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Moriah Weber

Otterbein University, Webermoriah@gmail.com

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The Importance of Collaboration Within Project-Based Learning in a Kindergarten Teacher
Classroom

Moriah Weber

Otterbein University

2019

Submitted in partial fulfillment of the requirements of a Masters of Arts in Education degree.

Assistant Professor Bethany Vosburg-Bluem _____
Advisor Signature Date

Dr. Dee Knoblauch _____ Second Reader
Signature Date

Dr. Daniel Cho _____ Third Reader

THE IMPORTANCE OF COLLABORATION WITHIN PROJECT-BASED LEARNING IN A
KINDERGARTEN TEACHER CLASSROOM

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By

Moriah Weber

2019

THE IMPORTANCE OF COLLABORATION WITHIN PROJECT-BASED LEARNING IN A KINDERGARTEN TEACHER CLASSROOM

VITA

Teaching Experience

2016-Present	Kindergarten Teacher Dublin City Schools Dublin, Ohio
2014-2016	Kindergarten Teacher Delaware City Schools
2013-2014	Kindergarten Teacher Whitehall City Schools
2011-2013	Pre-Kindergarten Teacher Primrose School Powell, Ohio

Education

2019	Master of Arts in Education Curriculum and Instruction Otterbein University Westerville, Ohio
2011	Bachelors of Science in Education Urbana University

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KINDERGARTEN TEACHER CLASSROOM

Urbana, Ohio

VITA

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ABSTRACT

The purpose of this research to is examine the impacts teaching collaboration tools within Project-based learning, in a Kindergarten classroom. Data collection was taken by video recording two PBL projects, observing and reflecting on field notes, and recording students reflection how they collaborated during each project. This data collection compared two different half day Kindergarten classes with similar demographics. The AM class was taught collaboration by using different collaboration tools while the PM class was not. Both classes did the same PBL projects with small groups and the data was collected on collaboration in comparison between the two groups. The findings discovered the importance of teaching students how to collaborate and giving them collaboration tools. Students who were taught how to use collaboration tools were able to articulate how they collaborated during the lesson and they were less likely to argue and tattle on their peers throughout their projects.

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SECTION ONE

Introduction

Education is constantly evolving in an ever changing world. Educators are consistently challenged on ways they can meet the needs and interests of their students. The education system bears the demands of standardized tests, evolving technology, and high expectations for the next generation of learners. Students feel the pressure of these demands, and their sense of contribution to their learning can be lost. The sense of these high demands can be overwhelming as well as challenging. Teachers feel the stress of these demands and they tend to focus only on traditional teaching practices. Many educators worry about their students passing high stakes tests as well as their own teacher evaluation.

There is a high need for authentic learning experiences at all educational levels, and students need to be actively engaged in their own learning. Project-based learning can bridge this gap in the curriculum. PBL has been around since the beginning of the progressive education movement. Educational scholars such as John Dewey and William Heard Kilpatrick argued that “learning by doing would result in more powerful learning” (Duke p. 6). PBL is when students work together over a period time by producing a project that can solve or answer a real life question. Students are able to be hands-on with their learning which allows students to have more authentic learning experiences. There is a need for this type of learning in our society today.

There has been a shift in change with education within the last century. Educators are wanting their students to be prepared for life after graduation. This is what is called 21st century learning skills. Integrating PBL into classroom instruction is a method of curriculum design that incorporates 21st century skills which are also known as the 4Cs (Communication,

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Collaboration, Creativity, and Critical Thinking). These skills are needed for all students to understand and master so that they can be utilized in the workforce and everyday life. The 4Cs are a major emphasis in my school this year, so this inquiry project will benefit my colleagues and me as we continue to explore ways of moving 21st learning into the curriculum. Students will use the Four Cs when collaborating with their peers during PBL projects. Project-based learning can have many benefits well as challenges. Many feel that PBL can only be implemented at the higher grades due to students working independently as well as the challenges that come with collaboration. Younger elementary students tend to struggle with collaboration due to them naturally wanting to do things on their own and in their own way. However, PBL can be beneficial for all ages and it can begin as early as Kindergarten.

I am a Kindergarten teacher and within my Kindergarten classroom I have a diverse group of students represented. The students in my classroom are all at different learning levels. About half of my students are English Language Learners, a quarter of my classroom is on free and reduced lunch, and every student is at a different reading level. I have students who can read and write and students who cannot read their own name. Addressing the needs of all these learners is a challenge in a kindergarten classroom and one that is difficult to accommodate with traditional teaching practices. The common interest of all my learners wanting to do projects motivated a need to explore project-based learning in the Kindergarten classroom. I feel that my Kindergarten students can gain growth in collaboration skills while going deeper within their learning through PBL. There is a need for Kindergarten students to learn and understand collaboration. The Kindergarten curriculum has drastically changed within the last decade. Gone are the days of socializing. Kindergarten is now the new first grade, and the demands are high. For example, the state standards in Ohio for literacy expect students to read at a level 3 (read

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books that are not pattern predictable), decode words, produce and identify rhyming words and word families, along with other basic phonics skills. Students need to be able to write complete sentences, and produce informational, opinion, and narrative writing (Ohio Department of Education, 2017). Kindergarten today is not just about learning school and the alphabet, but rather it is more demanding today than it ever has been before. Students need to be engaged in their learning and they need to have authentic learning experiences. Kindergarten is foundational year for students and their educational careers. Brusica, S.A., & Shearer, K.L. (2014) “Students learn their alphabet before they can read, and this needs to be done with 21st century skills” (p. 9). Incorporating project-based learning can allow Kindergarten students to start exploring and utilizing collaboration and other 21st century skills.

However, even though there are many benefits with PBL. There is a gap in the research of collaboration at the Kindergarten level. Due to national changes in curriculum within the past decade, teachers tend to shy away from collaboration opportunities within PBL. Some teachers claim that there is not enough time or resources to achieve such teaching practices in a Kindergarten classroom. It is important for Kindergarten students to use components of the Four C’s with an emphasis in collaboration with their peers and thinking critically, to come up various ways to work on PBL projects. It will require my students to stretch their thinking when their projects don’t work, and they will have to collaborate with others to brainstorm new ideas. These are foundational skills that will benefit my students in school as well as in the real world. These skills will be built upon for their rest of their lives. Why not start building these skills in Kindergarten? That is why I plan to focus on collaboration during this research study. I would like to see how my Kindergarten students utilize and reflect on different collaboration tools that are used in within PBL projects. However, there is little research related specifically to my

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project plan. Therefore, I seek to find an answer through instructional inquiry to following question: Does incorporating collaboration tools through project-based learning, increase students ability to collaborate in a Kindergarten classroom?

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SECTION TWO

Literature Review

Origins of Project-Based Learning

Project-based learning and student-centered curriculum of today, has its roots in the progressive education movement of the 1920s. Educational scholars such as John Dewey argued that “learning by doing would result in more powerful learning” (Duke p. 6). John Dewey was an American philosopher, psychologist, and educational reformer during the early 1900s. His views on education has had a rippling effect on other philosophers and education movements. Dewey believed that teachers are the facilitators and students should fully be involved in their own learning. He believed that true education comes from a child’s curiosity to solve a problem (Taylor, Schreier, & Ghiradelli, 2008). Dewey claimed that education is essential for life, and it is about experiences tied to life and preparing students for the future. He opposed the views of traditional learning using direct instruction. He argued that learning is not about gaining and retelling information, but rather putting information and knowledge into practice. Students need to solve their problems even if there are no solutions. An educator will only help facilitate when needed so that the students can learn how to be better problem solvers and inventors (Dewey, 2004). In Dewey’s work *Democracy and Education*, he connected that education is the purpose of life. He expressed that “the continuity of any experience, through renewing the social group is a literal fact. Education in its broadest sense, is the means of this social continuity of life” (Dewey p. 2). It is important to value education and the experiences that come with it. The student needs to be actively involved in their learning, and their learning experiences need to be hands-on and life applicable. John Dewey’s philosophy on education

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coincides with the Reggio Emilia teaching approach. However, the Reggio Emilia approach tends to be more focused on the teaching philosophy of early childhood education.

The Reggio Emilia approach was developed by Loris Malaguzzi, an Italian teacher, after World War II. It started out as a collection of schools, in Reggio region of Italy, focused on a child's intellectual, emotional, and social needs (Edwards, Gandini, & Forman, 1998). Children play a role in their learning and the teacher helps facilitates. According to Gardner and Jones (2017) in the Reggio Emilia approach, the teacher listens to their students interests and provides them with opportunities and resources to explore their own learning on a daily basis. Teachers will listen to their students and help assist them with their thinking and plan for their ideas. Allowing students to take ownership in their own learning provides them with opportunities to use their critical thinking skills. The Reggio Emilia approach is said to be inspired from John Dewey's educational philosophy (Lindsay 2015). Both Dewey and the Reggio Emilia approach have influenced the philosophy and framework behind Project-Based Learning.

What is Project-Based Learning?

“Project -Based learning (PBL) has been a long tradition in America's public schools, extending back to the 19th century to the work of John Dewey”(Morgan, Capararo, & Capraro p. 6). PBL is a teaching method that allows students to gain knowledge and skills by working for an extended time in order to investigate and respond to a question, problem or a challenge (Hallermann, Larmer, & Mergendoller 2016). PBL allows students to build something, create something, respond in order to solve a real problem, or address a real need (Duke 2016). This type of authentic learning allows students to become more actively engaged in their own learning. According to Hallermann, Larmer, & Mergendoller (2016) PBL allows students to

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explore their learning. They can demonstrate their learning through high-quality products that are produced collaboratively in small teams that are guided by the teacher.

Over the past two decades there has been several empirical studies on how project-based learning can have a positive impact on students learning. Grant and Branch (2005) developed a case study of five eighth grade students on the outcomes and benefits of project-based learning within a Social Studies lesson. Students had to research a country and present information by using various forms of technology. These authors questioned this research question: What outcomes do students obtain with project-based learning? The results indicated that the students had multiple differences, but they all had a chance to experience and represent their learning in different ways through Project-based learning experiences. This research suggested that schools and teachers need to provide their students with more opportunities with student-centered learning. This will allow their students to use their metacognitive skills and self-regulation in order to monitor their own learning. These skills allow students to be more engaged in their learning and they are able to apply it to their learning for the rest of their lives.

Students are known to perform better when they have a targeted audience, and this is evident with project-based learning. If students are blogging or creating something for the public to see, then they will produce better work (Duke 2016). Students want to be proud of their work. PBL allows students to collaborate with others who come together with a common goal. It allows students to take ownership in their learning. Often, in a project, students see a problem and they have to use their critical thinking skills to find a solution. PBL provides opportunities for students to try new strategies to solve problems. Then, this allows students to apply their knowledge and critical thinking skills to the real world (Lou, Liu, Shih, Chuang, & Tseng, 2011). They have to collaborate and communicate with their peers, as well as use their creativity within

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the project. Their end results can be very impactful which can have a positive influence on how they function in the classroom as well as in their future workforce. Almost every profession requires people at some point in their career to work with others. PBL is preparing students with 21st century skills that can transfer outside the walls of a classroom.

Project-based learning is interdisciplinary and teachers can intertwine several learning standards when having their students take on a project. Students have to research and produce their project, and these components incorporates reading and writing. Teachers can incorporate other academic content standards such as social studies, science, and the arts. Project-based learning is a great way to incorporate nonfiction literature into the curriculum. Sometimes students tend to stay away from nonfiction texts, but utilizing PBL allows teachers and students to embrace this type of literature (Duke 2016). Incorporating nonfiction text can be the roots of research for PBL projects.

Project-based learning allows students to have a voice and a choice in their learning. They can decide on which direction they want their project to go. Sometimes in PBL, students have to solve for a real life problem. They have to collaborate with their classmates on how to solve this problem. Duke (2016) says that with PBL, students see that there is a real purpose for reading, writing, and learning beyond what is a school requirement. Students are more willing to participate and learn. PBL can have many benefits, but there are also some challenges.

Challenges with Project-Based Learning

There can be some challenges that can arise when incorporating to project-based learning into the curriculum. Duke (2014) argues, that just like in literacy, educators have a lack of clear conceptualization when it comes to implementing project-based learning into their instruction. Some teachers feel that PBL takes too much time and there is not enough traditional learning.

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However, in reality PBL should be something that worked on for a long period of time that can go above and beyond a school requirement. At times, PBL can become overwhelming and lose its purpose. Teachers become too focused on producing a certain amount of projects per year rather than focusing on the process, purpose, and outcomes of the projects. It can be time consuming for teachers to organize and plan PBL projects, and that can cause teachers to take a more traditional route to their teaching instruction.

Another challenge with PBL is that educators tend to limit alignment to standards. Teachers want to focus on just one standard or learning objective. However, PBL can be interdisciplinary across multiple domains. Teachers tend to go too narrow with their learning objectives and standards when incorporating project-based learning into their curriculum. Teachers tend to focus on one single content strand. Even though PBL provides opportunities for teachers and students to go deeper in their learning across multiple subjects, not all teachers are equipped with knowledge on how to implement projects into their instruction. However, this mindset of PBL has been challenged. Halvorsen et al., (2012) conducted research, which studied a group of second graders in Michigan. These students visited a local park and they were encouraged to come up with a proposal that would help improve the park. Their project aligned with several different state standards as well as it was interdisciplinary with other subjects such as reading, writing, and social studies. Students who were involved in this study showed to have gains in their learning. “In fact, the children who were from low socioeconomic status (SES), low-performing schools performed in informational reading and social studies at levels statistically equivalent to students from high-SES, high-performing schools. This suggests the promise of designing projects aligned with standards in multiple domains” (Duke, 2016, p.

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29). Overall, some teachers also do not have the growth mindset compatible to use PBL in their classroom (Blumenfeld et al., 1991). This type of instruction takes time.

Assessing Project-Based Learning.

Project-based learning can be challenging because there can be a lack of systematic learning instruction. Even though PBL can be very beneficial for student ownership and exploring, there is still a need for explicit instruction. Students need to have systematic instruction when it comes to reading and writing so that accurate assessment of learning can take place. However, “there is overwhelming evidence in favor of explicit, systematic instruction in a number of areas, including comprehension and writing, both of which are entailed in many projects” (Duke, 2016, p. 29). Boss (2012) that Andy Holly Bremerkamp, Acuity product manager at CTB/McGraw-Hill, emphasised that project-based learning and assessments are becoming more important as there is a need to measure students’ abilities to think critically and collaborate with peers. However, it can be very challenging to assess critical thinking and collaboration along with mastery of the content. These assessments can be very open ended, while in a traditional classroom with systematic teaching is more concrete. Teachers need to educate their students on their own growth through the PBL process. Which can be done through feedback from students and teachers. This is much different from standardized testing that truly only evaluates low level comprehension (Blumenfeld et al., 1991). Overall, Grading and assessing students in PBL is not always concrete and that is why teachers can struggle with incorporating this teaching method into their classroom.

The Costs of Project-Based Learning

It can be very expensive and time consuming for teachers and schools to include to project-based learning into their instruction. If teachers are new to PBL it can take a lot of time

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and money to learn how to write rubrics and to collaborate with colleagues to evaluate student work (Boss 2012). Teachers also need a lot of time of professional development in implement project-based learning. “Research presented at the American Educational Research Association’s annual meeting in April 2012 underscores the need for professional development to help teachers gain confidence with PBL methods” (Boss, 2012, p. 52). This study found out that teachers who had professional development with project-based learning had been able to “implement and assess projects as a way to teach and assess 21st-century skills without sacrificing academic rigor” (Boss, 2012, p. 52). However, even though assessing project-based learning can be very challenging, it can also be very costly. In the Vail School District, they are revamping their curriculum to PBL and it cost the district \$60,000 to educate and provide professional development for their teachers (Boss 2012). However, the benefits from implementing PBL into the curriculum outweighed the costs.

Benefits of Project-Based Learning

Project-based learning is for all students at all ages, not just those who are older or who are identified as gifted (Duke, 2016). According to Katz and Chard (2000), “As a way of learning, the project approach emphasizes children’s active participation in the planning, development, and assessment of their own work; children are encouraged to take initiative and responsibility for the work that is undertaken” (p. 4). Children can be more willing to learn when they are interested and inquiring about what is being taught. This is something that comes very natural for children, because children learn through experiences. When children are engaged, they can become more accountable for their learning. It is important for students to collect their own artifacts for learning. This allows students to construct their own knowledge because learning by doing is crucial (Blumenfeld, Soloway, Marx, Krajcik, Guzdial, & Palincsar). This is

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setting the foundation for lifelong learners and preparing them for their educational and work career. Hertzog (2007) claims that research studies on various models of early childhood curriculum (Marcon, 1992, 1995) showed children who participated in programs were more actively engaged in their own learning and performed better in fourth grade standardized tests compared to those children who participated in more formal, teacher-directed instructional method. This research also stated classrooms who incorporated PBL had fewer behavior and social problems amongst their students than those in a more teacher directed program. When students are taking ownership in their learning and are engaged in the content being taught, there is less time for classroom interruptions and classroom discipline (Hertzog 2007) .

Saunders-Stewart, Gyles, and Shore (2012) researched a 23 item criterion-referenced inventory on the outcomes and benefits of inquiry based learning such as PBL. These authors addressed this research question: What outcomes do students obtain during project-based learning? A meta-analysis was performed and it concluded that all students regardless if they are inner-city or rural can benefit from PBL. Some of the positive outcomes of inquiry based learning are that students are more engaged in their learning and they are able to apply it to their learning to their lives. When inquiry based learning is incorporated into classroom instruction, it allows students to improve their creativity, critical thinking skills, problem solving skills, and it opens up communication between students and teachers. The teacher becomes a facilitator and the students drive their learning based upon their needs and interests. Inquiry learning can be applied across multiple domains and is adaptive to different subjects.

Regardless of the student's age or economic status, project-based learning can be beneficial for all. In Peoria, Illinois, PBL is the chosen method of instruction at the Valeska Hinton Early Childhood Center. Serving predominantly at-risk preschoolers through first

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graders, students ultimately leave the center to attend elementary schools throughout the district. A 4-year follow-up study indicated the Valeska Hinton students achieved as high or better on standardized tests than their peers at other schools whose teachers did not use the project approach (Brown, 1999). Project-based learning helps students become prepared for the future workforce, but it also allows students to perform better on standardized tests. Research has demonstrated that students do better on standardized tests when their teachers engage them in quality project-based learning rather than emphasizing basic skills and broad coverage of material (Newman, King, & Carmichael, 2007; Wenglisky, 2004). With such research, this suggest that if students are willing to be active participants in their learning, they will be able to obtain more knowledge. PBL prepares students to be successful academically but also with life outside of the classroom. This is why 21st century skills a positive role in a student's educational career. Incorporating PBL into the curriculum provides students opportunities to use 21st century skills and the Four Cs. Students need to be able to use critical thinking, creativity, and collaborating in order to meet the demands of work and citizenship (Duke 2016). The ultimate goal for students is to be ready to apply what they are learning to their everyday lives.

The Importance of Incorporating 21st Century Skills and the Four Cs

The Partnership for 21st Century Skills (2009) claims that today's students need to be equipped with 21st century learning skills as well as the ability to communicate, collaborate, create, and have critical thinking skills (the Four Cs). Today there is demand for teachers to implement 21st Century Skills for all students, in order to help them become consumers and producers in the world (Brusic, 2014). The ultimate goal for any student is to be ready for the real world and to apply what they are learning to their everyday lives. According to Soulé and Warrick (2015), the world has drastically changed over past few decades and it will look

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drastically different from the world that our students will be living in when they are older. It is very important for today's students to be ready for the future workforce. Even though some of these skills are not new to the 21st century, "they are newly relevant in an age in which the ability to excel at non-routine work is not only rewarded, but is expected as a basic requirement for success" (Soulé & Warrick, 2015, p. 178).

When schools implement the Four Cs as a foundation, students are more engaged in the learning process and they graduate better prepared to thrive in college, their career, and life (Soulé & Warrick, 2015). In addition, educators experience greater collaboration, interdisciplinary application of curriculum, and support within their own teaching. The Four Cs lay a foundation to help prepare students for their future as problem solving citizens. They need to be able to communicate and collaborate with others. It is important for students to be creative and to use their critical thinking skills. Creativity can play an important role in the foundation of the Four Cs because it involves brainstorming, creating new ideas, as well as analyzing and refining one's own ideas. Providing students with the freedom of Creativity it allows someone to creatively work with others as well as communicate new ideas. The Four Cs can be interdisciplinary, and it can have a positive long term effect on a student's life. If students are learning how to proactively use 21st century skills then they will be more prepared to contribute to society and more prepared for the workforce.

Why Collaboration Matters

Collaboration is essential in our classrooms and it is needed for all students in order to work at school and in the real world. Roshelle & Teasley (1995) describe collaboration as, "coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem" (p. 70). Students need to collaborate with their peers

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when learning and working a project, problem, or school work. When something does not go the right way, students need to be able to collaborate with one another to solve the problem.

Collaboration is a skill that needs to be taught and utilized in schools. Students need to work on collaboration because it is a life-long skill that will transfer to workforce and other circumstances in life outside of school. It is the “inherent in the nature of how work is accomplished in our civic and workforce lives. Fifty years ago, much work was accomplished by individuals working alone, but not today. Much of all significant work is accomplished in teams, and in many cases, global teams” (National Education Association p. 19).

A great deal of research has been conducted on how collaborative activities can optimize individual student learning, so it is important for schools to implement these types of activities into their instruction (Plucker, Neag, Kennedy, & Dilley, 2015). The Global Learning and Observations to Benefit the Environment (GLOBE) Program, is a worldwide, hands-on, primary and secondary school. This school focuses on science and the importance and impact on collaboration with their peers in order to solve global issues. GLOBE’s vision helps promote students, teachers, and scientist to collaborate on inquiry-based investigations of the environment and the Earth. They work in closely with NASA, the National Oceanic and Atmospheric Association (NOAA), and the National Science Foundation (NSF) Earth System Science Projects (ESSP’s). Over 1.5 million students have participated in GLOBE and there has been more than 21 million have contributed to GLOBE’s database in inquiry-based projects. GLOBE has prepared students for a global, technology-based experiences that will benefit them in the workforce. There is more of need to have schools like GLOBE (National Education Association p. 19). When students know how to collaborate with one another, it is providing a foundational skill that they will be able to implement throughout the rest of their lives. Project-

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based learning allows students to practice using their 21st century learning skills and the Four Cs. These life experiences provide students with skills that will transfer when they go into the workforce as adults.

Summary

Project-based learning has been around since the educational progressive era, and it can be a successful way to implement authentic learning experiences for all learners. Research supports the positive effects PBL in the curriculum because it allows students to use 21st century skills. Students are able collaborate with their peers to come together with a common goal. These students can use critical thinking skills while doing their project. More specifically, According to Brusic, S,A.,& Shearer, K.L. (2014) when teachers challenge their students in a project that requires them to incorporate different subjects to solve their problem, that alone promotes 21st century skills. Research supports that PBL allows students to take ownership in their own learning (Katz & Chard, 2000). When students are invested in their learning, they are more engaged. PBL can make learning authentic and realistic for students (Duke, 2014).

Project-based learning can be very beneficial, but at the same time it can be challenging. Educators know that PBL is very impactful, but grading students on their project is not concrete. Teachers are known to use PBL rubrics, but that does not assess students on their critical thinking. Also teacher grading can be very open-ended. PBL can also be very expensive. It is costly for teachers to switch over to PBL, and it takes a lot of time and professional development. Money is something that can hold teachers and school districts back from exploring PBL. Also, teachers are not always given professional development on PBL and it can be difficult to start implementing it into the curriculum (Boss, 2012).

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Overall, the benefits of project-based learning outweigh the challenges. PBL is for all students, at any age. Regardless of the student's economic status, PBL is impactful for all students at all ages (Duke, 2014). PBL allows students to collaborate with their peers to solve problems that can be applied to real world. The more chances for students to collaborate, the better it will be for them in implement this type of practice into their everyday lives.

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SECTION THREE

Research Design and Method

Student Population

The purpose of this study is to investigate the effectiveness incorporating collaboration tools within in Project-based learning in a Kindergarten classroom. I developed an instructional inquiry project that will be quasi-experimental between two of my Kindergarten classrooms.

My collaboration research experiment will be taking place in a central Ohio urban school district. The school district contains 19 schools with over 15,000 students enrolled. There are a total of 12 elementary schools, 3 middles schools, and 4 high schools. The demographics of students within this district are 20 % Asian, 6% Hispanic, 4% Black, 64% White, and 5% identify with two or more races.

My research will be done in the largest elementary school in the district. This school contains grades Kindergarten through Fifth with over 800 students enrolled. The demographics of these students are 34% Asian, 11% Hispanic, 3% Black, 48% White, and 4% identify with two or more races. Only 14% students qualify for free lunch and 1% qualify for reduced lunch prices.

Setting

This research collection will be taking place in my Kindergarten classroom. I have one morning and one afternoon Kindergarten class in which are very diverse. My students are only in my classroom for 2.5 hours a day. All-day Kindergarten is not mandated in the state of Ohio, so all-day Kindergarten and half day Kindergarten varies amongst school districts.

I will be collecting research data on 40 of my Kindergarten students ranging in ages 5 and 6 years old. My morning Kindergarten class contains 22 students total with 11 males and 11

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females. The demographics of these students are 64% Asian, 9% Hispanic, 18% Black, and 9% White. My afternoon Kindergarten classroom contains 18 students with a total of 8 males and 10 females. The demographics of these students are 39% Asian, 33.5% Hispanic, 5% Black, and 22.5 % White. I have two students who are on an IEP and they have some paraprofessional support throughout their school day.

Collectively, some parents share that their children go to preschool before entering Kindergarten. However, it is not mandated to disclose this information. Many students experience school for the first time in Kindergarten, which results in several students qualifying for the all-day Kindergarten program. This program is designed to help students who are not on track in reading. Students who qualify for this program go with a reading support teacher during the opposite time of their normal Kindergarten day. Three students attend this program in my morning class and 5 students attend in my afternoon class. Providing these students with extra reading support with smaller class sizes and implicit reading instruction is a way to help improve their reading literacy skills.

Methods

I plan on teaching collaboration tools to one of my Kindergarten classroom during two different project-based learning experiences. Both classes will be doing the same project, but one class will be taught and will implementing the collaboration tools. These PBL projects will be taking place for a larger chunk of time. These projects normally last for an hour and the students will only be able to work on this project on that given day. I randomly selected my morning class to be taught how to use collaboration tools. The first PBL project will be a STEM activity where students will have to plan, design, and build a house out of toothpicks, lollipop sticks, marshmallows, gumdrops, and straws. This project stems from our literacy unit of the Three

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Little Pigs. The students will have to create a 3D house to stand up against the big bad wolf. At the end of their project, I will take out my blow dryer and try to “huff and puff” their house over. The second project is based around our math unit of 3D shapes and the book “Not a Box” by Antoinette Portis. The students will be put into groups of 3 and they will be given a box. They will have to design and create something out of their box. They will present their completed project to the class.

Collaboration Interventions

The morning class will be given direct instruction on collaboration and how to use collaboration tools. A mini lesson will be given before the students will start their PBL lessons. The first collaboration tool will be presented around direct instruction, modeling, and role playing with collaboration. Kindergarten students need to be taught and molded how to collaborate in order to developmentally understand this concept. We will watch some short videos that demonstrate collaboration, so that students can discuss ways collaboration can happen. I will be able to model how collaborate with the students. Each student will have a chance to role play collaboration, by getting into groups and building different structures out of blocks. I will help guide the students in ways they can collaborate and how they can get involved if they do not know where to start. Students will be given sentence stems (See Appendix A) on ways to help collaborate with their peers and then they will be able to practice role playing with these sentence stems. There will be a poster created in the classroom so that students can refer back to it during their Three Little Pigs PBL project.

The second collaboration tool will be taught in week two of the research. This will also be done with a mini lesson before the PBL project. Students can refer back to their sentence stems poster to help build schema for this mini lesson. The students will pair up with their small

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group. They will create their own collaboration contract. A collaboration contract will allow students to be accountable in collaboration during their PBL project (See Appendix B). Several of the sentence stems from the chart will be listed on their contract. Both students will read, agree, and sign their contracts. These contracts will be placed at their workspace during the “Not a Box” PBL projects. The students will be able to refer back to them throughout their PBL project.

The afternoon class will not be taught these collaboration tools and mini lessons, but they will be doing the same PBL projects. This will allow me to compare and contrast the impacts of teaching collaboration tools in a Kindergarten classroom during PBL projects.

Data Collection and Analysis

I will be collecting data in three different ways. I will be taking field notes throughout each PBL project. In these field notes I will write down observations of how students collaborated. I will write down exact quotes from students as well as different events that take place during the PBL projects. This will document their strengths and weakness of collaboration within in PBL projects.

I will also be video recording each Kindergarten PBL project. Afterwards, I will go through each video recording and tally up how many time students argued and tattled during their projects. This will allow me to see if the collaboration tools actually affect students’ participation within group projects.

The last piece of data that I will be collecting will be a student self-reflection. After each PBL project, I will video record each student’s response so that I can analyze their reflection later. I will ask each student “How did you collaborate?” Afterwards, I will tally up on how many students could give an example of how they collaborated.

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With all of this data I hope to answer my research question. Does incorporating collaboration tools through project-based learning, increase students ability to collaborate in a Kindergarten classroom?

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SECTION FOUR

Results

The purpose of this study was to investigate the effectiveness incorporating collaboration tools within in project-based learning in a Kindergarten classroom. I developed an instructional inquiry project that was quasi-experimental between two of my Kindergarten classrooms. My findings discovered that students are naturally egocentric and need to be taught how to collaborate. This is a skill that is not always understood and applied in school and in life.

This section examines the effectiveness of using collaboration tools, as in intervention, to teach collaboration. My findings discovered the positive impact of educating Kindergarten students through direct instruction, modeling, and role playing as well as using different collaboration tools. The first collaboration tool was an anchor chart that gave various sentence stems and visuals to help guide students to collaborate during PBL projects (See Appendix A). The second tool was a collaboration contract that was signed by all of the students in the group. In this contract, some of the wording and phrasing came from the anchor chart that was used in the previous collaboration lessons (See Appendix B). The AM Kindergarten class was instructed in the collaboration lessons and taught how to use collaboration tools. It was very telling that they understood collaboration and applied it to their learning compared to the PM Kindergarten class.

During the first mini lesson prior to the PBL projects, the AM class had an opportunity to learn about collaboration. They watched some videos on how to collaborate and they were given opportunities to practice role playing collaboration and how to solve problems that could arise during a project. They discussed how they could listen and talk to one another when they did not agree. The anchor chart (See Appendix A) was used to guide students in their use of language

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during these role playing experiences. If group partners still could not agree, then they decided that they could play rock, paper, and scissors to make their final decisions. This was a strategy that the students came up with on their own during the different role playing experiences. Later, this type of problem solving emerged during their PBL projects. For example, Student A said during the “Three Little Pigs” PBL project “Hey lets play rock, paper, scissors, and whoever wins decides how to build this part of our house.” All of the student’s played and the winner chose the next steps in the project. The students did not argue about it and they all moved onto the next challenge in building their house.

During the “Not a Box” PBL project, the collaboration lesson the students learned was how to use collaboration contract. This contract was successful because the students would read and reference to it during their project. This helped students try to solve problems on their own before asking the teacher to intervene. For example in the AM Kindergarten class, Student A and Student B were fighting over the tape. Student C ran over with the contract and read from it. Student C said “Guys you needs share and be kind.” Throughout the rest of the lesson Student C kept on reading and intervening when problems came up. It appears that both collaboration tool lesson were effective because there was less tattling and arguing.

Data was collected between the AM and PM classes on how many times they tattled and argued during their PBL projects (See Appendix C). During the “Three Little Pigs” PBL project, the AM class had 3 occurrences, that were video recorded, of students tattling and arguing with their small group peers. In the PM class there were 14 occurrences, that were video recorded, of students tattling and arguing with their small group peers. The PM class tattled 82.4% more than the AM class (See Appendix F). The results were very similar during the “Not a Box” PBL project as well. The AM class had 6 occurrences of tattling and arguing with their small group

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peers compared to 22 occurrences in the PM class. The PM class tattled 78.6% more than the AM class (See Appendix F). This data appears to reflect the positive impact of teaching students how to collaborate with one another and the effectiveness of collaboration tools. Roshelle and Teasley (1995) describes collaboration as, “coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem” (p.70). This research and evidence is displayed between the two Kindergarten classrooms. The AM class had more students in attendance during the project compared to the PM class. However, regardless it was evident the the PM class struggled with collaborating with their peers and needed more intervening from the classroom teacher. The PM class struggled with communicating their ideas, thoughts, and working through their problems to come up with a new solution. Collaboration is a life skill that needs to be taught even as early as Kindergarten.

This section examines the impact on student learning through their personal reflections. It was very insightful to see how to student’s reflected at the end of each PBL project. Each student was video recorded, and they were asked the following question: How did you collaborate? They had to explain and show what they did to help collaborate within their projects. It was very insightful to see how the students used and understand the vocabulary term collaboration. Both Kindergarten classes knew that collaboration was working together as a team. This term had been explained to both groups in several previous PBL experiences. However, the direct teaching of collaboration and providing students with collaboration tools was a new concept to the Kindergartners. During the “Three Little Pigs” PBL project 85% of the AM students were able to articulate how they collaborated in the project while 15% did not explain. In the PM class, 41% of the students were able to articulate how they collaborated in the project while 59% did not explain. During the “Not a Box” PBL project, 99% of the AM

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students were able to articulate how they collaborated in the project while 1% did not explain. In the PM class, 44% of the students were able to articulate how they collaborated in the project while 56% did not explain (See Appendix D). These numbers illustrate both the growth and impact of collaboration through the inclusion of the collaboration tools. However, it did not necessarily show the growth and impact of the tools in the students change in behavior. Overall, you could see the growth and the impact of the collaboration tools and mini lessons that helped the AM students understand and apply their knowledge of collaboration. This was a truly evident during these self-reflections.

Overall, the results of the analysis of students' self-reflection responded by saying "we did this together" rather than this is what "I" did to help out with the project. During the "Three Little Pigs" PBL project 60% of the AM students responded on how they collaborated, by using the word "we" and 40% of the students responded by using the word "I". This was very different compared to the afternoon class. In the PM class 41% of the students responded how they collaborated, by using the word we and 59% of the students responded by using the word "I". In the "Not a Box" PBL project 56% of the AM students responded how they collaborated, by using the word "we" and 44% of the students responded by using the word "I". In the PM class 12% of the students responded how they collaborated, by using the word "we" and 88% of the students responded by using the word "I" (See Appendix E). Using "we" as a response was more common with the AM class. For example, during the "Not a Box" PBL project there was a group of AM students who shared how they collaborated through their self-reflection. There were three students in the group and each student responded by saying "we" and used other students' names while reflecting on their project. Collaboration is not always something that comes naturally to everyone, so it is important to introduce and instruct these skills starting as

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early as Kindergarten. Understanding collaboration is a life skill that is needed not only in school but in the real world. It is beneficial for students to practice and explore ways to collaborate in a school setting so that it can be applied to other areas in their lives.

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SECTION FIVE

Discussion

The aim of the study was to see if incorporating collaboration tools through project-based learning, increases students ability to collaborate in a Kindergarten classroom. The results appeared to show that it is beneficial to teach and use collaboration tools to Kindergarten students to help improve their ability to collaborate. The data showed that students who were taught to collaborate were able to strategize and problem solve easier than those who were not. For example, during the “Three Little Pigs” PBL project the PM class tattled 82.4% more than the AM class and during the “Not a Box” PBL project the PM class tattled 78.6% more than the AM class (See Appendix F). The students who were taught collaboration tools did not argue or tattle on their peers as much as those who were not taught how to collaborate. It was also very telling on how the students reflected on how they collaborated during their PBL projects. The students who learned about collaboration were able to articulate how and why they collaborated. These students responded more frequently by saying “we” instead of “I” when ask how they collaborated. For example, during the “Not a Box” PBL project there was a group of AM students who shared how they collaborated through their self-reflection. There were three students in the group and each student responded by saying “we” and used other students’ names while reflecting on their project. This type of response was more common in the AM class compared to those in the PM class. During the “Three Little Pigs” PBL project 60% of the AM students responded on how they collaborated, by using the word “we” and 40% of the students responded by using the word “I”. This was very different compared to the afternoon class. In the PM class 41% of the students responded how they collaborated, by using the word we and 59% of the students responded by using the word I. In the “Not a Box” PBL project 56% of the

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AM students responded how they collaborated, by using the word “we” and 44% of the students responded by using the word “I”. In the PM class 12% of the students responded how they collaborated, by using the word “we” and 88% of the students responded by using the word “I” (See Appendix E). They looked at their PBL project more as a team effort rather than individual work. Overall, this information shows that students at the Kindergarten age struggle with understanding collaboration, and it is not always about themselves, but rather how they contributed to one idea or project. It was very telling how students responses were different between the AM and the PM classes. The AM students used the word “we” more frequently than those students in the PM class. The afternoon class was lacking the knowledge and understanding of what collaboration is and how it can affect the outcomes of a project. These findings suggest the importance of teaching collaboration lessons with the use of collaboration tools. Brusic, S.A., & Shearer, K.L. (2014) stated “Students learn their alphabet before they can read, and this needs to be done with 21st century skills”(p. 9). Collaboration is a 21st century life skill that needs to be implemented and taught even as early as Kindergarten. This research appears to support the positive impacts of teaching collaboration so that it can transfer into the students’ lives outside the classroom as well as into their future.

Limitations and Implications for Practice and Future Research

Although this study appears to support the positive impact of teaching collaboration within PBL in and Kindergarten classroom, there were limitations with the data presented. Due to the amount of snow days, holidays, and other missed school days, there should have been an additional PBL project completed and observe. However, due to these time constraints there were only 2 PBL projects recorded, observed, and analyzed. The third data collection could of solidified my findings, and provided more concrete results. Also, there were more students out

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during the “Not a Box” PBL project compared to the “Three Little Pigs” PBL project. In some cases, the group sizes went from 3 students per group to 4 students per group. This raises some questions. Does the group size truly matter or are there more challenges as the group sizes get larger? Does the group sizes matter based upon the students age and grade?

For future research, I wonder if the results would be the same in a Kindergarten classroom where the students attend all day every day. This research was done in Kindergarten classes where students attended half-day. Also, research could be done to see if the results would be the same if the same PBL lessons took place over several days instead of one large chunk of time? Does time and providing students to work on a project over multiple days make a difference in the data? All of these questions could lead to future practice and research. This research appears to support the positive impacts of teaching collaboration so that it can transfer into the students’ lives outside the classroom as well as into their future.

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LIST OF REFERENCES

- Blumenfeld, P.C., Soloway, E., Marx, R.W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991) Motivating Project- Based Learning: Sustaining the Doing, Supporting the Learning. *Educational Psychologist*, 26(3/4), 369.
- Boss, S. (2012). The challenges of ASSESSING project-based LEARNING. *District Administration*, 48(9), 46-52
- Brown, D. R. (1999). Achievement on the rise at valeska hinton center. *Journal Star*, pp. A1, A21.
- Brusic, S.A.,& Shearer, K.L. (2014). The ABCs of 21st century skills. (cover story) . *Children's Technology & Engineering*, 18(4), 6-10
- Dewey, J. (2004). *Democracy and Education: An Introduction to the Philosophy of Education*., Mineola, NY: Dover Publications.
- Duke, N. K. (2014). How project-based approaches in literacy could go terribly wrong. *Reading Today*, 32(3), 28-29
- Duke, N. K. (2016). Project-based instruction. *American Educator*, fall, 4-12.
- Edwards, C. P., Gandini, L., & Forman, G. E. (1998). *The hundred languages of children: The Reggio Emilia approach--advanced reflections*.
- Gardner, A. F., & Jones, B. D. (2017). Examining the Reggio Emilia Approach: Keys to Understanding Why it Motivates Students. *Electronic Journal of Research in Education Psychology*, 14(40).
- Grant, M. M., & Branch, R. M. (2005). Project-Based Learning In a Middle School. *Journal of Research on Technology in Education*, 38(1), 65-98.
- Hallermann, S., Larmer, J., & Mergendoller, J. R., PhD. (2016). *PBL in the Elementary Grades: Step-by-step guidance, tools and tips for standards-focused*. Place of publication not identified: Buck Institute for Education.
- Halvorsen, A., Duke, N. K., Brugar, K. A., Block, M. K., Strachan, S. L., Berka, M. B., & Brown, J. M. (2012). Narrowing the Achievement Gap in Second-Grade Social Studies and Content Area Literacy: The Promise of a Project-Based Approach. *Theory & Research in Social Education*, 40(3), 198-229.
- Hertzog, N. B. (2007). Transporting pedagogy: Implementing the project approach in two first grade classrooms. *Journal of Advanced Academics*, 18(4), 530-564.

THE IMPORTANCE OF COLLABORATION WITHIN PROJECT-BASED LEARNING IN A KINDERGARTEN TEACHER CLASSROOM

- Katz, L. G., & Chard, S. C. (2000). *Engaging children's minds: a project approach*. Norwood, NJ: Ablex.
- Lindsay, G. (2015). Reflections in the Mirror of Reggio Emilia's Soul: John Dewey's Foundational Influence on Pedagogy in the Italian Educational Project. *Early Childhood Education Journal*, 43(6), 447-457.
- Lou, S. J., Liu, Y. H., Shih, R. C., Chuang, S. Y., & Tseng, K. H. (2011). Effectiveness of online STEM project-based learning for female senior high school students. *International Journal of Engineering Education*, 27(2), 399-410.
- National Education Association (2010). Preparing 21st Century Students for a Global Society: *An Educator's Guide to the "Four Cs"*. Retrieved from <http://www.nea.org/assets/docs/A-Guide-to-Four-Cs.pdf>
- Newman, F. M., Bryk, A. S., & Nagaoka, J. K. (2001). *Authentic intellectual work and standardized tests: Conflict or coexistence? Consortium on Chicago School Research*.
- Newman, F. M., King, M. B., & Carmichael, D. L. (2007). *Authentic instruction and assessment: Common standards for rigor and relevance in teaching academic subjects*. Des Moines, IA: Iowa Department of Education.
- Newman, F. M., Marks, H. M., & Camoran, A. (1996). Authentic pedagogy and student performance. *American Journal of Education*, 104, 280-312.
- Ohio Department of Education. (2017). *English Language Arts*. Columbus, OH
- Partnership for 21st Century Skills (2009, December). P21 framework definitions. Retrieved from <http://www.p21.org/documents/P21_Framework_Definitions.pdf>
- Plucker, J. A., Neag, R., Kennedy, C., & Dilley, A. (2015). What We Know About Collaboration. *The 4Cs Research Series*, 1-10.
- Preus, B. (2012). Authentic instruction for 21st century learning: Higher order thinking in an inclusive school. *American Secondary Education*, 40(3), 59-79.
- Roschelle, J., & Teasley, S. D. (1995). The Construction of Shared Knowledge in Collaborative Problem Solving. *Computer Supported Collaborative Learning*, 69-97.
- Saunders-Stewart, K. S., Gyles, P. D., & Shore, B. M. (2012). Student Outcomes in Inquiry Instruction. *Journal of Academics*. 23(1), 5-31.
- Soulé, H., & Warrick, T. (2015). Defining 21st century readiness for all students: What we know and how to get there. *Psychology of Aesthetics, Creativity, and the Arts*, 9(2), 178-186

THE IMPORTANCE OF COLLABORATION WITHIN PROJECT-BASED LEARNING IN A KINDERGARTEN TEACHER CLASSROOM

Stefanou, C., Stolk, J. D., Prince, M., Chen, J. C., & Lord, S. M. (2013). Self-regulation and autonomy in problem- and project-based learning environments. *Active Learning in Higher Education, 14*(2), 109-122.

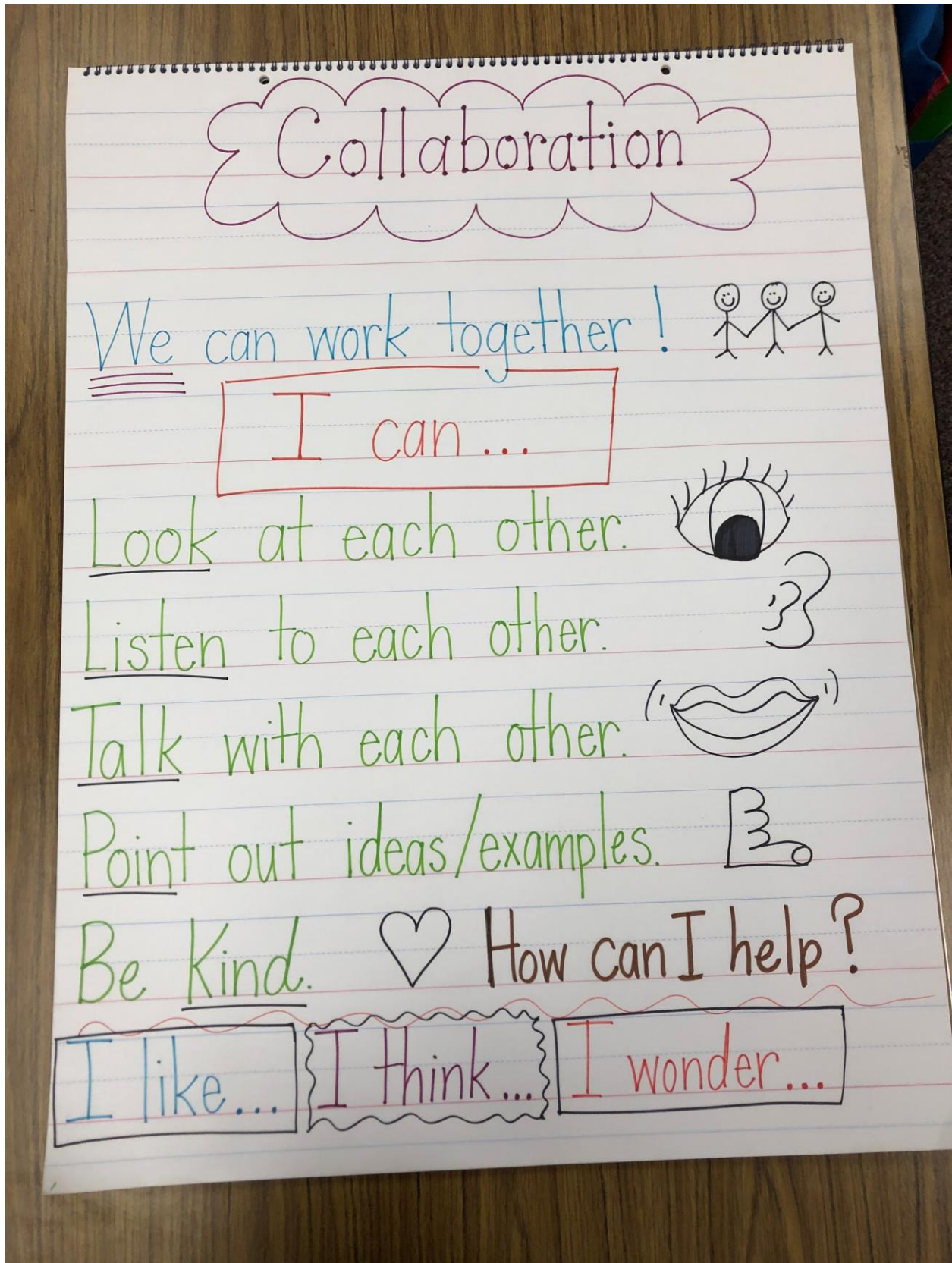
Taylor, M., Schreier, H., & Jr, P. G. (2008). *Pragmatism, education, and children: International philosophical perspectives*. Amsterdam: Rodopi.

Wenglinsky. H. (2004). Facts or critical thinking skills: What NAEP results say. *Educational Leadership*, p. 32-35

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APPENDIX A

Collaboration Tool: Sentence Stems Anchor Chart



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APPENDIX B

Collaboration Tool: Collaboration Contract

Collaboration Contract

We can work together.

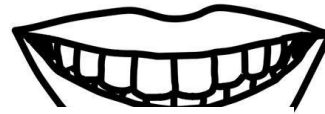


We can look at each other.



We can listen to each other.

We can talk with each other.



We can point out ideas and examples.



We can be kind.



We can share.



Your Name:

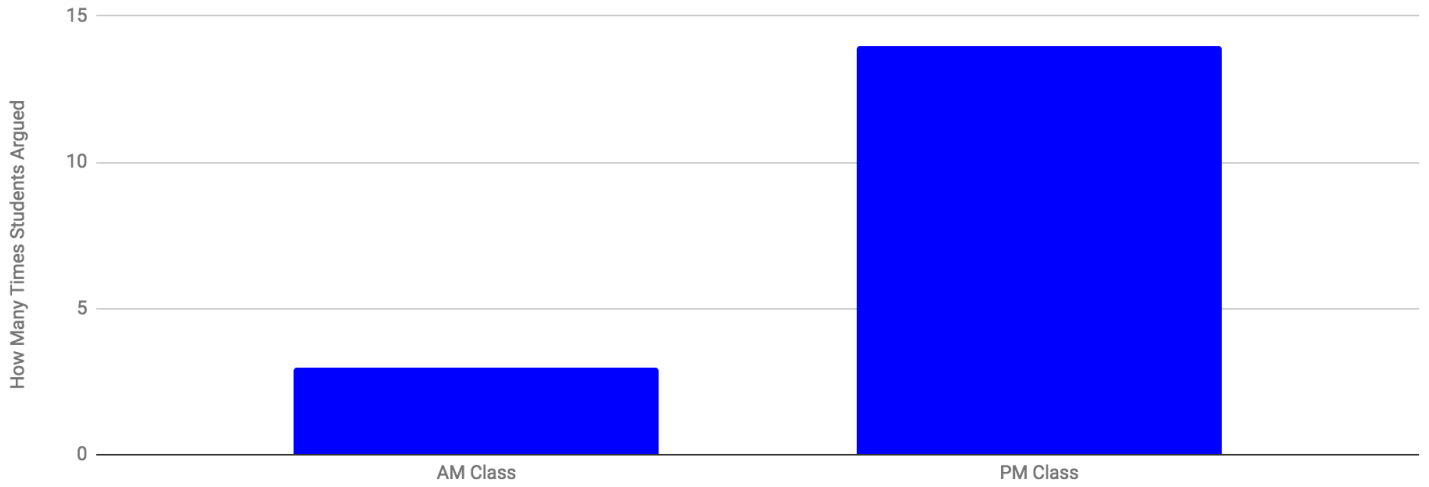
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APPENDIX C

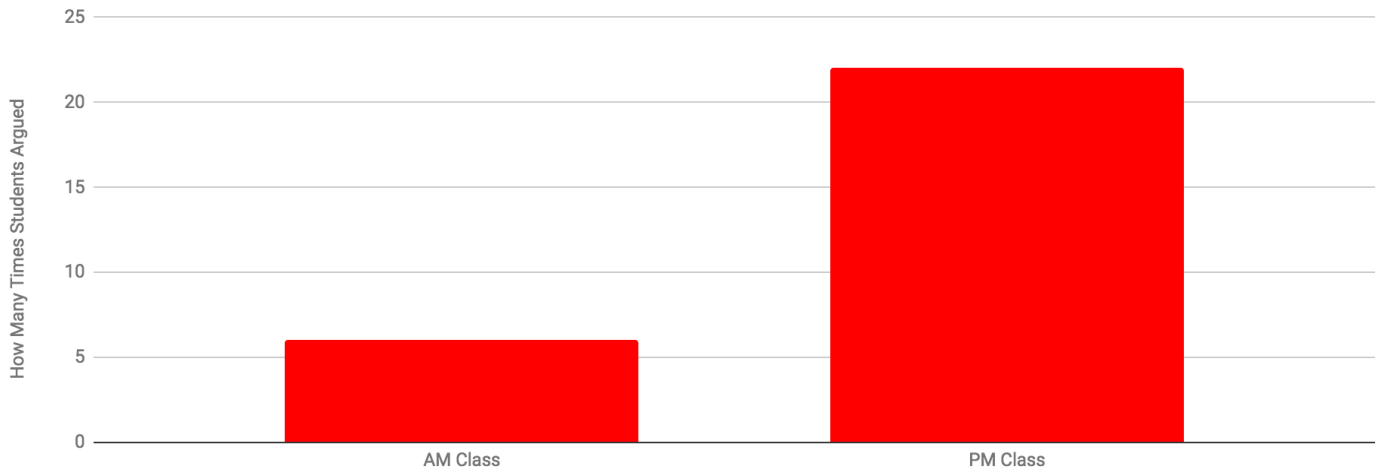
Tattling and Argument Bar Graph Data

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The Three Little Pigs PBL Project: Tattling and Arguing



Not a Box PBL Project: Tattling and Arguing



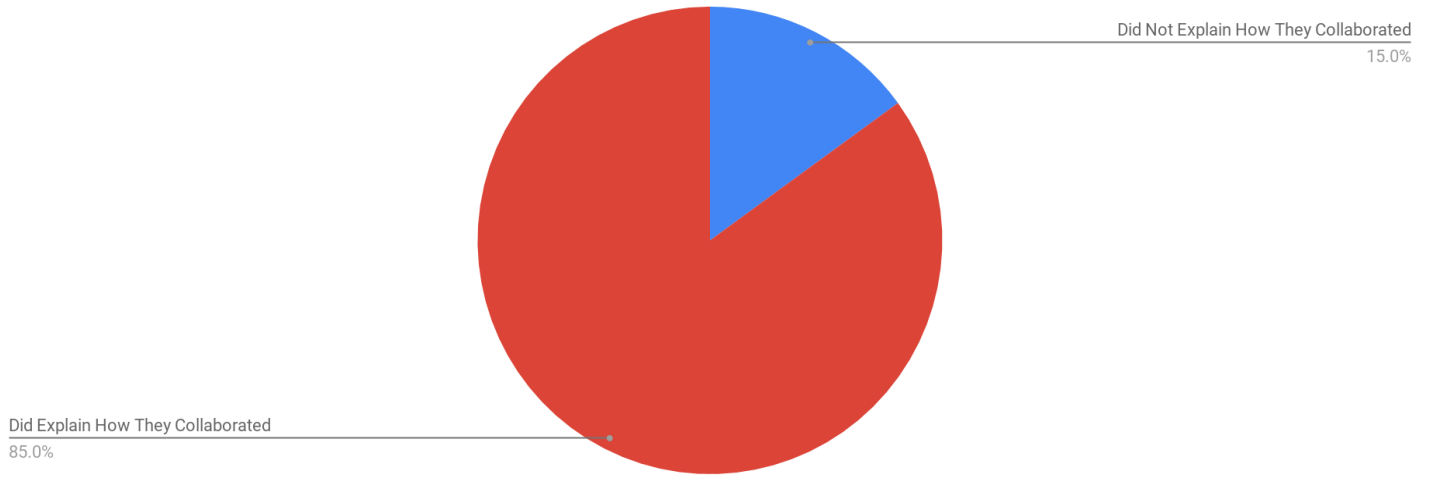
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APPENDIX D

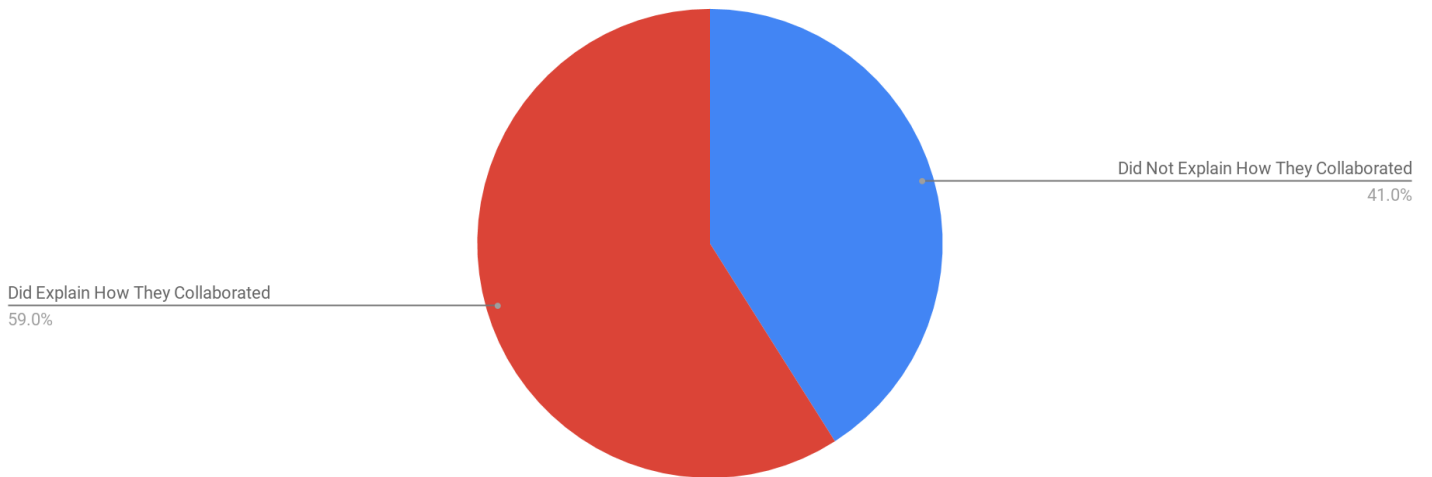
Student Self Reflection on Collaboration Data

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The Three Little Pigs PBL Project: AM Student Reflection on Collaboration

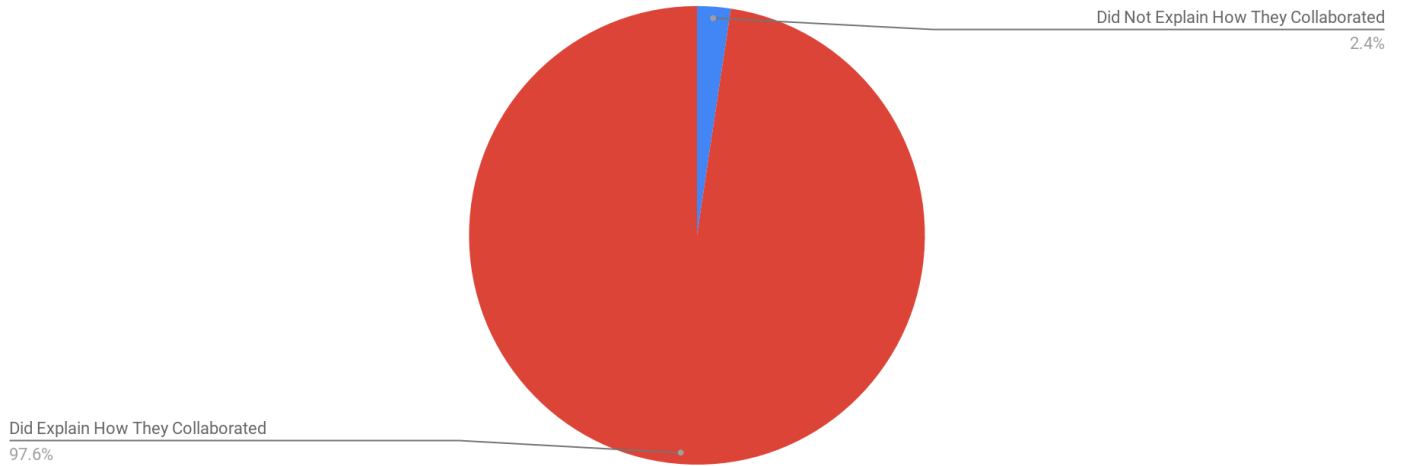


The Three Little Pigs PBL Project: PM Student Reflection on Collaboration

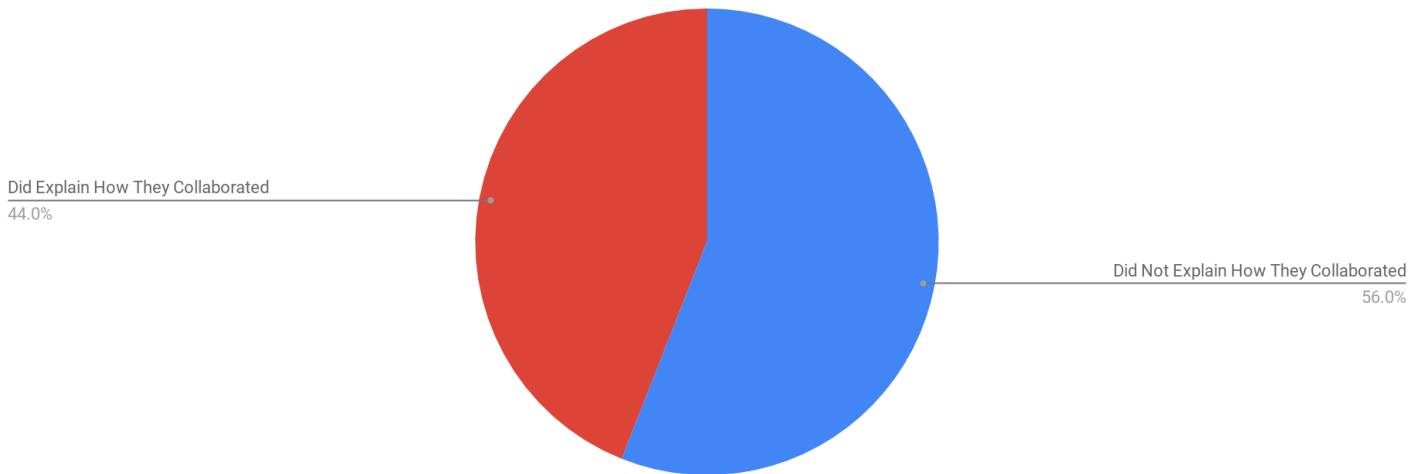


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Not a Box PBL Project: AM Student Reflection on Collaboration



Not a Box PBL Project: PM Student Reflection on Collaboration



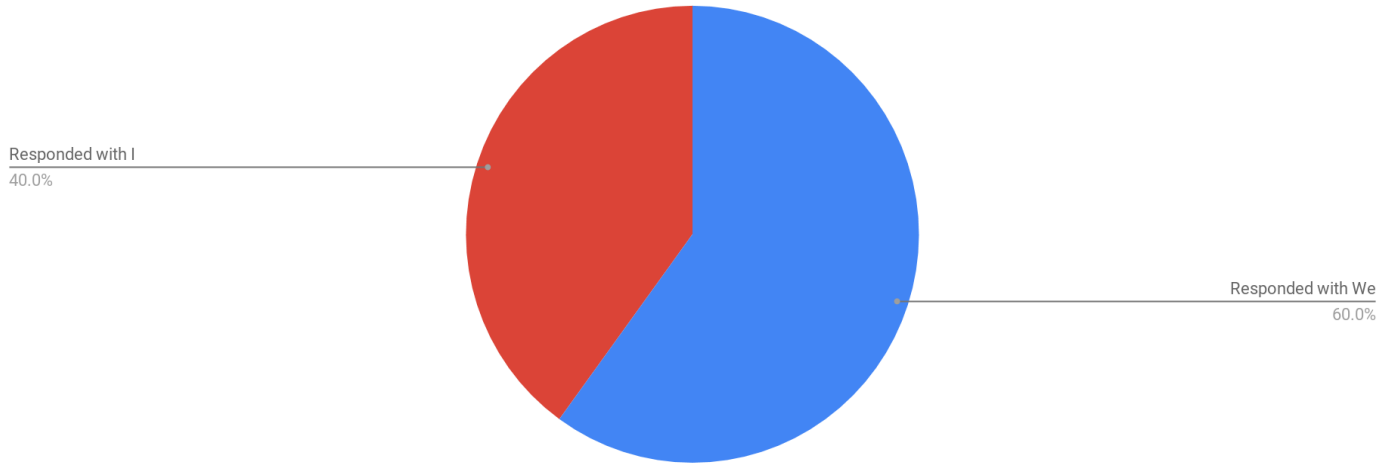
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APPENDIX E

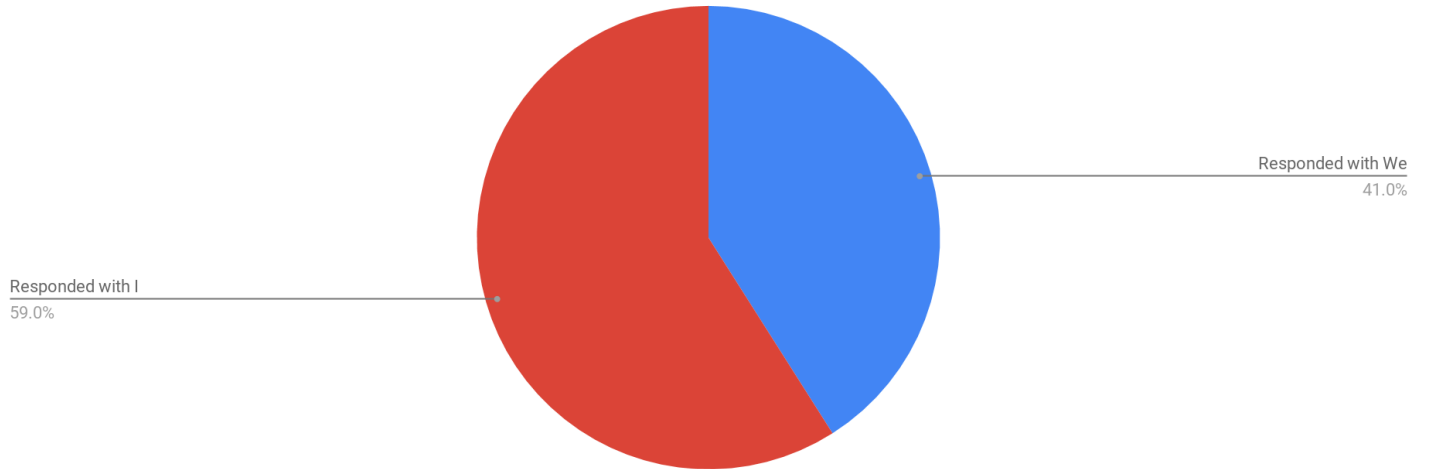
Student Reflection: Student Vocabulary Responses Data

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The Three Little Pigs PBL Project: AM Student Vocabulary Responses

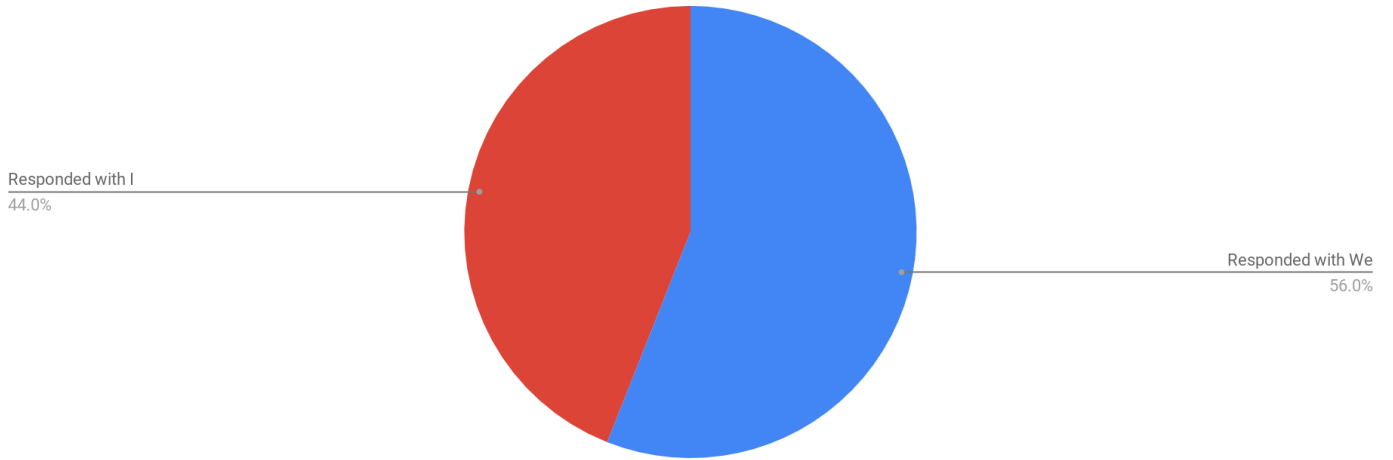


The Three Little Pigs PBL Project: PM Student Vocabulary Responses

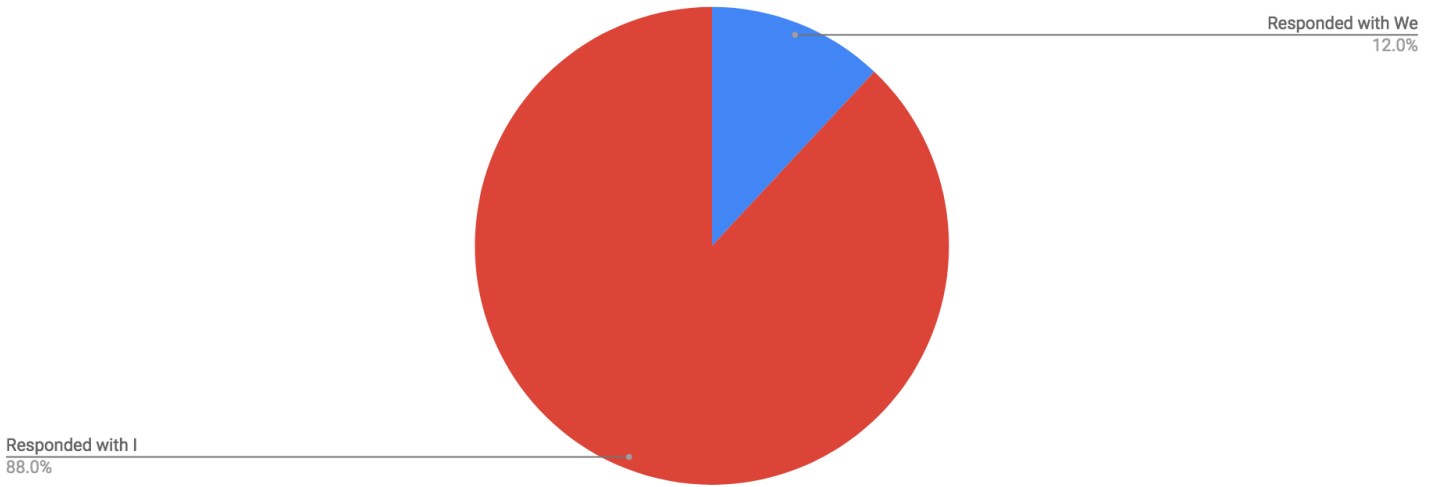


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Not a Box PBL Project: AM Student Vocabulary Responses



Not A Box PBL Project: PM Student Vocabulary Responses



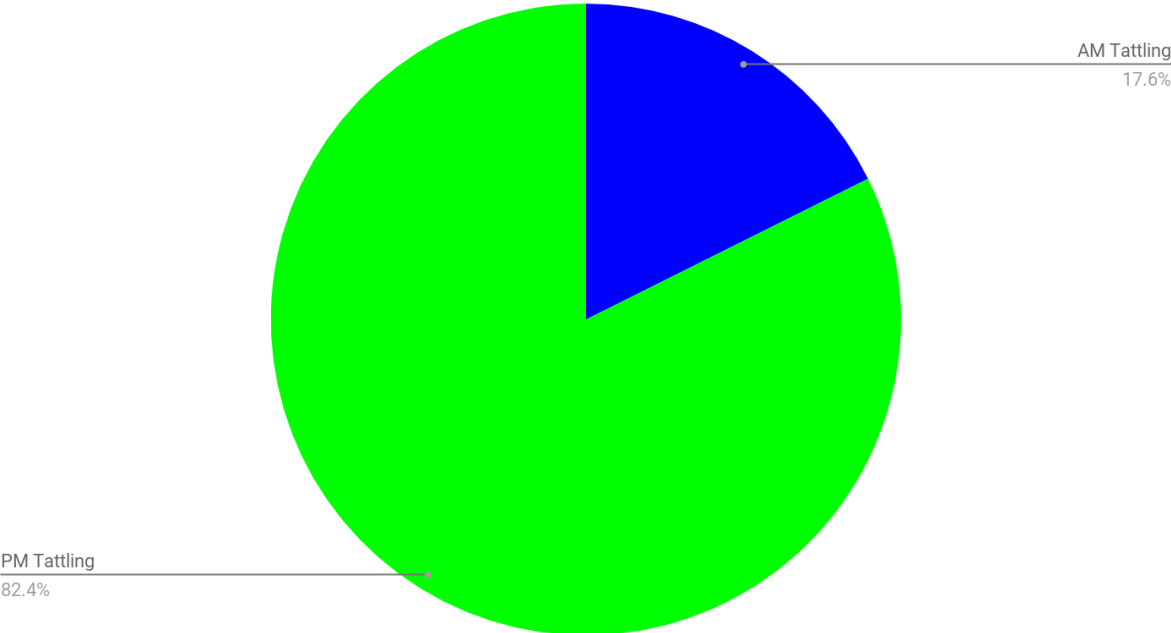
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APPENDIX F

Tattling and Arguing Pie Chart Data

THE IMPORTANCE OF COLLABORATION WITHIN PROJECT-BASED LEARNING IN A KINDERGARTEN TEACHER CLASSROOM

Three Little Pigs PBL Project: Tattling



Not a Box PBL Project: Tattling

