: (a) disseminating pedagogy and curricula, (b) developing a reflective teacher, (c) policy, or (d) shared vision. Creating a shared vision has the potential to incorporate stakeholder knowledge (Henderson et al., 2010). Understanding the impact of the teacher as a stakeholder becomes important when introducing new programming or content into a district's curriculum. It is also tied to a shared vision. Depending on how and whether the teacher perceives the content as

impactful, student learning can be affected.

The idea that teachers find value in this approach to teaching science is an element of implementation. Ferreira, Grueber, and Yarema (2012) noted that prior to a collaborative partnership involving seven Detroit elementary schools, a local university, and a community organization, the teachers and students had very few chances to experience the outdoors and did not connect learning to being outside the classroom. However, once the classroom instruction was supported with classroom lessons, activities, and the establishment of outdoor classroom areas, teachers' perception of the value of being outside changed. Ferreira et al. (2012) conducted pre and post reflections of 16 teachers who taught within these schools and found that teachers' viewpoints on the value of the experience increased, as did student learning.

Professional Development

In this section, I review research literature that has been written on the relationship between professional development and place-based education. The subtopics covered include correspondence to instructional practice, student learning, and teacher competency. Singer, Lotter, Feller, and Gates (2011) noted that professional development might be a catalyst for change and a likely influence on the use of the inquiry approach in science instruction and classroom practices. The professional development model was designed to encourage integration through the use of preselected curriculum materials. In particular, a prototypical professional development program held within a summer school session was found to profoundly impact pedagogical strategies, learning technology, and materials within participants' classrooms. Study participants reflectively perceived a

connection of the content to the science standards. These teachers also felt that the professional development experience provided visual reinforcement, collaboration, and controlled practice teaching, all of which positively impacted their perceived instructional efficacy.

Instructional practice. The professional development element for Learn, Protect, and Stay Program in the district is specifically related to the subject of place-based education and science content. Constructed to use the resources and expertise of nontraditional learning spaces, the programming is also intended to provide teacher professional development and create opportunities for connective hands-on learning experiences for students. The professional development element is designed to allow teachers to be better able to engage learners later in the classroom. In a midsized urban district, formal professional development and collegial collaboration were found to be congruent contributors predicting teacher change in instructional practice and student achievement in English language arts (ELA) and mathematics (Parise & Spillane, 2010). Researchers collected data as part of an evaluation of K-12 teachers from 30 schools. They concluded that collaborative learning opportunities (which included casual advice seeking) within a building were just as important as outside professional development to impact change. In fact, when effective and offered on a continuous basis, professional development programs can result in favorable and compelling additions to teacher belief and knowledge (Duran, Ballone-Duran, Haney, & Beltyukova, 2009). Palmer (2011) concluded that by improving cognitive mastery, a teacher might develop and gain self-efficacy. The change in instructional practice, belief, and knowledge to construct a

classroom teacher's pedagogical practices can influence student academic acquisition and intellection of the learning experience (Davidson, Passmore, & Anderson, 2010).

Teacher professional development inspires teachers and motivates them to implement new practices that rouse the minds of students (Veletsianos et al., 2012). Professional development organized at the district level can promote science reform because it allows the building administrator to clearly understand and subsequently support the newly introduced instructional practices and scope of training (Rhoton & McLean, 2008). One concerning aspect of the opportunity to build one's content knowledge in environmental science is that, in light of current increasing demands for standards-based teaching and teacher accountability, its importance may be placed markedly behind that of other science curricula (Parlo & Butler, 2007). Ergo, professional development can support instructional practice related to the program.

Sinclair, Naizer, and Ledbetter (2011) assessed the impact of a professional development program designed for teachers in Grades K-8 in a rural community. The educator participants shared their personal notions that they lacked content knowledge and a background in science. The program addressed classroom practices in science education during a summer institute, with 8 months of follow-up sessions emphasizing inquiry and constructivist pedagogy. The summer course and successive sessions were facilitated by a science professional from an informal institute and used peer networking as a built-in support for modeling hands-on lab activities and earth science content. The teacher participants were engaged in hands-on cooperative activities that mirrored the exact lessons that would be taught later in their elementary classrooms. Several measures,

including a qualitative feedback survey and classroom observations, were used to determine that the experience had an extensive impact on the participant's actual implementation of the modeled teaching practices and content knowledge. The teacher study participants voiced the importance of the coteaching element as making a strong contribution to their experience (Copur-Gencturk, Hug, & Lubienski, 2014; Lakhsmanan, Heath, Perlmutter, & Elder, 2011; van Driel et al., 2012).

After one year, Roehrig, Dubosarsky, Mason, Carlson, and Murphy (2011) found evidence of the impact of a professional development that focused on training teachers in culturally relevant and inquiry-based science teaching. After only 1 year, improvements were found in the attitudes of early childhood Head Start teachers from an American Indian reservation. After 2 years, the implementation of student-centered science practices was observable. Both quantitative and qualitative methods were utilized to determine that a change had taken place within the first year of beginning a transition. Prior to this, practice of lower level teaching requiring simple memorization and recall of facts were in place. After the transition, the teachers created and used indoor science areas that complemented and extended outdoor observations and experiences. In the second year of the study, practices were increased and modified to include greater complexity including culturally relevant lessons, one of which included student engagement by integrating The Three Sisters Garden. After 2 years, researchers found that the professional development course had shifted negative attitudes about science to positive attitudes and encouraged science teaching in the early childhood classrooms (Roehrig et al., 2011).

According to Zion, Schanin, and Shmueli (2013), teachers who participated in inquiry-based professional development were able to effectively engage an open inquiry process of teaching in their classroom when the teacher course is taught from the students' point of view. In this study, the 55 science teachers effectively integrated the approach into their teaching practice. This method demands higher-order thinking with the teacher guiding the students through the construction of knowledge (Zion et al., 2013).

Zemelman, Daniels, and Hyde (2012) cited the Common Recommendations of National Curriculum Reports for best practices in classroom instruction included in the list are more experiential hands-on learning, more diverse roles for teachers, including coaching, demonstrating, and modeling and more varied and cooperative roles for teachers, parents and administrators (p. 7). According to their research the most natural and impactful learning is the experiential practice as it provides direct concrete experience. However, the researchers emphasize that teachers must model thinking processes while treating their students as apprentices who are developing a true understanding of the concepts (Zemelman, Daniels, & Hyde, (2012).

Bransford, Brown, and Cocking (2000) explored the difference between knowledge of general teaching methods and pedagogical content knowledge noting that within effective teaching the expert teacher is knowledgeable of the framework of their discipline's content. This structural insight permits the teacher to guide student learning in a way that optimizes performance when questioned and evaluated. This is a result of the teacher choices that intermingled pedagogy and knowledge to shape what is the

classroom environment. This makes teacher growth and training essential to student growth and learning.

Student learning. Ertmer and Ottenbreit-Leftwich (2010) and Johnson and Fargo (2010) argued that both student and teacher growth can be impacted by professional development. Teacher knowledge facilitates the construction of student learning. While teacher participation in continued professional development is important to continued content growth. In a like manner, teacher professional development can increase student learning and reshape one's instructional practice (Johnson & Fargo, 2010; Johnson & Marx, 2009; Johnson, 2007). Darling-Hammond and Richardson (2009) asserted that professional development linked to school curricula and reform can improve academic achievement. The researchers noted that the most compelling opportunities are those that are sustainable in format and use active learning techniques to focus on student learning.

Teacher competency. Professional development focuses on building a teacher's understanding and increasing student science literacy of the nature of science (Posnanski, 2010; Spector, Burkett, & Leard, 2012). Goodnough (2011) examined a correlation between having confidence when teaching science and the perception of self-efficacy which is enhanced by professional development in science. Lumpe, Czerniak, Haney, and Beltyukova (2012) found that teachers who participated in professional development lasting over a long period of time (e.g., greater than 100 hours annually) increased their science self-efficacy.

Measuring the element of influence and impact that professional development contributes to place-based programming is critical. The mentoring component of the

district's place-based programming is intended to increase teacher competency and self-efficacy by providing the teacher practitioner with additional collaborative support. Richmond and Manokore (2011) surveyed teachers from an urban district who voluntarily participated in a 5 year initiative. Within this district challenges existed resembling other urban areas of its size including consistent underperformance on state achievement tests, insubstantial resources, a declining student population, low graduation rates, transient students, high teacher turnover and intradistrict teacher mobility. The educators perceived that their involvement within the grade-specific collaborative peer relationships or professional learning communities as having a more significant impact on their professional growth and science teaching than any other district intervention. It was noted by the study participants that the intentional shared focus and construction of knowledge built to exist within the group allowed for meaningful conversations to occur. The professional learning communities also provided a venue for discussions about assessment alignment, lesson plan development, how to integrate science teaching into other subjects, best practices in science, and reteaching when students have misconceptions centered around science ideas.

Additional alternative factors leading to teacher learning and reflection are teacher competency and efficacy. Professional development within place-based education can contribute to teacher competency. According to Forbes and Zint (2010), teachers who perceive their competency and readiness to teach their content translate their belief into positive instructional practice in the classroom. In an elementary classroom where an inquiry approach is used to teach environmental content, both methods course offerings

and professional development have been found to be foundational to the teacher growth (Forbes & Zint, 2011). Taking this into account, Tairab (2008) highlighted the importance of colleges specifically offering courses related to science education rather than general education courses. Tairab argued that providing specific science education courses would better prepare emerging teachers to develop and implement science curriculum in their classrooms. The perception of efficacy in science content in incoming teachers is significant to student learning. Hall and Johnson (2007) and Tairab (2010) found that the level of confidence possessed by prospective elementary science teachers in and about teaching scientific content knowledge related to their ability to teach science, which ultimately impacted student learning. The greater confidence, equates to a greater ability to put it into practice in their classrooms resulting in a greater impact on student learning.

The Importance of Informal Settings

Research has found that informal venues, such as museums, zoos, aquariums, and botanical gardens, can successfully facilitate teacher growth and professional development (Duran et al., 2009; Johnson et al., 2006; Melber, 2007). Additional research has examined a model for teaching the nature of science in the context of an informal venue specifically evaluating the influence of the learning environment and experiential learning (Ball, 2012; Riedinger, Marbach-Ad, McGinnis, Hestness, & Pease, 2010; Spector et al., 2012). Within this theoretical base, the role of informal education settings for science education is to contribute to teachers' understandings of the nature of science. Informal education settings provide teachers with the tools to think

systematically about their practice to include the experiences that take place outside of the classroom walls. Two additional benefits to using an informal setting to teach the nature of science include (a) stimulating teachers to include informal education settings in their future teaching plans and (b) establishing partnerships between schools, and organizations in the community, an initiative that appeals to supportive funding agencies (Riedinder et al., 2010).

Teachers who used the natural schoolyard or built additions to teach multiple facets of student learning including environmental education developed the concept of learnscapes. The term, having been classified as a place-based approach, was sanctioned by the Department of Education and Training in New South Wales, Australia in its environmental education policy as a new pedagogical approach. Skamp (2009) focused not only on an international interest in teaching learnscapes, which were developed in a regional primary school in Australia, but also how and why teachers used them. Using an education-based complexity change theory, Skamp found that there are interdependent components and factors that facilitate the understanding of learning outside the classroom. The teachers perceived learnscapes as pedagogical tools including reflection and teacher learning. Skamp concluded that both school leadership and teacher learning increase one's conception of teaching and could encourage the change to teaching outside of the classroom.

For a teacher-led reform to be successful, Le Cornu and Peters (2009) cited that teachers likely to be successful at reform must continue to educate themselves with regard to pedagogy. Therefore, continued teacher education, in the form of professional

development is necessary. Teachers who are in the process of school or curriculum reform efforts have to reframe and rethink the way in which their students learn best. According to LeCornu and Peters, within the constructivism theory, the teacher will lead the change by being progressively reflective and guiding the students to be reflective as well. In this scenario, teacher preparation is key to the acceptance of a new program or approach as they learn within their practice (LeCornu & Peters, 2009).

Taylor et al. (2008) found that most teachers perceived the input and guidance of science experts as a classroom consultant, content mentor or professional developer as a resource for rousing and creating student interest in learning. In an effort to creatively and directly expose students to nature, the local botanical garden is included in the district's place-based education programming in the role of collaborative partner and stakeholder. Teachers of Grades PK-4 participate in extensive professional development and are compensated with lesson plans, teaching materials and resources as well as a trip to the garden for their classroom (Taylor, 2008).

Museum and educator partners can interact by joining as stakeholders in collaborating partnerships to provide effective learning experiences. Teachers can benefit professionally from the additional knowledge that is gained from the practicing scientists provided by these stakeholder partnerships. The scientist and institutions become mentors to the teachers who then mentor their students. These museum educators and scientists provide expertise and resources not otherwise available to the students (Rhoton & McLean, 2008).

Riedinger et al. (2010) found how informal settings were used to teach science

was important. Specifically, when science education leaders used informal settings to assist teachers in making science relevant to the real world, it set the stage for a lifelong learning of science. The process occurred by providing necessary inquiry skills and fostering a continuum between school and after-school and home activities that continue and enrich science learning.

Implications to the Review of Literature

To improve science education in this district's Grades PK-5, the district administration must recognize teachers as the cantilever of change. In the current research, there was anticipation that factors would be found that enhance or impede the implementation of the place-based education program, and according to the literature review, these could be related to professional development, teacher preparation, and teacher perception. This project was to evaluate the implementation. The identification of such factors could help the design and implementation of current and future programs, especially with low income and under achieving populations. Changes could be made to the program based on the findings of the current research. For example, if teachers' state that there is a lack of buy-in or a lack of professional development, then the districts could work to improve buy-in or provide additional professional development as support to teachers. The district curriculum officials could also target factors that impede implementation and work to help overcome those factors to encourage better implementation.

One method for furthering this research could be a white paper report that examines the relationship between the academic achievement of children living in a high

poverty environment and the lack of curriculum related experiences occurring outside of the classroom. This information could be used to persuade classroom teachers, curriculum developers, and policymakers to provide content and experiences that extend outside of the classroom and to also emphasize the need for a professional development element to be included in the topic. The report should include background on the relationship between successful education initiatives and the teacher's perception of how the strategy affects change.

Summary

This study evaluated how teachers are integrating the place-based programming into the science curriculum in their classroom and what factors lead to the implementation. Although earlier existing studies are conclusive and directly correlate positive aspects of student learning to place-based education, few if any, are situated in a vastly different at-risk urban or high-stakes test environment. The results might be different for students who otherwise underperform. Additionally, few discuss the connection between the implementation of place-based education to teacher perception, preparedness or pedagogical design.

For that reason, this study focused on how teachers in this urban setting are integrating the place-based programming approach in their classroom and how professional development influences implementation. This integration could have an impact on student learning and academic achievement. In order to determine if teachers are integrating the place-based programming, the research questions were posed to interpret what encourages the educators to implement place-based programming into their

teaching practice.

I evaluated the integration and implementation of place-based education to the district curriculum as one mode for academic improvement in science education in Grades PK-5. Research that was conducted acknowledged and suggested the importance and value of experiential learning in classroom settings, other influences on student learning such as the importance of teacher practice and viewpoints on student learning also exist. One idea that emerged from past theories and research is that teachers are guides as children construct knowledge and learn content. If included in the preexisting standards-based content in a meaningful and enriching way, place-based experience must make sense to both the learner and the teacher.

In this district, the No Child Left Behind policy changes required a shift in focus to concentrate efforts on mostly teaching mathematics and reading. Presently, the recognition that this unbalance has resulted in a statewide underperformance in science has resulted in the adoption of the Ohio New Learning Standards in Science Education. Weiland and Akerson (2013) stated that professional development that is facilitated by the experts who are staffed at the non-traditional places of learning like museums, zoos, botanical gardens, nature centers, and aquariums can broaden a teacher's science content knowledge. Additionally, such professional development has the potential to improve a teacher's attitude and confidence about the educational value of the place-based experience within their classroom practice. The results of this evaluation could be a predictor of the outcome of this programming addition as a means of positive change and academic improvement in science.

Section 2: The Methodology

Multiple factors influence the implementation and ultimate success of a program or curriculum. While place-based education programs have been found to be effective in increasing student learning, such positive impacts are dependent on implementation. The overall goal of this formative evaluation was to better understand whether and how teachers are integrating the place-based programming approach and factors that have impeded or encouraged that implementation in a specific district in Ohio. The topics address the research design, site, participants, instruments, and data collection process. The discussion of methodology provides an overview of the research questions, role of the researcher, data analysis, and study limitations.

Research Design

The study used a process evaluation to examine the implementation of the place-based programming. The context, input, process and product (CIPP) model is a comprehensive evaluation framework that addresses educational decision making in four areas: context evaluation, input evaluation, process evaluation, and product evaluation (Stufflebeam, 2003). The process evaluation is more appropriate than the other areas of context, input, and product as they relate in a number of ways to decision making in the change process. The process evaluation design has been selected for the reason that it is "an ongoing check on a plan's implementation plus documentation of the process, including changes in the plan as well as key omissions and/or poor execution of certain procedures" (Stufflebeam, Madaus, & Kellaghan, 2000, p. 294).

Researchers have suggested that although place-based education has many benefits, confirmation of its integration and identification of factors that encourage or hinder the use of the approach are important. According to Scheirer (1994), the level of implementation should not be assumed; therefore, using a process evaluation method is critical to shape intervention. The process evaluation method provides feedback to district stakeholders and decision makers on delivery, clarifies who is receiving the services, defines the extent of the services, and gives an understanding of how the program components affect implementation.

The evaluation plan for this study used a qualitative research design that was descriptive in nature. Qualitative research allows for more in-depth description of an event, experience, or perceptions. The qualitative approach divulges and interprets how teacher educators make sense of the place-based program and how it relates to their classroom teaching (Merriam, 2009). To provide this detailed understanding of the place-based programming, the research did not use quantitative methods as a result of a limited setting and group (Lodico et al., 2010). Using the process evaluation approach, I had the goal of examining components of the place-based programming model and its professional development to determine the level of implementation and whether the programming as implemented is effective. The formative evaluation of the place-based education program will be used to determine and address issues of integration and implementation as the program is ongoing. Unlike other applied research, this method provides the researcher the ability to have a reporting relationship back to the stakeholders (Lodico et al., 2010; Spaulding, 2014).

Two central research questions guided the process evaluation:

1. How do PK-5 teachers integrate place-based education practices into their classroom science curriculum, and what prevents them from implementing it into the classroom?
2. How do PK-5 teachers describe the role that professional development has in the implementation of place-based education into their classroom?

Description of the Research Site

The evaluation took place in a large urban school district in northern Ohio. In the fall of 2014, the school district student population was 40,251, making the district the second largest in the state. There are 96 schools in the district, of which 73 are elementary and middle schools and 23 are high schools. The average daily enrollment is 38,717 students, of which 100% are classified as economically disadvantaged. In terms of racial/ethnic distribution, the student population primarily consists of students who are Black, non-Hispanic (66.9%), followed by White, non-Hispanic (17.7%), Hispanic (14.4%), multiracial (2.9%), Asian or Pacific Islander (0.9%), and American Indian or Alaskan Native (0.2%). The reported student gender distribution is fairly equally distributed, with 48.5% of students being female and 51.5 % of students being male (Cleveland Metropolitan School District, 2014). The district school attendance rate is 91.1%, the 2012 4-year graduation rate was 59.3%, and the 5-year graduation rate for the same year was 63.3% (ODoE, 2014). Twenty-four percent of students receive special education services, 6.4% receive multilingual services, 6.5% receive gifted education, 2.7% receive homeless services, and 100% qualify for free or reduced-price lunch

(Cleveland Metropolitan School District, 2014).

All of the teachers in the district have at least a bachelor's degree, and 86.9% of the teachers have a master's degree. Teachers who are not considered highly qualified teach 5.1% of core subjects, while 95.3% of core subjects are instructed by teachers who are properly certified (ODoE, 2014).

Participants

Sampling

Participants included PK-5 teachers selected from the school district's 73 elementary buildings. Teachers who were selected had taught in the district at these grade levels for at least 3-years, during which time the program was first implemented. The selection of teachers from multiple schools allowed for various perceptions and beliefs to be gathered. A stratified random selection procedure guided the selection of the participants. The stratifying process produced a proportional sample by grade level in order to ensure a sample that was representative of the entire population (Creswell, 2009). To ensure that the sample was stratified, I gathered data on how many teachers were in each grade level districtwide. Once the percentage of teachers per grade level was identified, the sample population was divided into strata based on grade level. There were seven strata, one for each grade level. The size of each stratum in the sample was proportionate to the size of the stratum in the district population. I used an even sampling fraction to reduce the sample population to a smaller, more manageable number and to ensure that the proportion in the strata in the population remained the same as the proportion in the sample. Based on the allocation of numbers from each of the seven

grades (PK, K, 1, 2, 3, 4, and 5), 659 teachers were surveyed. Although there were approximately 100 teachers per grade level, the expected response could have been as low as 5% (Lodico et al., 2010). Subsequently, the total number of participants who responded was 57.

To identify possible participants, prior permission from the district central office administration was received. Once permission was given, I obtained a list of the names, grade levels, and email addresses of the teachers in order to contact them via email with an invitation to participate, an explanation of the study, and an informed consent document.

Ethical Treatment of Participants

I identified and deleted the email addresses of teachers with whom I had a previous, existing, or close relationship as a teaching colleague. To further define the researcher-participant relationship, measures for the ethical protection of participants were taken to guarantee respondent confidentiality and protection from deductive disclosure. The consent form explained why I was conducting the research and indicated that results and subsequent reports from the study would not contain any information that could be used to identify individuals. The consent form confirmed that all possible precautions would be taken to disguise individual identities within the study and that the study was designed to uphold and protect the participants' rights (Appendix D). After participants read the consent form, it was explained that by entering the survey, they were agreeing to participate but could leave the survey at any time. If they agreed, they were given the option to move on to the survey. Only those who agreed to the consent form

were able to participate. This structure allowed potential participants to make informed decisions about whether to participate or not.

Confidentiality was addressed throughout the study, with emphasis given at three points: during the collection of data, data cleaning, and reporting of results. First, during data collection, the statement of confidentiality and letter of consent preceded the interview questions. Second, I cleaned the data set by removing any identifiers from the data collection records. Specifically, the original names and email addresses that were used to solicit the interviewees were both destroyed and deleted from all files, written and electronic. To assure the confidentiality of downloaded data for participants, I deleted any IP addresses from the downloaded data file that were collected by the Survey Monkey program. The data and backup files were stored in a secured place and on a computer that is password protected. Finally, teacher comments that I chose to quote were edited so that any specific school, district, or personnel names that teachers referred to in their statements were changed to pseudonyms when data results were reported and disseminated. I did not compromise confidentiality by sharing insights, even if the statements were not perceived as harmful or capable of changing the behaviors of others toward the participants.

Instrument

Spaulding (2014) stated that a survey, due to its flexibility, is the most common data collection tool within program evaluation. A one-shot survey design was used to explore whether and how teachers were integrating place-based programming, as well as how professional development is described to affect implementation. An online, 5-item

open-ended research survey questionnaire was the data collection tool in this study (Appendix E). I developed the questions using the attributes of place-based education along with the factors impacting implementation that were identified in the literature review. The teacher-focused questions permitted the teachers to report their understanding of their experiences. Each survey question aligned to a specific research question. Survey Questions 2 and 3a answered Research Question 1. Survey Questions 4 and 5 answered Research Question 2. The survey question addressed the subquestion.

Role of the Researcher

I served as the curriculum and instructor manager of science education in the district for 5-years. Prior to being an administrator, I was a teacher in the district for 15 years. I believed my experiences working in the classroom and as an administrator heightened my cognizance and sensitivity to the issues that were addressed in this study. I was aware of personal bias and the reality that may have shaped my perception and interpretation of the data that were collected. I was aware of the fact that teachers may have perceived that there were potential problems of coercion or undue influence. To address these possibilities, participation was voluntary, there were no overriding statements regarding the importance of the study to the participants, and all interview questions were presented in an anonymous online survey format. The thoughts and opinions of the study participants were given precedence over my own views. I kept a reflective journal with notes. This journal allowed me to reflect on my own thoughts and values and how those feelings might influence the data collection.

Data Collection

Once the sample had been identified, I emailed each participant. The initial email included a copy of the consent form and an option allowing access to the Survey Monkey online questionnaire. The survey was available during a 7-week window. At the end of each week, a reminder invitation was sent to all of the email addresses. The teacher survey was not timed, in an effort to assure that teachers had the opportunity to finish answering all of the questions. A statement appeared at the beginning of the survey informing the participants that once they began the survey, they would need to complete it, as there was not an option to save the survey and return to it later.

The survey began with preliminary questions, which provided systematic and general background demographic information on participants, including current grade level being taught and number of years teaching. A complete listing of all study events can be found in Appendix C.

Data Analysis

To ensure the validity of results, reflective field notes to acknowledge my feelings following the processing of the interview questions were recorded. Member checking was used to ensure that I had accurately recorded and interpreted the participants' statements.

As the online surveys were completed, data were downloaded, backed up, secured, and organized in a way that eased analysis. Data were organized by grade level and number of years taught. Data were organized in this way because the district place-based programming is organized by grade level and teacher experience or number of years taught, which could have impacted the participant's responses. I created a system to

identify which grade levels the surveys represented by creating a grade level list and then labeling grades with a letter (e.g., A, B, C, D, E, and so forth). The letter was part of the ID number given to survey responses. Data were reorganized as themes emerged.

During the initial review process, I investigated the data in their entirety prior to coding for themes. The survey data sources were duplicated before coding began and were color coded by hand to identify key emergent themes in order to answer the research questions. The code categories were cultural context, depth of integration, and type of integration, prevention events, and professional development. I looked for patterns of personal experience, fear, familiarity, and events that encouraged implementation. Additional new codes emerged, and these were identified and included as they became apparent. I read and reread the survey responses for an accurate analysis. The data analysis process was repeated until I believed that all themes had been identified and the research questions had been answered. The codes were used to organize responses and construct thick descriptions of identified themes.

To address Research Question 1, several survey questions were presented, including one in which teachers were asked to describe their types of personal experience with place-based education. With this question, one theme that emerged was how place-based education was used in the curriculum. Another question in this category asked teachers to describe their experience working in a school with place-based education; the five themes that emerged were gardening, travel, science kits, programs and partnerships, and other. The next question, which asked teachers to describe how place-based education was integrated, had two emergent themes: STEM/science and interdisciplinary.

Several research questions were posed to address Research Question 2, which asked how teachers would describe the role of professional development on the implementation of place-based education into their classroom. One of these survey questions asked teachers to describe what professional development, if any, they had received on experiential learning. In the responses to this question, three themes emerged that were based on level of implementation: those who were unsure as to whether or not they had implemented the approach, those who were unsure and had not implemented place-based education in their classrooms, and those who had implemented place-based education in their classroom. These three themes were further sorted into subthemes. The first theme, *not sure if implemented*, had three subthemes: none/I do not know, several courses/trainings, and teaching lessons/hands-on labs. The second theme was, *not implemented*, which had four subthemes: none/very little, college courses, the Nurturing the Environment by Maintaining Ohio Program (NEMO) training sessions, school-based team, and professor. The third and final theme was *implemented*, which had five subthemes: none, graduate classes, in the classroom, study on my own time, and professional development through botanical garden, museums, aquariums, and so forth. Participants were also asked to describe how professional development in place-based education contributed to its implementation, and responses were separated based on level of implementation. The first theme for those who were unsure was separated into six subthemes: unsure/do not know/never had any, would learn what it is, how to implement, would be helpful, understand the materials, and helps to learn about the community. The second emerging theme for those who had not implemented place-based education was

separated into seven subthemes: unsure/do not know/nonapplicable, would learn what it is, would be important for implementation, helpful but still lack resources, engagement with community/ provide support to teachers, deeper understanding, and takes fear away/network. The third theme for those who had implemented the approach was separated into six subthemes: hinders implementation, never had any, shows how to implement, puts into context/more experience, learn about resources, and helps teachers connect.

The subquestion for the study asked how do teachers describe what prevents them from implementing place-based programming in their classroom and when asked specifically about challenges five themes emerged, resources, time, training/lack thereof, buy-in and too complicated. When the teachers were asked about factors that prevent implementation four themes emerged, lack of and/or need for training/professional development, time and materials/resources, current curriculum/curriculum requirements, and other.

Limitations

One limitation is that the data were collected over a short period of time without including a collection of linkage data that correlates student achievement on high-stakes testing in science to the data of specific teacher integration results. This direct correlation is a limitation because although it could substantiate and confirm a relationship it would take several years to collect and track. A second limitation was that the research is heavily dependent on one source of data, a self-report survey. Another limitation is that teachers may not type much limiting the depth of the participant's response.

Summary

The purpose of this study was to evaluate the integration and implementation of the place-based program, and to determine the factors related to the implementation of the place-based programming. I described the method, design, participants, instruments, data collection, and analysis that were used in this evaluation report. The data collected will assist the school district, whose students have performed poorly on standardized tests in science education at the fifth grade level, by examining the factors related to the implementation of place-based programming into district classrooms. The process evaluation, evaluates the implementation and examine whether and how place-based is implemented, also identifies the factors that might enhance or impede that process. Spaulding (2014) stated that the outcome of research and evaluation differs, such that evaluation often has program change or practice change and research often leads to theory development or increased knowledge. While evaluation makes some type of evaluative judgment as to what is working and how, in this evaluation the researcher seeks to establish whether the program was implemented and factors related to that implementation (Spaulding, 2014).

Data Collection and Analysis

Data were collected using an online survey. Responses to each individual item were read and coded into themes that emerged. Fifty-seven participants completed online surveys. All participants had been teaching for at least 6 years, with the majority having taught for 16 years or more (Table 1). Approximately half of the participants had taught at their current grade level for 5 years of or less. Participants taught across all levels from

pre-kindergarten through Grade 5 (Table 2).

Table 1

Frequency of Number of Years Teaching Total and at Grade Level

	Total years teaching		Years at current grade level		Years at previous grade level	
Number of years	*N*	*%*	*N*	*%*	*N*	*%*
< 1	0	0	2	3.5	0	0
1	0	0	3	5.3	4	7.0
2	0	0	7	12.3	6	10.5
3-5	0	0	16	28.1	19	33.3
6-10	5	8.8	12	21.1	13	22.8
11-15	9	15.8	9	15.8	7	12.3
16-20	19	33.3	6	10.5	7	12.3
20+	23	40.4	2	3.5	1	1.8
Other:						
31	1	1.8	0	0	0	0

Table 2

Frequency Teaching at Current and Previous Grade Level

	Current grade (n = 57)		Previous grade (n = 54)[b]	
	N	*%*	*N*	*%*
Prekindergarten	4	7.0	13	24.1
Kindergarten	5	8.8	0	0
1st grade	10	17.5	4	7.4
2nd grade	7	12.3	7	13.0
3rd grade	8	14.0	5	9.3
4th grade	9	15.8	11	20.4
5th grade	8	14.0	8	14.8
4th/5th split	3[a]	5.4	0	0
6th grade	0	0	1	1.9
Multiple grades	0	0	2	3.7
Other:				
Retired (now substitute)	1	1.8	0	0
K-5 intervention specialist	1	1.8	0	0
5th-8th grade specials	1	1.8	0	0
6th-8th ELA	0		1	1.9
Science	0		1	1.9
Higher education	0		1	1.9

[a] Includes one 4th/5th ELA/science teacher. [b] Three participants did not provide answers to this item.

Results

The results will be presented by the study research questions. There are two research questions and one subquestion.

Research Question 1

The first research question asked: "How do PK-5 teachers integrate place-based education practices into their classroom science curriculum?" To address this research question, several survey questions were asked.

Personal experience with place-based education. The school district Department of K-8 Science Education has established a collaborative with nontraditional institutions within the community. The collaborative provides place-based experiential programming in grades pre-kindergarten, K, 1, 2, 3, 4, 5, and 7 that is embedded into the district scope and sequence, and the participation is presented as mandatory for all classrooms in those grades. The embedded programming is established in grades Pre-Kindergarten, Kindergarten and first grade with a local nature center, while second grade visits the natural history museum. After completing an extended professional development, prior to the loss of funding ending, the third grade teachers were able to bring their students to the botanical garden, fourth grade visits the local aquarium, fifth graders visit the zoo and seventh graders visit the science center.

In order to get a sense of how teachers' integrated place-based education, they were asked to describe their personal experience with PB education. Their responses provided insight as to what experiences with PB education that teachers had as a foundation for integrating it into their classrooms. The majority of the teachers indicate

that they had no prior personal experience with place-based education (Table 3).

Of the few teachers that did have some personal experience, three teachers provided a description that specifically named one or more of the district embedded grade level programs. For example, one teacher listed a variety of community partners that paired with them in PB education, including "partnerships with The Nature Center at Shaker Lakes, Greater Cleveland Aquarium, Cuyahoga Valley Environmental Education Center, Cleveland Botanical Garden, Hale Farm, Cleveland Metroparks Zoo, Great Lakes Science Center, and University Circle LEAD program with Art museum and Natural History Museum" (Participant 13).

Table 3

Frequency of Personal Experience with Place-Based Education

	N	*%*
No personal experience with PB education	45	78.9
--No personal experience	32	56.0
--Never heard of it	8	14.0
--Knew very little about it	5	9.0
Familiar with but never used it	4	7.0
Had experience with PB education	8	14.0
--Used in their curriculum	5	9.0
--Involved with community partnerships	3	5.3

Another teacher described the activities of students who took part of these grade-

level programs, stating:

> I worked with community partners to secure two lots of land, one in which 3rd graders conducted experiments and as a result created a sun flower garden to help remove toxic lead levels from the soil. The second lot of land I worked with our community partners the mayor, city councilman, and the Cleveland Botanical center in the planning and ground breaking of the Miles Park outdoor learning environment. (Participant 31)

Five teachers acknowledged using some form of the approach in their curriculum. For example, one teacher described her experience as "Digging through kits to figure out what I need, often until after the year starts" (Participant 32). Another teacher stated that she had "Started using it [PB education] for science" (Participant 46). Finally, another teacher described using PB education through participation "in a program with Gelfand Center at CWRU, and with CMSD Grades 2, 3, and 4 and Progressive Arts Alliance" (Participant 23).

Extent to which you have worked in a school with PB education. Similar to describing their experiences with PB education, teachers were asked to describe the extent that they have worked in a school with PB education. Again, their responses provided insight as to what background they had and how that might provide a foundation for integration or level of integration of the approach into their classrooms. Just under (n = 11) indicated that they had worked in a school with PB education. Their experiences in these schools varied. Two teachers stated that they had experiences with PB education, but did not elaborate as to what these experiences were.

Participants 32 and 40 stated that their schools utilized science kits. The district centrally manages all district adopted science kits in grades Kindergarten thru 8. Kits are not provided or applicable to all standards that are taught. Participants 15 and 44 stated that they do gardening activities with their classes. One teacher elaborated saying, "We did gardening at a 5th grade class, we also set up an outside weather station at the school" (Participant 44). Participants 53 and 21 stated that the PB education programming involved travel with students. One teacher stated, "We take our classes to as many places the budget allows" (Participant 21). Another teacher stated that the PB experience at their school involves "only with elephant trip to the zoo, with very little meaning to the curriculum" (Participant 53). While each of the district grade level place-based programs is supposed to culminate in an extended experiential trip to the non-traditional institution that is designed to connect the standards-based classroom content to real-life learning, teachers' actual experiences may not always reflect this.

Participants 13, 21 and 23 described partnerships and program that were in place at their schools to support PB education. One teacher described the variety of community partnerships that the school/class has taken advantage of saying, "MRW STEM school has utilized Progressive Arts Alliance to facilitate the instruction of the STEM principals, developed a curriculum program with CWRU [Case Western Reserve University] to use in Grade 4, and participated in outreach learning opportunities with the Aquarium, Natural History Museum and Hale Farm" (Participant 23). Another teacher noted the district programs available and the partnerships sought as part of the experiences with PB education. This teacher stated, "I have followed the programs provided by the district as

stand-alone programs, I have developed my own partnerships with some establishments and created a specific program for my classes, I have also used the provided experience and integrated it into my classroom projects and activities or theme" (Participant 13).

Integration of PB education in the classroom. To directly address the research question, participants were asked to describe how they had implemented PB education in their classrooms. Ten participants indicated that they had implemented PB education in their classroom. Additionally, one participant indicated that they had incorporated "parts of the idea of place based education, but not all 'requirements'" (Participant 29). Fourteen participants were "not sure" how he/she had integrated it.

When describing how they had implemented, teachers' responses fell into two categories: descriptions of how long they had implemented PB education and descriptions of the content areas in which they had implemented PB education. Four teachers indicated a length of time that they had integrated PB education, with two having implemented it for five years, and two indicating that they had done so only during the current school year. Overall, implementation of PB education seemed to be done only recently by teachers.

While mainly in science, teachers did show an attempt to implement PB education across subjects. Five teachers described the content areas in which they implemented PB education. Two teachers indicated that PB education was incorporated in STEM/science activities, often units on weather. For example, one teacher listed the various content areas as follows: "Habitats, force and motion, classifications, weather" (Participant 21). Three teachers described that they tried to implement PB education using an

interdisciplinary approach such that it was integrated into other areas, such as reading and social studies as they emphasized that it was not just for science. One teacher described that PB education typically is "Isolated in science...periodically into social studies or nonfiction reading" (Participant 32). Another teacher elaborated on why and how PB education was implemented across disciplines saying:

"I try to integrate science in every aspect of my classroom curriculum. Students are engaged in their own learning by using what they know and constructing new understanding are the key principles of science investigation. Students are able to use different strategies and approaches. Science is not an isolated curriculum, but rather it is a part of the whole" (Participant 31).

Research Question 2

The second research question asked, "How do PK-5 teachers describe the role of professional development on the implementation of place-based education into their classrooms?" To address this research question, several survey questions were asked.

Professional development role. Teachers were asked to describe what professional development, if any, that they have had on experiential learning. Responses were examined separately for those who had implemented experiential learning compared to those who had not to see whether there were differences in the type of professional development across levels of implementation.

Teachers who were unsure as to whether or not they had implemented experiential learning primarily stated that they had not had any professional development in experiential learning. One teacher who stated that she was unsure said that she had

received “Probably my college courses; many years ago”. (Participant 50) The few teachers that had participated in professional development stated that it was either through teaching lessons and hands-on learning or through a few trainings/courses. In general, any professional development they had was limited.

Similar to those who were unsure about implementing experiential education, the majority of those who had not implemented place-based education in their classrooms had not received any professional development on place-based or experiential learning. Some participants that responded as having received professional development stated that they had a few college courses in it or participated in training sessions. One teacher reported having worked with a school-based team and college professor.

Unlike the previous two groups, while some teachers who had implemented PB education in their classrooms had not had any professional development on place-based or experiential learning, more than half had received some professional development. Most of these teachers indicated that they had received professional development through an outside group (e.g., botanical garden and zoo) while others had completed graduate coursework, studied on their own time, or had professional development in the classroom through demonstrations. Within their elaboration about the outside training they had received two teachers referred specifically to the Case Western Reserve University’s Learn, Protect and Stay yearlong professional development coursework saying, “A whole year of study on our own time with Jean Brightwood (pseudonym) at CWRU, met on Saturdays and a month in the summer. Professional development through CMSD when offered.” (Participant 23) Participant 13 added, “Cleveland Metroparks Zoo, Learn

Protect Stay Program with Jean Brightwood (pseudonym) at CASE".

Contribution of professional development (PD) to implementation of PB education. Participants were asked to describe how PD in place-based education contributed to its implementation. Responses were separated based on teachers' level of implementation of PB education in their classrooms.

Just under one-third of the teachers who were unsure of whether they had implemented it in their classrooms said that they had not received PD, and as a result stated that they were not sure what the contribution of PD would be on their teaching. The majority of the other teachers stated that PD would be useful and might teach them what PB education was and how to implement it in their classrooms.

Just under half of the teachers who had not implemented PB education said that they were unsure how PD would contribute to implementation, as they had never had training. Approximately half of the teachers stated that PD would be helpful for implementation and that any professional development prior to the implementation of any curriculum is helpful. Additionally, some teachers stated that PD would be helpful, as it would teach them what PB education is and how to implement it in their classrooms. Another common response was that PD would provide support to teachers as they implemented PB education, and the PD would take the fear of implementing it away and provide networking support to teachers. Two teachers commented that while they agreed that PD was important, it still did not address the lack of time/resources to actually implement what is learned.

The majority of teachers who had implemented PB education stated that PD

would be useful in helping them to implement experiential education in their classrooms. Some teachers commented that PD would help show them how to implement PB education, while additional teachers indicated that PD would help put into context and provide more experience for teachers with PB education. Two teachers were unsure of the benefits of PD as they had not had any related to PB education. Finally, one teacher differed in that they believed that PD was more of a hindrance due to being at an inconvenient location and requiring obtaining a substitute teacher (Appendix F).

Subquestion

One subquestion was asked in this study: "How do PK-5 teachers describe what prevents them from implementing place-based program into their classroom practice?" Slightly different questions were asked to participants who had implemented PB education to some extent in their classrooms versus those who had never implemented PB education.

Challenges faced in implementing PB education. Participants who had implemented PB education were asked to describe what, if anything, prevents them from fully implementing PB education as well as what challenges they have faced in doing so. Participants often mentioned more than one challenge that they faced when implementing PB education. The most common theme mentioned by just under half was time (e.g., time to plan, and time in class). One participant described not having enough time because of constantly being pulled into professional development throughout the week (Table 4). The next most common theme related to resources, or lack thereof. Teachers also indicated that inadequate or complete lack of training was a challenge.

Table 4

Challenges Faced When Implementing PB Education

Theme	Example responses
Resources	"Lack of science textbook for class .. .parents want to see a textbook!" "Cost of materials for some items" "Too much copying—killing a forest to teach the kits"
Time	"Constant PD that has pulled me out of the classroom once or twice a week" "Not enough time in the day" "Time to plan with partner teachers outside of the school day" "The challenges I experience would be time"
Training/Lack thereof	"Not trained in science" "Training"
Buy-in	"A leadership buy in that we are teaching to the scope and sequence."
Too complicated	"The kits are too complicated and the books in the kits are too high for the grade levels"

Factors that prevent implementation of PB education. Participants who had not implemented PB education were asked to describe why they had not implemented PB education in their classrooms. Of the 46 participants who had not or were unsure of whether they had implemented PB education, 35 provided information on what prevents them from doing so. Just over half of the teachers stated that the main reason preventing them from implementing PB education in their classrooms was their unfamiliarity with it.

They either did not know what it is or had never even heard of it. One teacher described not having a "Clear understanding of the program and how it can be integrated in an elementary classroom" (Participant 10). The information that is presented in Appendix F includes themes and sample responses. Five teachers stated that they had not implemented PB education because of time, materials, and resources, or lack thereof. A

few teachers indicated that they had not implemented it due to a current curriculum already being utilized and/or the rigor of the current curriculum. Finally, the remaining teachers gave other reasons, such as being new to teaching science or the age group of the students they taught.

Table 5

Factors That Have Prevented Implementation of PB Education in the Classroom

Theme	Example responses
Lack of and/or need for training/PD	"I would definitely be interested in implementing this type of learning within my classroom. I would need some training/professional development to implement it correctly." "I would need help planning" "Clear understanding of the program and how it can be integrated in an elementary classroom"
Time and materials/resources	
Current curriculum/curriculum requirements	"Time and the rigor of the ELA and Math program requirements" "District curriculum requirements" "I teach in a investment school for CMSD where were have specific curriculum that differs from other schools in CMSD and must follow it."
Other	"Age group of the students to work with the community" "New to science. Doing the NEMO PROGRAM this year"

Quality of Data

I followed procedures assuring accuracy and transparency of the reporting of the data. This is evidenced in several ways: the participants typed in their own responses, the data were stored securely, and the data were accurate in that no transcription was needed as it is in their own words with no errors due to interpretation of recordings. Examples of surveyed responses are given by direct quotes for the reader to see.

Summary

Teachers who participated in this survey teach in Grades Pre-Kindergarten thru 5, where there is a mandatory participation place-based education curriculum in each grade level. Each of those curricula has a professional development component that is in place and is structured with the intention to support the teacher's content knowledge, pedagogical delivery and maximize student learning therefore augmenting science achievement. The programming is coordinated with the district curriculum specialist and involves five non-traditional learning institutions.

The second grade program is the longest running program in conjunction with the natural history museum and is in the fourth year of implementation. The newest programming is in its third year of implementation and is with the local aquarium. This program is in the fourth grade and has the most extensive professional development component, a series of three face-to-face 1-hour to 2-hours sessions. Completion is required prior to scheduling field experience or classroom visit. The professional development component is a video and information packet with pre and post curriculum materials that are provided to the teacher weeks prior to the daylong class visit.

Fifty-seven responded to answer the first research question, "How do PK-5 teachers integrate place-based education practices into their classroom science curriculum?" To answer this question, the teachers were asked to describe their personal experience with place-based education. Forty-five of the teachers who were surveyed stated knowing nothing about the approach, four said they were familiar but had never used it. The eight teachers who had descriptions offered a variety of examples that they

believed were considered using a place-based approach or experiential learning. Three of the eight gave descriptions that specifically named the district embedded programming. The surveyed teacher's viewpoint of how professional development contributes to the implementation of place-based was coded into three themes, those who were unsure, not implemented and those who felt they had implemented the approach. Those who were unsure felt that the addition of professional development would be helpful for them. The most frequent responses of teachers who believed they had not implemented the approach felt that professional development could assist their understanding of the term, would be helpful and contribute to the approach being used. In the same way, teachers who stated that they had implemented the approach in their classroom felt that professional development would be helpful, assist them with putting it into context, provide support and broaden their own experience with place-based education. I concluded the study by developing a process evaluation in the form of an executive summary presentation to the program stakeholders and district leadership that summarize the findings of the data collection process.

Section 3: The Project

I developed an evaluation report and presentation based on the research findings from my study. I designed the project with two things in mind: (a) the idea that the teacher makes place-based education relevant to each individual child and (b) the importance of stakeholders understanding the importance of revising the professional development component. Although the first of five grade-level experiences has been embedded into the district curriculum for 4 school years, a qualitative online survey questioning those district teachers revealed that most teachers did not understand or feel knowledgeable about the approach. All of the informal science institutions have a professional development session as a part of the programming.

A major goal of the place-based education program design was to prepare the teachers in Grades PK-8 to use a new approach in their instruction. The teacher assumes a major role in the education that is taking place within this curriculum program. The role of the teacher is foundational to the learner. Like the student learners, the teachers need to know when, where, and how to use the knowledge that they are disseminating. Now that the teachers have had an opportunity to practice the approach through implementation, they have had more time to develop expertise and can process a need for change as well as improvement. Encouraging teachers and administrators to embrace new roles is essential to education reform efforts in the United States (Darling-Hammond, 1997) and in this district. The evaluation report and presentation will introduce the key stakeholders to the idea that a program revision is needed and suggest ways to redevelop the professional development components of the program and district teacher training.

In this section, I present the project overview, description, goals and a literature review. In the literature review, I explain how the project deliverable was developed, structured for comprehension, organized, and intended to guide stakeholders into thinking about the need for change.

Description and Goals

The proposed project is an evaluation report, which will be presented to an invited audience composed of the program stakeholders including the district chief, leadership, K-8 teachers, and place-based collaborative informal science institutions. I will use a PowerPoint (Appendix A) and a written executive summary report (Appendix B) as tools to deliver the information within a 3-hour presentation and interactive workshop. The goals of the presentation will be to examine the outcome of the study, to identify and inform stakeholders of possible program barriers, and to suggest as well as create effective strategies for change, all in response to the study data. As a result of the proposed project evaluation report and presentation, the district and stakeholders will be able to take the findings into consideration and make changes to the program as it continues.

Rationale

This project evaluation report and presentation can provide feedback on how well teachers are able to transfer what they know about the approach and have learned through professional development training. If the teachers are not flexibly adapting to the new approach and feeling that they are capable of teaching and benefitting the students, then they may not feel motivated to teach using the method (Bransford, 2000). If this place-

based programming is to be effective in its implementation, the teachers must feel confident in their ability to bring the program into practice; thus, the professional development component of the program was embedded into the design. To this end, the process evaluation will be an effective method of introducing the need for intervention, change, and adjustment. If the training component needs to be restructured to fit the needs of the teachers, it is important that the district leaders and program stakeholders be informed. I will use both the process evaluation design and logic model approach, which is a graphic tool used to depict logical relationships between components of a program within the context of the curriculum as an evolving process, and the state's Standards for Teacher Professional Development as a framework to present the information to the program stakeholders.

A PowerPoint presentation will use the logic model to show a logical flow from beginning to end. The logic model will provide clear linearity to confirm the relationship between the input and output factors (Frye & Hemmer, 2012). The framework of the logic model is clear, concise, and efficient when used in a program evaluation (Baptise & Letts, 2014). In subsequent examinations to re-evaluate the program processes and intended outcomes, the logic model can be used effectively and repeatedly to show a correlation between teacher knowledge and student learning, as well as how teacher practitioners can translate their knowledge and skills into practice (Newton, Poon, Nunes, & Stone, 2013). This evaluation presentation with the executive summary will provide the district with valuable insights and give leadership an opportunity to adjust the curriculum program in response to the information that the report provides. By

understanding whether the program is being implemented (and, if not, why), knowing whether the teachers understand the place-based approach and what they understand about it, and how teachers can be supported through professional development training, the school district leadership can make adjustments to the program design.

Review of the Literature

Overview of the Project Development

While the goal of this review of literature is to contribute to the knowledge base as it pertains to the PowerPoint evaluation process, I developed it by researching relevant seminal texts and writers and establishing a correlation to more recent research. The information in this literature review was used to understand how the presentation must be anchored to several philosophies leading to a structured and successful evaluation report. The older historical literature is significant and foundational to understanding the theoretical framework and how the more recent literature impacts the progression of evaluating education programming (Merriam, 2009)—in this case, the district's professional development component of the place-based education program.

The structure of the evaluation report and PowerPoint content is based on historical literature and theory. In the United States, the evaluation of curriculum emerged in the 1930s and has grown at a rapid and steady pace. First considered as an education innovation, the process has developed and changed into an organized, systematic specialty with distinct models to fit the complex progression of education curricula (Levine, 2002; Norris, 1998). Today, evaluation models are used to determine the benefit, credibility, or impact of an education program (Mertens, 2014). More

specifically, the evaluation of an environmental science education program like this one can prove to be a beneficial primary tool when aligning an organization's mission and education goal—that is, if the evaluation is focused and purposefully developed (Heimlich, 2010). The four components of the logic model—inputs, activities, outputs, and outcomes/impacts—and the CIPP model are used to suggest causal relationships within the program's professional development design.

The CIPP Model Complementary Sets and Future Evaluations

At the end of the evaluation report and presentation, I will suggest that subsequent evaluations might be beneficial. In preparation for probing questions on how those evaluations might be structured and tied into future evaluation processes that could be requested by the stakeholders, I researched literature on the CIPP complementary sets (context, input, process and product) model and found that it uses four concepts and a constructivist approach to guide evaluation. The model, which was originally contrived by Guba and later developed by Stufflebeam in the 1960s, focuses on the improvement of design, planning, and implementation efforts (Stufflebeam, 2004). According to Stufflebeam and Shinkfield (2007), due to the structure of the model, its use is only feasible when there is the opportunity for open communication and ongoing interaction between the evaluator and the client. In the development of a learning space, trust and unbiased stakeholder respect are foundational to the success of the process. Within the context of evaluating this education program, the CIPP model is instrumental, as it focuses on the improvement of design, planning, and implementation (Stufflebeam & Shinkfield, 2007). The CIPP model functions within a metaevaluative framework and is

capable of rousing thinking and decision making pertinent to the direction of the program, whether in relation to objectives, goals, plans, strategies, execution, or discerning the outcomes (Stuffelbeam, 2003).

Within the CIPP model design are the four components. Each is developed to inform the decisions of the stakeholders at a particular stage of the programming, as shown in Figure 1.

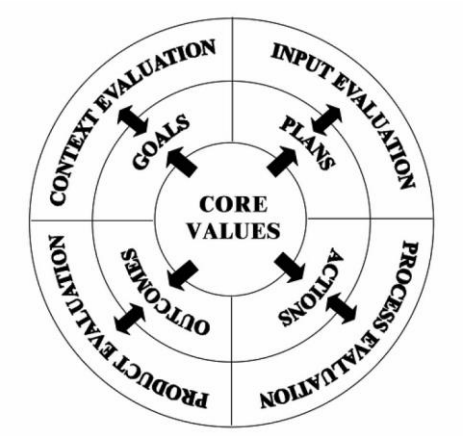

Figure 1. Key components of the CIPP evaluation model and associated relationships. From "The CIPP Model for Evaluation," by D. L. Stufflebeam, 2003, in *International Handbook of Educational Evaluation* (p. 33), New York, NY: Kluwer Academic. Copyright 2003 by Stufflebeam

Context evaluation advises decision-making stakeholders when they are considering the needs and probable problem components of the programming. Randall (1969) stated that those who are in a position to make decisions and who can define the goals and actions of the program optimally should apply the outcome of context evaluation to determine which strategies will be used to address the problems that might emerge. The main data collection methods in this approach are literature review and survey. Expert opinions can also be used in this evaluation method.

The *input evaluation* component is best used to assess cost effectiveness or feasibility, especially during the planning or proposal phases (Frye & Hemmer, 2012; Tan, Lee, & Hall, 2010). In this instance, when working on behalf of the program stakeholders and decision makers, the evaluator can determine through investigation whether there are pre-existing programs that can serve as models for the program being planned. Stufflebeam (2007) noted that the input program evaluator may also assess the program's budget to determine whether it will be adequate to meet the needs and goals as planned, compare the program's merit and strategy to those of similar programs, evaluate the work plan and schedule as developed, conduct a workshop, or issue a final report that provides feedback on the evaluation findings to the stakeholder. This information is best considered prior to making definitive program decisions or undertaking actions. Consulting experts, conducting literature reviews, requesting proposals from experts in the subject area, and visiting an existing model program are all scholarly ways to approach the input evaluation study (Frye & Hemmer, 2012).

In contrast, the *summative product evaluation* component determines and assesses the sufficiency of the program objectives and positive or negative outcomes, in addition to long- and short-range goals. Stufflebeam (2007) stated that this approach is sometimes divided into four evaluation subparts addressing the program's impact, effectiveness, sustainability, and transportability. This evaluation approach is significant to program leaders who are concerned with staying focused and identifying whether established priorities within the targeted program objectives have been met. According to Frye and Hemmer (2012), an effective product evaluator designs a systematic method that will

expose the unanticipated consequences and disclose both intended and unintended outcomes. The product evaluation can use multiple data collection methods, including surveys, case studies of targeted participants, reports from participants documenting program effects, decisive input from stakeholders, comparative study of similar programs or projects, and group interviews that focus on program outcomes, to inform the decision of whether to continue or terminate the program or project (Stufflebeam, 2007).

The information in this evaluation report and presentation is consistent with *process evaluation*, which is a formative approach that can be repeated multiple times within a program or project, as it can allow for the interpretation of ongoing data flow that can lead to continual, fluid change and management (Frye & Hemmer, 2012; Stufflebeam, 2007; Tan, Lee, & Hall, 2010). Frye and Hemmer (2012) articulated that program developers, leaders, and stakeholders of complex educational programs rely on the retrospective evaluation report to reveal whether components of a program model can be replicated or not within the context of consequential or inconsequential adjustments. Hakan and Seval (2011) described the CIPP model as a valid and reliable instrument for curriculum evaluation in the field of education, noting that those conducting a process evaluation can seek specific and detailed information about students' individual needs, activities, participation, and teacher contributions to student learning. Additionally, this method can be used to provide summative information after a program has ended to inform stakeholders of how and whether the program actually worked.

According to Zhang et al. (2011), CIPP evaluation processes can be used to assess a complex service learning program in an educational setting. The model has the ability

to guide faculty members and stakeholders through feedback and decisions for continuous improvement (Zhang et al., 2011). In the context of this evaluation report and presentation, I am seeking to provide an overview of whether the program is accomplishing the important component of professional development in the most effective way. Naturally, this evaluation is formative, because the best answer will involve continuous observation and change. Levine (2002) contended that because people approach education through epistemological viewpoints and assumptions and what people believe dictates what people do, there is going to be a lack of harmony between curricular and evaluation ideologies. This contrast in perspective is fueled when conventional thoughts about education are bound into change due to evolution in practice (Levine, 2002).

Evaluating the Curriculum From the Fixed Product and Positivist Perspective

I believe that there is a potential absence of congruence between the two paradigms of curriculum and evaluation due to the fact that they have different philosophical origins, as suggested by Hawick, Kitto, and Cleland (2016) and Levine (2002). The theory used to guide the development of the evaluation report and presentation will involve addressing the place-based program as a fixed product. According to Levine (2002) from a modernist and positivist perspective, the traditional curriculum model is a fixed product. The fixed product curriculum originates from the positivist belief that in combining administrative and pedagogical elements, individual and societal change can occur (Dewey, 2013; Levine, 2002; Tsafos, 2013). Applying the process evaluation model approach from these perspectives to the evaluation report and

presentation will allow for a more concise determination of whether the goals of professional development were attained. The place-based education curriculum framework is based on a constructivist paradigm, emphasizing that the teacher contributes to how the students' experiential learning is internalized to help shape their reality. What people know is always interdependent within relationships and experiences (Levine, 2002). The place-based curriculum is a fixed product, as it is perceived as having pedagogical elements that can change individuals. Levine (1999) further noted that within the fixed curriculum perspective, knowledge and meaning are transmitted objectively from experts to teachers and then on to student learners (Levine & Nevo, 2009). As a fixed product, the curriculum is explicit and prescriptive in design, with specified learning outcomes that a teacher can achieve (Levine, 2002). The manner in which the process evaluation is supported by the fixed curriculum ideology is that the teachers, stakeholders, and leaders will perceive this curriculum model from both paradigms, constructivist and fixed product, subsequently viewing both the curriculum and the evaluation reporting process as an evolving opportunity for change and growth (Raskin, 2012).

Within the PowerPoint presentation, I will attempt to prepare the stakeholders, curriculum planners, teachers, and leaders to objectively reshape their thinking. Based on the research findings, there will be a recommendation for redevelopment of the professional development component and curriculum. In the presentation, I will introduce the place-based education program curriculum within a prescriptive positivist approach, informing the stakeholders that knowledge and action are very different. In my

presentation, I will use the Granott (2013) statement explaining to stakeholders that how well they act, do, or take action depends on how well organized their thinking is and how well their knowledge is constructed. I will assure the stakeholders that they can evolve and change through this evaluation process.

The carefully developed and constructed evaluation executive summary report presentation and PowerPoint are necessary to create stability and a sense of standardization while acknowledging that change is to be expected within a likely non-predictable situation (Levine, 2002). Flexibility in thought will allow for a non-linear approach to the curriculum development process as the planners address instructional problems that link to instructional strategies which impact learning outcomes (Kloosterman, 2014; Kumari, 2014; Quiroga, Moreno & Garcia, 2013), in this case science education.

Presenting the Idea of Changing

In order to effectively make changes with the goal of improvement, Kreber, Brook, and Policy (2001) stated that there is strong evidence for greater success when evaluating educational programs if the assessment is over a period of time, is at multiple levels, becomes more complex with each data collection and is both summative and formative. The researchers propose a six-level model that is a self-evaluation portfolio with records that are kept by educational developers allowing for reflection, comparison and change. Change that is conversational, reflective and over a period of time, is effective (Danielson, 2015). The self-evaluation report would reflect the ideas suggested by the stakeholders during the presentation and can become a section of an annual report

to central stakeholders (Kreber et al., 2001). The project's PowerPoint of information is conversational, reflective and suggests follow-up evaluations to revisit the progress of the professional development component.

In the 1930's, Ralph Tyler recognized two main objectives to curriculum evaluation as affirming strengths and weaknesses within the program. Tyler called this the objectives achievement model. In the curriculum development planning there are often gaps between what was conceptualized, planned and what is eventually implemented. According to Armstrong, Stahl, and Kantner (2015), the evaluation process can be the approach used to redevelop a program's curricula at multiple levels. An evaluation model that is adaptable and expansive enough to make a distinction between the idealized curriculum, official written curriculum, and the program that was taught and tested is able to inform examination and encourage change (Armstrong et al., 2015). Within the positivist model, gaps are considered a result of failing and error and are to be expected when evaluating curriculum programming (Levine, 2002).

State Standards for Professional Development

The learning design for this evaluation report and presentation integrates the state department of education's system for effective professional learning that guides how educators gain new knowledge and skills. The Ohio Department of Education (2016) has established seven standards that organize the professional development criteria in the state. To make a recommendation for improving the current practice and delivery of the content knowledge that is necessary for the place-based program to be effective with optimal student learning in science, the format of the evaluation report and presentation

will acknowledge two of the state's professional development standards that are most applicable to this process. The Ohio Department of Education (2016) noted Standard Five for learning designs and Six for implementation.

Standard 5: Learning designs. Learning designs-professional learning that increases educator effectiveness and results for all students integrates theories, research and models of human learning to achieve its intended outcomes.

- What do we know about how adults learn?
- How does research inform our designs for professional learning?

Standard 6: Implementation. Implementation-professional learning that increases educator effectiveness and results for all students applies research on change and sustains support for implementation of professional learning.

- What do we know about research on change?
- How can this impact our building/district plans for professional learning?
- How can we support and sustain implementation of new skills and knowledge gained from professional learning?
- What is our process for providing constructive feedback to educators? What kinds of constructive feedback do we provide (ODoE, 2016)?

The 3-hour evaluation report and presentation will be the catalyst to inform the stakeholders around ideas of change and improvement. Stewart (2014) stated that by establishing a climate of comfort and equity within the beginning of an educational learning community, a tone of mutual respect and cohesion will become evident. By starting with a needs assessment the stage for critical analysis and constructive feedback

will be created within a learning community resulting in high quality meaningful interaction and common goals (Knight, 2011; Stewart, 2014). At the presentation, ideas for change will be presented as suggested options and not given as directives to me.

According to the qualitative findings of the research when asked to describe their personal experience, what prevents implementation and how the role of professional development impacts using the place-based education approach many of the teacher participants noted either unfamiliarity with the approach, they were not sure if they had implemented the place-based approach in their classroom or that they had received any professional development training. This evaluation report and presentation will be framed to be a catalyst for self-directed change within the district stakeholders and teacher participants.

Presentation

I will schedule one or more 3-hour workshops with optional times to be held at the easily accessible district's professional development center. The preferred time of the school year is in the spring, which is when program curriculum planners are planning for summer training and the upcoming academic year. The alternative choices will allow the collaborative stakeholders, informal science institutions, the district chief leadership, and teachers to attend at times that are convenient. This evaluation report and presentation will establish what has been accomplished within the place-based education program, what improvements are needed and next steps.

To do this I decided that by using a metaphoric storybook format in a PowerPoint presentation as the project delivery model I could easily transition and communicate

otherwise difficult to translate complex content. The logic model will be used as a systematic framework for implementation, to bring organization and clarity, to the trends, as well as, issues presented in the project delivery. Using the logic model as a template the research questions will be presented, as indicators. Next, I applied the 4 components of the simplest ogic model framework: inputs, activities, outputs and outcomes-impacts. The first component term or inputs, is used to describe what was invested into the program for example money, equipment or resources. The second component called activities refers to programming that has been developed or undertaken, training, or materials. The third component or outputs is used to identify the deliverables directly produced through the organization's activities. In the place-based learning collaborative some of the outputs have been the number of teachers receiving professional development, the number of students educated, and for some institutions the number of materials provided. The last logic model component term is outcomes/impacts. This term is used to illustrate the fundamental change that occurs as a result of the program. This change may be intentional or unintentional and in this collaborative the intent is that there will be increased knowledge and skills for both the teacher and the students. I will use the survey responses as a source of evidence to guide the stakeholders and district leadership as they determine the effectiveness of the program's long-term goal.

Primary Resources and Existing Supports

Two primary resources were needed. The first involved establishing a framework in which the evaluation would be presented. The second involved the scheduling an interactive workshop that would provide stakeholders the opportunity to engage in

discussion to shape thinking around how the professional development component of the program will be implemented. General workshop materials such as pens, markers, Post-It Chart Paper, projector and laptop are supplied by the district professional development center. The student evaluator paid other items, including the printed versions of the report summary. An additional primary resource and an existing support are the informal science institutions (ISI's) collaborative that exist as stakeholders. The collective meets on a regular basis and the institution leadership is able to easily meet with the district CEO on an as needs basis. The collaborative holds the district leadership accountable for supporting the progress of the place-based programming.

Potential Barriers

Scheduling is a potential barrier. Finding one mutual time to present the evaluation report and presentation to the district leadership will be a challenge. There will be a variety of presentation options to select from and this will be done to deter cancellations, postponement and no-shows. Having a printed report summary will address hard to schedule stakeholders who cannot attend.

A second barrier is at the district leadership level. This obstacle is the possible perception that this is not important, should not be a district-wide focus, and or may not be prioritized. This challenge could be addressed by emphasizing the corresponding data evidence that supports the need for change at a district and collaborative level. It may be necessary to revisit the survey data along with the district's state test score results in science.

A third barrier could be reorganizing the entire collaborative around program

revisions. Meetings involve not only time but also human capital. Due to the fact that the informal institutions and district leadership must have a voluntary in-kind commitment to the process, phone conferences could replace face-to-face meetings which require additional cost including travel time. Choosing a phone conference or to videoconference also means less time away from being onsite and present for other responsibilities and duties.

If stakeholders revise the professional development program a fourth possible barrier is the cost of getting teachers into additional professional development training. There are several possible challenges in this scenario first is the logistic of substitute cost if teachers are trained during the work day, or if after school hours union contracts require teachers be paid an agreed hourly amount. Also, if teachers are out of the classroom during instructional hours there is the loss of valuable class-time that is already viewed as limited. This barrier can be addressed creatively by suggesting that the district and informal science institutions offer teachers educational credits for participating or require professional development attendance in exchange for the program materials or opportunity to participate in the collaborative experience.

Roles and Responsibilities

The role and responsibilities of the student researcher will be as an evaluator and scheduler who will coordinate, schedule and facilitate the 3-hour interactive workshop that will present the overall evaluation report, results and discuss options for change. The role and responsibilities of the informal science institutions that participate in the learning collaborative grade level experiences will be to revise the professional development

component of grade level programs by developing data driven professional development that is aligned to the state standards for professional development and district goals.

The roles and responsibilities of the district chief leadership will be to support the professional learning experiences of the teachers, assure that the training sessions are aligned to district goals, devise a plan for expectation of teacher attendance, give the informal science institutions access to the teachers so that they can be easily communicated with or attend sessions, garner excitement around place-based or experiential learning and establish consistent supportive messaging.

The roles and responsibilities of the district Science Department are to plan, devise and develop data driven professional development programming for district science education and for the learning collaborative that is aligned to district goals and to the state standards for professional development, communicate science professional development sessions in a timely and effective manner, gather impact data from district information sources and present findings to the district and the learning collaborative and lead collaborative conversations between the district and the informal science institutions.

The roles and responsibilities of the teachers are to be active participants in district science and informal science institution professional developments and trainings. Optimally the teachers will apply the knowledge and skills developed in the district science and informal science institution trainings to their daily practice.

Project Evaluation Plan

This formative process evaluation will provide the stakeholders with a verbal presentation which will provide the following: an overview of the evaluation steps, an

analysis and synthesis of the findings, an interpretation of the meaning of the data, and recommendations and actions to consider. There are three goals of the project evaluation: to gain insights that will lead to organizational improvement and change, to identify the effects of the program, and to affect the participants by empowering discussion and raising awareness about the program. The steps of the project are noted in Table 6.

Table 6

Timetable for the Evaluation Report and Presentation

Item	Time
Email invitation sent to stakeholders announcing the evaluation report and workshop presentation subject matter, content and times. Confirmations responses will be requested via an email link to the evaluators email address.	4-6 weeks prior to presentation
Confirmations responses to confirm attendance due to the evaluators email address	3 weeks prior
Reminder email invitation sent to stakeholders who have not responded by confirming attendance.	2 weeks prior
3 Project Evaluation Report and presentations	3-Hours Options=Day; afternoon and evening
Executive summary sent to all attendees and non-attendees	1 day after last presentation

There are numerous stakeholders involved in the project. The collaborative stakeholders include the ISI administrative leaders from the local natural history museum, zoo, botanical garden, aquarium, nature center and science center along with the district chief leadership who are the chief executive officer, chief academic officer, deputy chief of curriculum and instruction, and district network leaders. Additionally, PK-5 teachers throughout the district are stakeholders in the project as they are the ones implementing

the program.

Project Implications

The importance of the evaluation report and presentation is its potential to guide, alter and improve the mechanisms that exist within the two stakeholder organizations, the ISI's and district chief leadership. The ISI stakeholders have thought critically and invested in-kind services to contribute to educating elementary students in a more profound way and the district chief leadership have the expectations that the district curriculum managers of science education have developed a program that will result in increased science learning. This educational strategy of combining the community resources to support the science education within one of the nation's poorest cities with partially funded programming can change society (Apple, 2012). With strategic concise organization, the revisions that will come from this project will result in empowering thoughtful change within both groups to consider adjustments within the program. In reformative education programming there is often the need to make adjustments. The data that resulted from this research suggests that there may be a need for additional teacher training which will strengthen the impact of the teacher's role in the program and increase the intended learning opportunity for the students. In order to achieve positive reform and curriculum improvement in education we must make continuous revisions and connections while developing new knowledge (Henson, 2015).

In a larger context the additional aspects to consider are the possible outcomes resulting from effectively using the place-based education approach in the urban classroom setting. In addition to academic augmentation, the experience gained thru

place-based education has the potential to have an impact on the overall welfare and lives of children who live in poverty. What this means is that children, who in their normal life circumstances would not experience museums, gardens, zoos and other places of learning due to accessibility and cost, could be exposed to a much bigger perspective of the local world. Having an opportunity within the context of limited financial resources and chances for exposure offers real-life tangible experiences. Students can benefit from this engagement by recalling touching, feeling, hearing, smelling and processing participatory information as references of learning instead of the lack of familiarity and typical declination and opportunity to make three-dimensional learning connections. When children have hands-on learning that extends beyond the classroom, en a third much deeper conceptual application and connection can be made to relevant real life situations. Based on social knowledge structure, reflection, and the way that learning is spirally developed people learn best through experience (Kolb, 2014). The potential for increasing student awareness of the world around them and the idea that students can change their behavior and become engaged in their own learning in a much more involved transformative way is compelling.

Section 4: Reflections and Conclusions

This journey to improve the education of each child within this community began when I realized that when I taught students who had experienced beaches, farms, museums, nature walks, and national parks, the lesson seemed to be inherently deeper. This difference produced a passionate curiosity within me about the elements of the learning experience and how I might be able to replicate exposure and cognizance. My commitment to finding the answer to these questions began with broadening my knowledge through 4 years of coursework that became the foundation of my research. Like my students, I had to experience more. Although my thoughts were deep and wide, there were strengths and limitations to the process, as well as other ways in which I could have addressed the subject. The information in this section provides a reflective perspective on the final study.

Project Strengths and Limitations

As with all projects, there are strengths and limitations. One strength is I selected a basic logic model design to meet the needs of the study and the stakeholders (Spaulding, 2008). The structure of the model provides clarification, making it easier for the stakeholders to understand the purpose for the evaluation and interpret the meaning of the outcomes. A second strength of the project is that the feedback from the finalization report provided to the stakeholders is a reference point, allowing for further development of the program coordination and design (Preskill & Russ-Eft, 2015; Spaulding, 2008).

One limitation of the project is that the design of the logic model does not allow for other possibly influencing factors, specifically emerging outcomes and details of the

program that may have a direct impact (Spaulding, 2008). Another limitation to the study is the sensitivity of poverty and accurately identifying whether students have been previously exposed to outside experiences and to what degree, especially in comparison to children from other socioeconomic settings. A third limitation is that although four of the informal science institutions have consulted with two experienced professional evaluators and have collected evaluative data, those data are not part of this study.

Recommendations for Alternative Approaches

The evaluation project will be presented to the collaborative stakeholders and district chief leadership, who will consider making recommended changes and adjustments to the professional development component of the program. The stakeholders will be responsible for deciding how the findings and changes will be presented to the classroom teachers. In this district, there are approximately over 600 teachers who are impacted by the implications of this study. However, challenges of communication and consistent messaging exist in the large district, in addition to the restrictions and protocols that a strong teacher's union presents. Communication and inconsistent messaging concerning the definition of *place-based*, as well as how the district would like to see this form of programming embedded into classroom instruction, could lead to alternative definitions for the identifiable problem.

Alternative communication options are available to communicate findings to teachers and other stakeholders. To communicate results to classroom teachers who are directly affected by the report, the evaluation process might be presented to a smaller group of teachers who represent the greater population. This stakeholder group might act

as an advisory board for their colleagues and communicate the findings in addition to developing solutions for changes in a subreport. Alternative options for communication to other stakeholders, including district chiefs and teachers not present for the initial project presentation, include providing additional presentation times, mailing an abbreviated written summary report, and sharing the report through electronic communications (e.g., e-mail, blog, or multimedia interactive report).

Scholarship, Project Development, Leadership, and Change

Due to my inexperience, the research and development of the project were difficult and at times arduous. Although I am a novice researcher and evaluator, I am an accomplished educator, and my curiosity surrounding the topic provided enough fuel to drive the process and counteract frustration. According to Creswell (2012), it is important that research involves "a process of interrelated activities rather than the application of isolated, unrelated concepts and ideas" (p. xviii). My research, which was intended to augment my knowledge and understanding of place-based education in an urban setting, was first challenged by my difficulty in developing enough confidence to form a research question based on an area where few studies had previously been conducted. Although there is intrinsic excitement in providing information about a new topic, it was intimidating to venture into unchartered territory.

The second challenge was finding appropriate literature from the past or present that was relevant to my research. There had been very little literature written on experiential and place-based learning in urban elementary settings, making it difficult to find the type of literature that would align with my topic. I had to learn to evaluate

research studies.

The next challenge in the process was finding an existing suitable tool for data collection. I found one; however, the researchers to whom it belonged did not respond to multiple emails requesting permission to use it. Subsequently, I had to design one that asked the correct questions leading to answers that would allow me to measure the targeted information. This required skill and information building.

My Walden coursework had prepared me for the process and guided the research and development of the project. My course texts, articles, and lectures became resources that connected learning to practice. I found the university library to be systematically organized and catalogued in a way that supported the focus of my literature review. Once I transitioned into the role of a skilled scholar, practitioner, and evaluator, I realized that somewhere along the way, I had gained confidence and felt an intrinsic sense of professional credibility and change. I believe this to be an outcome of the strategically designed academic structure and goal of the core curriculum of the Administrator Leadership for Teaching and Learning doctoral degree. As a result, there are many stakeholders who are interested in my research results and look to me to guide them into understanding how to make changes.

Reflection on the Importance of the Work

What I learned through the process was how to apply a framework of critical components successfully and develop proficiency of those components. As a lifelong learner who will continually add to my knowledge and skills, I am committed to replicating the process on an ongoing basis, including recognizing other critical issues,

analyzing current research in education, and advocating for positive social change. Further, by looking at this innovative program through a critical analytical lens, I learned there was a need for change that was evidenced by reliable data.

Implications and Application

Within this project, there is the potential for positive social change at an organizational level. Horace Mann (n.d.) stated, "Every addition to true knowledge is an addition to human power" (p. 97). This project presentation, titled "Finding Your Place," provides stakeholders with knowledge that may lead to a change in the way that professional development is addressed in the district as a whole and within the informal science institutions. According to the research data from this study, the current approach to professional development is not meeting teachers' needs in many ways and therefore is not translating into a change in classroom instructional practice. The information provided in the literature review gives support to the idea that teacher practitioners can deeply engage student learners in science content even to a mastery level of science processes and that professional development can be a catalyst for change.

If the stakeholders choose to accept the recommendations of the presentation and use the teacher response data to revise the professional development component to better meet their needs, as well as enter into as ongoing evaluation process, then there could be a measurable development in science proficiency among students. This process of ongoing evaluation built into the place-based learning collaborative and school district could significantly alter how the teachers deliver instruction.

In 2014, Kolb noted that if a change does occur as a result of ongoing revisions,

the refinement could have reinforcing implications supportive of the 4-stage cycle known as the Lewinian learning model. The study also indicated that the immediate personal experiences of teachers will become the focal point of their learning, meaning that the teachers' ideas are not fixed but can be formed and reformed based on their experiences (Kolb, 2014), further confirming the importance of experiential and place-based learning.

Directions for Future Research

My research was foundational to the subsequent evaluation of the implementation of the place-based approach in the PK-5 grade classrooms of the study district. Future research that more closely examines what professional development strategies are being used and what strategies are proven to be more beneficial and relevant to how teachers contextualize place-based education would be feasible for this district. I recommend a multiphase mixed methods study with a well-designed data collection strategy. This future research framework would be developed to collect and explicitly combine data sets: quantitative data with clearly identified variables, possibly the level of confidence that an individual teacher has, along with qualitative methods including classroom observations.

Conclusion

Place-based programming was introduced in this district in 2012, in part to reform the school district's science education. The school district and place-based learning collaborative have a vision to improve science education for children who, due to the limitations of their urban surroundings and based on their socioeconomic status, have a lack of experiences to apply to their classroom learning. The decisions of the adult

stakeholders who lead this district, including the central office and building administrators, teachers, and informal science institutions, can and do directly impact student learning and academic performance, ultimately leading reform and change if the correct choices for changes are identified. Reform efforts should be led by the confirmation of data and a needs assessment.

The essence of this study involved identifying data, confirming specific needs, and constructing an evaluation process leading to reformation and change, specifically in relation to the professional development component of the place-based education collaborative grade-level experiences. This study was planned with two intentions in mind: The first was to replace the assumption of program efficiency with data and factual information concerning whether the professional development was being effectively delivered and received, and the second was to guide stakeholders through an evaluation process suggesting ongoing revision and change.

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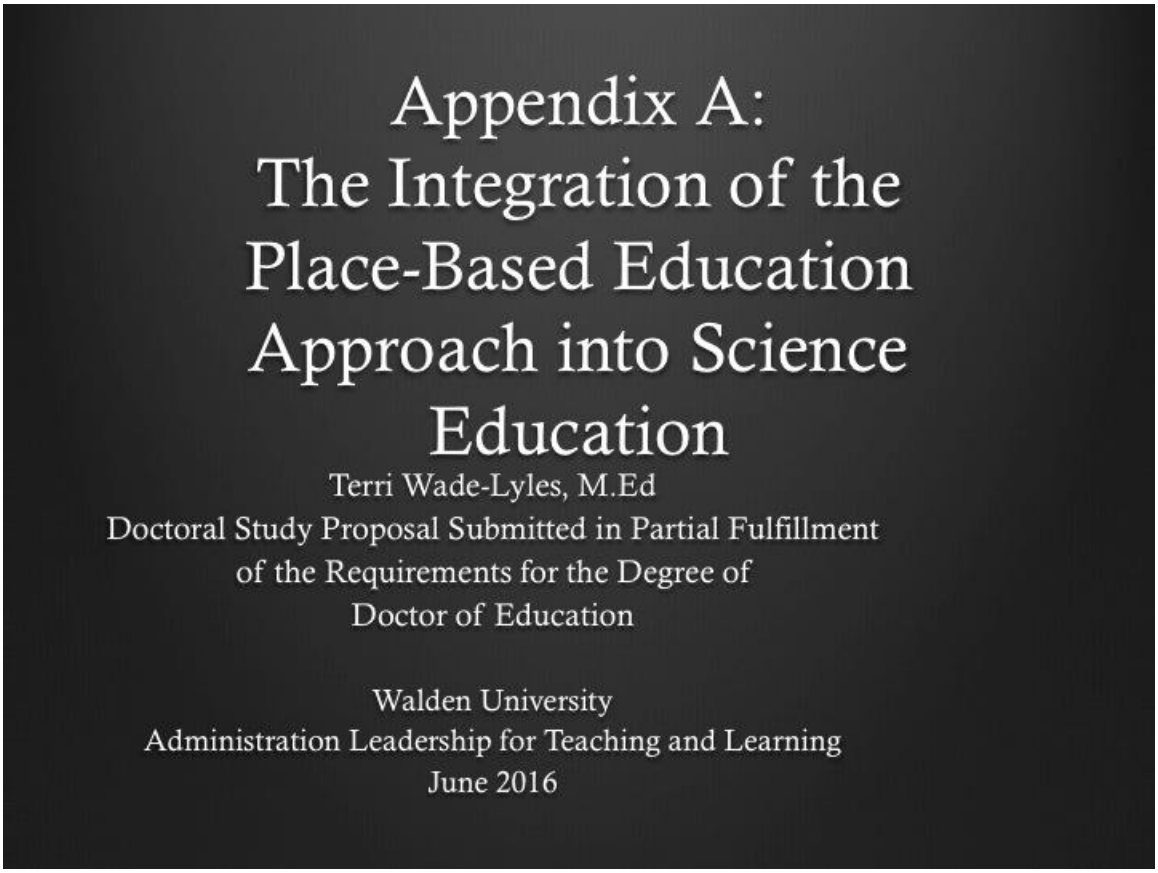
Appendix A: Project—The Integration of Place-Based Education Presentation

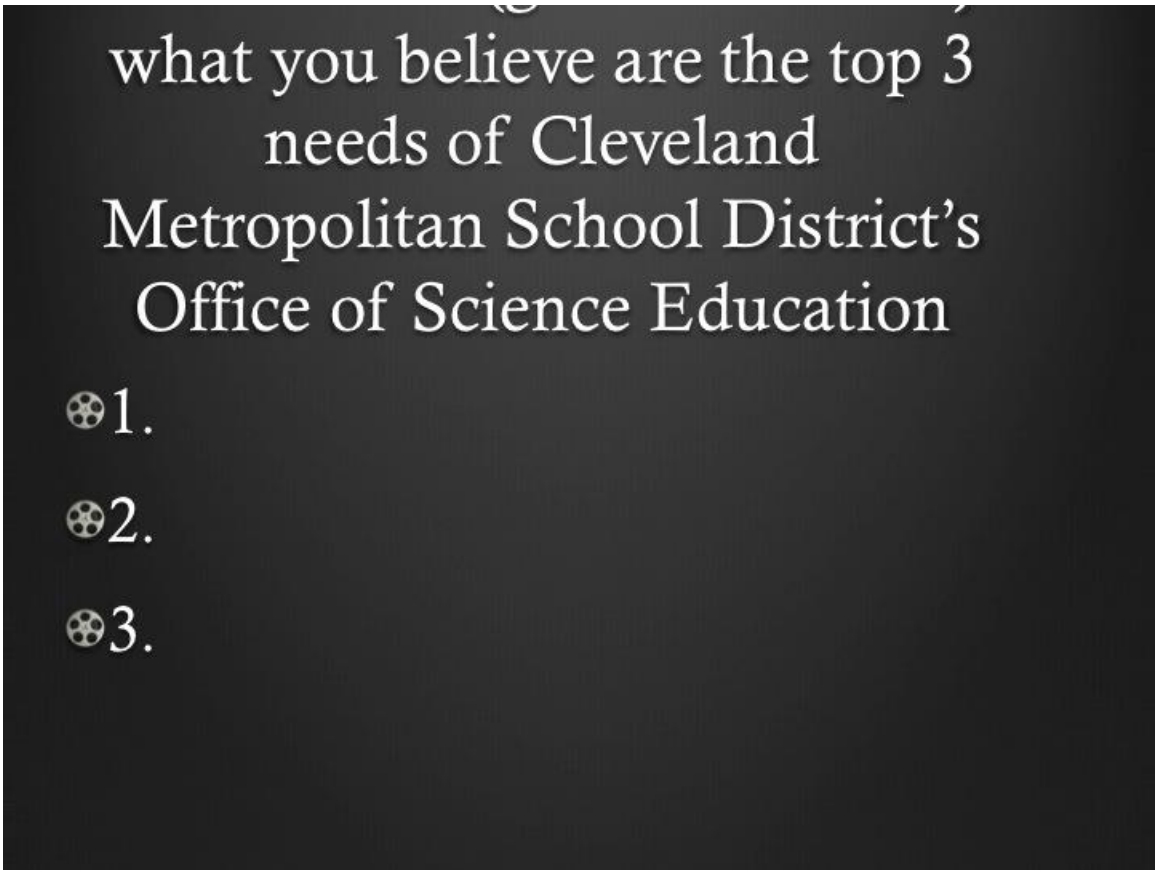
Slide 1



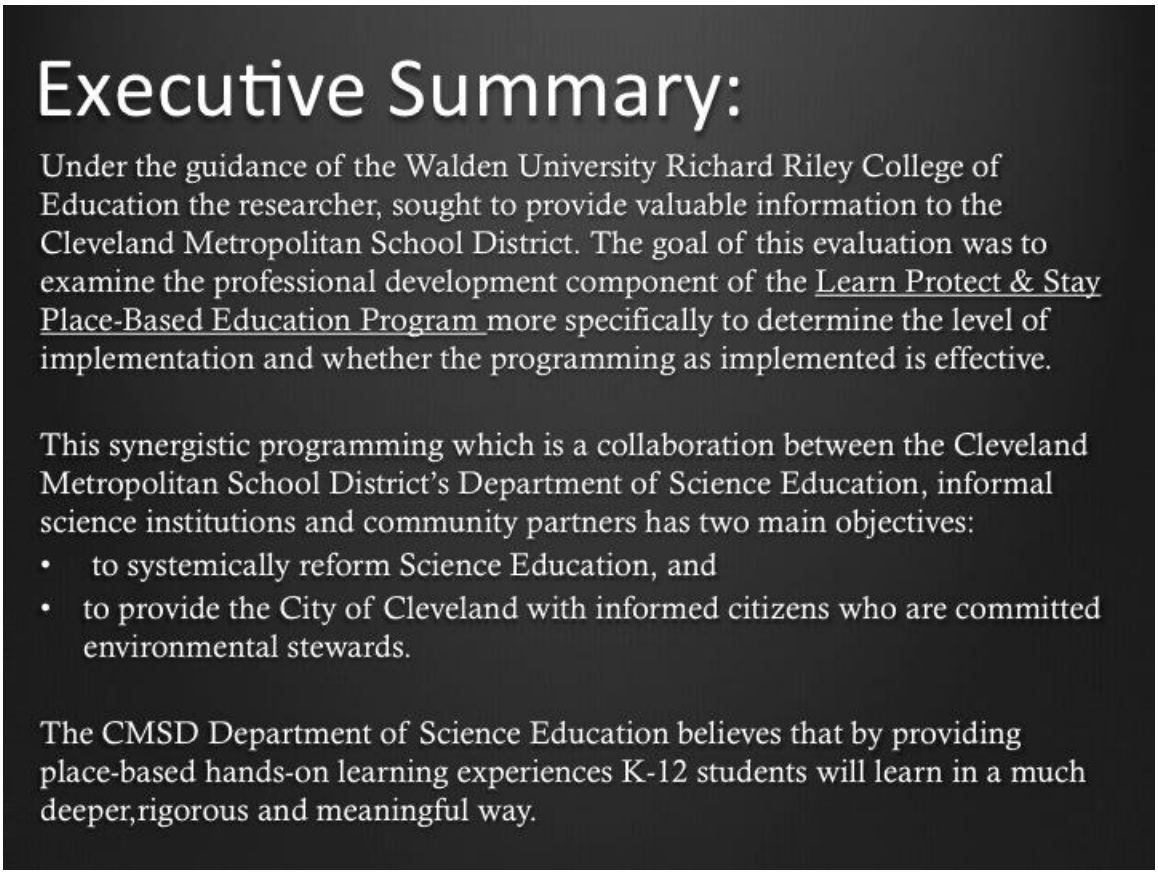
Slide 2


Finding Your Place:
An Evaluation Overview of the Professional Development Component of the PreKindergarten thru Grade 5 Grade Level Field Experiences in Partnership with the Learn, Protect and Stay Place-Based Education Collaborative
Terri Wade-Lyles, M.Ed. ,Evaluator & Researcher
Walden University
On behalf of the Cleveland Metropolitan School District

Slide 3


what you believe are the top 3 needs of Cleveland Metropolitan School District's Office of Science Education
1.
2.
3.

Slide 4


Executive Summary:
Under the guidance of the Walden University Richard Riley College of Education the researcher, sought to provide valuable information to the Cleveland Metropolitan School District. The goal of this evaluation was to examine the professional development component of the Learn Protect & Stay Place-Based Education Program more specifically to determine the level of implementation and whether the programming as implemented is effective.
This synergistic programming which is a collaboration between the Cleveland Metropolitan School District's Department of Science Education, informal science institutions and community partners has two main objectives:
• to systemically reform Science Education, and
• to provide the City of Cleveland with informed citizens who are committed environmental stewards.
The CMSD Department of Science Education believes that by providing place-based hands-on learning experiences K-12 students will learn in a much deeper,rigorous and meaningful way.

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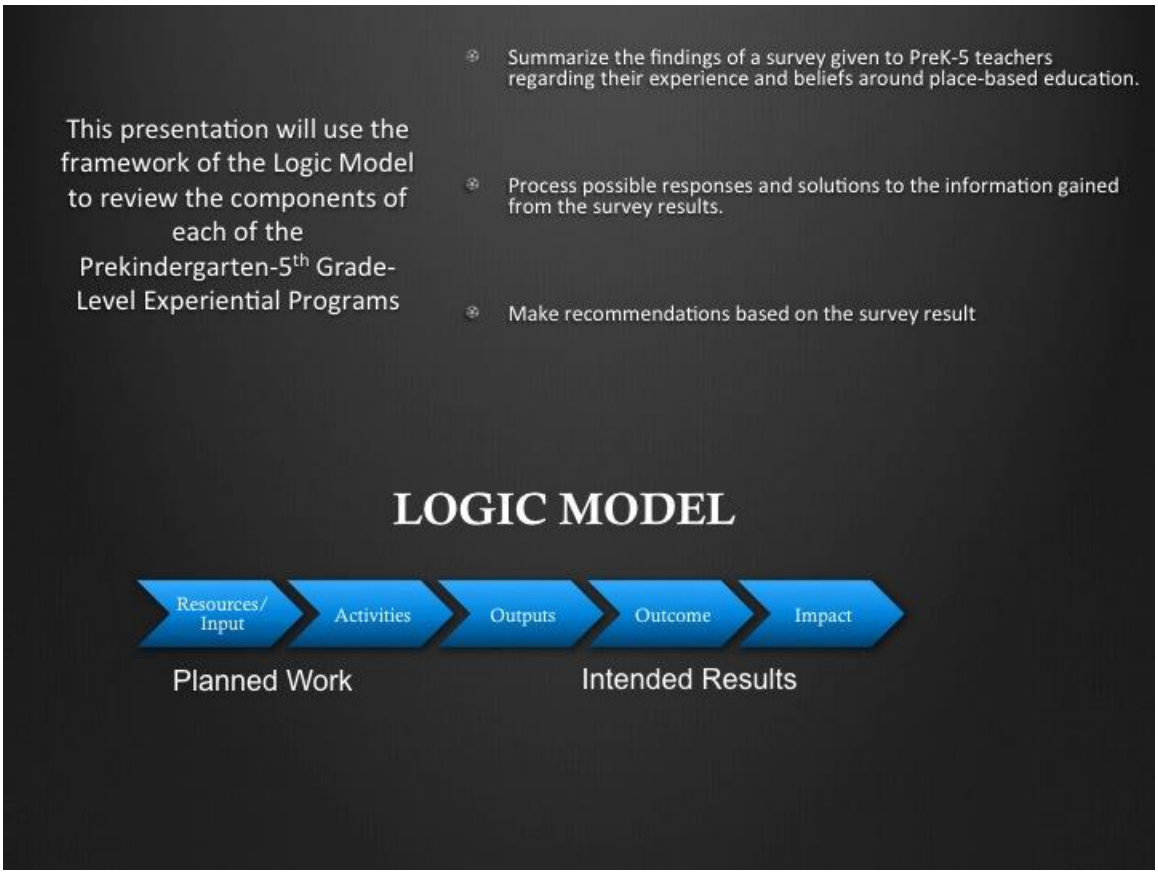
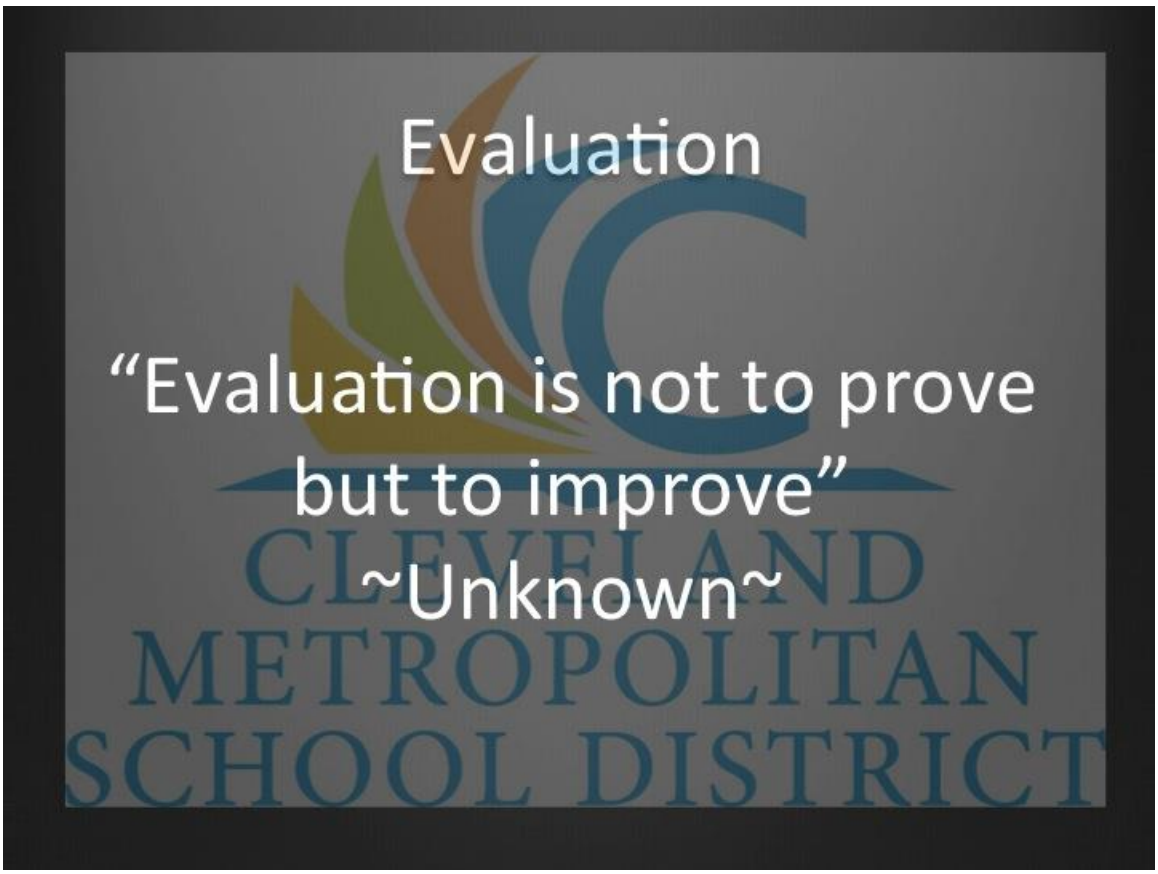
Slide 5

We want to assess teacher efficiency!

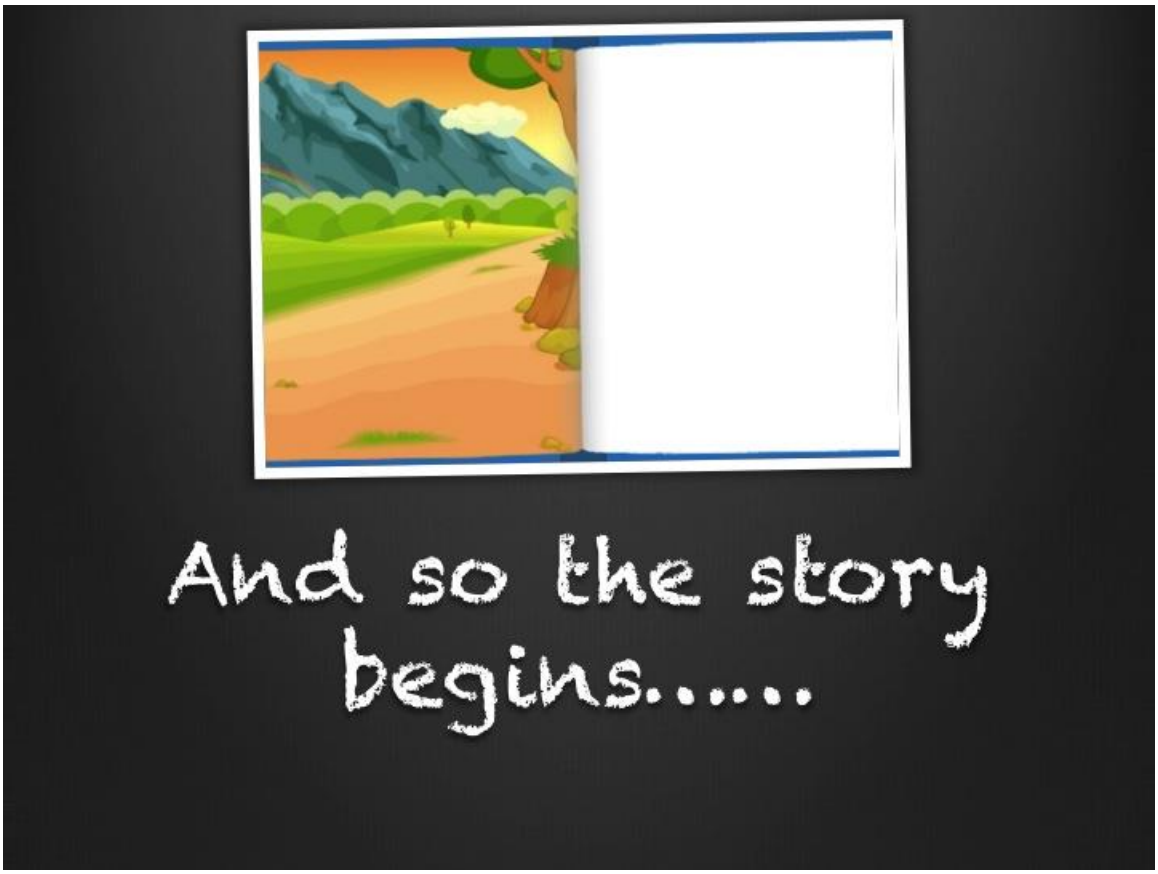
Slide 6


This presentation will use the framework of the Logic Model to review the components of each of the Prekindergarten-5th Grade-Level Experiential Programs
Summarize the findings of a survey given to PreK-5 teachers regarding their experience and beliefs around place-based education.
Process possible responses and solutions to the information gained from the survey results.
Make recommendations based on the survey result
LOGIC MODEL
Resources/ Input
Activities
Outputs
Outcome
Impact
Planned Work
Intended Results

Slide 7


Evaluation
"Evaluation is not to prove but to improve"
~Unknown~
CLEVELAND METROPOLITAN SCHOOL DISTRICT

Slide 8



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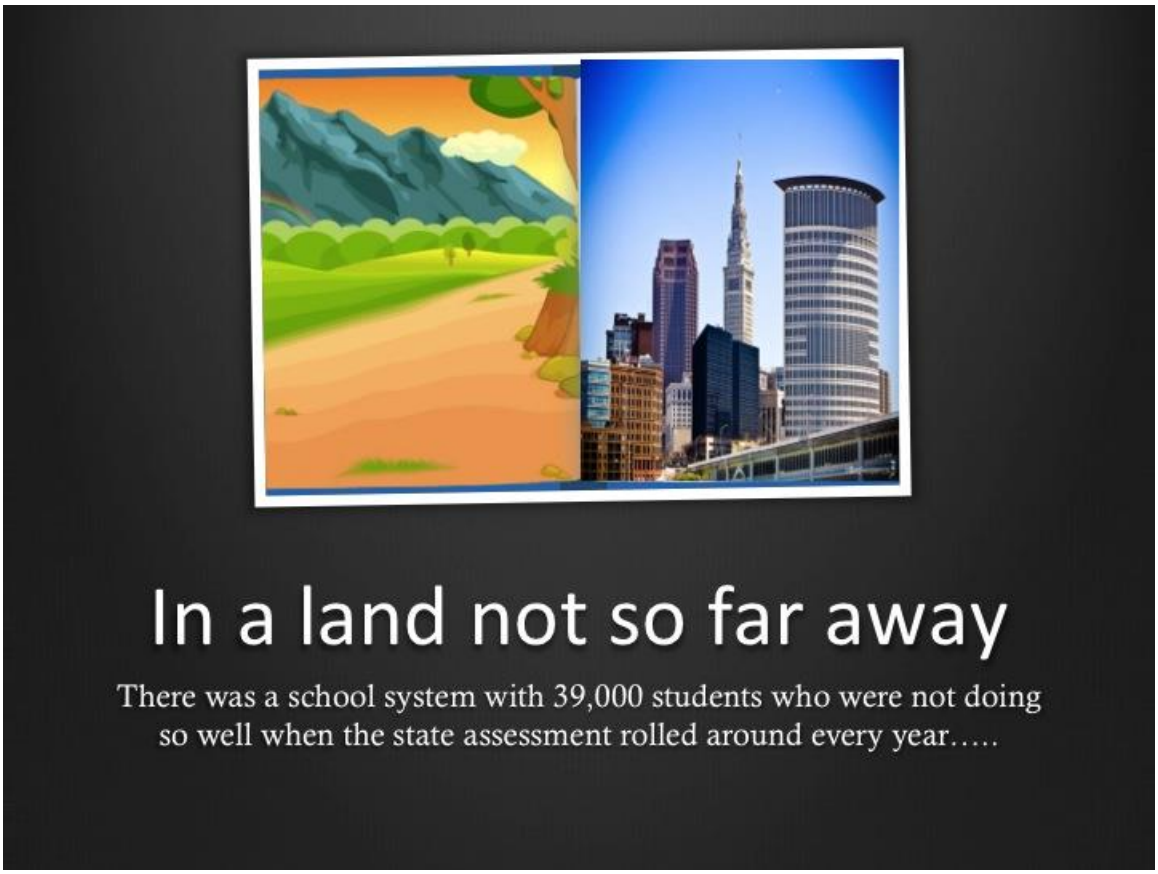

In a land not so far away
There was a school system with 39,000 students who were not doing so well when the state assessment rolled around every year…..

Slide 10


5 giants came to the rescue.....
The first programs began in the Fall of 2012

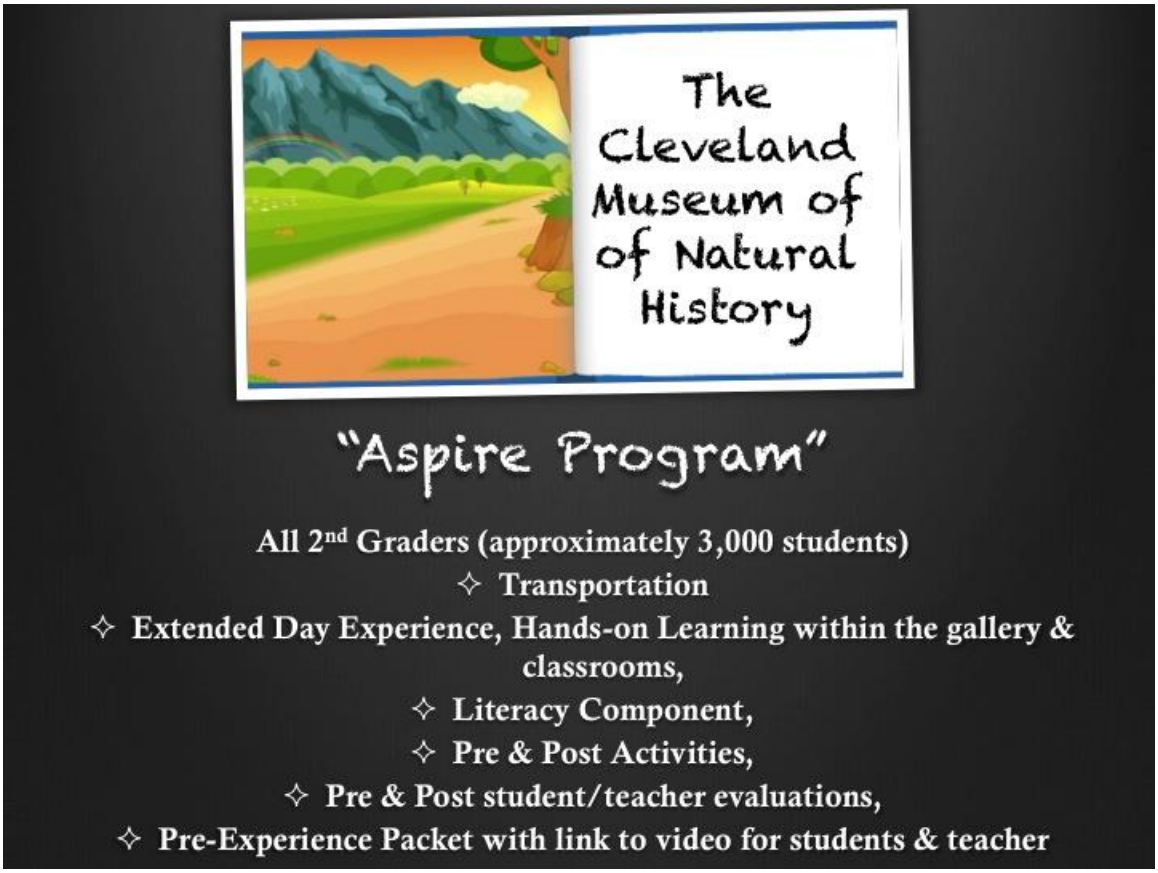
Slide 11


CLEVELAND METROPOLITAN SCHOOL DISTRICT
CLEVELAND BOTANICAL GARDEN
CLEVELAND METROPARKS ZOO
greater cleveland aquarium
Nature Center
Cleveland Museum of NATURAL HISTORY
Learn Protect & Stay
Grade Level Experiences
PreKindergarten-5

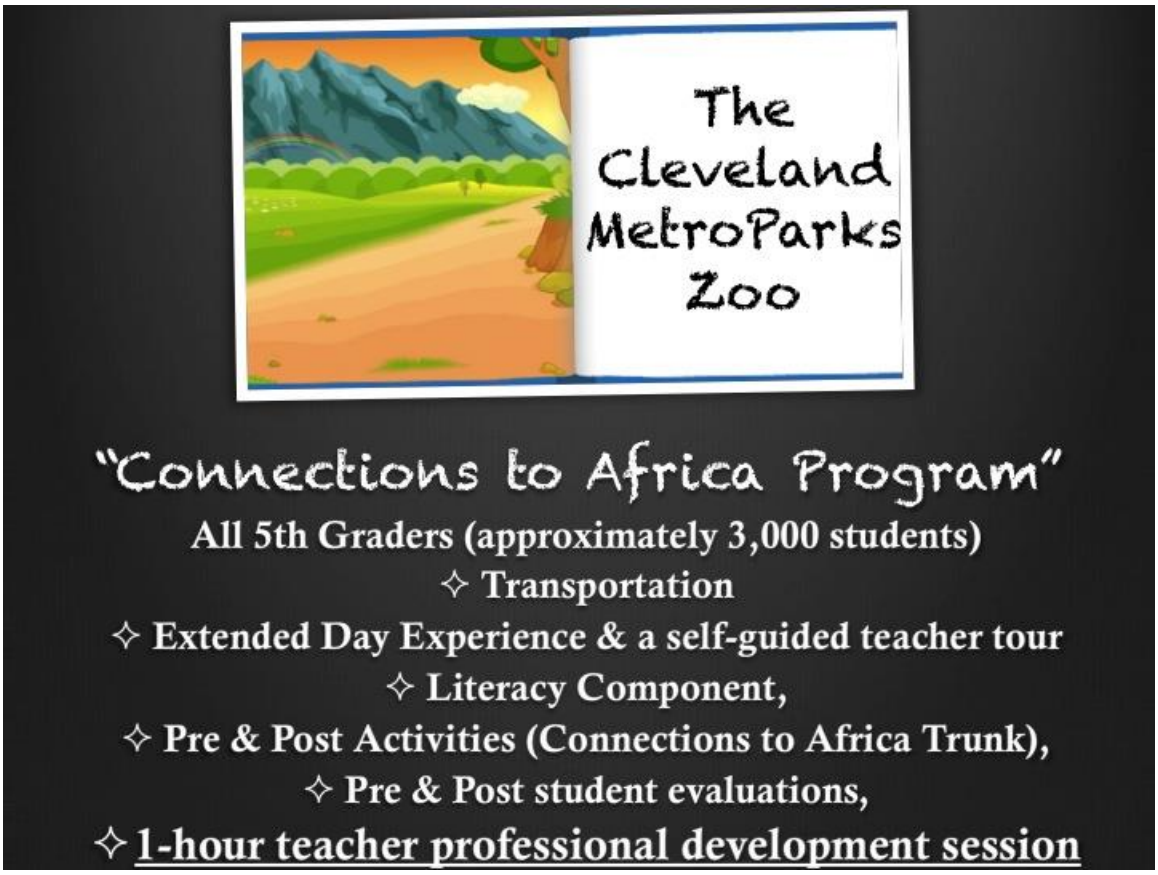
Slide 12


"Dig Into Plant Science Program"
Open to any 3rd Grade Teacher (approximately 125 Teachers)
✧ Transportation Voucher
✧ Free student admission for a 2-3 hour experience
✧ Literacy Kit with materials,
✧ Pre & Post Activities,
✧ Pre & Post teacher evaluations,
✧1 3-hour Professional Development Session

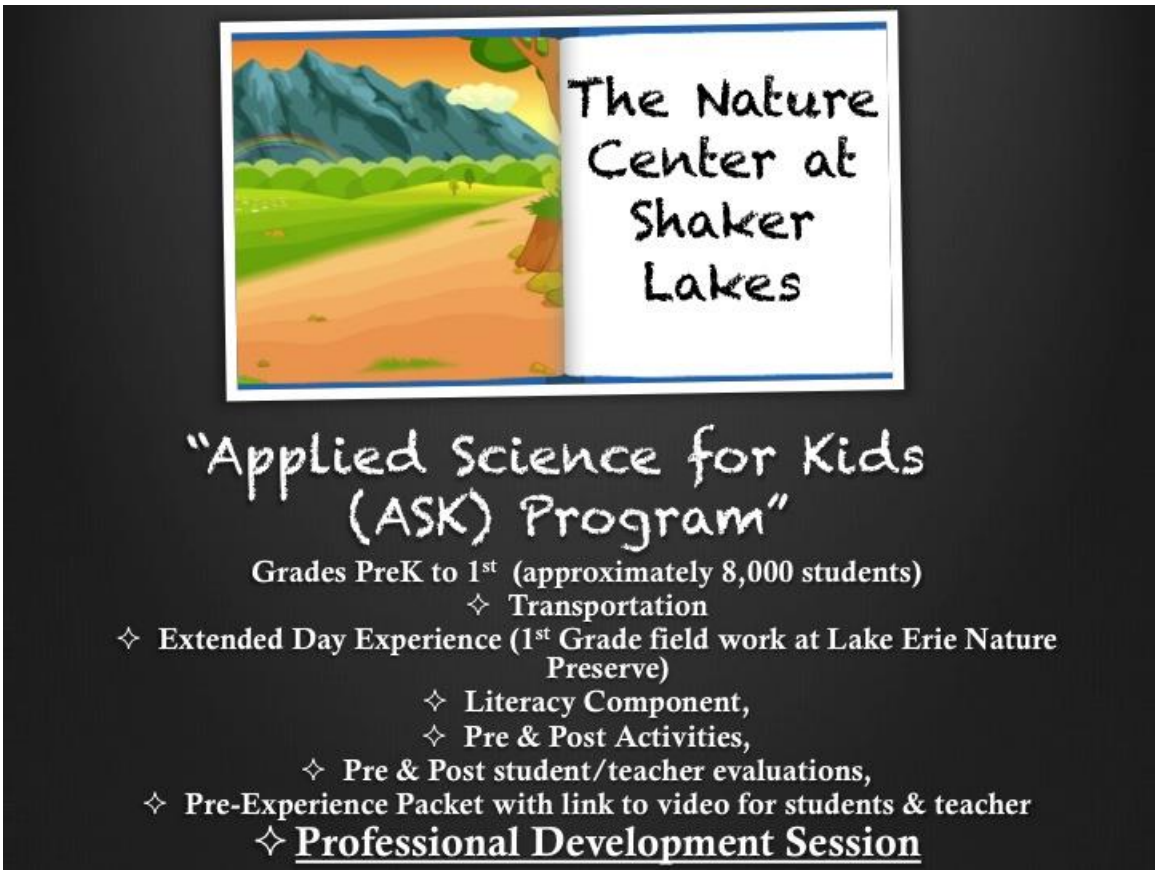
Slide 13


The Cleveland Museum of of Natural History
"Aspire Program"
All 2nd Graders (approximately 3,000 students)
✧ Transportation
✧ Extended Day Experience, Hands-on Learning within the gallery & classrooms,
✧ Literacy Component,
✧ Pre & Post Activities,
✧ Pre & Post student/teacher evaluations,
✧ Pre-Experience Packet with link to video for students & teacher

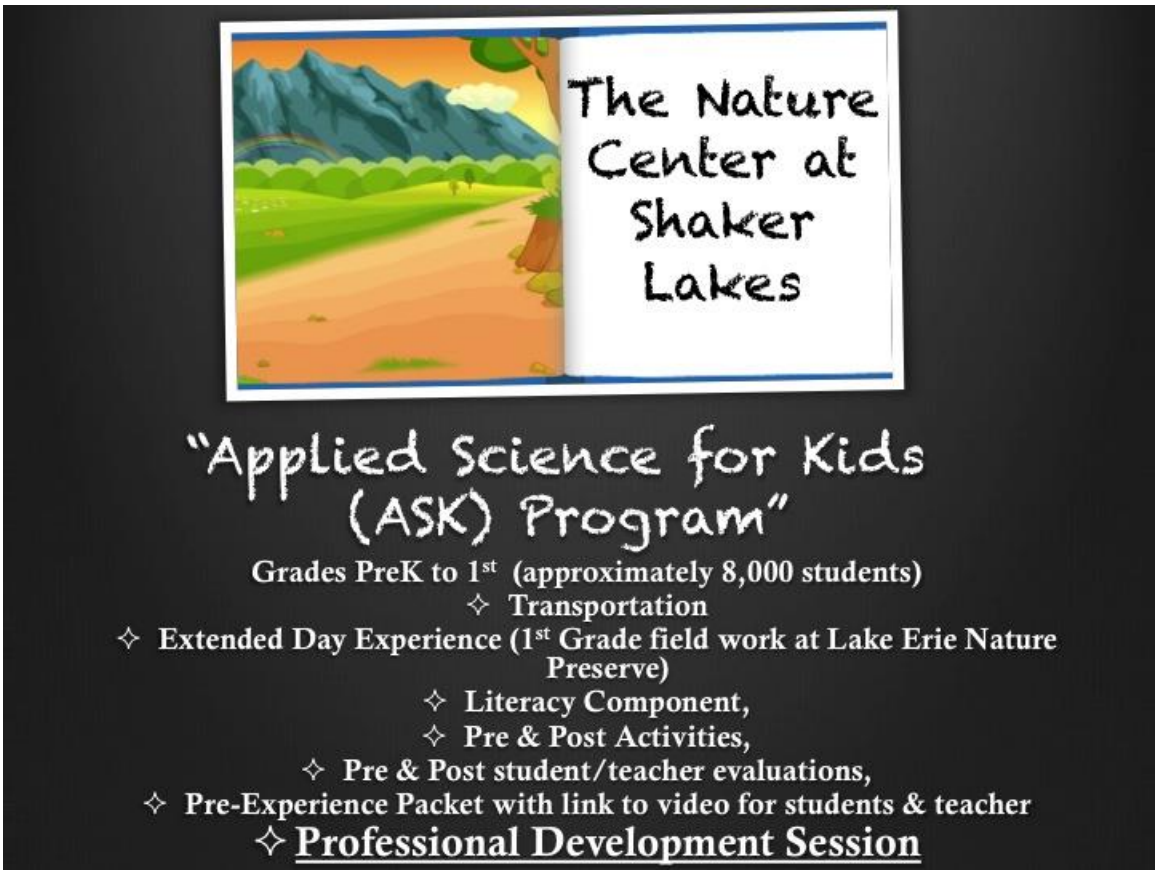
Slide 14


The Cleveland MetroParks Zoo
"Connections to Africa Program"
All 5th Graders (approximately 3,000 students)
✧ Transportation
✧ Extended Day Experience & a self-guided teacher tour
✧ Literacy Component,
✧ Pre & Post Activities (Connections to Africa Trunk),
✧ Pre & Post student evaluations,
✧ 1-hour teacher professional development session

Slide 15


The Nature Center at Shaker Lakes
"Applied Science for Kids (ASK) Program"
Grades PreK to 1st (approximately 8,000 students)
✧ Transportation
✧ Extended Day Experience (1st Grade field work at Lake Erie Nature Preserve)
✧ Literacy Component,
✧ Pre & Post Activities,
✧ Pre & Post student/teacher evaluations,
✧ Pre-Experience Packet with link to video for students & teacher
✧ Professional Development Session

Slide 16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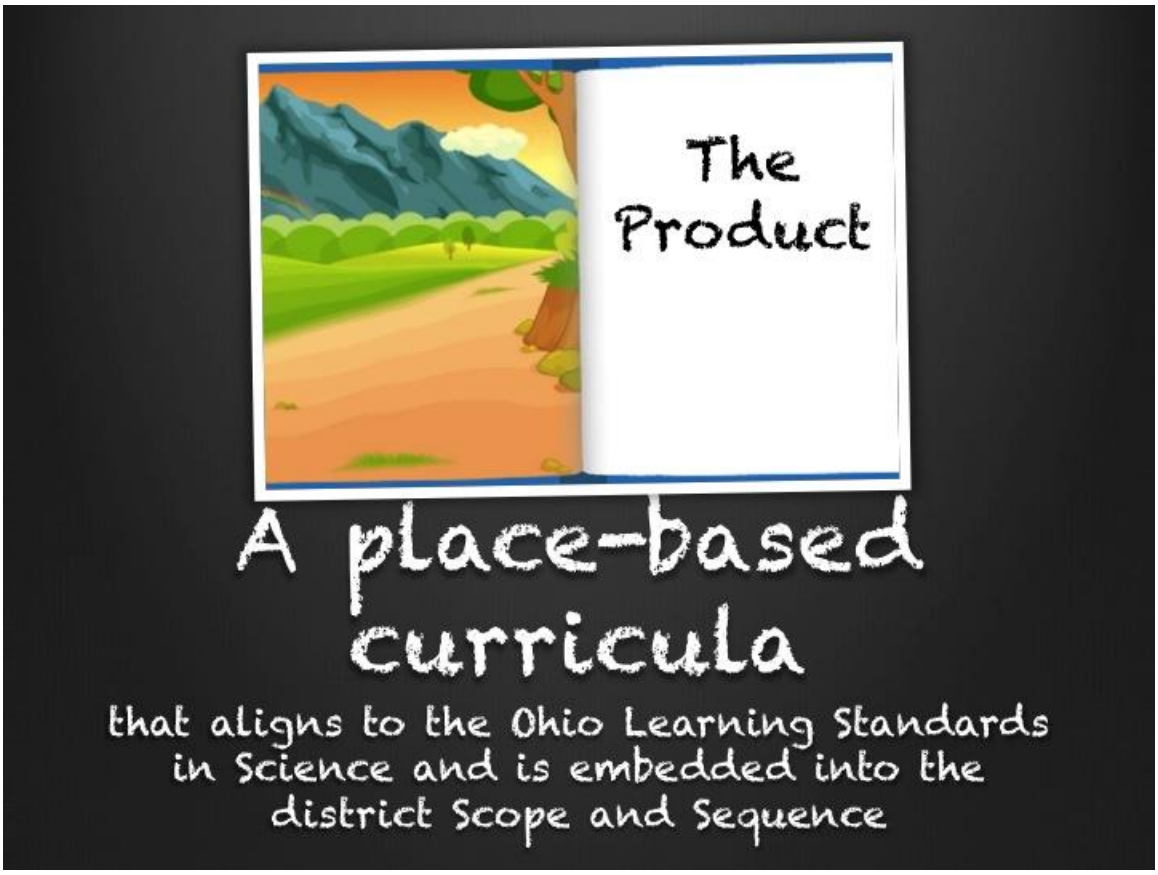
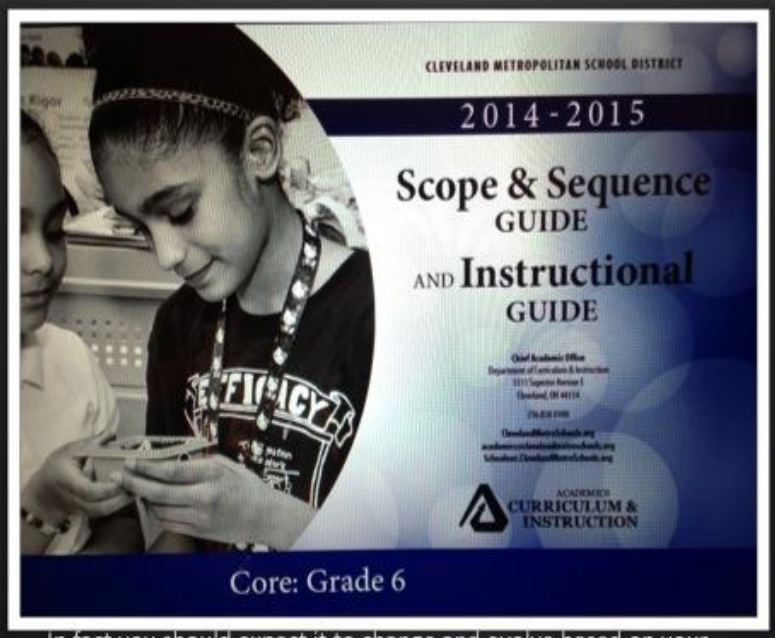
✧ Pre-Experience Packet with link to video for students & teacher
✧ Professional Development Session

Slide 17


The Product
A place-based curricula
that aligns to the Ohio Learning Standards in Science and is embedded into the district Scope and Sequence

Slide 18

Your curriculum is fixed but it can Change!



In fact you should expect it to change and evolve based on your needs. You are capable of making adjustments until it fits !

Your curriculum can be to be more compatible with the needs of your students

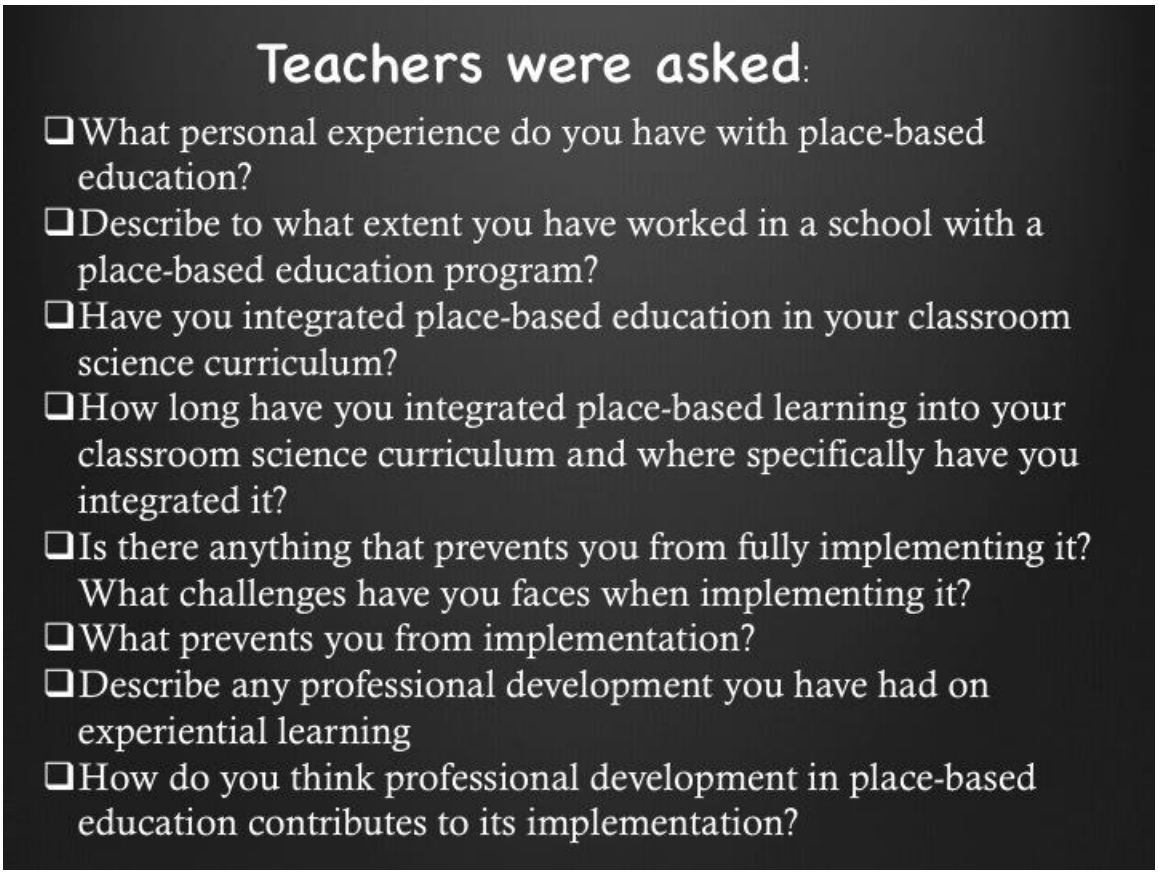
Slide 19


659 PreKdg-5
Teachers
Were invited to participate in an online survey. 57 Responded.

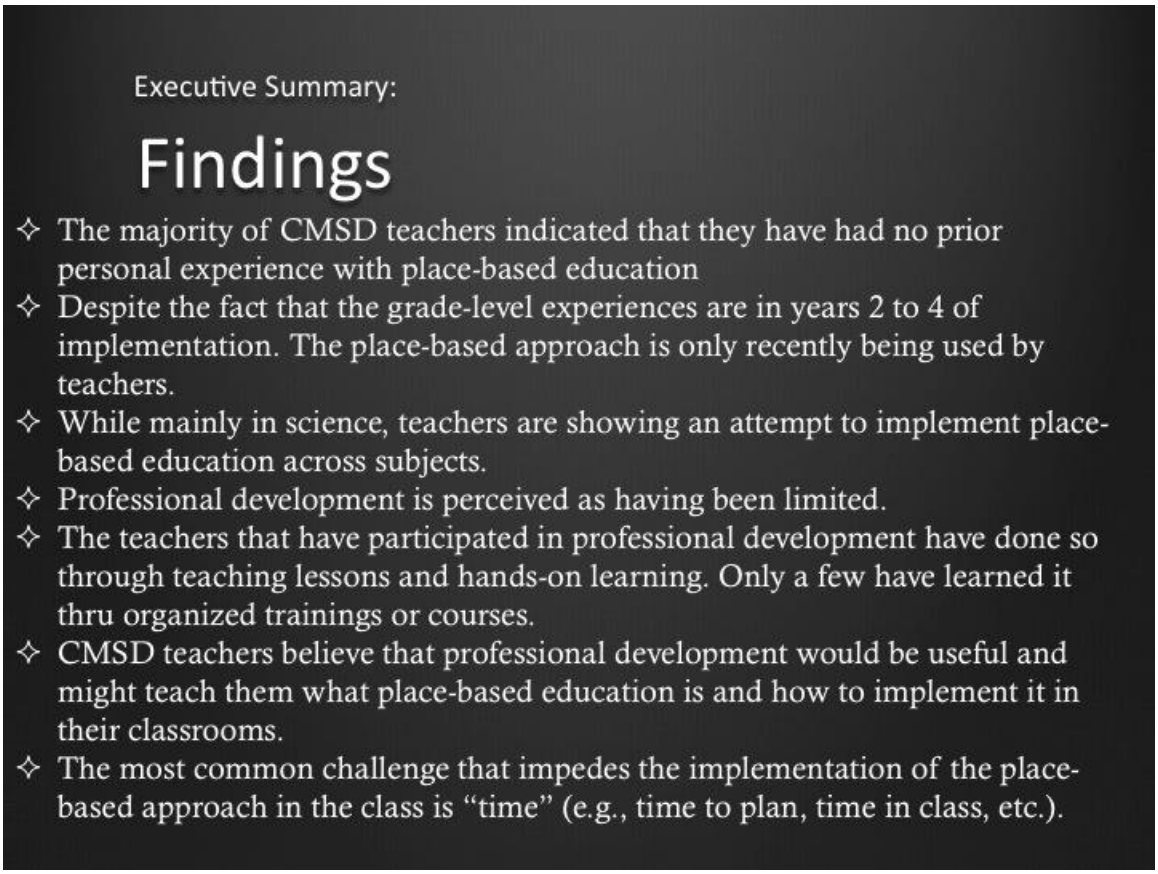
Slide 20


All participants
Had been teaching for at least six years, with the majority having taught for 16 years or more.
Approximately half of the participants had taught at their current grade level for five years of or less.
Participants taught across all levels from pre-kindergarten through grade 5

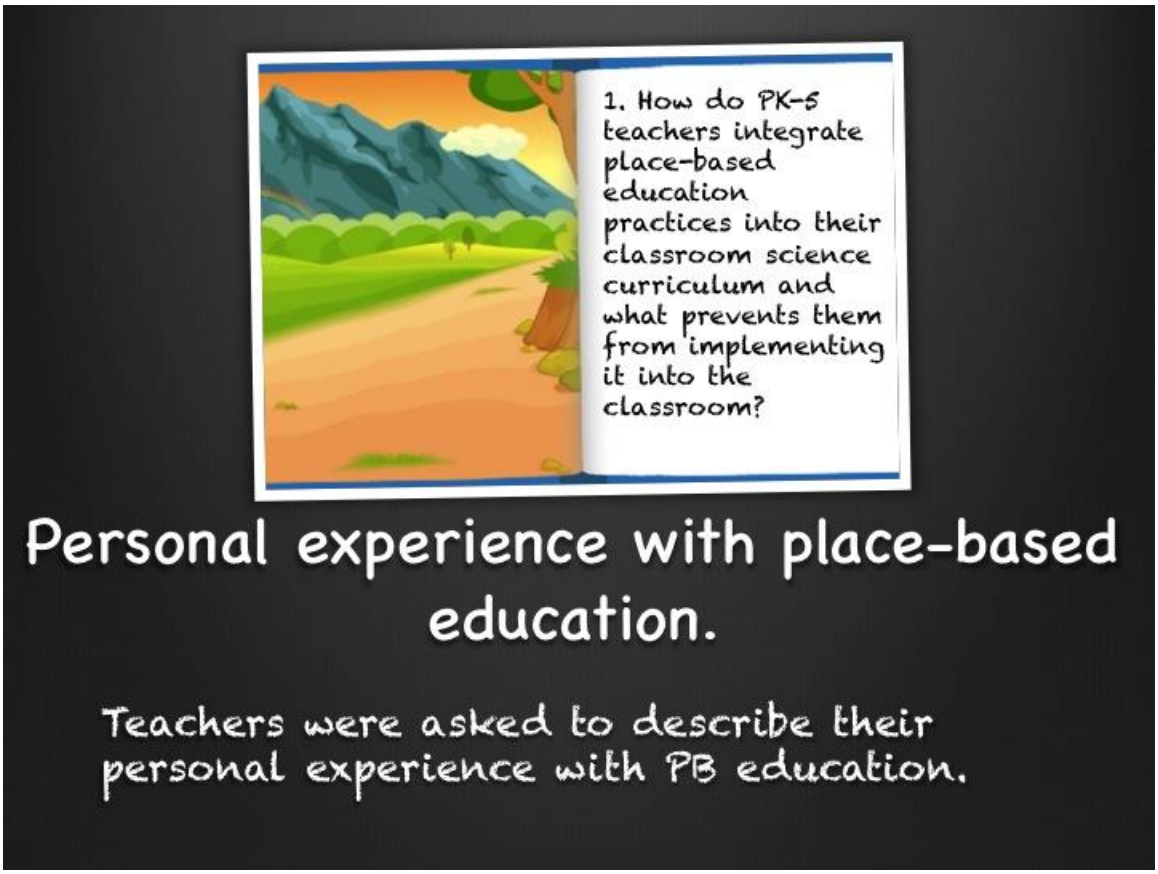
Slide 21


Teachers were asked:
What personal experience do you have with place-based education?
Describe to what extent you have worked in a school with a place-based education program?
Have you integrated place-based education in your classroom science curriculum?
How long have you integrated place-based learning into your classroom science curriculum and where specifically have you integrated it?
Is there anything that prevents you from fully implementing it? What challenges have you faces when implementing it?
What prevents you from implementation?
Describe any professional development you have had on experiential learning
How do you think professional development in place-based education contributes to its implementation?

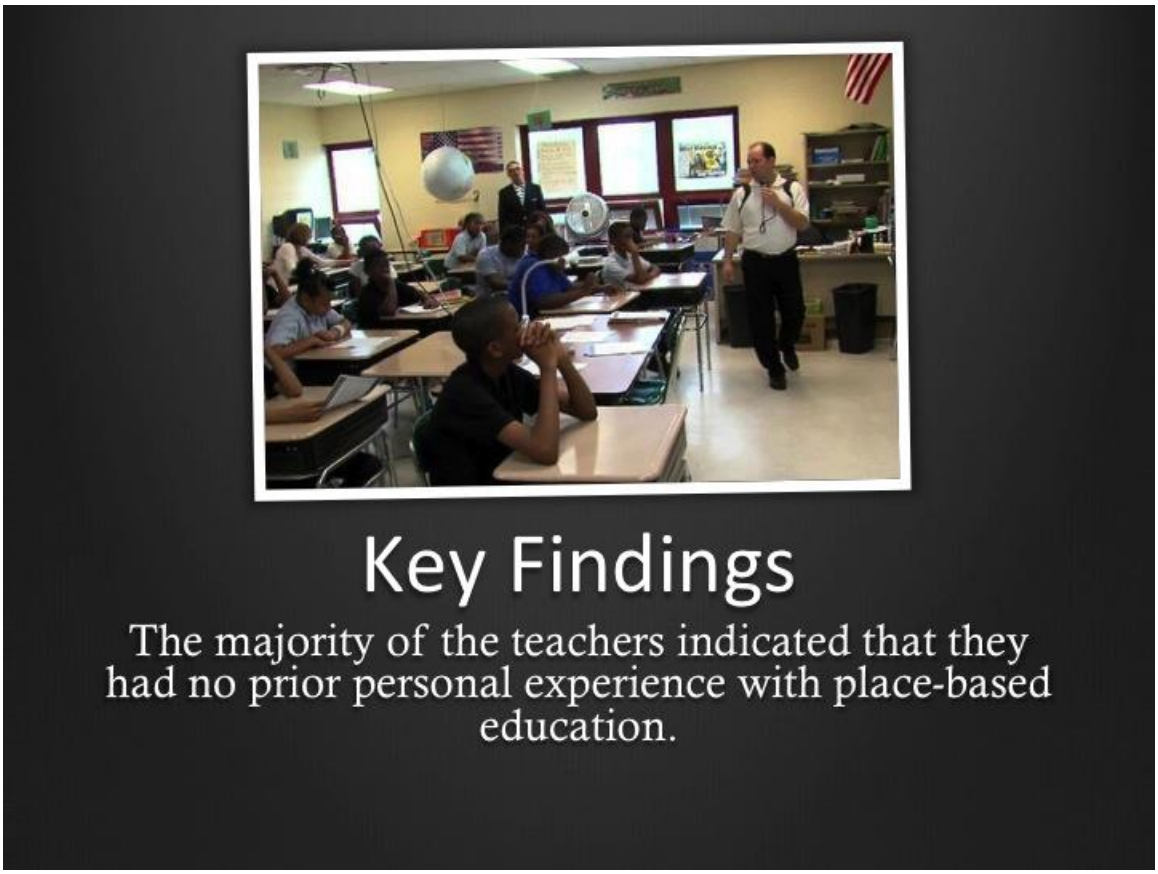
Slide 22


Executive Summary:
Findings
The majority of CMSD teachers indicated that they have had no prior personal experience with place-based education
Despite the fact that the grade-level experiences are in years 2 to 4 of implementation. The place-based approach is only recently being used by teachers.
While mainly in science, teachers are showing an attempt to implement place-based education across subjects.
Professional development is perceived as having been limited.
The teachers that have participated in professional development have done so through teaching lessons and hands-on learning. Only a few have learned it thru organized trainings or courses.
CMSD teachers believe that professional development would be useful and might teach them what place-based education is and how to implement it in their classrooms.
The most common challenge that impedes the implementation of the place-based approach in the class is "time" (e.g., time to plan, time in class, etc.).

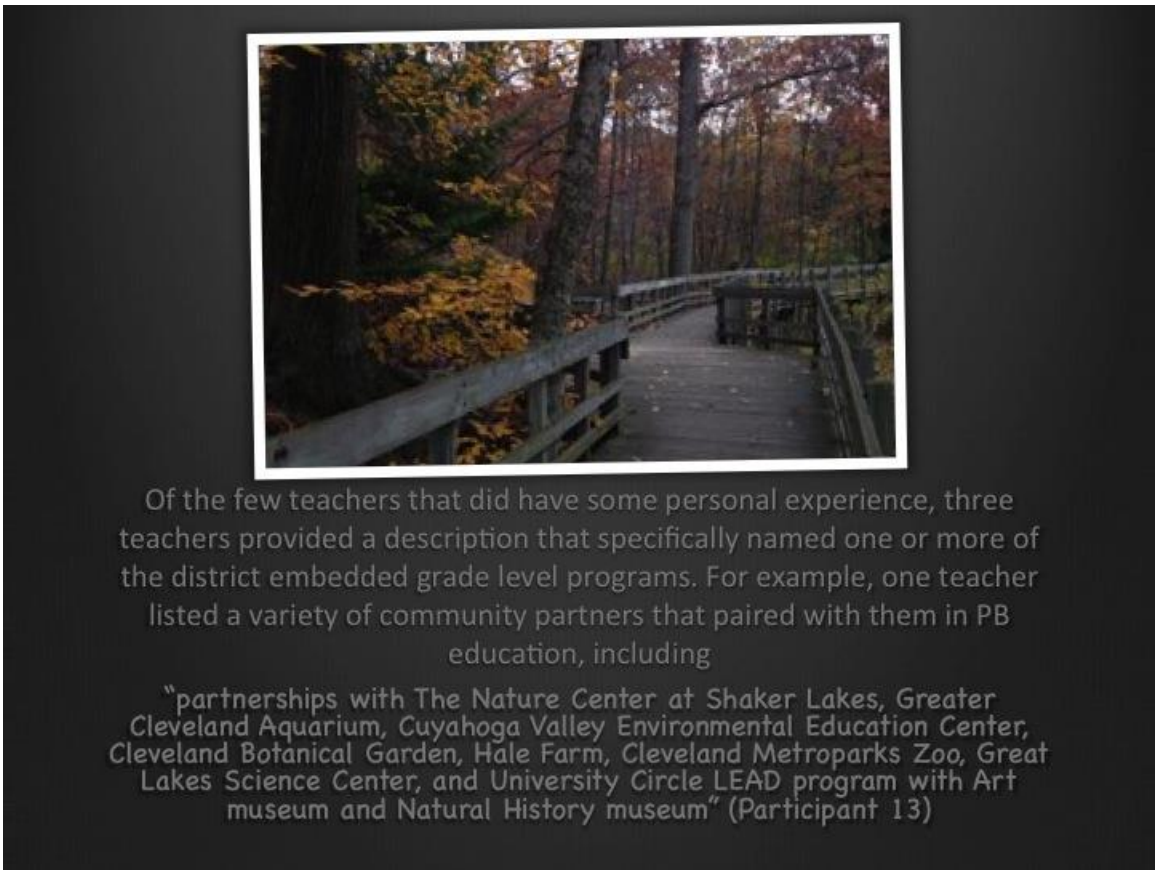
Slide 23


1. How do PK-5 teachers integrate place-based education practices into their classroom science curriculum and what prevents them from implementing it into the classroom?
Personal experience with place-based education.
Teachers were asked to describe their personal experience with PB education.

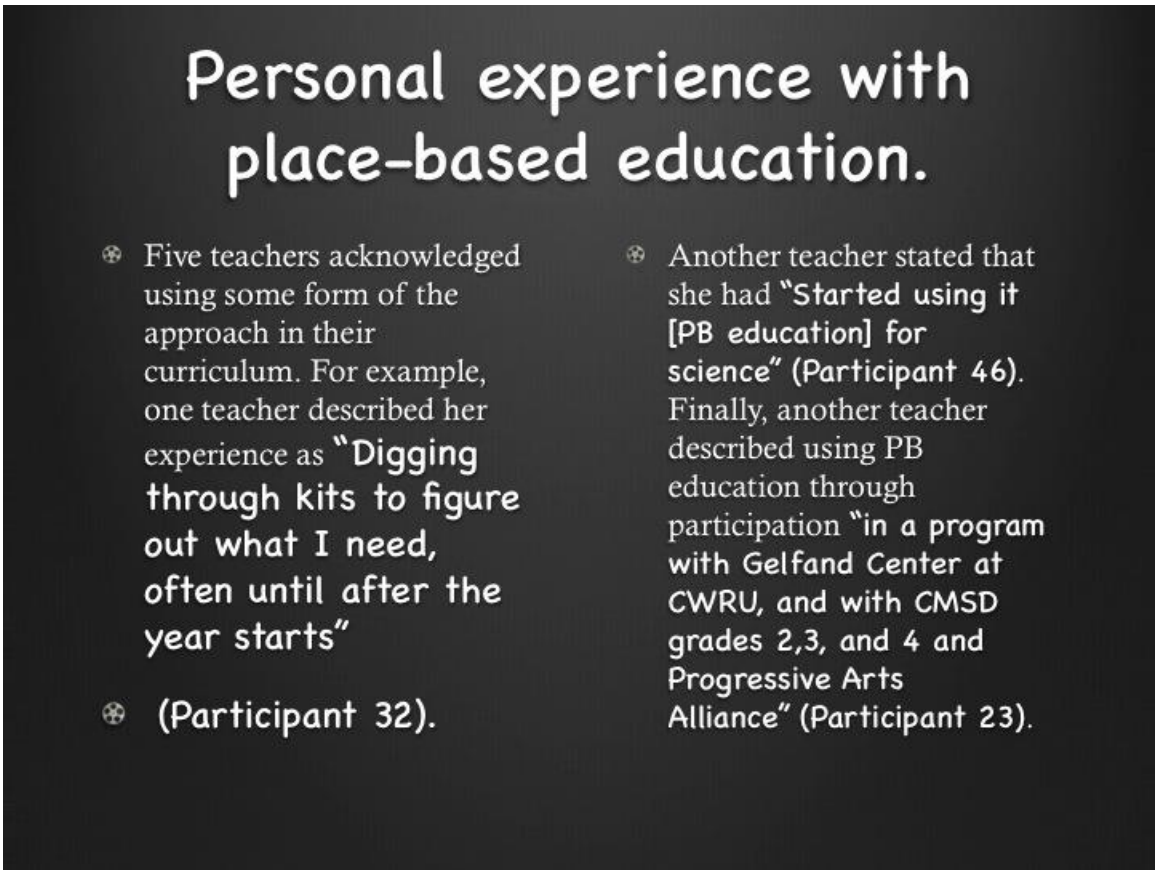
Slide 24


Key Findings
The majority of the teachers indicated that they had no prior personal experience with place-based education.

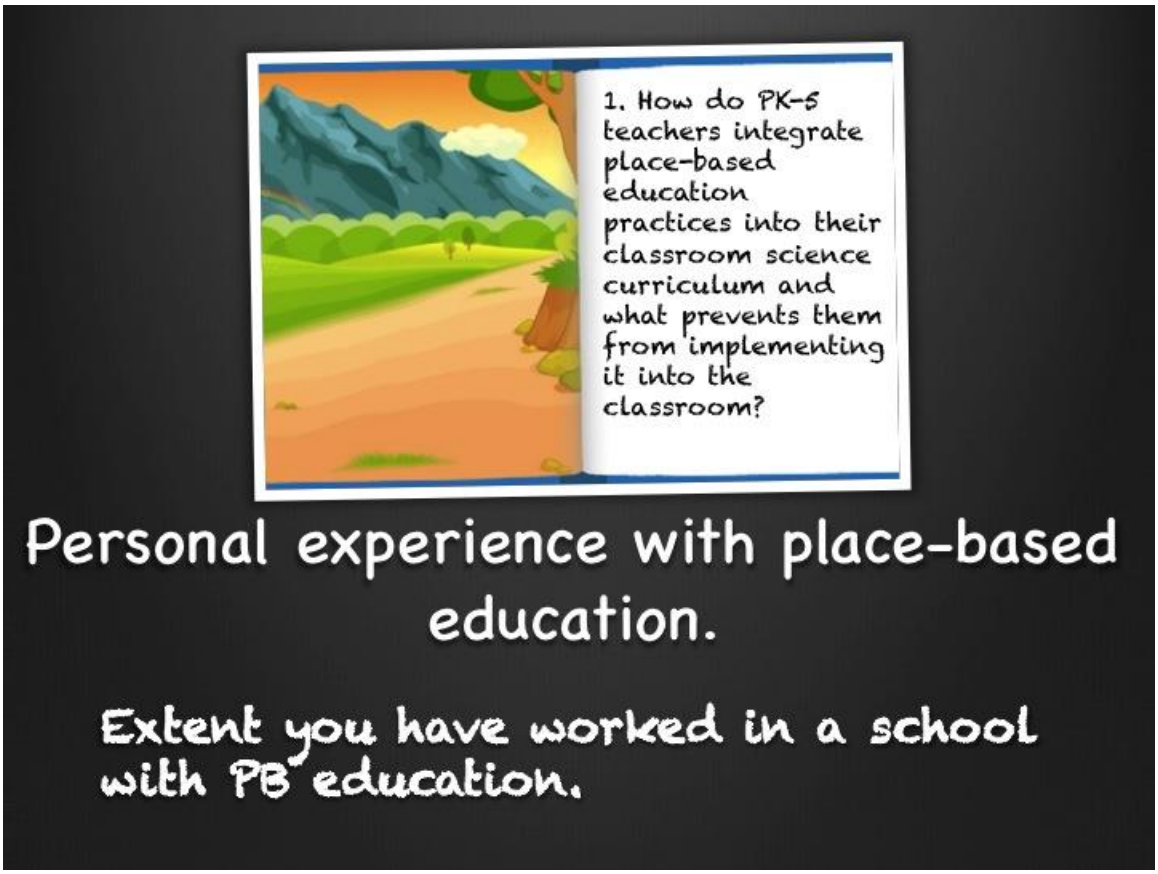
Slide 25


Of the few teachers that did have some personal experience, three teachers provided a description that specifically named one or more of the district embedded grade level programs. For example, one teacher listed a variety of community partners that paired with them in PB education, including
"partnerships with The Nature Center at Shaker Lakes, Greater Cleveland Aquarium, Cuyahoga Valley Environmental Education Center, Cleveland Botanical Garden, Hale Farm, Cleveland Metroparks Zoo, Great Lakes Science Center, and University Circle LEAD program with Art museum and Natural History museum" (Participant 13)

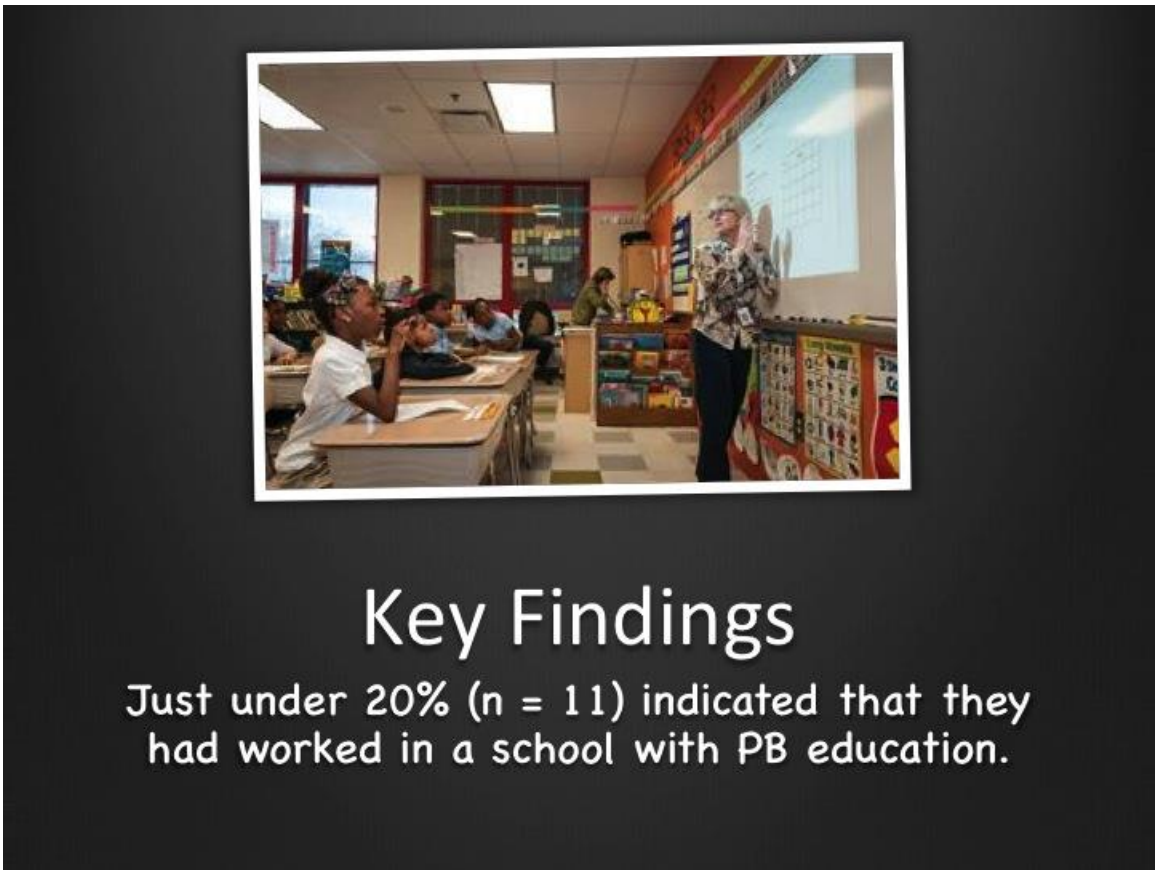
Slide 26



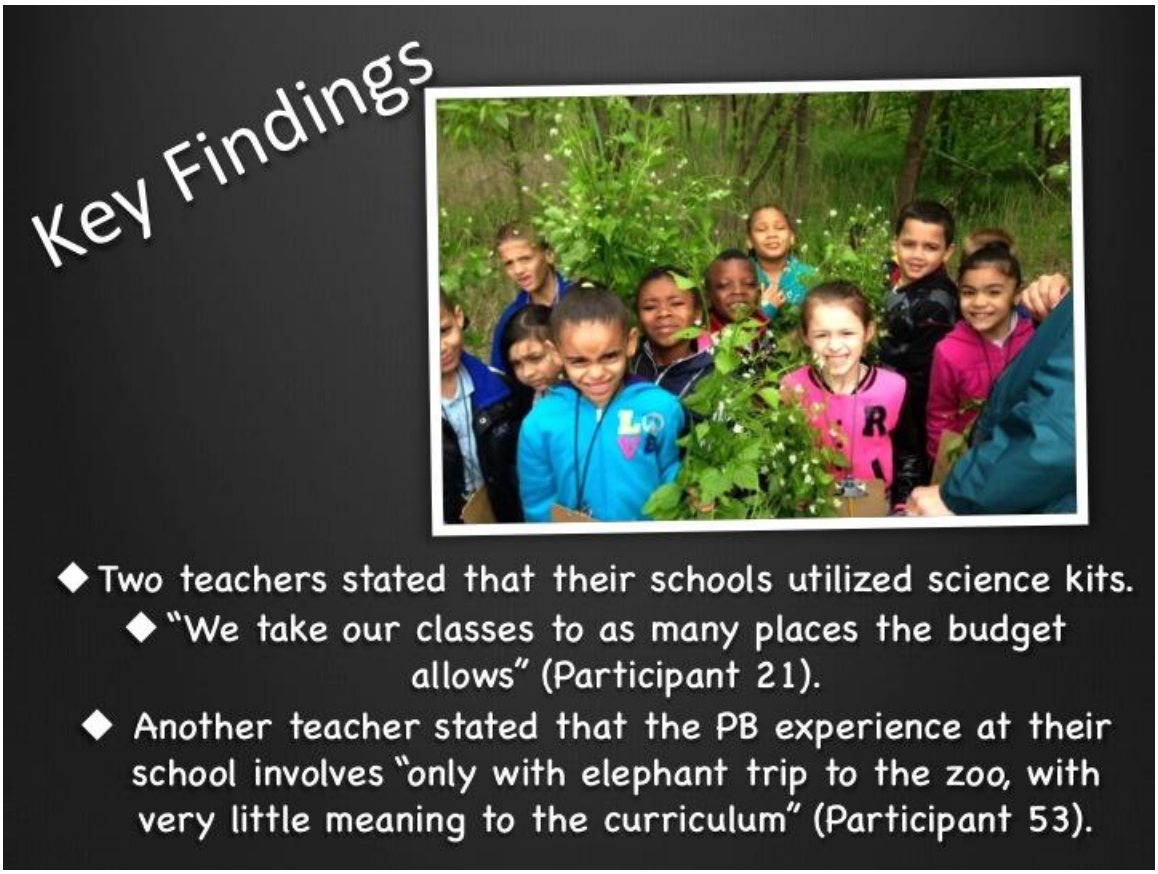
Slide 27


1. How do PK-5 teachers integrate place-based education practices into their classroom science curriculum and what prevents them from implementing it into the classroom?
Personal experience with place-based education.
Extent you have worked in a school with PB education.

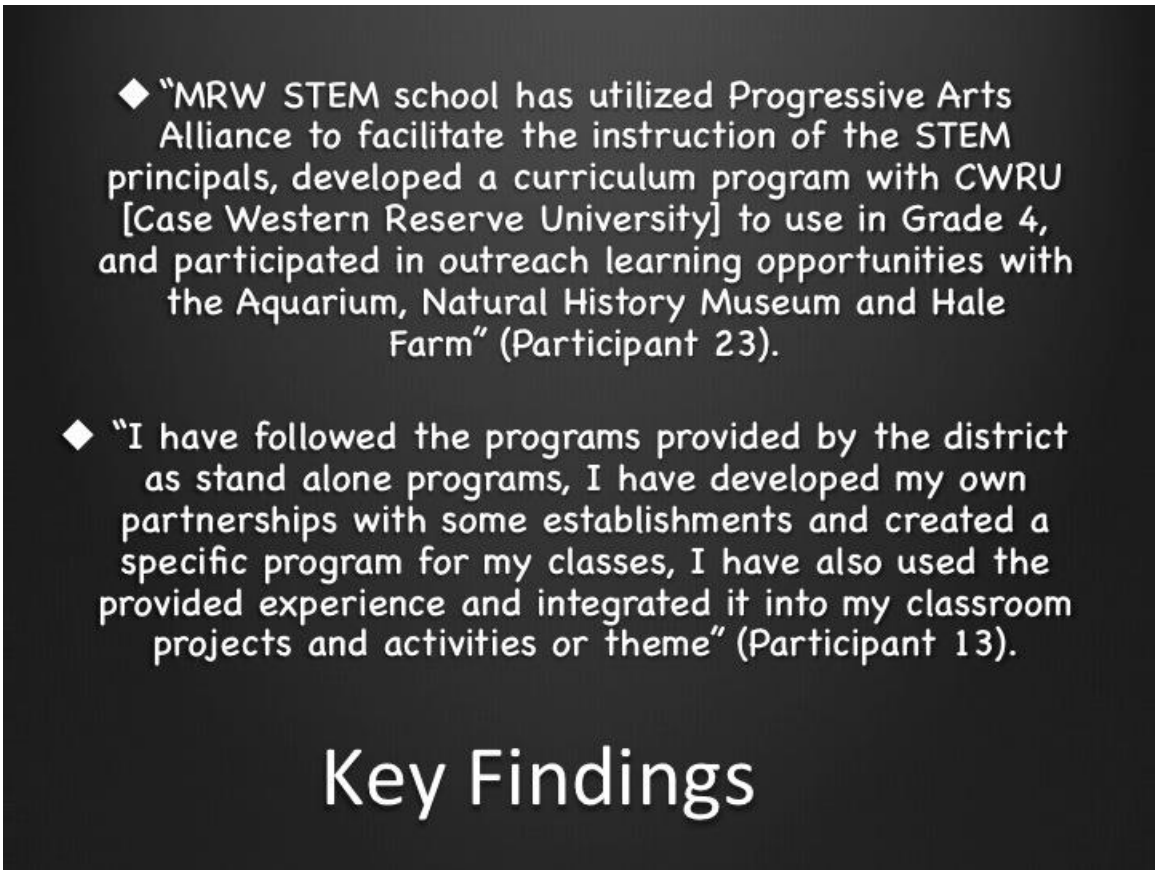
Slide 28


Key Findings
Just under 20% (n = 11) indicated that they had worked in a school with PB education.

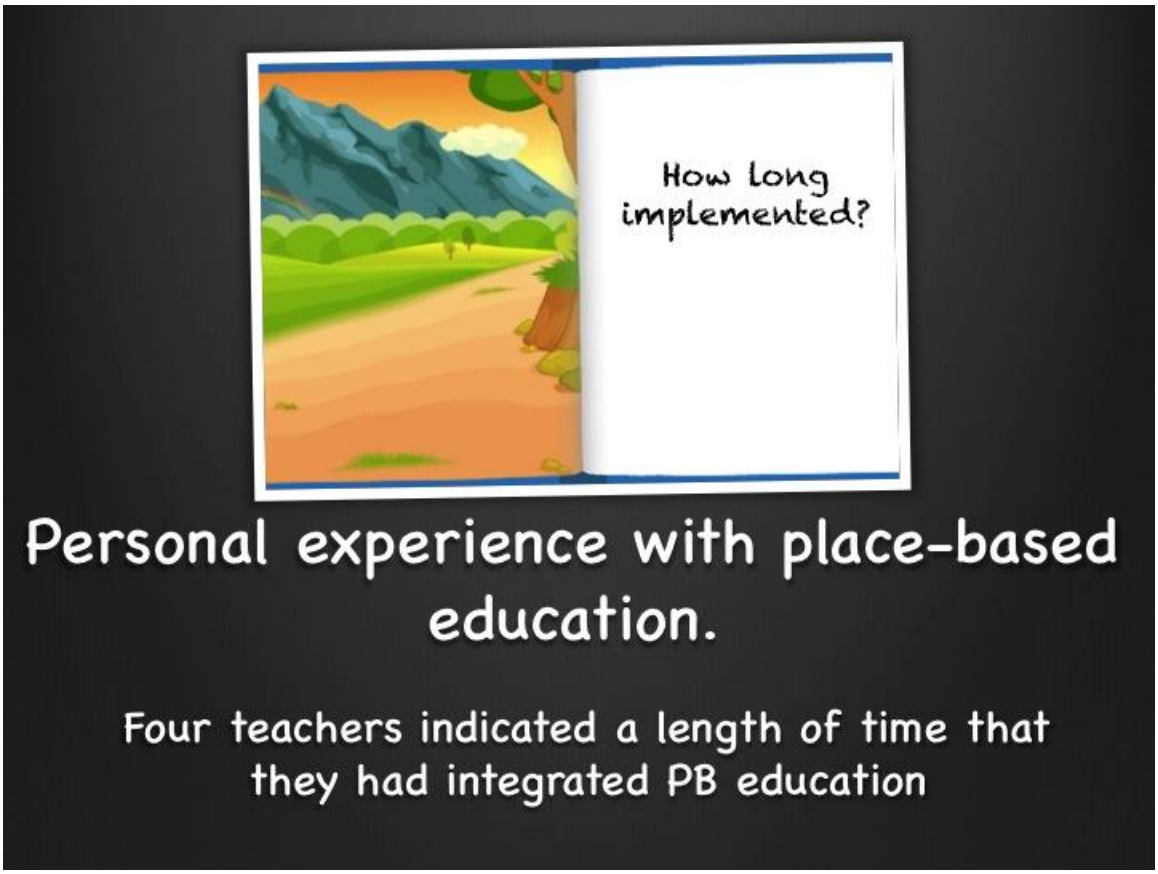
Slide 29


Key Findings
◆ Two teachers stated that their schools utilized science kits.
◆ "We take our classes to as many places the budget allows" (Participant 21).
◆ Another teacher stated that the PB experience at their school involves "only with elephant trip to the zoo, with very little meaning to the curriculum" (Participant 53).

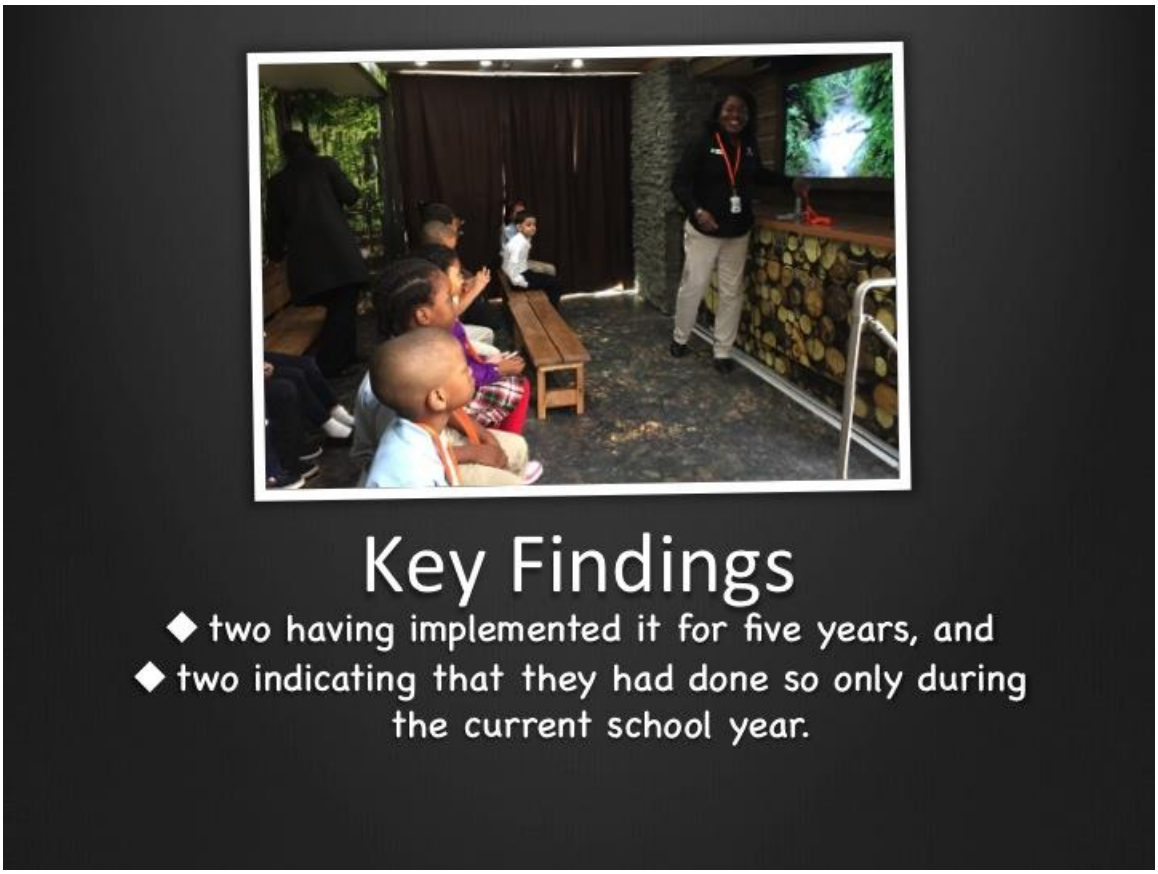
Slide 30


◆ "MRW STEM school has utilized Progressive Arts Alliance to facilitate the instruction of the STEM principals, developed a curriculum program with CWRU [Case Western Reserve University] to use in Grade 4, and participated in outreach learning opportunities with the Aquarium, Natural History Museum and Hale Farm" (Participant 23).
◆ "I have followed the programs provided by the district as stand alone programs, I have developed my own partnerships with some establishments and created a specific program for my classes, I have also used the provided experience and integrated it into my classroom projects and activities or theme" (Participant 13).
Key Findings

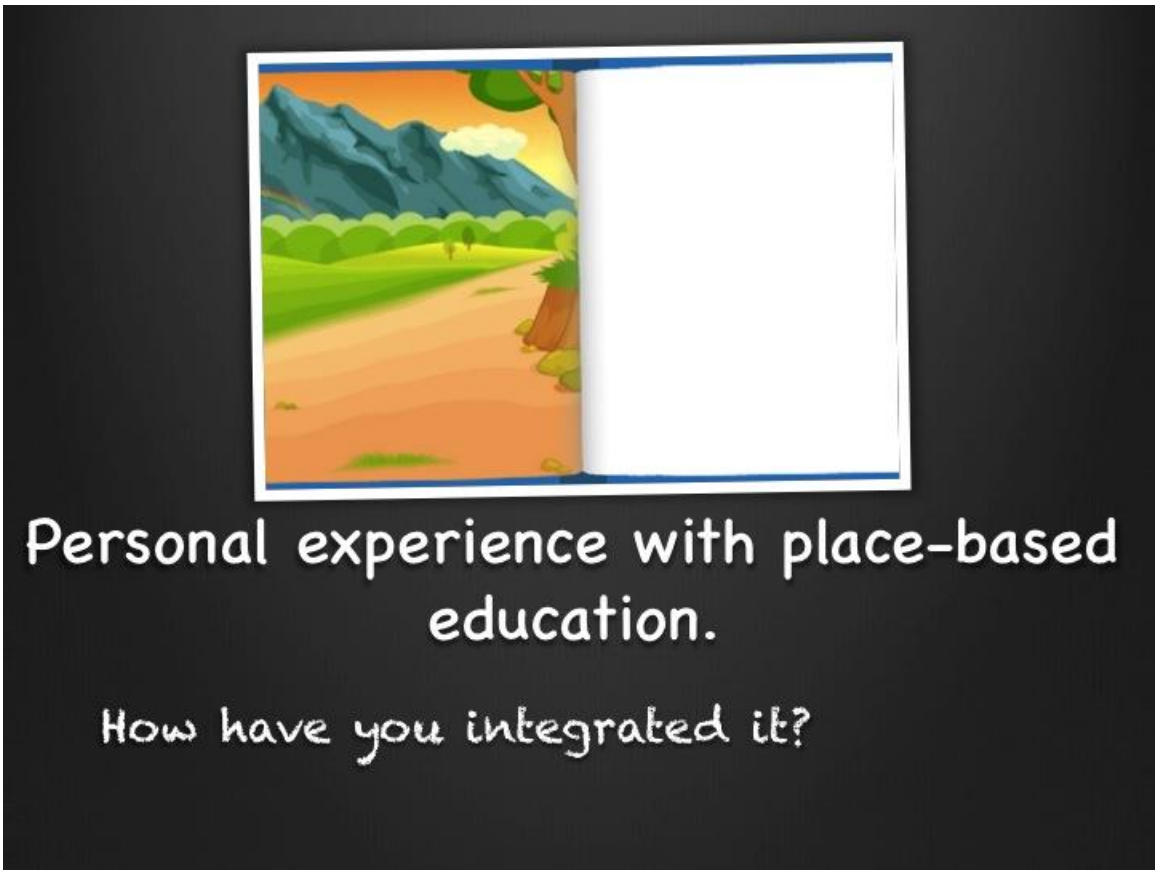
Slide 31


How long implemented?
Personal experience with place-based education.
Four teachers indicated a length of time that they had integrated PB education

Slide 32


Key Findings
◆ two having implemented it for five years, and
◆ two indicating that they had done so only during the current school year.

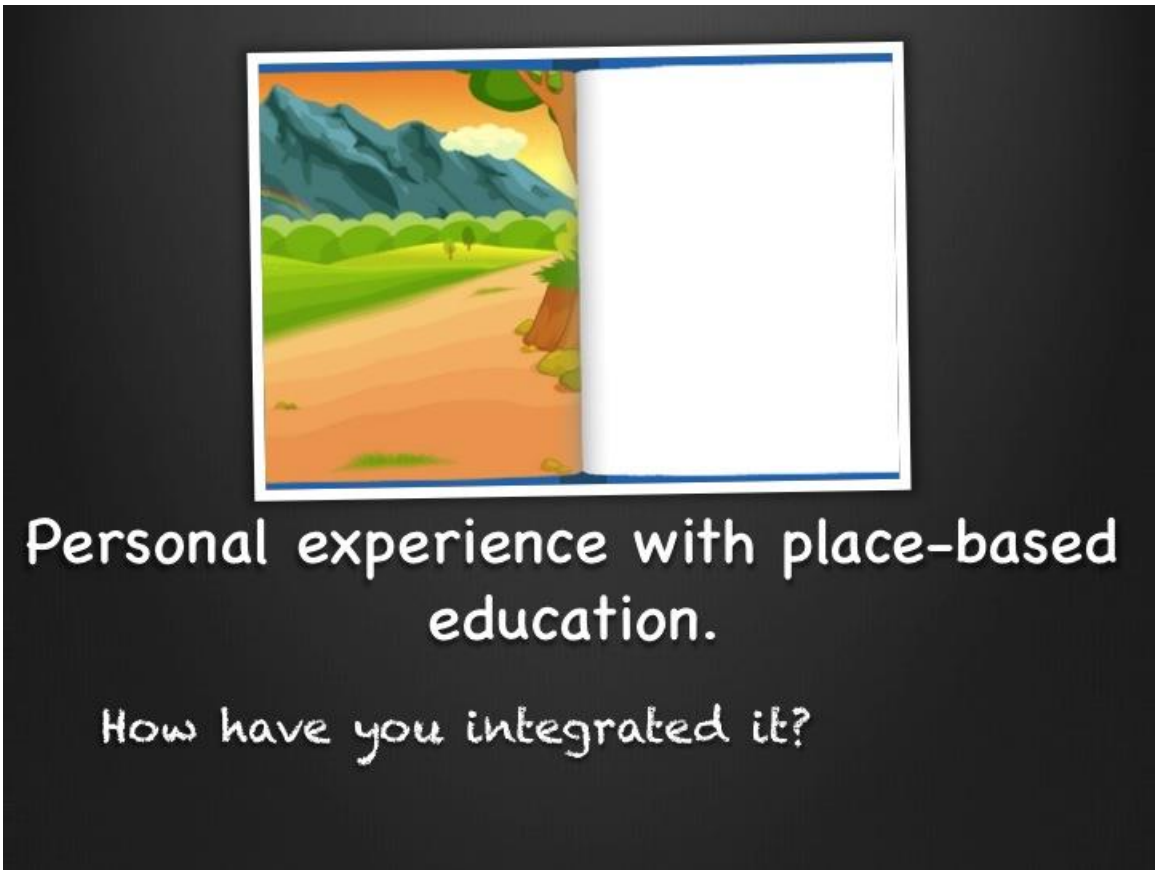
Slide 33


Personal experience with place-based education.
How have you integrated it?

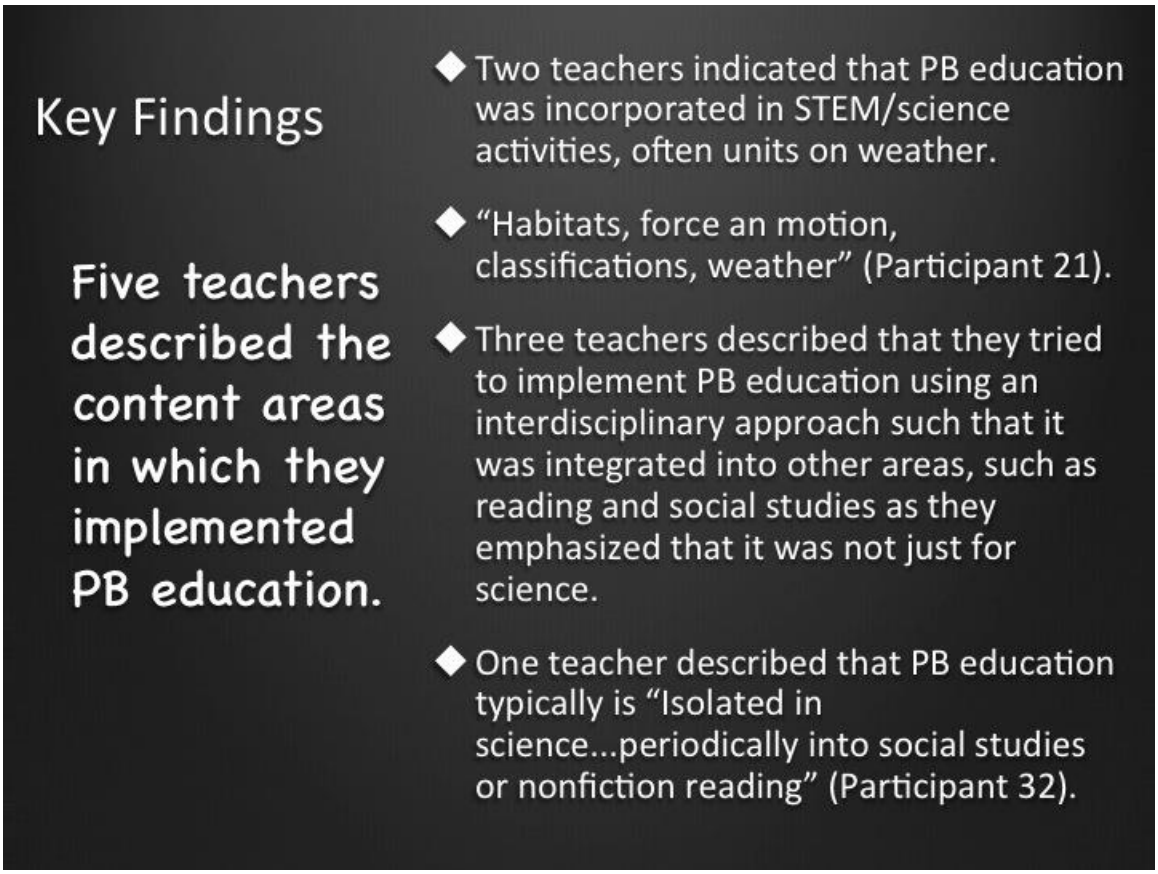
Slide 34


Key Findings
◆ Fourteen participants were "not sure" how he/she had integrated it.

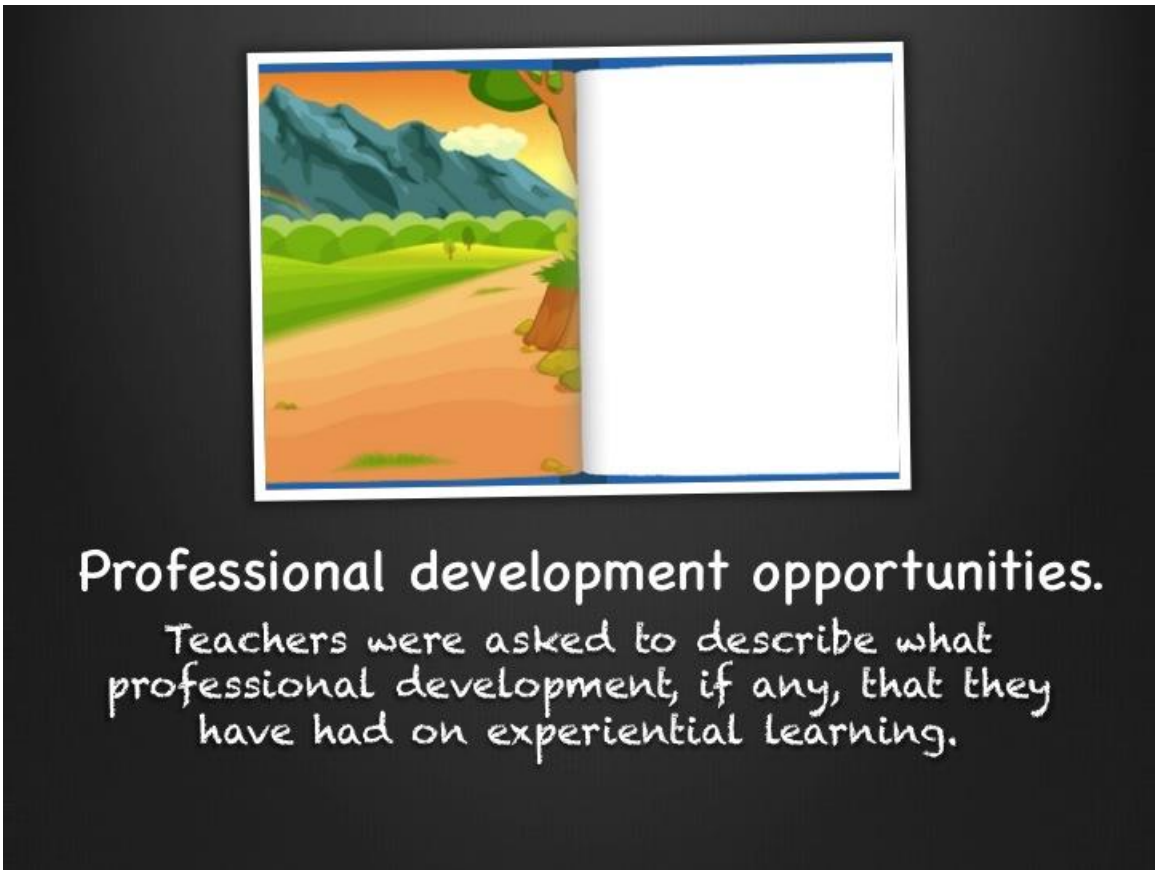
Slide 35


Personal experience with place-based education.
How have you integrated it?

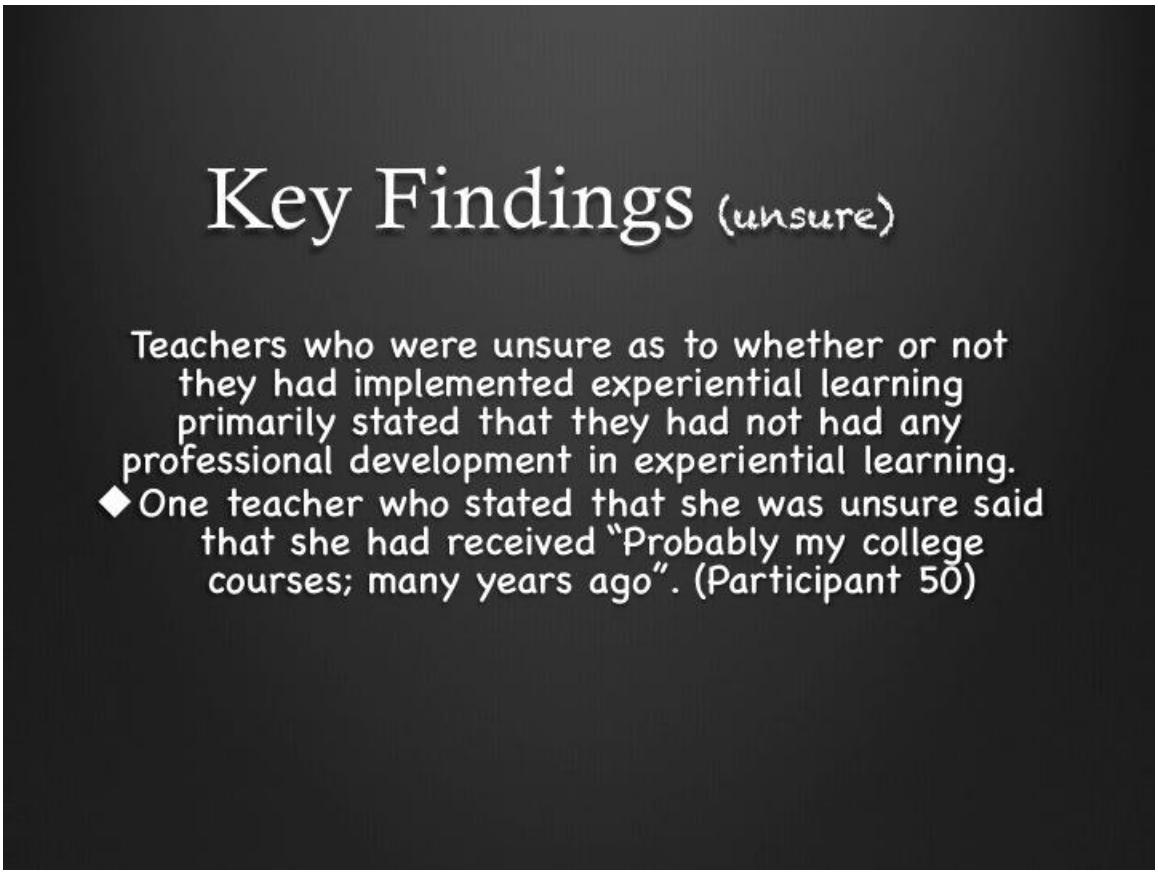
Slide 36


Key Findings
Five teachers described the content areas in which they implemented PB education.
Two teachers indicated that PB education was incorporated in STEM/science activities, often units on weather.
"Habitats, force an motion, classifications, weather" (Participant 21).
Three teachers described that they tried to implement PB education using an interdisciplinary approach such that it was integrated into other areas, such as reading and social studies as they emphasized that it was not just for science.
One teacher described that PB education typically is "Isolated in science...periodically into social studies or nonfiction reading" (Participant 32).

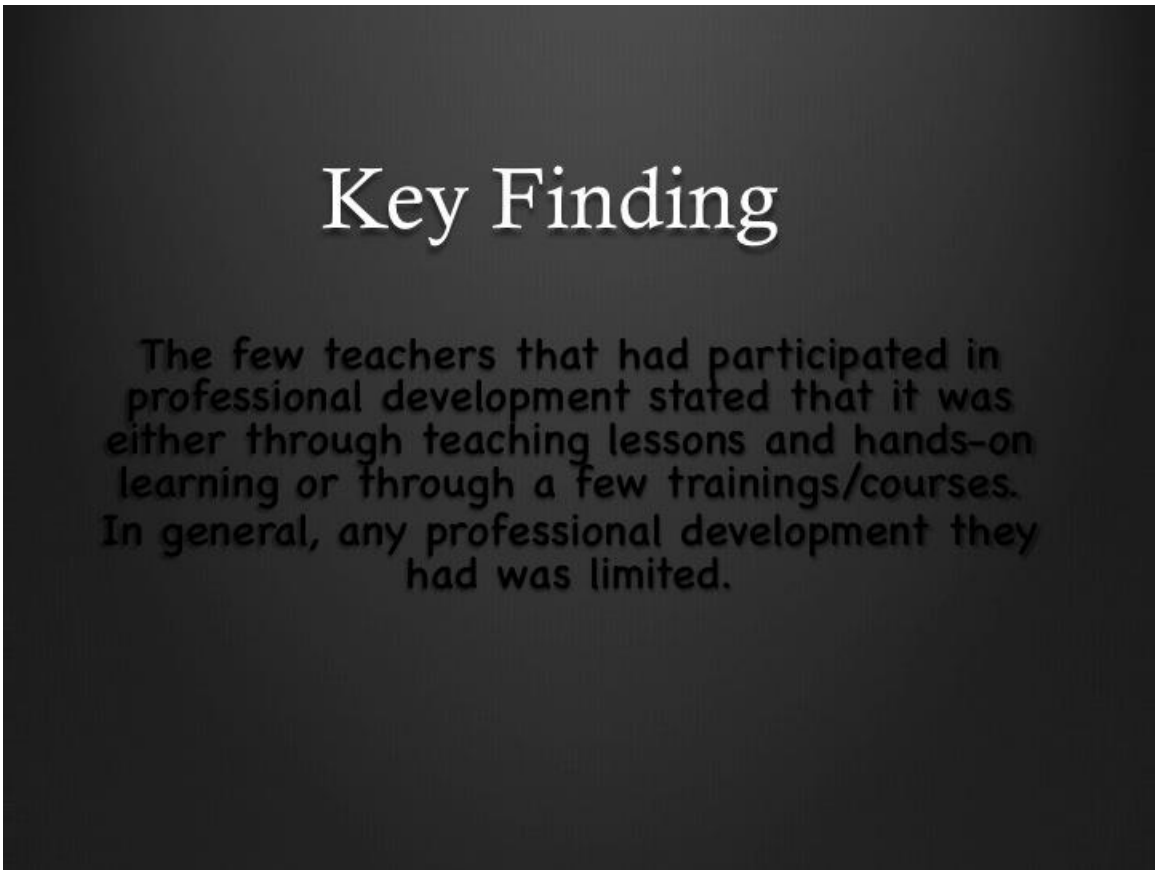
Slide 37


Professional development opportunities.
Teachers were asked to describe what professional development, if any, that they have had on experiential learning.

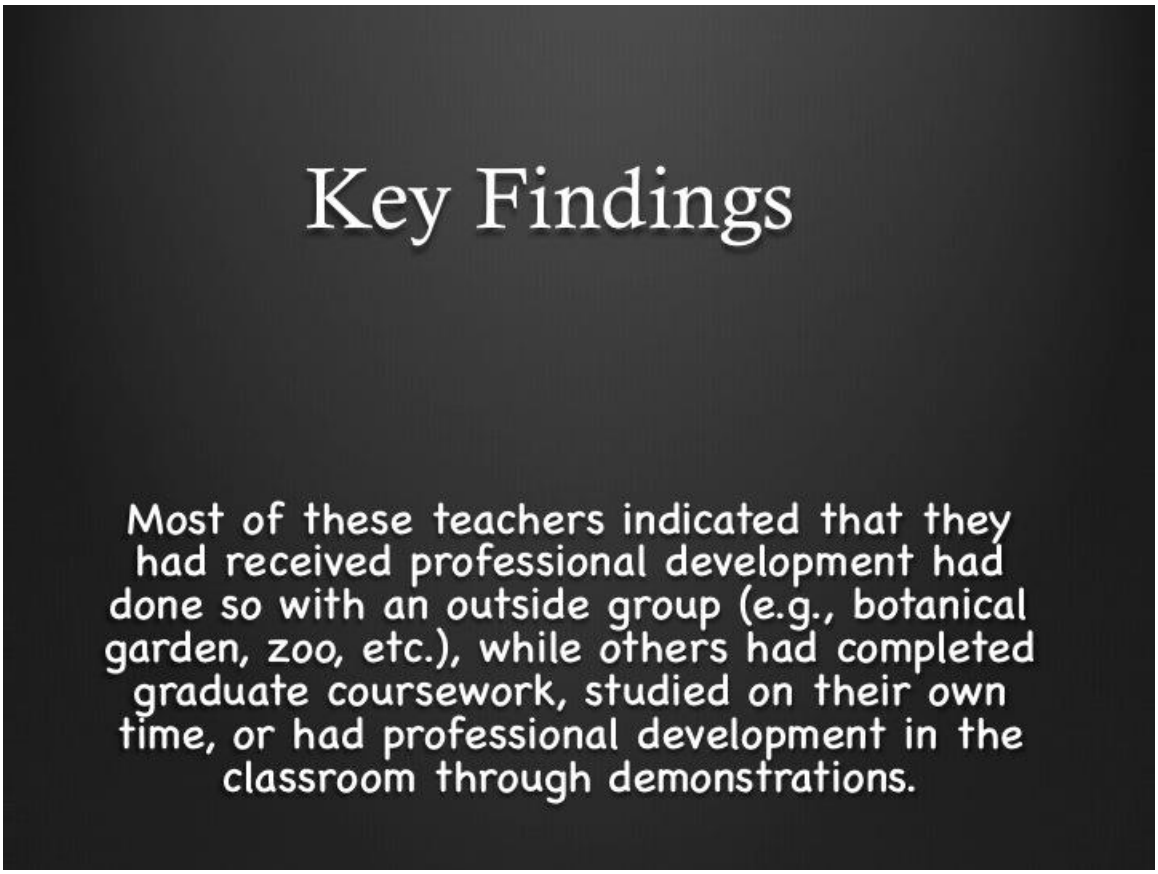
Slide 38


Key Findings (unsure)
Teachers who were unsure as to whether or not they had implemented experiential learning primarily stated that they had not had any professional development in experiential learning.
One teacher who stated that she was unsure said that she had received "Probably my college courses; many years ago". (Participant 50)

Slide 39


Key Finding
The few teachers that had participated in professional development stated that it was either through teaching lessons and hands-on learning or through a few trainings/courses. In general, any professional development they had was limited.

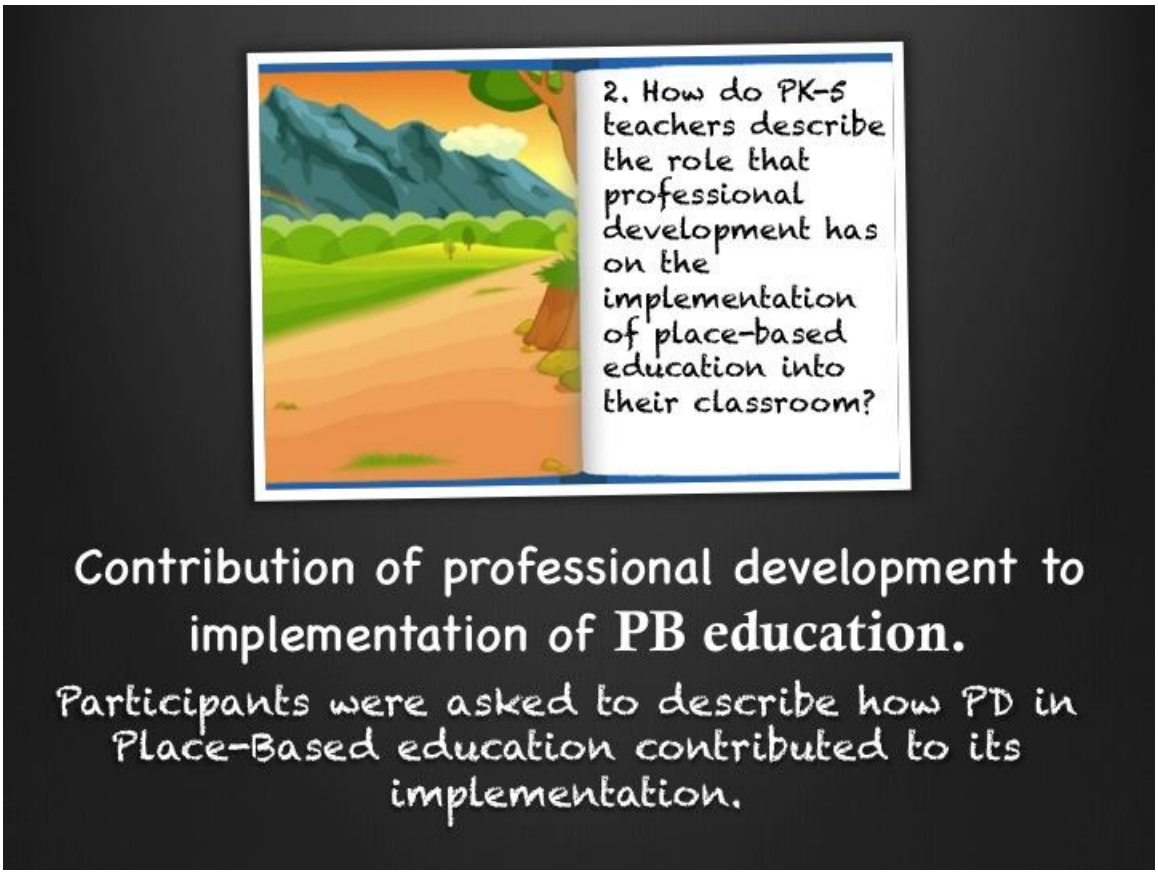
Slide 40



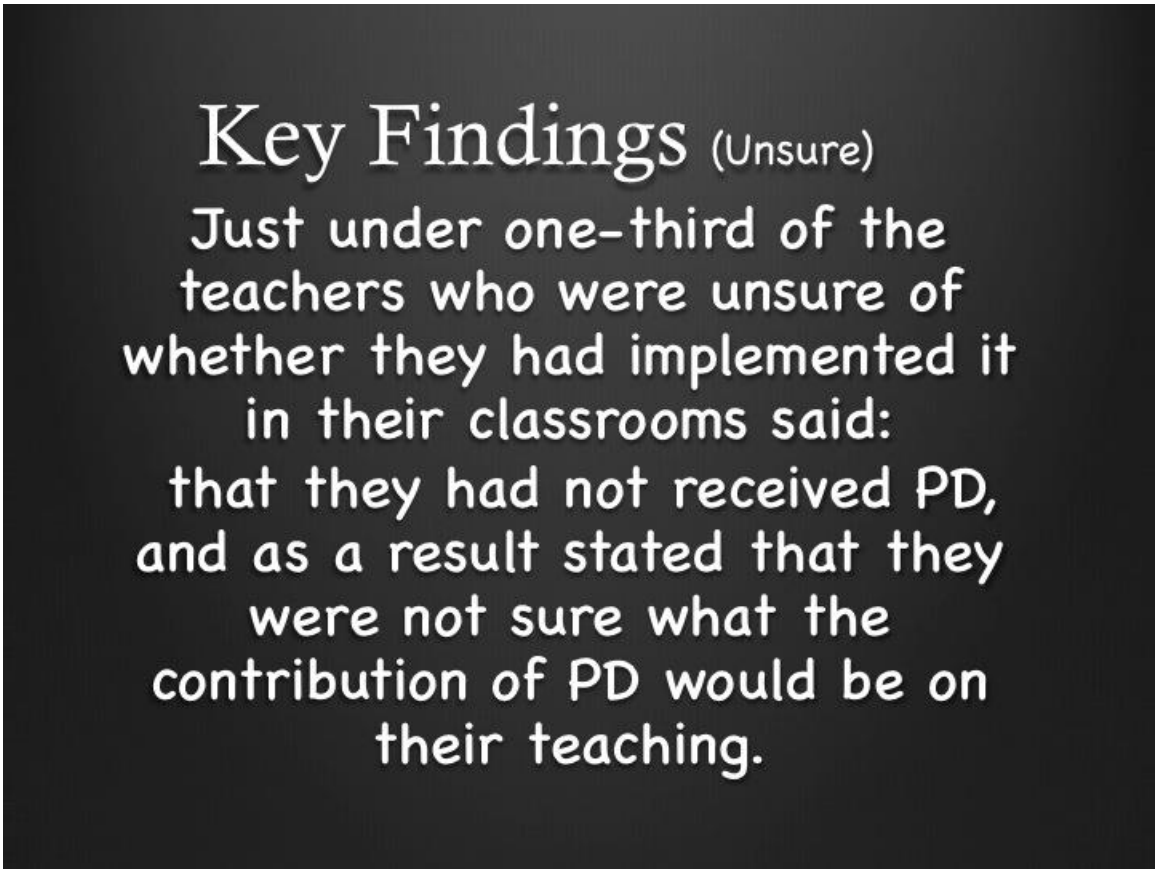
Slide 41


Key Findings (If implemented)
"Cleveland Metroparks Zoo, Learn Protect Stay Program with Jean Brightwood (pseudonym) at CASE". (Participant 13)
"A whole year of study on our own time with Jean Brightwood (pseudonym) at CWRU, met on Saturdays and a month in the summer. Professional development through CMSD when offered." (Participant 23
LEONARD GELFAND
STEM CENTER
CASE WESTERN RESERVE
UNIVERSITY
STEMCON
SCIENCE

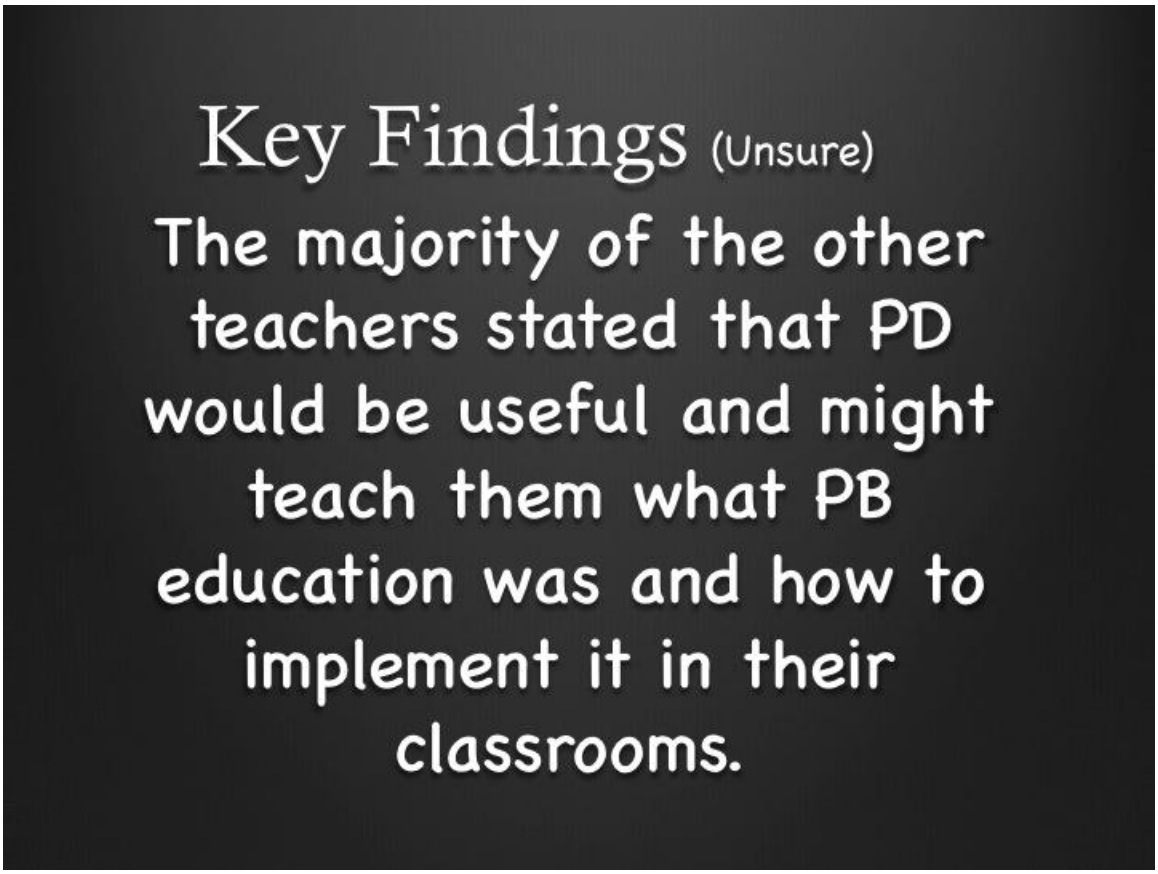
Slide 42


2. How do PK-5 teachers describe the role that professional development has on the implementation of place-based education into their classroom?
Contribution of professional development to implementation of PB education.
Participants were asked to describe how PD in Place-Based education contributed to its implementation.

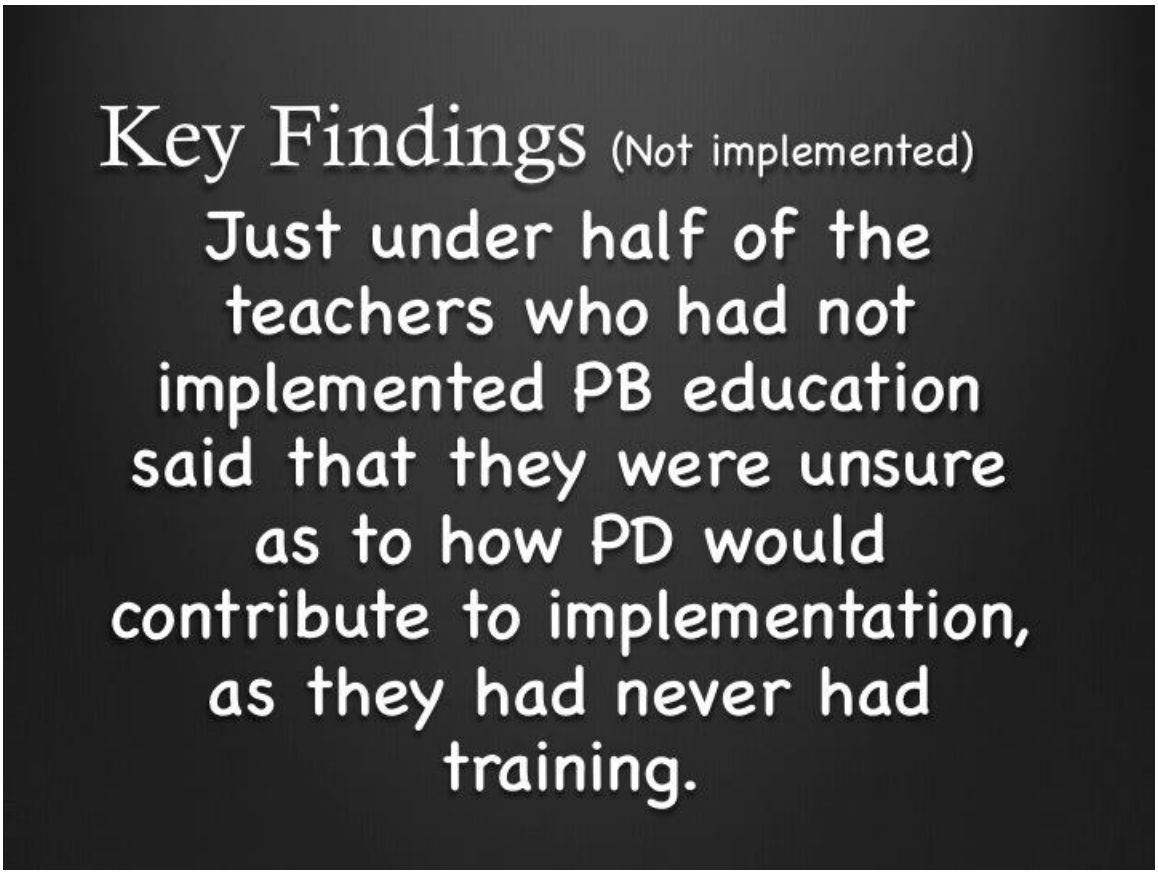
Slide 43


Key Findings (Unsure)
Just under one-third of the teachers who were unsure of whether they had implemented it in their classrooms said:
that they had not received PD, and as a result stated that they were not sure what the contribution of PD would be on their teaching.

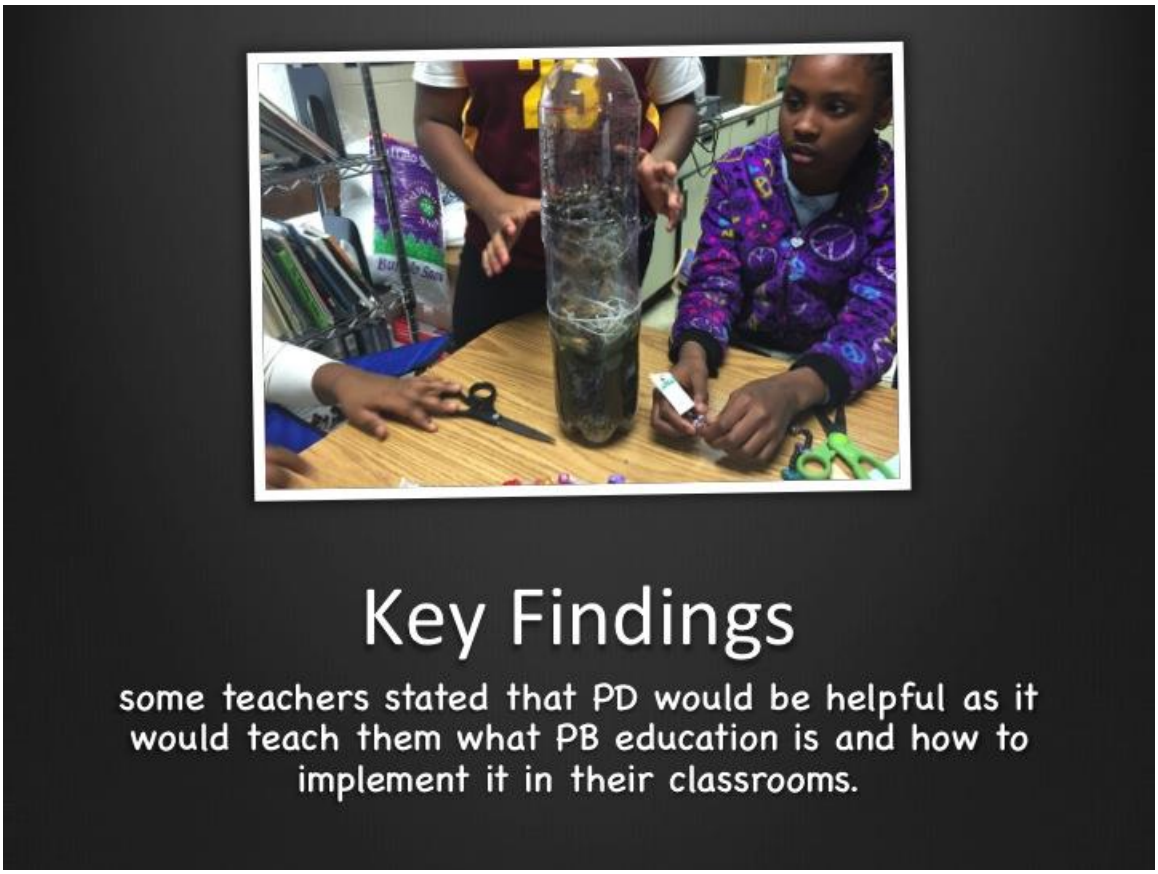
Slide 44


Key Findings (Unsure)
The majority of the other teachers stated that PD would be useful and might teach them what PB education was and how to implement it in their classrooms.

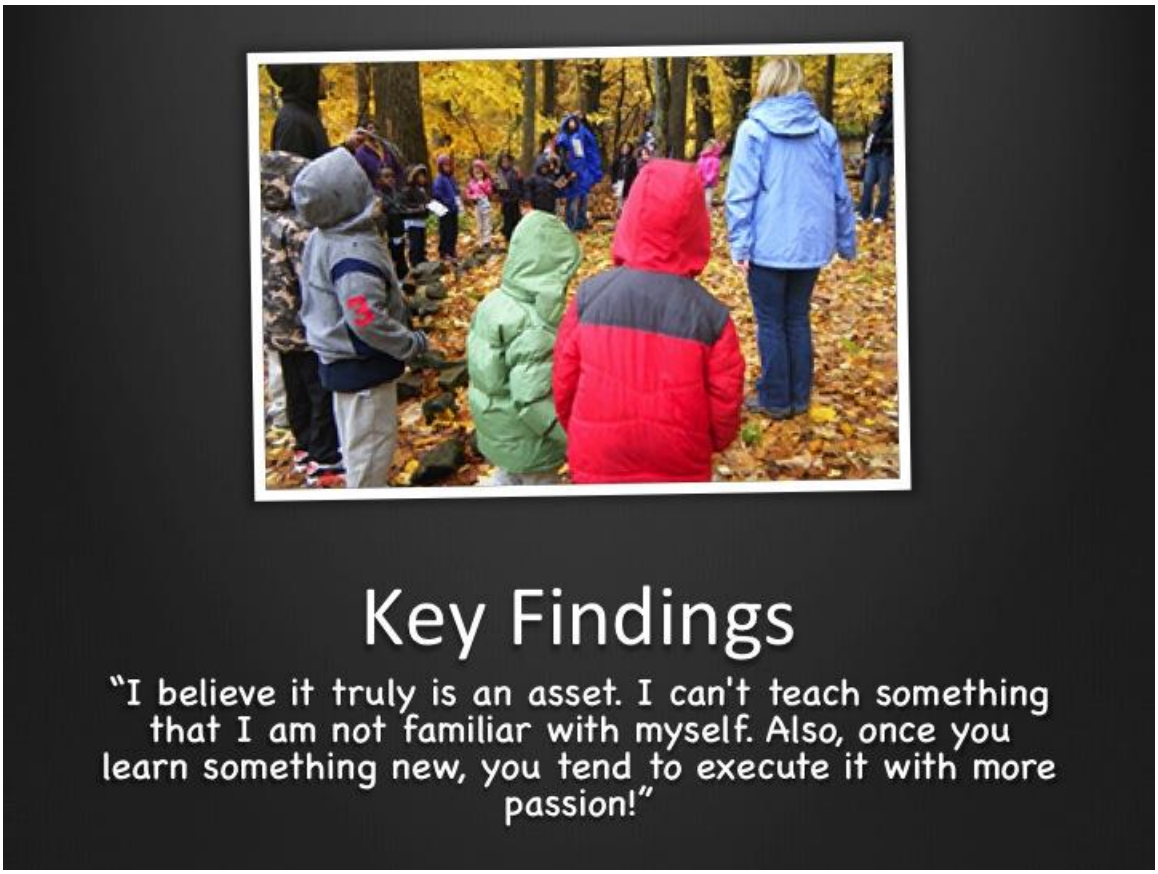
Slide 45


Key Findings (Not implemented)
Just under half of the teachers who had not implemented PB education said that they were unsure as to how PD would contribute to implementation, as they had never had training.

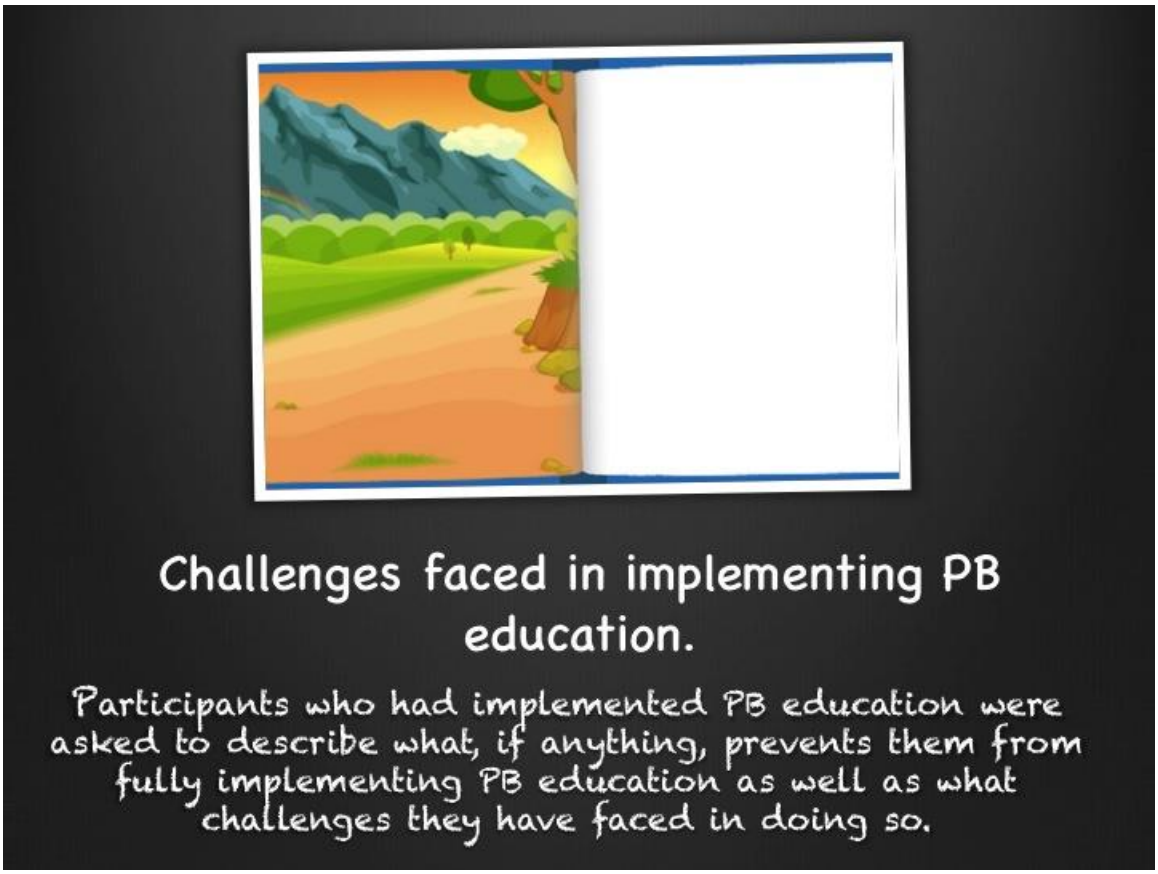
Slide 46


Key Findings
some teachers stated that PD would be helpful as it would teach them what PB education is and how to implement it in their classrooms.

Slide 47


Key Findings
"I believe it truly is an asset. I can't teach something that I am not familiar with myself. Also, once you learn something new, you tend to execute it with more passion!"

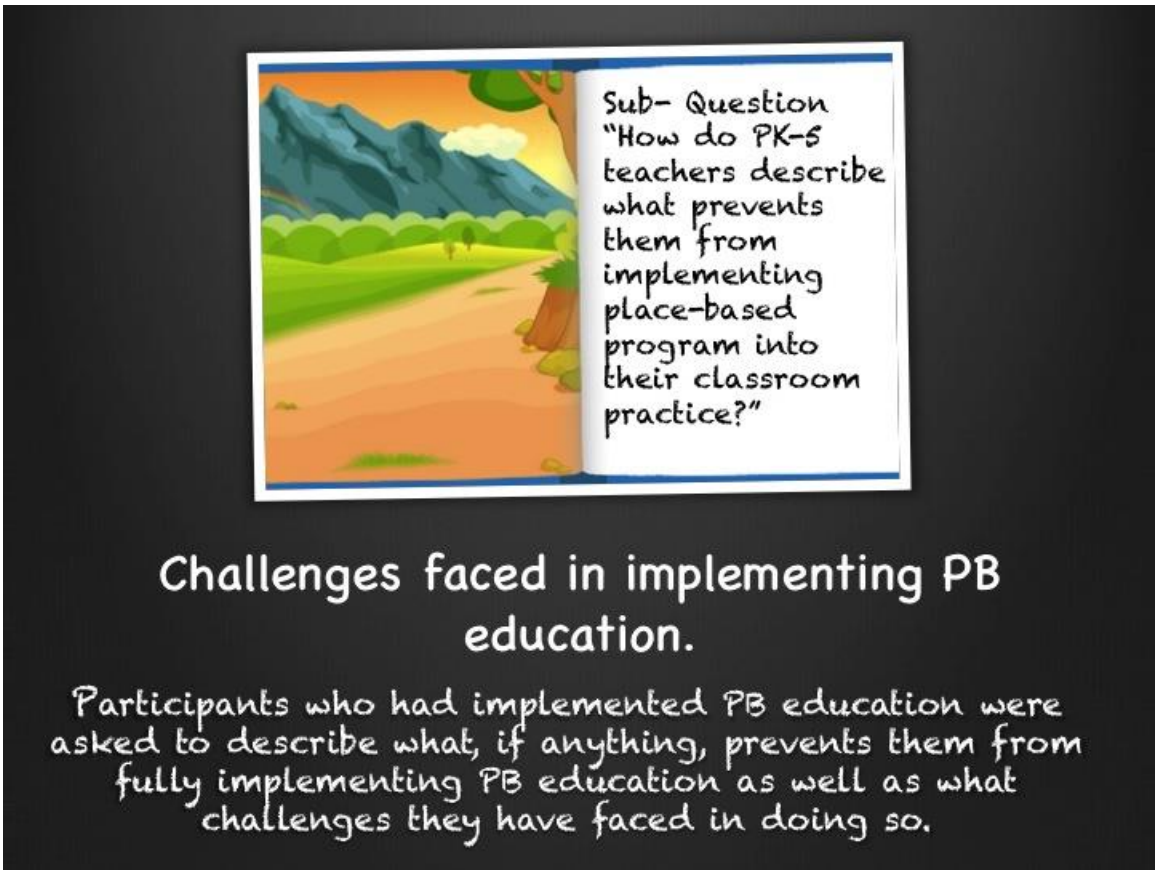
Slide 48


Challenges faced in implementing PB education.
Participants who had implemented PB education were asked to describe what, if anything, prevents them from fully implementing PB education as well as what challenges they have faced in doing so.

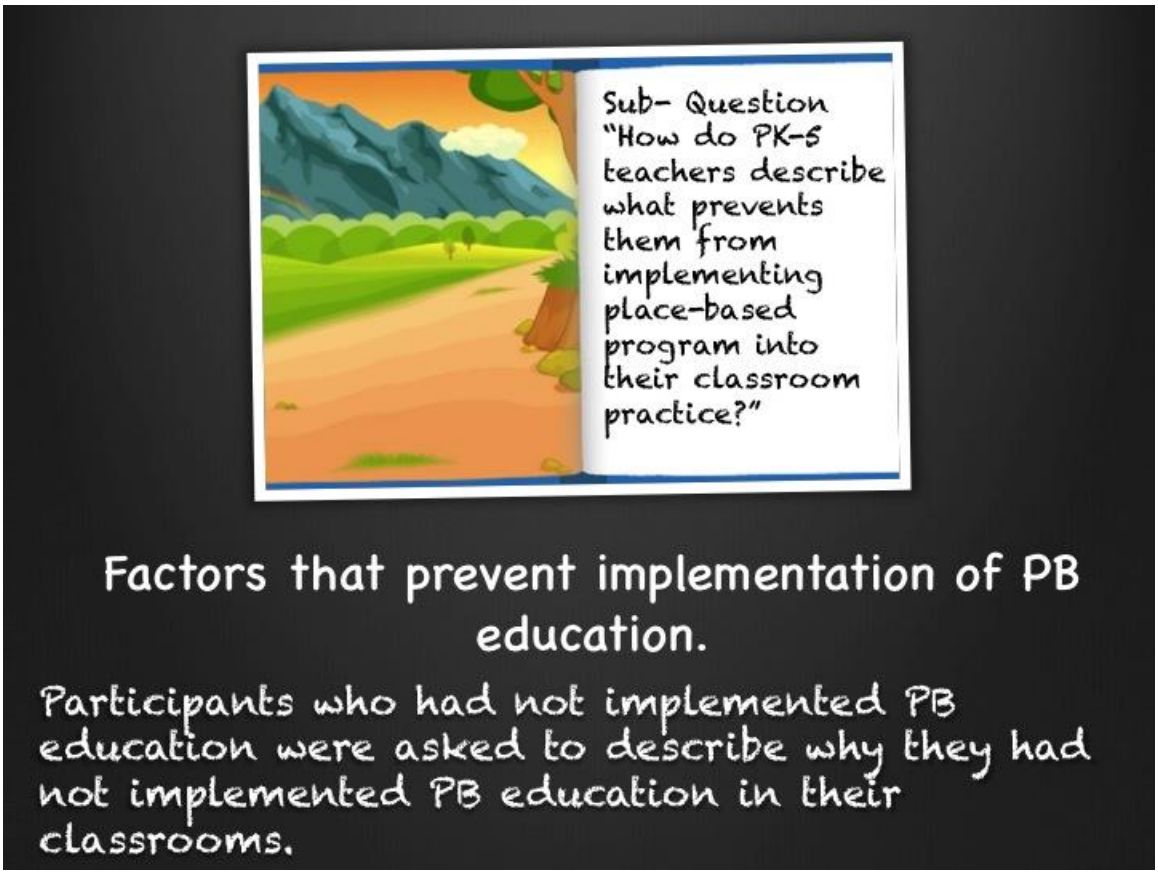
Slide 49


◆Time
◆Resources
◆Lack of Training
◆Buy-In
◆Too Complicated
Key Findings
"Training in science" ; "training"

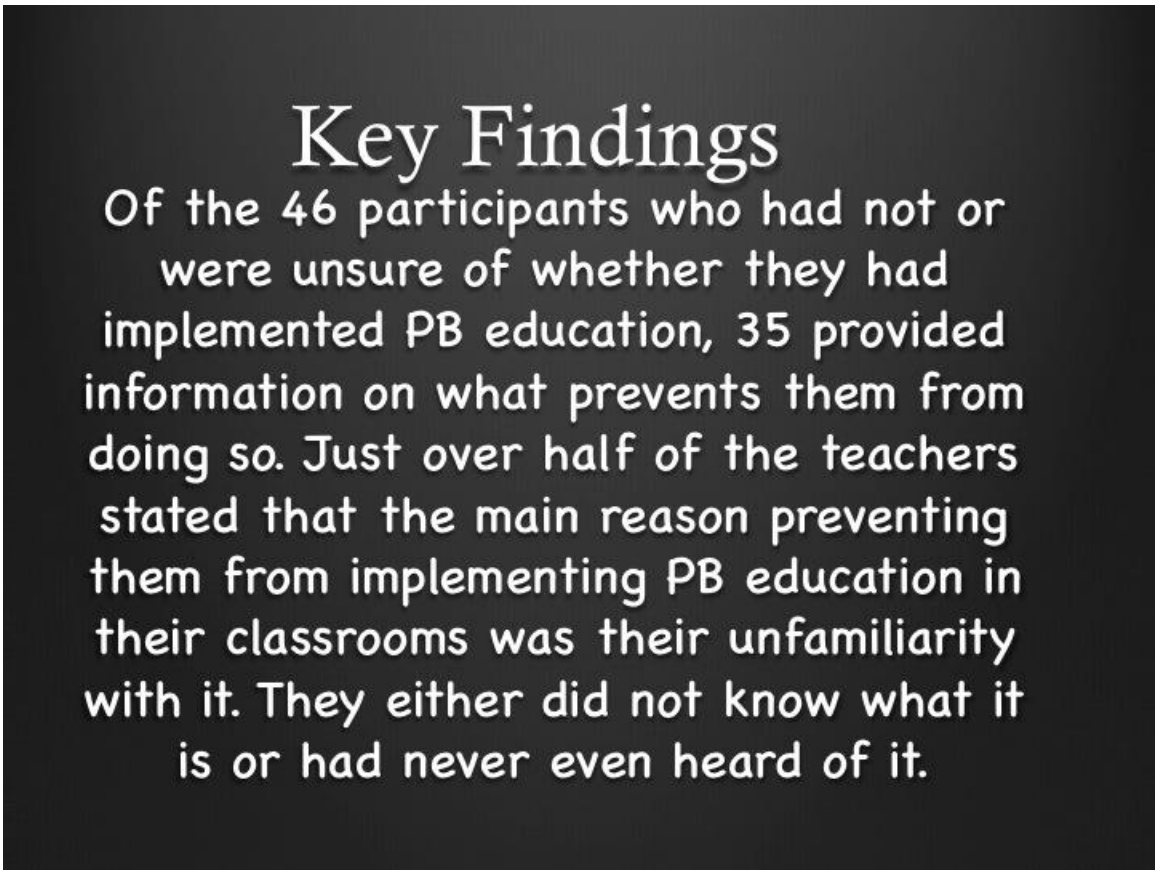
Slide 50


Sub- Question
"How do PK-5 teachers describe what prevents them from implementing place-based program into their classroom practice?"
Challenges faced in implementing PB education.
Participants who had implemented PB education were asked to describe what, if anything, prevents them from fully implementing PB education as well as what challenges they have faced in doing so.

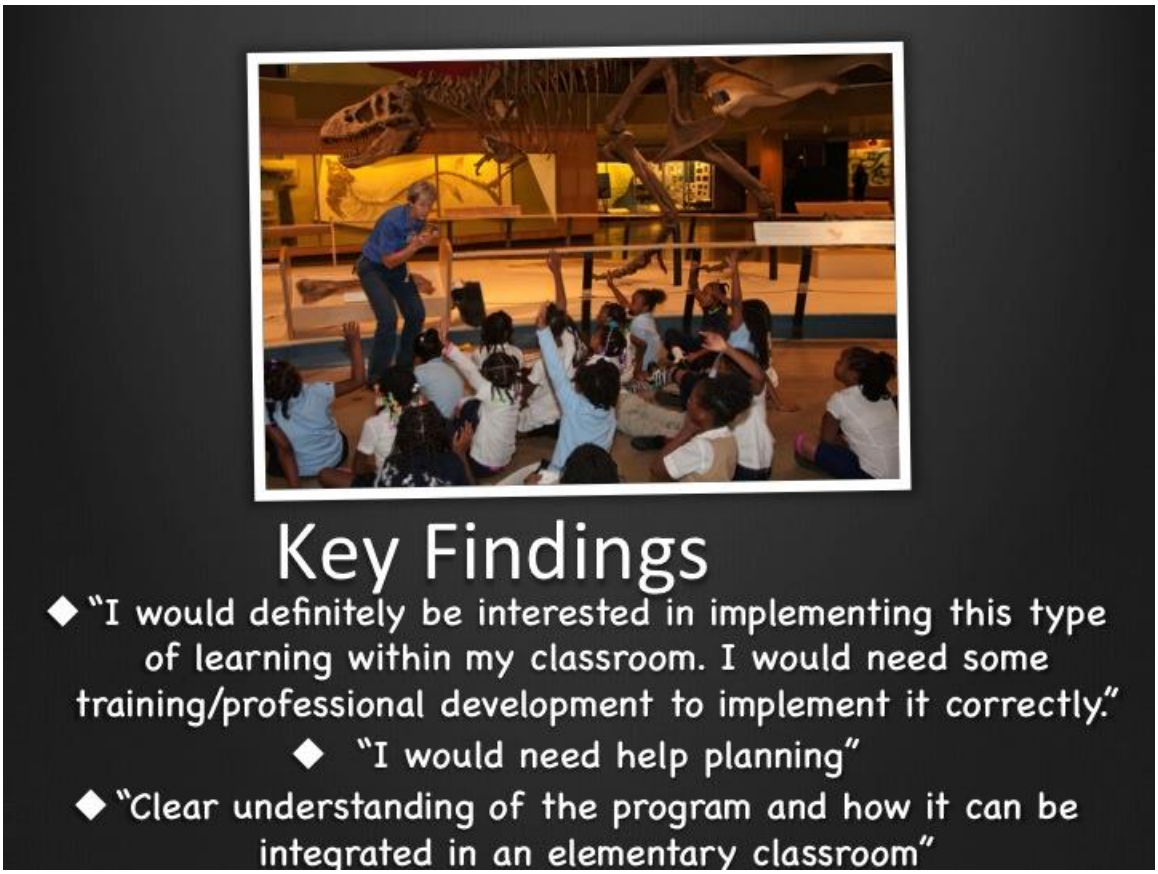
Slide 51


Sub- Question
"How do PK-5 teachers describe what prevents them from implementing place-based program into their classroom practice?"
Factors that prevent implementation of PB education.
Participants who had not implemented PB education were asked to describe why they had not implemented PB education in their classrooms.

Slide 52


Key Findings
Of the 46 participants who had not or were unsure of whether they had implemented PB education, 35 provided information on what prevents them from doing so. Just over half of the teachers stated that the main reason preventing them from implementing PB education in their classrooms was their unfamiliarity with it. They either did not know what it is or had never even heard of it.

Slide 53


Key Findings
◆ "I would definitely be interested in implementing this type of learning within my classroom. I would need some training/professional development to implement it correctly."
◆ "I would need help planning"
◆ "Clear understanding of the program and how it can be integrated in an elementary classroom"

Slide 54

The fundamental role of a teacher is to help children make connections between what is to be learned and what is already known or believed.

Slide 55


Oh no! What should we do? What can we do?
Action Steps...
As the ISI (Informal Science Institution) administrative team you could
Redevelop and redesign the professional development component

Slide 56


Holy Toledo! Change..... We should have seen it coming!
Action Steps...
As the district administration team you could
#1Work with the teachers to develop a more supportive training that meets their needs and request to understand the pedagogy better.
#2 Look for gaps in the curriculum and in the teacher training

Slide 57


Lets take a break from our story and
Move into groups with your organization and discuss how you can work to address the survey results.
5
5 minutes

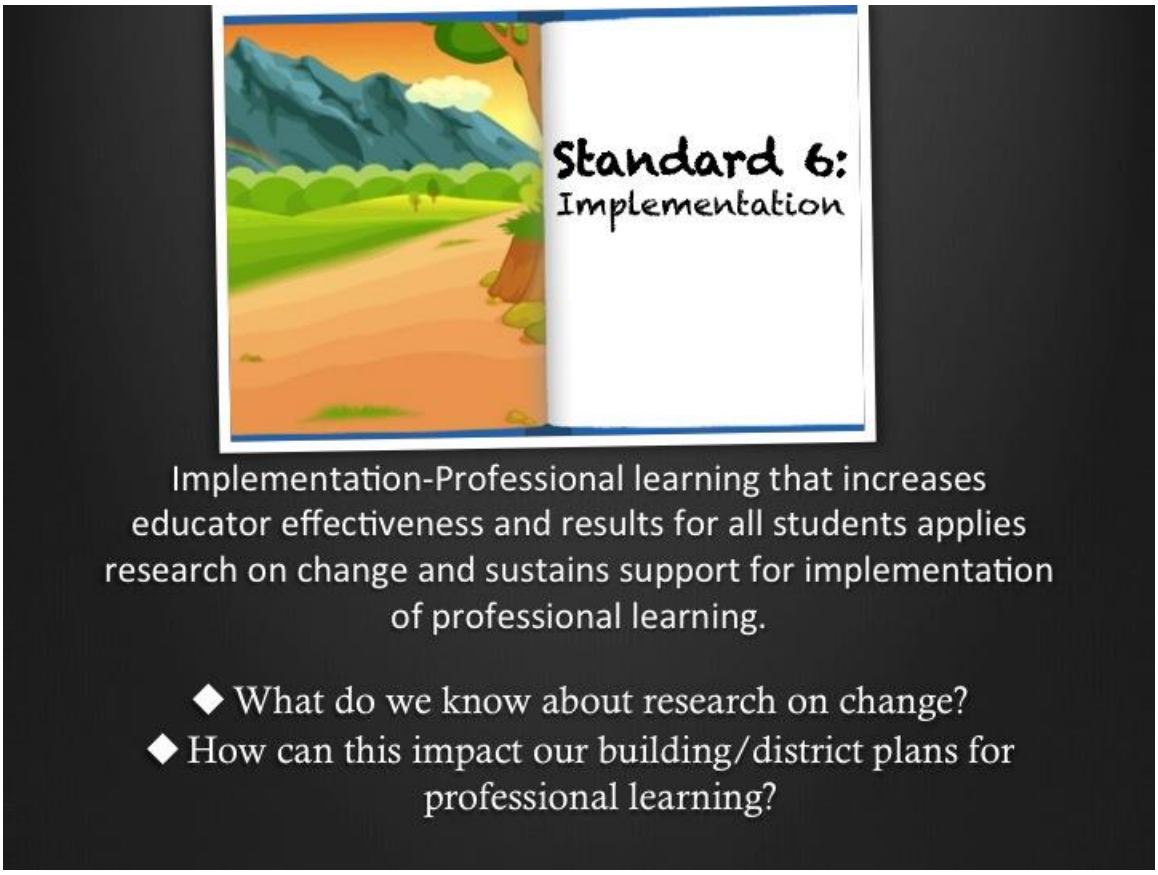
Slide 58


Whatever we decide to do we must remember that
Ohio has professional development standards
Using these standards as guidelines for the revisions to the professional development programming will give a framework and focus.

Slide 59


Standard 5: Learning Designs
Learning Designs-Professional learning that increases educator effectiveness and results for all students integrates theories, research and models of human learning to achieve its intended outcomes.
◆ What do we know about how adults learn?
◆ How does research inform our designs for professional learning?

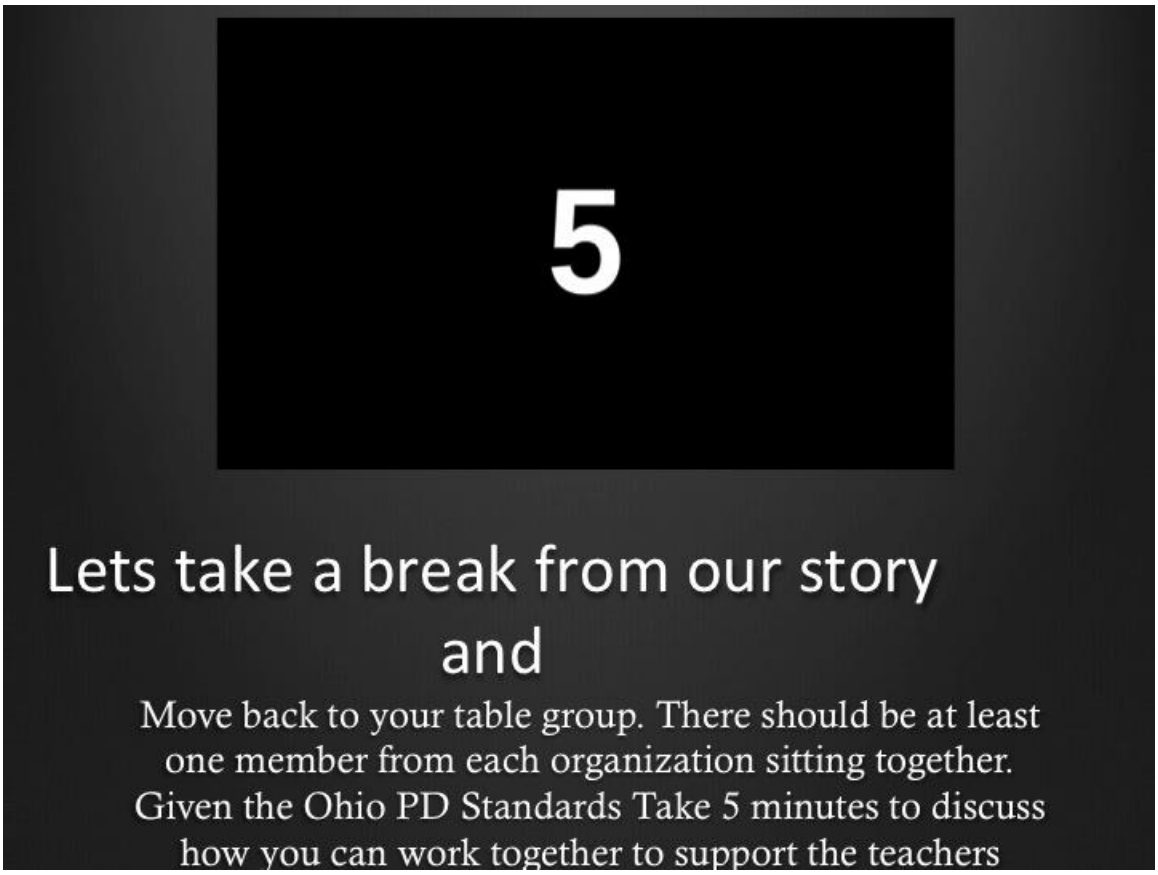
Slide 60


Standard 6:
Implementation
Implementation-Professional learning that increases educator effectiveness and results for all students applies research on change and sustains support for implementation of professional learning.
◆ What do we know about research on change?
◆ How can this impact our building/district plans for professional learning?

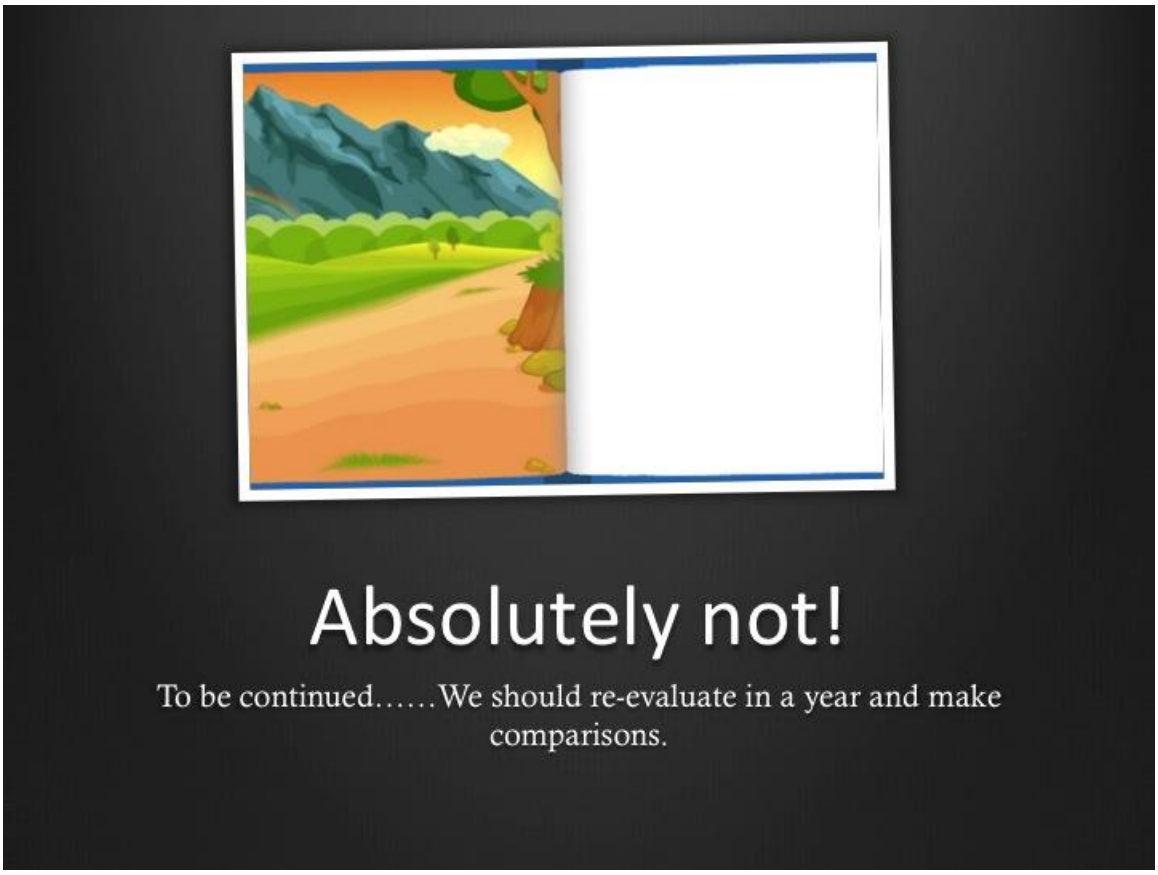
Slide 61


Standard 6:
Implementation
How can we support and sustain implementation of new skills and knowledge gained from professional learning?
What is our process for providing constructive feedback to educators?
What kinds of constructive feedback do we provide?

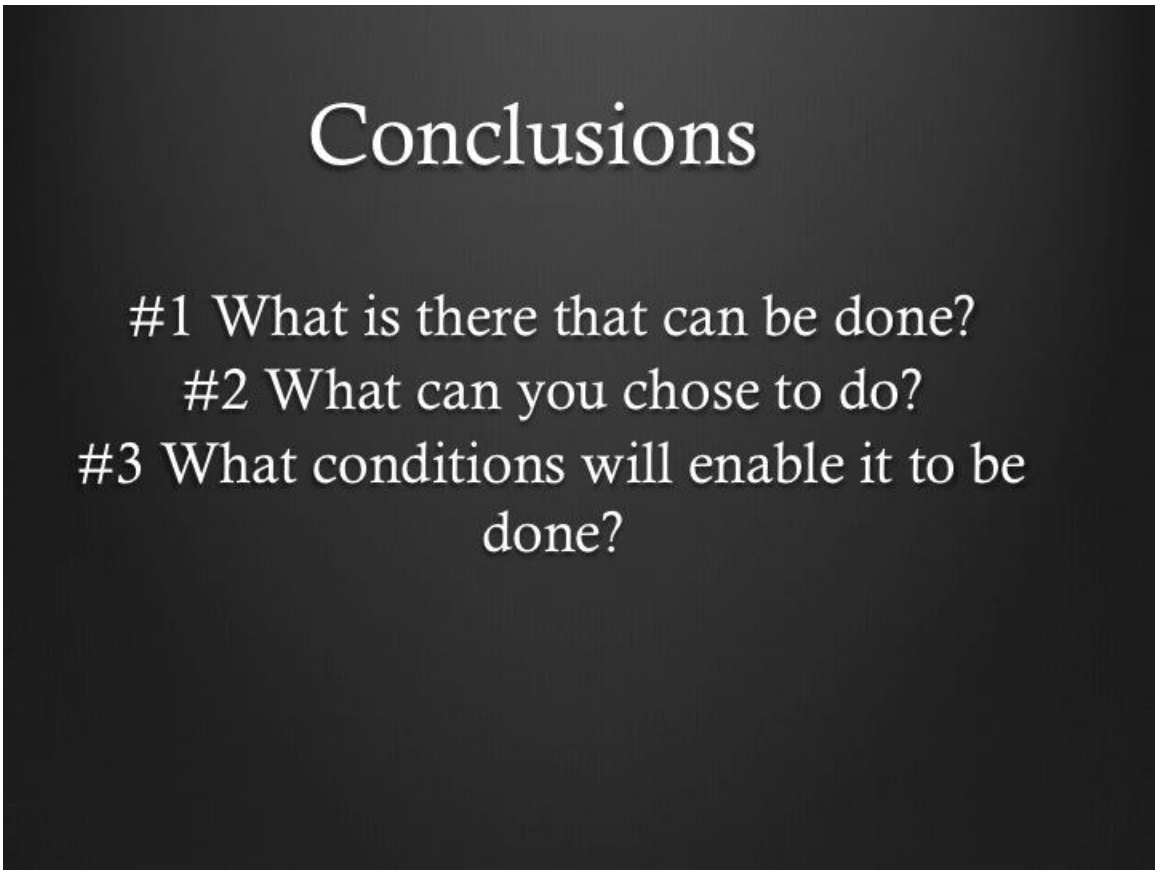
Slide 62


5
Lets take a break from our story
and
Move back to your table group. There should be at least one member from each organization sitting together. Given the Ohio PD Standards Take 5 minutes to discuss how you can work together to support the teachers

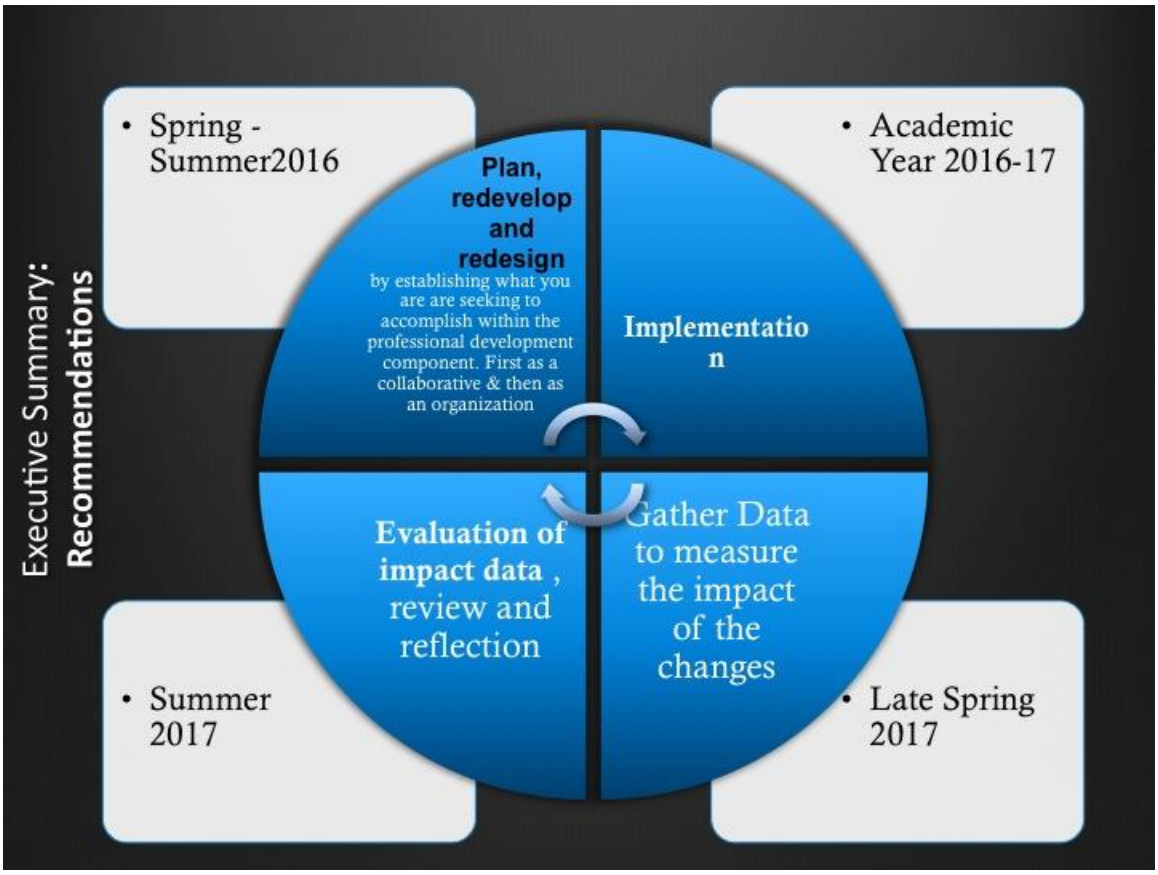
Slide 63


Absolutely not!
To be continued……We should re-evaluate in a year and make comparisons.

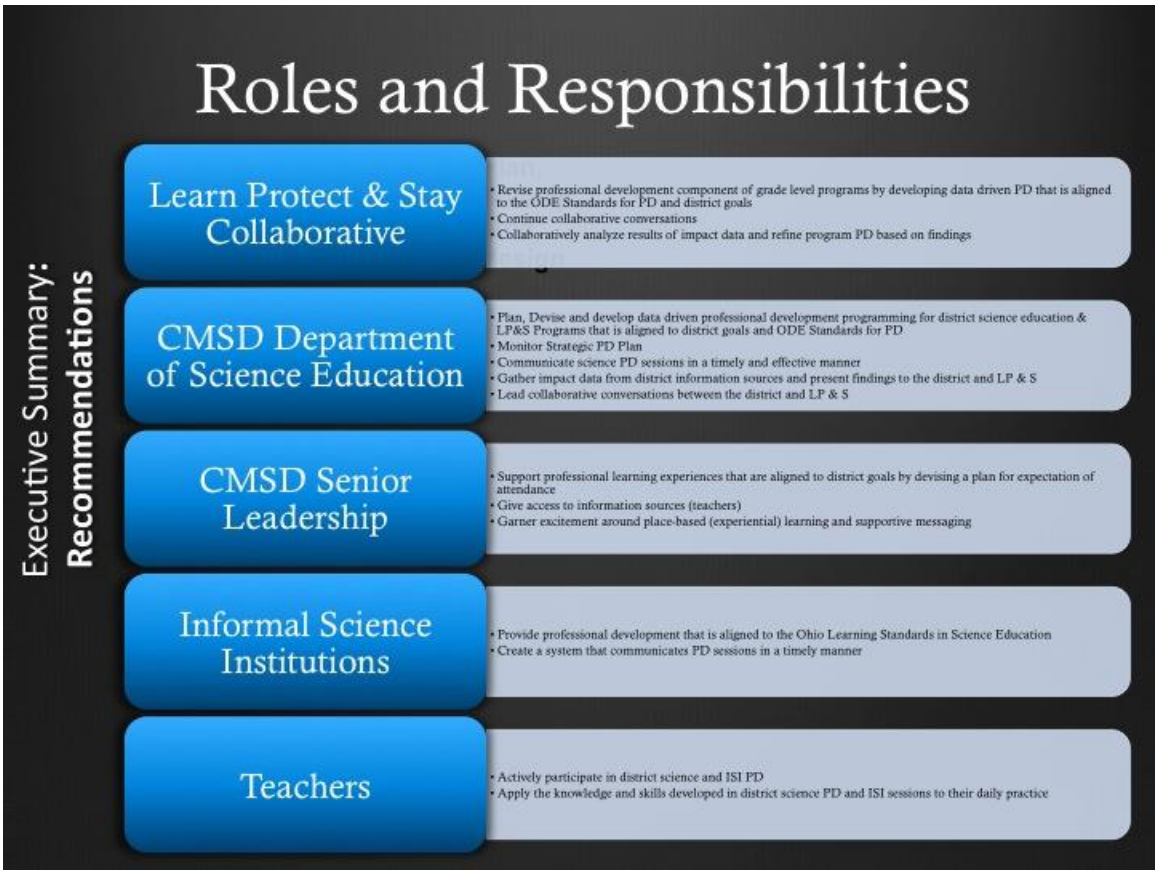
Slide 64


Conclusions
#1 What is there that can be done?
#2 What can you chose to do?
#3 What conditions will enable it to be done?

Slide 65


Executive Summary: Recommendations
• Spring - Summer2016
• Academic Year 2016-17
Plan, redevelop and redesign
by establishing what you are are seeking to accomplish within the professional development component. First as a collaborative & then as an organization
Implementation
Evaluation of impact data , review and reflection
Gather Data to measure the impact of the changes
• Summer 2017
• Late Spring 2017

Slide 66


Roles and Responsibilities
Executive Summary: Recommendations
Learn Protect & Stay Collaborative
• Revise professional development component of grade level programs by developing data driven PD that is aligned to the ODE Standards for PD and district goals
• Continue collaborative conversations
• Collaboratively analyze results of impact data and refine program PD based on findings
CMSD Department of Science Education
• Plan, Devise and develop data driven professional development programming for district science education & LP&S Programs that is aligned to district goals and ODE Standards for PD
• Monitor Strategic PD Plan
• Communicate science PD sessions in a timely and effective manner
• Gather impact data from district information sources and present findings to the district and LP & S
• Lead collaborative conversations between the district and LP & S
CMSD Senior Leadership
• Support professional learning experiences that are aligned to district goals by devising a plan for expectation of attendance
• Give access to information sources (teachers)
• Garner excitement around place-based (experiential) learning and supportive messaging
Informal Science Institutions
• Provide professional development that is aligned to the Ohio Learning Standards in Science Education
• Create a system that communicates PD sessions in a timely manner
Teachers
• Actively participate in district science and ISI PD
• Apply the knowledge and skills developed in district science PD and ISI sessions to their daily practice

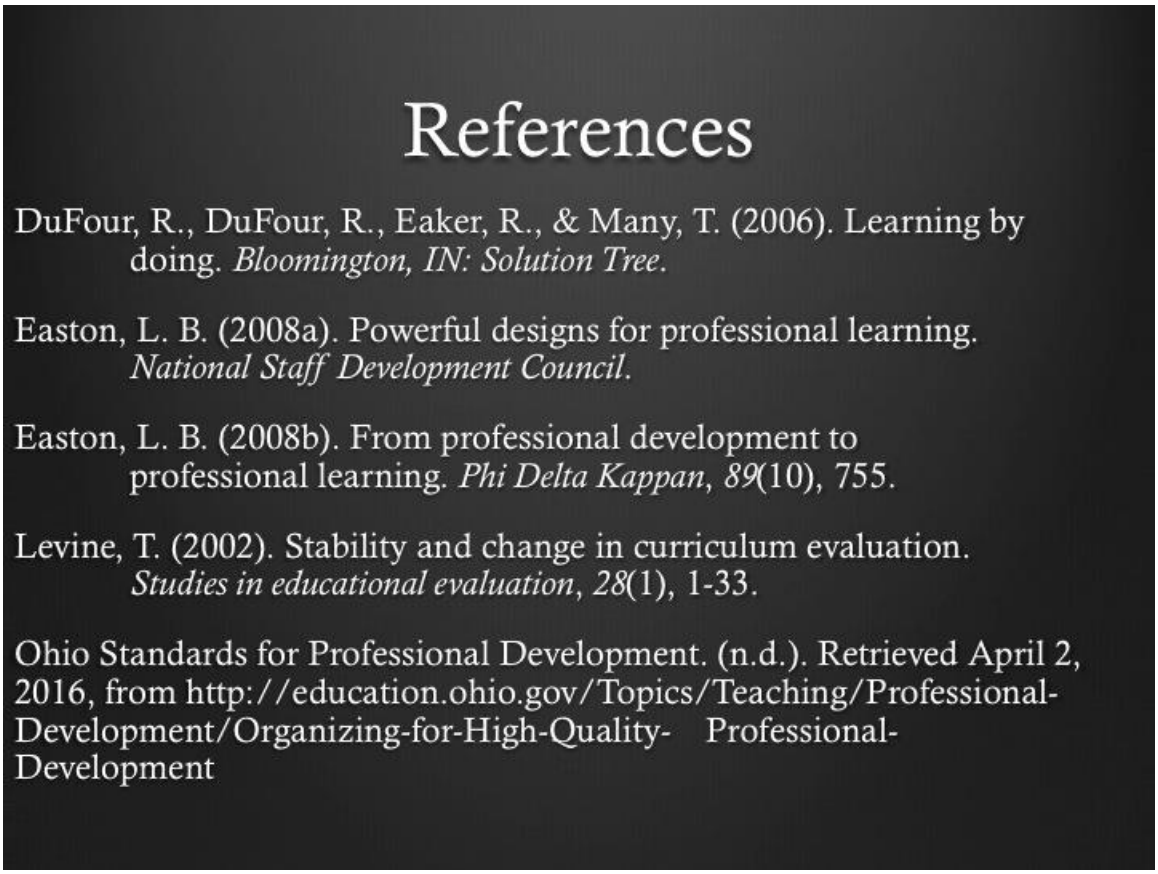
Slide 67


Appendices
Ohio PD Standards
Ohio Standards for Professional Development
Standard 1: Learning Communities - Professional learning that increases educator effectiveness and results for all students occurs within learning communities committed to continuous improvement, collective responsibility and goal alignment.
Standard 2: Leadership - Professional learning that increases educator effectiveness and results for all students requires skilled teacher leaders and administrators who develop capacity, and advocate and create support systems for professional learning.
Standard 3: Resources - Professional learning that increases educator effectiveness and results for all students requires prioritizing, monitoring and coordinating resources for educator learning.
Standard 4: Data - Professional learning that increases educator effectiveness and results for all students requires the use of a variety of sources and types of student, educator and system data to plan, assess, and evaluate professional learning.
o Standard 5: Learning Designs - Professional learning that increases educator effectiveness and results for all students integrates theories, research and models of human learning to achieve its intended outcomes.
Standard 6: Implementation - Professional learning that increases educator effectiveness and results for all students applies research on change and sustains support for implementation of professional learning.
Standard 7: Outcomes - Professional learning that increases educator effectiveness and results for all students aligns its outcomes with educator performance and student curriculum standards.
Ohio Standards for Professional Development, 2015)

Slide 68


Appendices
Online Research Survey Questions
Teacher Survey Questions:
1. Current grade level taught?
2. Previous grade levels taught?
3. Number of years teaching those grade levels
a. Current Grade?
b. Previous Grade?
4. Total number years teaching
Past Experience
5. What personal experience do you have with place-based education?
6. Describe to what extent you have worked in a school with a place-based education program?
7. Have you integrated place-based education in your classroom science curriculum?
a. If Yes, how long have you integrated place-based learning into your classroom science curriculum and where specifically have you integrated it?
b. If Yes, Is there anything that prevents you from fully implementing it? What challenges have you faces when implementing it?
c. If No, what prevents you from implementation?

Slide 69


References
DuFour, R., DuFour, R., Eaker, R., & Many, T. (2006). Learning by doing. Bloomington, IN: Solution Tree.
Easton, L. B. (2008a). Powerful designs for professional learning. National Staff Development Council.
Easton, L. B. (2008b). From professional development to professional learning. Phi Delta Kappan, 89(10), 755.
Levine, T. (2002). Stability and change in curriculum evaluation. Studies in educational evaluation, 28(1), 1-33.
Ohio Standards for Professional Development. (n.d.). Retrieved April 2, 2016, from http://education.ohio.gov/Topics/Teaching/Professional-Development/Organizing-for-High-Quality- Professional-Development

Appendix B: Executive Summary

Executive Summary

Evaluation Overview of the Professional Development Component of the Prekindergarten thru Grade 5 Grade Level Field Experiences in Partnership with the Learn, Protect and Stay Place-Based Education Collaborative

Terri Wade-Lyles, Independent Researcher & Evaluator
Walden University
On Behalf of the Cleveland Metropolitan School District
Spring 2016

Executive Summary

Under the guidance of the Walden University Richard Riley College of Education the researcher, sought to provide valuable information to the Cleveland Metropolitan School District. The goal of this evaluation was to examine the professional development component of the Learn Protect & Stay Place-Based Education Program more specifically to determine the level of implementation and whether the programming as implemented is effective. This synergistic programming which, is a collaboration between the Cleveland Metropolitan School District's Department of Science Education, informal science institutions and community partners has two main objectives:

- To systemically reform Science Education, and
- To provide the City of Cleveland with informed citizens who are committed environmental stewards.

The CMSD Department of Science Education believes that by providing place-based hands-on learning experiences K-12 students will learn in a much deeper, rigorous and meaningful way.

Cleveland Museum of NATURAL HISTORY

“Evaluation is not to prove but to improve”
~Unknown~

Overview

This report presents the findings of research, which studied the professional development component of the PreKindergarten-5th Grade-Level Experiential Programs in the Cleveland Metropolitan School District. To gather this information 659 PreK-5 Grade Teachers were invited to participate in an anonymous online survey. The study yielded 57 responses that are presented in this report. This report will:

- Summarize the findings of a survey given to PreK-5 teachers regarding their experience and beliefs around place-based education.
- Make recommendations based on the survey results.

Findings

- The majority of CMSD teachers indicated that they have had no prior personal experience with place-based education
- Despite the fact that the grade-level experiences are in years 2 to 4 of implementation, CMSD teachers are only recently using the place-based approach.
- While mainly in science, teachers are showing an attempt to implement place-based education across subjects.
- Professional development is perceived as having been limited.
- The teachers that have participated in professional development have done so through teaching lessons and hands-on learning. Only a few have learned it thru organized trainings or courses.

Recommendations

Executive Summary

Timeline	Focus
The fundamental role of a teacher is to help children make connections between what is to be learned and what is already known or believed.	
Spring-Summer 2016	Plan, Revise and Redevelop Professional Development Goals
Academic Year 2016-17	Implementation of New Professional Development Component
Late Spring 2017	Gather Data to Measure the Impact of the Changes
Summer 2017	Evaluation of impact data, review and reflection

Roles and Responsibilities

- **Learn, Protect and Stay Collaborative**
    - Revise professional development component of grade level programs by developing data driven PD that is aligned to the ODE Standards for PD and district goals
    - Continue collaborative conversations
    - Collaboratively analyze results of impact data and refine program PD based on findings
- **CMSD Chief Leadership**
    - Support professional learning experiences that are aligned to district goals by devising a plan for expectation of attendance
    - Give access to information sources (teachers)
    - Garner excitement around place-based (experiential) learning and supportive messaging
- **CMSD Department of Science Education**
    - Plan, Devise and develop data driven professional development programming for district science education & LP&S Programs that is aligned to district goals and ODE Standards for PD
    - Moniter Strategic PD Plan
    - Communicate science PD sessions in a timely and effective manner
    - Gather impact data from district information sources and present findings to the district and LP & S
    - Lead collaborative conversations between the district and LP & S
- **Informal Science Institutions (ISI's)**
    - Provide professional development that is aligned to the Ohio Learning Standards in Science Education and clearly defines place-based education
    - Create a system that communicates PD sessions in a timely manner
- **Teachers**
    - Actively participate in district science and ISI PD
    - Apply the knowledge and skills developed in district science PD and ISI sessions to their daily practice

Appendix C: Timeline of Study

Timeline	Activity & Event Description	Materials	Location	Person Responsible
Month 1				
Week 1				
Day 1-2	Prospective participants' names, grade levels and email addresses retrieved from district human resources.	District List	Researcher Office Site	Principal Researcher
Day 3-5	Third party presents the request to participate in the online survey emailed. Online Survey live and available for responses.	Laptop/tablet	Researcher Office Site	Principal Researcher and designated third party
Week 2				
Day 2	1). First invitation reminder email sent	Laptop/tablet,	Researcher Office Site	Principal Researcher and designated third party
Day 5	Online survey responses continue.	Laptop/tablet,	Researcher Office Site	Principal Researcher
Week 3				
Day 1-2	Second reminder Invitation to participate in the online survey emailed. Online Survey live and available for responses.	Laptop/tablet,	Researcher Office Site	Principal Researcher and designated third party
Day 3-7	Final reminder email sent and online survey closes.	Laptop/tablet,	Researcher Office Site	Principal Researcher and designated third party
Week 4				
Day 1-7	Active data collection	Laptop/tablet,	Researcher Office Site	Principal Researcher
Month 2				
Week 1-3				
Day 1-7	Data downloaded and entered	Laptop/ tablet	Researcher Office Site	Principal Researcher
Month 3				
Week 2-3				
Day 1-6	Data Analysis, and surveys coded	Laptop/tablet	Researcher Office Site	Principal Researcher

Appendix D: Letter & Consent Form

A Program Evaluation of Place-Based Science Education

Terri A. Wade-Lyles, MEd
Walden University

My name is Terri Wade-Lyles and I am the Curriculum Manager in Science Education for Grades PreK-8, as well as, a graduate student at Walden University. My work role is separate from my role as a researcher. In partial fulfillment for my degree requirements I am conducting a project study. In this project, I am a sole researcher, researching if place-based programming can be used to augment science achievement in any urban district in grades PreK-5. Because you are a teacher in a Prekindergarten – fifth grade classroom in the Cleveland Metropolitan School District I am asking you to participate in this research study by taking an online survey.

Your survey responses will be anonymous. Participation is strictly voluntary and you may refuse to participate at any time.

Thank you for taking the time to assist me in my commitment to continuing my education. The data that is collected will provide useful research information regarding the effects of the Place-Based Education Programming in this district and other similar districts. If you would like a summary of this study you may follow this link: https://docs.google.com/document/d/1yP4iXrya5FDwIdxdoRrYvSxNd1dhOxVj9Q6Zx_vvRxA/edit?usp=sharing. The researcher will provide the results once they become available. Clicking on the submit button after reading the following consent form, will take you directly to the research questionnaire and gives me permission to use the contents of this survey for research purposes. It also indicates your willingness to participate in this study. If you require additional information or have questions, please contact me at the number listed below.

Contacts and Questions: You may ask any general questions you have now or if you have questions later, you may contact the researcher via email at terri.wade-lyles@waldenu, as well as, the researcher's committee chair, David Weintraub at David.Weintraub@waldenu.edu. If you want to talk privately about your rights as a participant, or have any questions about your participation in this study, you can call Dr. Leilani Endicott. She is the Walden University's Research Participant Advocate Representative who can discuss this with you. Her phone number is 1-800-925-3368, ext.312-1210 or you may reach her by email at IRB@Waldenu.edu.Walden University's approval number for this study is 11-05-15-0227165 and it expires on November 4, 2016.

Sincerely,Terri Wade-Lyles, MEd

Consent Form

Consent Form This anonymous online survey study examines the effects of the place-based programming in science education. The study is being conducted by Terri Wade-Lyles in partial fulfillment of a doctorate in education degree at Walden University and has been approved by Walden University's Institutional Review Board and the Cleveland Metropolitan School District's CEO and Department of Data Accountability. Her work role is separate from her role as a researcher. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life).

You are being invited to participate because of the fact that you are a teacher in grades PreK-5 and there has been place-based programming in those grades. Participation in the survey is not timed, should take no more than 30 minutes and is strictly anonymous. Once you begin there is no save and return option therefore you should allot enough time to complete the survey in whole. Participants will respond to a series of questions about place-based education and the professional development offerings. The researcher designed these questions to determine how you integrate and implement place-based education into your classroom science curriculum. Some sample questions are:

- What personal experience do you have with place-based education?
- Describe to what extent you have worked in a school with a place-based education program?
- Describe any professional development you have had on experiential learning
- How do you think professional development in place-based education contributes to its implementation?

All responses are treated as confidential, and in no case can any responses from individual participants be identified. As there are no direct benefits to participants, the expected benefits to the larger community of faculty and staff is that the results may by applied to inform and improve instructional practices, content and learning tools. The research results may also benefit the education community by serving as a catalyst for a change in methodologies, and providing opportunities for new initiatives. All data will be pooled and published in summary form only.

Participation is voluntary, participants may withdraw from the study at any time, and they may decline to answer any questions if they experience any discomfort with the questions asked. Participants will not be paid to participate in this research study.

Contacts and Questions:

You may ask any general questions you have now or if you have questions later, you may contact the researcher via email at terri.wade-lyles@waldenu, as well as, the researcher's committee chair, David Weintraub at David.Weintraub@waldenu.edu. If you want to talk privately about your rights as a participant, or have any questions about your

participation in this study, you can call Dr. Leilani Endicott. She is the Walden University's Research Participant Advocate Representative who can discuss this with you. Her phone number is 1-800-925-3368, ext.312-1210 or you may reach her by email at IRB@Waldenu.edu.Walden University's approval number for this study is 11-05-15-0227165 and it expires on November 4, 2016**.**

Statement to potential participant-When using the Internet to collect data there is a chance that tampering from an outside source can occur. Although many preventative measures to assure the confidentiality of your responses will be taken, there is always the possibility of hacking or other security breaches prior to it being downloaded from the Internet. You are free to and may choose to not answer any question or opt out by exiting the survey at any time.

Please print or save this consent form for your records.

If you are 18 years of age or older, understand the statements above, and freely consent to participate in the study you may proceed by clicking the submit button. By do this you are agreeing to the terms of the consent form and will be taken directly to the research survey questionnaire.	**Click here to submit now** and begin the survey

Appendix E: Online Research Survey Questions

Teacher Survey Questions

1. Current grade level taught?

2. Previous grade levels taught?

3. Number of years teaching those grade levels

a. Current Grade?

b. Previous Grade?

4. Total number years teaching

Past Experience

5. What personal experience do you have with place-based education?

6. Describe to what extent you have worked in a school with a place-based education program?

7. Have you integrated place-based education in your classroom science curriculum?

a. If Yes, how long have you integrated place-based learning into your classroom science curriculum and where specifically have you integrated it?

b. If Yes, Is there anything that prevents you from fully implementing it? What challenges have you faces when implementing it?

c. If No, what prevents you from implementation?

Professional Development

8. Describe any professional development you have had on experiential learning

9. How do you think professional development in place-based education contributes to its implementation?

Appendix F: Themes and Sample Responses Regarding Contribution of Professional Development to Implementation of PB Education

Theme	Example Responses
Not Sure if Implemented Unsure/DK/Never Had Any	"Based on not receiving the training I can't say"
Would Learn What it is	"If I knew what it was, it might increase the chance that I would implement it."
	"It would give me a hint of what we are talking about."
How to Implement	"I believe it truly is an asset. I can't teach something that I am not familiar with myself. Also, once you learn something new, you tend to execute it with more passion!"
	"It would give more information on how to implement and what it's all about"
Would be Helpful	"It would be helpful to have."
Understand the Materials	"If place-based means using the science kits versus textbooks, then the PD is very helpful to understand the materials."
Helps Learn about the Community	"PD in place-based education contributes to its implementation by learning about the community inside and out. The educator has to be in as complete oneness with the community as possible in order to have "buy-in"."
Not Implemented Unsure/DK/NA	
Would Learn What it is	"it would explain it to me"
	"I would need to be trained to know what this is"
	"It would inform me of what place-based education is and how to use it properly"
	"introducing the concept"

Would be Important for Implementation	"a big part"
	"I think it would be great."
	"It would be imperative"
	"It would be important"
	"It's vital."
	"Any good professional development helps with implementation of programs."
	"highly recommend professional development before implementation"
	"it is necessary for implementation"
	"If we had PD on the topic, it would greatly increase the implementation throughout the schools in my district."
Helpful but still lack resources	"Again, need the time and resources to implement properly."
	"you will hear great ideas, but not have resources"
Engagement with Community	"tremendously, we need to rekindle our engagement with the community"
Provide Support to Teachers	"training would guide the teacher through making arrangements for the experiences for the students"
	"yes, it would provide support"
Deeper Understanding	"Provides a deeper understanding of the concept allowing for easier implementation"
	"It gives teachers an understanding of what it is and how to implement it."
Takes Fear Away/Network	"It takes the fear away, it allows for networking and the sharing of ideas and strategies that lead to success, it can also be a productive venting forum"

Implemented

Hinders Implementation	“Hinders it. Development is too far away from work site and generally starts before I can get out of school-and other teachers don't want to cover my 32 students. Hire science teachers, give them actual science rooms, science tools, texts and let them teach in their area of expertise, so that our "scholars" get what suburban scholars get.”
Never Had Any	“We haven't had much, it would be nice because so many teachers and kits have moved grade levels.”
Shows How to Implement	“I think it is important as it show how to implement into the science curriculum”
	“Professional development helps take the fear out of its implementation and makes connections for the students and teachers!”
Puts into Context/More experience	“experience with your surroundings is key to learning”
	“puts experience in a context that makes sense”
	“It gives the concept a solid understanding of the concepts being taught.”
Learn about Resources	“You what the place has to offer and resources available to educators.”
Helps Teachers Connect	“I think PD in place-based education helps teachers to connect on a more personal level that promotes learning that is reflective on what is actually taking place in the learning environment.”