Beyond Academics: Using Project-Based Learning to Foster an Environment of Critical

Thinking, Change and Advocacy in an Early Childhood Context

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Statement of Research Problem/Question

Students today are often disengaged. Teaching to the test can be tempting for teachers pressed for time, but is this the most effective, authentic, and meaningful way for students to learn? There are alternative methods teachers can use to deepen the learning experience for students, and this research focuses on one of those ways. I propose that by using environmentally-based projects, teachers can facilitate higher level critical thinking skills, more meaningful understanding of learning concepts through hands-on activities, and create a supportive classroom environment by encouraging collaboration. By integrating the content, students learn in the context of their environment.

In addition, I am interested in learning how a project-based approach can engage all learners. Traditional teaching methods often serve only a small segment of students, while PBL allows all students to be engaged regardless of their learning level. Thus, there is a differentiation component to teaching using PBLs. In addition, teaching with projects allows more flexibility and choice. This is an advantage to working with students at all levels and to create independent learners, which works towards the specific needs of the school. Broadus Wood embraces the Responsive Classroom Approach, which encourages student choice and self-regulation. Through PBL, students can work at their own pace. Through this student teaching placement, I will have the opportunity to implement an environmental project. The questions I seek to address through this project are as follows:

- How can we use project-based learning to create environmental stewardship?

- How do collaborative efforts involved in project-based learning create better peer relationships?

- How do projects create a more cohesive, supportive, and reflective classroom community?

- How can students make changes within their communities?

- How does project-based learning allow for differentiation? And student choice?

Review of the Literature

Project-based learning has been an area of interest and study for both practitioners and researchers alike for many years. Thus, there is a wide availability of research on the subject but further study is needed in the area of non-academic advantages, such as creating a collaborative environment, and encouraging individuality, allowing children to explore their own interests and act as advocates for issues in the community and beyond. When combined with service learning, PBL can promote civic engagement in young children and guide them to become agents of change both within and outside of the school setting. The sources in this literature review are organized as follows: designing purposeful projects, service learning, and collaboration. These topics are subdivided further to provide a detailed outline of research of both PBL and service learning.

PBL can both align with standards and provide relief from the regimented learning standards in our schools. Since content is easily built into projects, why not make learning more authentic and meaningful for children by building service-learning projects into the curriculum? This literature review takes a look at the various advantages of marrying

together PBL and service learning in an early childhood context. In addition to providing guidelines for teachers, the sources take a look at the benefits of projects for students. The goal of this study is to implement a project-based approach in a third-grade classroom in order to increase student engagement, build critical thinking skills, meet content standards and ultimately, to provide an opportunity for students to make changes within their community and beyond.

Designing Purposeful Projects

I) Meeting the Standards

It is absolutely possible to embark on service-oriented projects while meeting standards. For example, students practice communication skills when interviewing others throughout the project, and practice oral presentation skills when sharing their project. These skills will serve them well in the future. In addition, standards related to math, economics, science, social studies and literacy can be built into projects with intentional planning. Farber (2011) suggests choosing 6-10 standards that the project will address (p. 22). Moreover, project-based learning often reflects the style of work students will do in the workplace, so it is a way to prepare students for their future careers (Warren, 2016; Katz, Chard & Kogan, 2014; Zemelman, 2016).

According to Bell (2010), project-based learning allows students to flourish as independent learners in a real-world context. The problem-solving students do through PBL sets them up as important future contributors to the 'global economy' (p. 39). In addition to this, students become more self-reliant through PBL, learn how to organize, set

goals, and reflect on their progress (p. 40). These are essential skills for a 21ˢᵗ century workplace.

II) Role of teacher, role of student

The idea of teachers as facilitators is not new: Dewey (1897) said that "The teacher is not in the school to impose certain ideas or to form certain habits in the child, but is there as a member of the community to select the influences which shall affect the child and to assist him in properly responding to those influences" (p.9). According to Helm (2015), teachers play a vital role in guiding students by helping them stay organized, providing materials, and access to experts. In addition, teachers need to observe carefully, listen to the concerns of students, and provide support when needed (p. 35). Katz, Chard & Kogan (2014) suggest that teachers can also remind students about pieces they may have forgotten, push their thinking by asking questions, and strengthening their dispositions as independent learners (p. 37).

Through PBL, teachers act as guides, while the students themselves become the primary directors of their own learning. This means that students take on more responsibility, and have more choices, which leads to higher levels of engagement, and more meaningful, authentic learning. Warren (2016) describes the teacher/student dynamic as a shift of power relations where "Teachers are encouraged to facilitate learning, while students are encouraged to take more ownership of their learning. Instead of teachers dispensing all the knowledge, students play an active role in studying, researching, and presenting content" (p. 14). Thus, project-based learning is a collaborative effort that

shifts the dynamics of the classroom. While this can initially be a source of discomfort for the teacher, over time teachers can learn new strategies and tools that will help them implement this style of teaching more effectively.

III) Project steps –

The phases of a project start with choosing a topic, planning the project, carrying out the project, reflecting and the culmination or sharing of the project. When selecting a topic that is appropriate for students, it is often helpful to do some research about needs in the community, or to respond to a local emergency or other concern. These issues can be found through the media: local newspapers, news channels, word of mouth, and even social networking sites can be great resources when deciding on a timely topic (Roberts, 2002; Zemelman, 2016; Wade, 2007). Wade (2007) proposes that students and teachers work together to select a topic. Teachers can guide students by brainstorming possibilities or choosing a category, and then having students choose an issue within that category, or having students ask their families for ideas. Also included in this bulletin is a list of suggested topics, such as: hunger/malnutrition, homelessness, graffiti, literacy, poverty, etc (p. 23). Of course, this issue should be relevant to the community where the school is located to ensure that both parties benefit.

In addition to addressing community needs, choice is important when engaging in service learning projects with students: teachers can provide some ideas, but ultimately it is up to the students to decide what topic they would like to delve into for their work. Teachers should know their students well before beginning a project. Katz, Chard & Kogan

(2014) highlight the importance of building off the interests of students in selecting an issue.

Teachers have the final say in whether or not a topic is appropriate for students. It should provide for an enriched learning experience and be within a realistic context. Roberts (2002) suggests asking students what issue they are working to address first and foremost to determine whether the project is a good match for the age and learning level of students. Then, teachers can move on to questions that require deeper critical thinking, such as 'what ways can we help this problem?' (p. 21). Projects should also be developmentally appropriate for the students (Katz, Chard & Kogan 2014; Roberts, 2002; Diffily & Sassman 2002).

To become more acquainted with the issue, several sources suggest that students do their own research by interviewing community members, writing letters, making phone calls, searching the web, and inviting guest speakers to learn more about the issue. Zemelman (2016) uses an ecological model to show the various levels at which problems become apparent: family, neighborhood, and society in general (p. 55). It is important for students to have a realistic perspective about the issues they are addressing: for example, while some students may initially think that homelessness is a self-inflicted problem, they may find upon further investigation that there are more contributing factors such as familial dysfunction, untreated mental health issues, and housing costs.

One way to get students thinking about a particular topic is to ask questions. For example, Aaron Sebens (2016), after studying a unit on energy asked his fourth grade

students "would you be interested in finding out if we could create a solar-powered classroom?" Recognizing a need to use more sustainable, alternative forms of energy in school, the students enthusiastically agree to the challenge (p.6).

Once a topic is selected, teachers must keep students engaged in the subject. Boss (2015) refers to this as 'hooking your students' – drawing attention to an issue or subject and keeping students interested throughout the duration of the project. Boss suggests building connections with real-world experiences for students, such as a field trip, showing a video clip, sharing real data related to the issue, or inviting a guest speaker to the classroom (p. 25).

Students engage in reflective practice throughout the project, but it is necessary to establish a structure for how and when this will take place following a project. Students need to know how they could have improved their work so they can do better next time, and this reflects the constructive criticism students will often receive in the workplace. Likewise, teachers continuously engage in reflective practice to improve their teaching strategies. This does not change with project-based learning: teachers need to be good role models by demonstrating the need to refine practices that aren't quite working, and by striving to be an active, engaged learner (Boss 2015, p. 42).

The culmination of the project involves sharing out of the work: students will share their project with the community at a culminating event. Many sources agree that the culmination is the most important aspect. Kraus and Boss (2013) refer to this as "spiraling out", where the project becomes something bigger, is publicized, and becomes connected

with a larger network of support (p. 146). When the project ends, teachers can ask students

what else they would like to do to help. Roberts (2002) suggests having a presentation

ceremony, where community members, family members, and more are invited to hear

about the experiences of students (p. 73). Katz, Chard & Kogan (2014) suggest

documenting the work of students in the form of an exhibition, where family members and

school administrators can view the work of students (p. 203). Farber (2011) suggests

sharing the work with the media to generate greater exposure to the project (p. 38).

Service Learning

Service learning is both a way of teaching and a philosophy of teaching. There are

multiple benefits to this style of teaching, including fostering civic engagement, more

engagement due to the academic content being built into a real-world context, build

problem-solving skills by addressing issues in the community, building lasting connections

between the school and community, and helping to create more supportive peer

relationships whilst building an atmosphere of democracy within the classroom (Lake &

Jones, 2012; Roberts, 2002). Farber (2011) views service learning not as community

service (which is usually a single act rather than an ongoing effort), but as a way to

empower students to impact their communities (p. 5).

Lake & Jones (2012) provide a definition:

Service learning combines service objectives with learning objectives with the intent

that the activity changes both the recipient and the provider of the service. This is

accomplished by combining service tasks with structured opportunities that link the

task to self-reflection, self-discover, and the acquisition and comprehension of values, skills, and knowledge content (p. 6).

Zemelman (2015) highlights the need to provide a space for students to actually *be* active citizens by providing service-learning projects for students rather than just talking about the need for students to engage as citizens in their futures (p. 6). By working to make changes, students learn many important skills that will serve them well in academics and in their careers. Learning is socially contextualized; therefore our teaching should reflect that reality (Lake & Jones, 2012). Wade (2007) believes that the definition of citizenship needs to be revitalized: many people think that voting is enough to merit good citizenship. However, being a good citizen involves caring for the wellbeing of all people in the community, and paying attention to environmental, political, and social issues (p. 13). Students should be directly involved in their communities as they are more likely to then carry this into their adult lives, as they will see that active citizenship is a lifelong affair. In early childhood classrooms, service learning can be combined with a project-based approach to help students' address a community need.

Aguas (2013) used a social studies unit on César Chávez as a basis for a service-learning project with her second-grade class. Students first delved into the historical and social context behind this topic, and explored the life of this Mexican-American farmer and activist. Then, students worked on addressing a community need in honor of Chávez where they cleaned up around the school, utilizing the help of parents and other volunteers. Aguas (2013) believes that learning can be extended through service:

The projects also include time for students to reflect on their learning and experiences of service. Service learning gives students autonomy in selecting what service to perform, and to take action that addresses an authentic need in their community in a cooperative manner (p. 6).

Thus, when approached with intention teachers can begin with a learning unit and then transition into a project that connects to the content. In this particular example, Aguas (2013) uses an important historical figure to inspire students to make a difference. There are many other ways that teachers can use learning units, concepts, or narratives to lead into service projects.

McMahon and Whitlock and Fox (2014) provide a sample project where fifth grade students engage in a service learning project following an inspiring narrative. As a class, they read the book *One Hen: How One Small Loan Made a Big Difference* about a young boy in rural Ghana who acts as an entrepreneur working to benefit his community. Students sold products such as friendship bracelets and stressballs with a $10 loan to raise money for underserved children in the community. Students then created advertisements to raise awareness about homelessness. At a culminating event, students spoke to an audience including school staff and students, family members, and others from the community about their work.

McMahon Whitlock and Fox (2014) suggest that students can learn the importance of civic action through service projects – according to one student "Even if you're small you can make one change…That *One Hen* book inspired me to start to make a difference. Look, I

didn't know I was an entrepreneur. I can make the smallest thing and still get money to help" (p. 28). This student articulates and understands the importance of making connections with the community to give back.

Collaboration

I) Building a Classroom Community

Both project-based learning and service learning are collaborative in nature. Often students are not accustomed to this style of learning, so it takes some planning on the part of the teacher to create a cohesive classroom community. Children need practice working in teams; in addition they need to be taught skills of collaboration. According to Zemelman (2016), teachers using a project-based approach should work towards developing students' mastery of the following skills:

- Listening – quiet voices when others are talking, turn taking

- Behaviors – on task, contributing to group effort

- Support – encouraging peers, increasing participation

- Responding – asking questions, checking for understanding (pp.98).

In addition to explicitly teaching collaborative skills, there are many community building activities and practices that teachers can build into their daily routine to create a more positive classroom environment. One suggestion Zemelman (2016) offers is the idea of "peace circles", where students sit in a circle and pass around a talking piece. A circle keeper, usually a teacher or a counselor, acts as a mediator. This teaches students how to listen to others, have respect for their peers, and builds a climate of mutual support

(p.133). During this time, students can discuss issues with bullying, exclusion from work groups during projects, lack of support from peers, and other specific actions or tensions that are bothersome to students. Other practices are conversation partners, quick writes, and an argumentative game known as four corners (p.100).

Diffily & Sassman (2002) also suggest scaffolding the process of working together in preparation for project work with very young children. Diffily and Sassman suggest using partner reading, learning centers and class meetings to allow opportunities for children to experience work in groups. During these times, collaborative skills can be taught. In addition, this is a good time for teachers to observe disruptive behaviors that may need intervention before beginning project work (p. 62).

II) Connecting with the Community

Naturally, the audience for project work is greater than that of the classroom teacher, which means that students have the opportunity to build connections with others in the community through their project work (Boss, 2015). The benefit is bi-directional when students engage in service-oriented projects: they impact their community by addressing a need or solving an issue, and their community benefits them by helping them learn and become active citizens.

On a practical level, students will have regular contact with those in the community through letters and in-person conversations, which will be modeled for students. In addition, teachers will need to have reached out to some community agencies beforehand to inform them about the intent (Thomson, 2006, p. 44). In addition to working outside of

the school on projects, such as visiting a homeless shelter on a field trip, experts can be brought into the school which helps strengthen ties with the community. This takes some planning. Zemelman (2016) suggests that both the visitor and the teacher fill out pre-visit forms, so that the expectations for the visit are clear and the learning objectives are met (p. 163).

In conclusion, the themes in the literature I have gathered are as follows: projects can connect learners with their interests, environments, and other learning communities than their own schools. They can contribute to areas of need in the community, while learning standards-aligned content in the process. Gradually over time, teachers must build up to collaborative behaviors that will make project work successful. Through these sources, I have concluded that a project-based service learning model will work well in a third-grade classroom and implementation of this for student teaching will provide an opportunity for further analysis and study in this area.

Ultimately, this style of learning allows children themselves to be the primary directors of their own learning. This will allow children to go forth into various professional and vocational fields with important 21st century skills such as collaboration, critical thinking, and problem solving. Most importantly, through PBL children will see that they are actors within their own education and within the world itself. Service-learning projects allows students to be learners, activists, and community organizers.

Rationale

As a student teacher, I intend to begin my teaching career within a month following my placement. With various practicum placements, a creative summer camp for children, and educational coursework geared towards all subject areas behind me, this student teaching placement was a pivotal step in my journey towards becoming a teacher. During this time, I had an opportunity to put into practice the teaching strategies my research focused on. While I had some initial concerns about my ability to implement a service learning project in a short amount of time, I was able to work with students to call attention to the issue of trash within the classroom and take steps to reduce it.

Through my teacher-research, I explored how students can be actively engaged in their communities through a project-based service learning model. Through this style of learning, students collaborated with their peers in addition to making a difference in their school community. This project created better relationships with students, increased their communication with others in the school community, created a more productive and meaningful learning structure, and created a sense of active engagement in students. In addition, I hope that by sharing this research with the general public, that other teachers will benefit as they will see how student learning can become deeper and more authentic when we give children the chance to embark on service-learning projects within their school communities.

I have been influenced greatly by the progressive movement in education. The idea that students should be the primary agents of their learning, working together to create knowledge, has a historical foundation. Many educational theorists have researched widely in this area, yet it is still not fully embraced by many schools given the focus on

standardization, numbers, and testing. While project-based learning is often seen as a result of the need for 21st century skills, the idea that students learn by doing dates back to John Dewey. Dewey (1976) believed that learning should be socially contextualized. He said, "whenever we have in mind the discussion of a new movement in education, it is especially necessary to take the broader, or social, view" (p. 5). Thus, teachers should work to improve society by reforming their practices within the classroom, which in turn benefits society as a whole. I believe Dewey's ideas still have merit in a present-day context. Learning is socially contextualized, and when we open up opportunities for students to work together we create spaces where they can learn from one another, solve problems, and build social-communication skills.

This project is important to me because from an early age in school, service was always emphasized. As a primary school student, I was a part of the Green Schools Ireland movement, where schools focus on creating environmental awareness within the school and local community. Students become responsible for maintaining the school environment, and are given opportunities to distribute knowledge about reducing, reusing, and recycling. I remember handing out brochures, and speaking to local people about how easy it is to create a compost, and sort recycling out from the landfill trash as an eight-year old.

In addition, when a family friend went on a service trip to Malawi, I knew I had to help. My sister and I made friendship bracelets with simple strings and beads, and got permission to sell them during lunch at our school. The money we made through this effort supported the building of two wells, which would provide a source of safe drinking water

in a small village in Malawi. During my spring break in high school, I went to Sierra Leone and worked with a nonprofit to support community-building by visiting families of children with disabilities, problem-solving with caregivers working in dilapidated orphanages, and facilitating community learning, such as sewing classes. These early experiences inform and influence my practice to an extent that helped me make connections with the service-learning project that students embarked on for this inquiry project. I have a passion for service, teaching, and community-building, and I utilized this in my self-study research project.

Method

The method I chose to guide my research project was collective self-study. According to Samaras (2011), this involves multiple sources of data collection: interviews, questionnaires, analysis of discussions, meeting notes and critical friend inquiries (p.108). The participants of my research were the students, my cooperating teacher, other teachers in the school community, such as the gifted resource teacher and the librarian, the principal, janitorial staff, and the food service manager. My cooperating teacher worked closely with me, asking students probing questions about their trash accumulation in the classroom. The janitorial staff gave me initial information about the trash process in the school and helped me collect trash for our classroom for two days by agreeing not to pick it up at the end of each day. The librarian helped me gather books for students about environmental issues such as compositing, recycling, and the history of trash. The gifted resource teacher, who completed the training for Project Learning Tree, suggested I use

some activities from that guide. In addition, she helped facilitate small projects with students during "genius hour".

To ensure that my research was supported well, I used a variety of methods to gather qualitative data about the effectiveness of project-based learning to create active engagement. To paint a complete picture of my research in an Early Childhood classroom, the three primary sources of data compiled here are interviews, documents and observations. To analyze my data, I used myself as the primary source and worked closely with my program advisor and my two critical friends (Samaras, 2011, p. 164). We communicated via group text at least once biweekly. I gathered data before, during, and after my student teaching placement, as Samaras (2011) suggests to show the progression of student learning throughout the semester (p. 167). Additionally, I returned to the school once my student teaching placement ended to gather additional pieces of data and to fill in gaps as needed.

I selected a small sample of four students to interview at the beginning of my research. I chose these students based on varied learning levels, and different socio-familial backgrounds to get a complete picture of the diversity of experiences within the classroom. I made my final selections based on my cooperating teacher's suggestions. These interviews were fairly informal, and were structured to gather data about learning interests and styles, the goal being to select a project mode and topic. Students also answered a set of stimulus response questions after the project ended, which provided some insight into growth from the beginning of the project until the end.

To supplement the more structured interviews, I also asked students questions at various other times, such as at lunch, at recess, and as they worked. I observed students as they worked together on the project, and took notes during whole-group discussion to take note of student learning, and to develop strategies of how I could be a better facilitator of projects in future contexts. I also took frequent ethnographic field notes in an observational field journal, which I typed up in a word document and analyzed later upon careful reflection.

To organize this data, I kept an electronic "student teaching project implementation" folder of my data which I backed up onto a flashdrive to ensure the work did not get lost. At the end of each week during student teaching, I typed my handwritten notes into a document. I also recorded the interviews on my phone and transcribed these later into a word document, which were added to the electronic folder.

In addition to the interviews and informal observations, I asked all students to complete an "emoji questionnaire" at the beginning of the placement. According to Samaras (2011), this baseline data is important when conducting research because it can often direct the research in a new way, or it can open up opportunities for gathering additional data (p. 162). The questionnaire I developed had ranges, or extremities, where students placed where their opinions fall at the beginning or at the end of the scale according to the emojis, which provided a visual representation of the questions. In addition, there was one question where students selected from possible project topics, or community issues. This helped me gather data about what students are interested in, and I found that many students were interested in a service project involving the environment. We chose to

engage in project-based learning to help reduce trash in the classroom as a result of gathering, measuring, and quantifying trash for two days. I gave this same questionnaire, with a few tweaks, to all students once again at the end of the placement to see how their attitudes towards collaborative service learning changed.

On the first day of my placement, August 28, I spoke with my coordinating teacher to inform her of my intentions for implementing the project, and discuss possible issues we would need to address. This began the dialogue about the project work, and provided some ideas about how I could use, and slightly adjust the teacher's previous teaching style to engage in project work with the students. In discussing this with my cooperating teacher, I found that project-based learning is a fully embraced by the school and that the gifted teacher has a program known as "genius hour" where she implements small projects, or challenges, with students. I spoke with the gifted teacher about my project, and she recommended using projects from the Project Learning Tree activity guide. I used a gathering trash activity from the book to begin the project, which sparked the interest of students as they became aware of how much trash their classroom was generating on a regular basis. In addition, she implemented smaller challenges with students, such as collecting acorns for the Virginia Department of Forestry.

To ensure that there was proper permission for the project, I first checked with administration to make sure that this type of project was supported by the school community. I spoke with the principal, who had some concern about the terminology "students will give back to their communities" in the letter. She felt that this made it sound like I was forcing students to meet a need within the community. I omitted this, however, it

did affect the direction of my project work. We focused instead on making a difference within the school community to meet the expectations of the administration.

In addition, I wrote a letter to parents introducing myself and explaining the work that I was doing with students. Attached to the letter was a consent form for parents to sign, by which they consented that their children will both work with people outside the school to address a community need, and that they will be subjects of a teacher-research study. At back to school night, I handed these out to the parents that attended and spoke about the type of work I would be doing. For the parents who did not attend, I sent the forms home with the students the following day. By the end of the week, 20 out of 22 parents signed the forms, which means I did not include data for the two students whose parents did not sign. 14 parents asked to be sent a project summary upon completion of the inquiry project.

Ethics/Validity

In order to ensure that I follow ethical procedures throughout the project, I prepared a consent form which caregivers signed, agreeing for their child to be a subject of educational research. In addition, I sent a letter to parents explaining the nature of the project. This created a level of trust necessary for me to begin my research. In addition, I updated parents by sending them a blog-style newsletter featuring student work and a discussion of what students did via AdobeSparks webpages. This ensured that there was transparency in the research process, in addition to creating knowledge about needs in the community.

The data that I collected was kept private, and while we may discuss general responses to data collection tools such as the questionnaire, students did not see their peers' specific responses. This reduced pressure on students and help maintain confidentiality. One exception that work was shared with parents for informational purposes.

Analyzing Data

I analyzed my data throughout the research process in short increments. Through simple reflection, I was able to analyze my data and make connections to other theories, ideas, and previous experiences. Samaras (2011) suggests using metaphors and analogies to make sense of data (p. 199). As I do have experience with service-learning, I expected to make meaningful connections with the project work that students engage in. Although the scope of the project was different than I expected, I still found there was a connection between my previous experiences as a student and the environmental project work that students engaged in. This process of continuously making mental connections helped grow our project.

I also used coding as a tool for data analysis. This helped organize the data, and provided a meaningful pattern to the project. In addition, it was helpful to see what areas are lacking and could be expanded upon. I used the following codes to organize my data: CB = collaborative behaviors, SDL = student directed learning, CT = critical thinking, CA = civic awareness, SCS = social/communication skills, SLC = service-learning connections, and P =

perseverance. As Samaras (2011) offered, I kept a key on file to prevent an overwhelming amount of disorganized data.

Throughout my research, I conferred with my critical friends. We agreed to discuss our progress via group text message. This provided an opportunity to make sense of, or analyze the data I gathered through interviews, discussion, and student work. My colleagues often provided unique perspectives or viewpoints that allowed me to grow in my research and to understand new pathways that the research could take. In addition, they helped provide an outlet for reflection and expression of my thoughts surrounding the project. Often there was little time to discuss the project with my CT, so it helped to connect with other graduate students on the same path as myself. Samaras (2011) refers to this concept as the "prism effect" (p. 214). My critical friends were key players in the research process as they provided valuable feedback and offered critique.

Context/Site/School

The site of my research was in a third-grade classroom with 22 students at a rural elementary school in Albemarle County, Central Virginia. According to school-wide data from 2016, there are 287 students enrolled at the school, 51.6% male and 48.4% female. 7.7% are classified as Black, 6.3% as Hispanic, 75.6% as White, 1.7% limited English proficiency, 18.5% as disadvantaged (receiving free and reduced lunch), 8.7% students with disabilities, and 5.2% gifted. There are 12 boys and 10 girls in the classroom. 21 students classify themselves as white, 1 girl classifies as Hispanic Latino. The schools SOL

pass rates are 84% for reading and 75% for math. Three students are in the gap group, which means that they are in a labelled category according to language or ethnicity.

Findings

Through the implementation of the project, I found that my research questions were supported. Students were engaged in meaningful project work and had positive attitudes towards learning more about composting. Students felt they had ownership over the project and were motivated to share with others what they had learned.

The first two weeks in the classroom were primarily dedicated to observation, student interviews, discussion and questionnaires. I wanted to begin to build relationships with students and to get a sense of their interests in order to decide what the best course for the project would be. I interviewed four students: Chase, Emma, William, and Kevin. When I asked Chase what it meant to be a good citizen, he said, "it means you're a part of a community and that you're in a group of people." In questioning him about his preference for working with others, Chase used the word cooperation. This related to the content students were learning about cooperation, assertiveness, responsibility, empathy, and self-control known by the acronym CARES. Emma referenced her large family and referenced specific examples of her helping out at home. When I asked her how she felt about helping others, she responded, "very confident." I asked her how she brought that same sense of helping out to school as she did at home: she responded, "with my heart, with my brain, and my hands." Emma cited picking up trash at a picnic and reusing recycled materials as examples of being a good citizen. She also spoke about what small acts represent to her:

"something small can turn into something very big." Kevin was excited about the active nature of project-work, and frequently cited "fun" as a contributing factor to his interest in PBLs. Kevin had low confidence in some of his classmates' ability to cooperate, and expressed some concern that "everyone would be shouting out their ideas at once." Kevin was used to helping others through his church, school and home. Through the interviews, I got the sense that the students had already had exposure to projects and that they were accustomed to helping the community through previous experiences, either at school or at home.

Following the interviews, I was interested to find out more about the children's exposure to project work. In discussions with my cooperating teacher and the gifted teacher, I found that the school worked hard to provide project-based experiences for students and to build a strong sense of community. There was a community garden behind the school where each grade level was responsible for a small plot. In addition, there were compost bins that were not being used at the time. The school embraced project-based learning, as evidenced by the weekly "genius hour" where students work together to solve problems. These were not designed as long-term projects; however, they were challenges that provided active, engaging learning for students. This provided some initial scaffolding for my project, as I was not introducing new concepts.

From the questionnaire I found that the majority of students liked working with others, doing projects, and helping the community. Responses varied for the second question, "How do you feel about working alone?" This information was helpful as it led me to the decision to incorporate opportunities for independent work within the project as

well as whole group and small group. For example, using Google Slides for the sharing of the project allowed students to work independently on their laptops on one slide that would be added to the group presentation. Opportunities such as this allowed for individual expression while contributing to one collaborative effort, which maximized the end product.

The gifted resource teacher introduced the design thinking process to my students to provide a platform for the project work. I turned to the Project Tree Learning Guide (2007) and found a trash collection activity to begin with my students. I gave each student a paper bag and asked them to collect their trash for a week. We made predictions about how much trash we would gather. I asked the janitor not to collect the classroom trash.

After two days, the smell was hard to bear so we decided to consolidate the trash. We brought it to the wooden stage nestled in the woods outside. Each student dumped the contents into the classroom trash can: the garbage overflowed onto the stage. Items such as ziploc baggies, crumpled up papers, leftover goldfish, and apple cores spilled out onto the floor of the stage. We discussed what was compostable, reusable, and recyclable. One student held up a plastic spoon to show that it was compostable: this made me realize students needed to learn more if we were to begin a compost project. To further emphasize our environmental footprint as a class, I brought in a weighing scale. I told the students I wanted to weigh the trash, but how would I do that? One student suggested I weigh myself with the trash. Eventually after problem-solving as a class, we decided I would weigh myself first without the trash, then weigh myself with the trash and record the difference

which would tell us how much the trash weighed. The trash weighed almost eight pounds, and the students were shocked.

In that moment, we knew we had a problem: third graders were generating too much trash! My cooperating teacher asked the students: "what can we do to solve this problem?" We returned to the classroom for discussion. Students had many ideas, which we recorded on the whiteboard in the classroom. Responses ranged from "eating less stuff", "make stuff out of trash", to "make a compost bin". Students also had many questions, such as "how much trash does the school throw out each day?" They wrote their questions on paper and we brought them to the principal's office. Each student read their question and she directed us to someone in the school who could help answer the questions. She suggested we utilize the schools' existing compost bins.

I knew that if the project was going to be successful, I needed to use all the resources I could think of within the school. The librarian helped our class by bringing us books about composting, recycling, and reusing. I set these up at a station for students to explore freely. The gifted resource teacher showed the students a BrainPop video about waste management and asked students why we had a compost bin at school. One student responded, "because lots of people just throw out all their trash after lunch but we can do something with it!". We went to the compost bin, which already had pumpkin guts in it from a cooking activity the students had done the previous week: she explained to the students that compost needs three things: greens, browns, and soil/water/air. To reinforce the idea, students played a game where they each had cards that said greens, browns, and soil/water/air. After counting to three, students put their card down. If collectively they did

not have the three components, they would try again. If they had all three, they would shout "COMPOST!"

I realized that if we were going to implement composting, we needed to make it a part of the daily routine for it to be effective. Each week, I assigned classroom jobs to students. I chose two new students to be our "compost helpers". These students brought a small bin with them to the cafeteria and collected food scraps after lunch. They used the wooden stick to stir the compost, which would help it break down. I realized that some students were composting the wrong items and only few students understood the decomposition process. This was indicated by one student asking, "why do we stir it?" I decided to email a parent I had met, also a teacher at a local private school who began a composting project there. Mrs. Wilson enthusiastically agreed to visit our class and help teach us more about the composting process.

Mrs. Wilson started with a PBS video about composting. Then, we went outside to the compost bins. We started our work on the basketball court. Everything was already set up: we began by looking at soil samples, which we added water too. Students watched as the layers began to settle and observed the samples over a period of two days. Then, students had the opportunity to simulate compost: there were four stations, water, paper, insulation, and browns. At the insulation station, students put plastic bags together which we used to insulate the compost. At the water station, students filled water bottles to add to our compost bin. At the paper station, students ripped up cardboard boxes into tiny bits. Students mixed browns in a large pail and added a number of plant items, such as lemongrass. They enjoyed the sensory experience of feeling and smelling the ingredients.

Mrs Wilson described compost as making a lasagna to students: you need layers, and it takes time. Once students were finished working at the stations, we added the components to our compost bin.

In the sharing of the project, I asked students to work in four groups to create presentations about what they had learned. I told students that because we did not learn everything about compost, they would need to do some research using the school's online library system. The county provides all students with laptops to use at school, so this made their research easy. I asked a Learning Technology Integrator, Mr. Brooks to teach the students how to create a Google Slides presentation. This would allow for more collaboration and bring in researching skills, which the students needed practice in. At the culminating event, students presented their projects with the other third grade class as the audience.

Discussion/Implications

The effects of project-based learning can be categorized into primarily two spheres: academic and social. While traditional methods and styles of teaching often focus on academics, it is important to engage a child on the social level in addition to provide for more meaningful, authentic learning. These are the areas that PBL can impact the learning of a child in a positive way.

Academic

On the academic level, I have found through this project that project-based learning is an effective method for merging the content areas. In this project, students were learning

about soil and scientific investigation through the compost project. At various opportunities such as weighing the trash, we also brought in math. In addition, they were able to refine their literacy skills and practice their oral speaking skills through interviews, discussion, and a formal sharing opportunity with the other third grade class as the audience.

In addition to content, the open-ended nature of PBL allows for layering of learning in a manner that can fit the needs of all students. This provides opportunities for differentiation, which is important in a class with students working at all different levels. Through my observations, all students were engaged in the project work and enthusiastic about learning. Students who struggled in certain academic areas were able to work at their own pace and found more ownership over the project work. In addition, students who needed to be challenged were able to work at another level. For example, one student group added lots of text and details to their slideshow, while other students communicated their learning about the project mainly through pictures.

Technological literacy was also an area of learning for students throughout the project, which will serve students well as 21st century citizens. Compiled research by Warren, (2016), Katz, Chard & Kogan (2014) and Zemelman (2016) suggests that PBLs reflect the type of work students will engage in within their future workplaces. In this project, students learned the process of researching information for their presentation using internet resources. Having a school laptop was one way for students to take ownership over their work while increasing workplace skills.

Problem solving is an important skill for students to refine throughout their learning. Throughout the project, students had the opportunity to solve problems related to the project. This not only gave them more ownership over their work, but it allowed them to see that they themselves could be agents of change. For example, one student noticed that a lot of the classroom trash was paper and suggested we reuse it for art projects. This led to the introduction of a class scrap paper bin. Whenever students had a question, instead of simply answering it myself, I asked them: "well, let's think about it. Who could we ask?" Or, "how can we find out?". It is important to let students solve problems on their own, and learning through PBLs is a very appropriate way to do this.

Inevitability, the roles become somewhat skewed when engaged in project-based work. Teachers must facilitate learning and create opportunities for students to work. I often had to restructure the schedule to allow time for the project, but I never did this without discussing it with the students. I began to see the students as colleagues, helping me work through my inquiry project rather than subjects of research. I enjoyed this style of teaching and I strongly urge new teachers to utilize PBLs. Initially, it challenges your idea of what it means to teach: we do not merely give students knowledge, we just create time and space for it, and support our students as best we can. This is a skill that takes practice, and as a new teacher I often felt uncomfortable not having the answers. However, this demonstrated for students that I myself was a lifelong learner like them. It made the learning much more meaningful for students.

The third-grade classroom I student taught in focused heavily on testing students. Assessments often made students anxious and I often observed students feeling very upset

when presented with a quiz or a test that had many questions designed to test just one ability. I believe PBLs are a good alternative to testing because they are hands-on. The testing language was foreign to the nature of children, who need experiences in order to learn. The visit from Mrs. Wilson helped students really experiment with the ingredients that go into a "compost lasagna". I will continue to utilize play experiences such as these to extend the learning of my students in the future as a teacher.

Social

In utilizing all of the resources within the school: my cooperating teacher, the librarian, the principal, the janitor, the technology instructor, a parent visitor and more, students were able to achieve more in their project and learn from multiple sources rather than just one. As a teacher, it is important to facilitate learning in a manner that allows for students to look to others in the school for knowledge. One teacher can only do so much, we must include others when helping our students learn.

I also found that students began to see themselves as active citizens in their communities, as evidenced by them picking up trash when they went outside for recess or walked down the hallways. One student created a model of our school using an old shoebox, with the words "our green school" written on it and brought it during share time. Students also were quick to point out if someone in the class was misusing paper. For example, some students formed a comic club where they stapled together many sheets of white paper. One student suggested that they fold up the paper really small and make mini comics so they wouldn't use as much paper. Students were quick to point out how others

could make less of an environmental footprint in their daily lives at school. Wade (2007) refers to citizenship as more than voting: it is "caring for the wellbeing of all people in the community, and paying attention to the environmental, political, and social issues" (p.13). Students developed sophisticated understandings of citizenship through the project, and expanding their definitions to include helping the environment.

I observed students collaborating well throughout the project. Although there was often difficulty assigning roles, students were quick to problem solve. For example, when creating the slideshows one group initially was working on the same slide and realized it was a problem. They began overlapping images and text. This was initially a source of frustration. One student said, "why don't we each do one?" In addition, I observed fewer escapist behaviors during the project work time than I did during other instructional times throughout the day: students were glued to their computers, and they talked to one another as they worked, saying things such as "hey, look at this compost video I found!" Students did not want to leave to see the nurse, go to the bathroom, or other places during the project time.

The school emphasizes student choice, which I made sure to capitalize on throughout the project. I never told students what to do, I asked them what they would like to do. For example, when I asked them how they would like to share their projects I gave them a choice: they could write a speech, create a poster, or make a slide show. They all decided they wanted to create a slide show. According to Aguas (2013), "service learning gives students autonomy in selecting what service to perform" (p. 6). It is important to foster an environment of critical thinking where students work on choice activities: as

demonstrated by my project, this creates higher levels of engagement which makes learning deeper and more authentic for students.

Conclusion

As a teacher, our goal is to create opportunities for open-ended learning so that all students are on an equal level. Differentiation is at the crux of all teacher's work, and project-based learning is one way to do that. I strongly believe that utilizing PBLs can help differentiate for students in a more organic way. Students work at their own pace on a single topic or project, and in this way teachers do not need to create separate assignments for students.

The project work also allowed students to be more aware of their impact within their communities as evidenced by students picking up trash if they saw it laying around the school at various opportunities throughout the day. In addition, students were motivated to compost their food scraps after lunch each day. There were several days I forgot, to which students would remark, "Miss Lavin, the compost bin!" I also found students questioning to be a strong indication that they had begun to see themselves as agents of change.

As teachers, we need to make learning meaningful, authentic, and engaging for students. Project-based learning is one way to do that. I will continue to utilize PBLs to extend and enrich the learning of my students.

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Appendix

A) Student Interview/Response Questions

Preliminary Questions

1) How do you feel about helping others? Do you know what it means to be a good

citizen?

2) Have you ever done a project before? How did you like it? What did you learn from it?

3) What do you like about learning with projects?

4) How do you feel about working with your classmates? What are some ways that could help you work better with your peers?

5) How does helping others in the community help you learn? How does helping others help you learn about others? How does it help you learn about yourself?

Post Project Stimulus Response Questions

1) How do you feel about working with others in the classroom? How do you feel about working alone?

2) How do you feel about doing projects? How do you feel about helping others in your community?

3) What was the most important thing you learned through this project?

What did you learn about yourself?

What did you learn about your classmates?

What did you learn about your community?

How will this help you in the future?

4) What are some ways you can contribute to your community from now on? Share your top three ideas.

1)

2)

3)

B) Questions to Ask Students During Placement

1) What do you like about the project we're doing? Would you like to keep learning this way?

2) How do you feel like this project is helping you get along better with your classmates?

3) Are there any problems or tensions? If so, how can we make that better?

4) Do you think we're helping the community? What are some ways we can help more?

C) Student Questionnaire

How do you feel about working with others in the classroom?

☺ ☺ ☹

How do you feel about working alone?

☺ ☺ ☹

How do you feel about doing projects?

☺ ☺ ☹

How do you feel about helping others in your community?

☺   ☺   ☹

Tell me one thing you want to learn from this project.

What are some ways you can make your voice heard in this classroom?

What are some ways you can contribute to your community?

If you could pick one problem in your town to help, what would it be? Please circle your answer.

recycling   homelessness   hunger   child welfare   voting

D) Cooperating Teacher Interview Questions

1) How do you feel third graders learn best?

2) How would you describe your style of teaching?

3) Does project-based learning have a place in your classroom? What are some ways that you feel I can strengthen that?

4) In what ways would you like me to challenge your students during my student teaching placement in your classroom?

E) Consent Form and Introductory Letter

August 2, 2017

Dear Parent or Guardian,

I am thankful to have the opportunity to work with your children as a student teacher this semester. I would like to take this opportunity to introduce myself and let you know about what I will be doing with your children this semester to help your students learn. I grew up in Galway, Ireland, and I attended my last three years of high school in Charlottesville. I received my undergraduate degree from James Madison University, and I am now enrolled in a graduate teaching program. My twelve week (August 28 – November 17) placement in your child's classroom plays an important role in my journey towards becoming a teacher and having a classroom of my own.

I will be completing my inquiry project as a requirement for my teaching license and graduate degree. The purpose of my project is for students to make a difference in their communities through a service-learning project. I welcome your input throughout the project.

The results of this project, possibly including pictures and/or video, will only be shared with my JMU professor and classroom. The school name and children's names will remain confidential.

I am seeking your permission to include video or photos of your child during my time in your child's classroom. If you have any questions, you may contact me by email at lavinmm@dukes.jmu.edu or my cooperating teacher at school. My supervisor is also available to speak with you about your concerns.

Please complete the form below and return it to (insert your teacher's name here) or me by August 31, 2017.

I look forward to working with your children this semester!

Thank you,

Meghan Lavin, your teacher's name

& name of school

Parental Consent Form

Please return by August 31, 2017

I, _____, give consent for my child, _____, to participate in Meghan Lavin's inquiry project and for reflection on his/her own teaching. All recording and filming will be used for educational purposes only. Names of students and the school will be kept confidential and nothing will be shared publicly outside of the JMU classroom.

_____   _____

(Parent/Guardian Signature)   *(Date)*

____ I am interested in receiving a summary of the project.

F) Timeline

Literature Review:

- Gathered initial research on project-based learning. Completed on 7/10/17

- Found additional research on service-learning. Completed on 7/11/17

- Compiled research into a review format. Completed on 7/15/17

Methods:

- Using research in the literature review, found that service-learning can be used as a method to increase collaboration, workplace skills, and civic engagement amongst students. Completed on 7/16/17

Plan of Action:

- Use strategies to create collaborative, project-based learning environment. Begin 8/2/17

Data Collection:

- Collect data throughout pre-placement planning process. Completed on 7/16/17

Enactment:

- Questionnaire about collaborative work and attitudes towards service. Administer on 8/29/17 and 11/17/17.
- Student interviews: Conduct 8/31/17 and 11/17/17.
- Teacher interviews: Conduct 8/31/17 and 11/17/17.
- Introduce project and decide on topic with students. 9/1/17.
- Guest speaker 9/4/17.
- Research topic with students, brainstorm ways to help, develop plan of action. 9/5/17-9/15/17.
- Implement project 9/18/17 - 10/23/17.
- Students reflect and prepare for culminating event 10/23/17 - 11/6/17.
- Culminating event 11/8/17.

Data Analysis and Findings:

- Begin 8/30/17 and continue until 11/24/17.

- Share findings 12/8/17.

G) Summary for Teacher

As a part of my student teaching placement, I will continuously work on a research project throughout the semester. I have chosen to implement a service-learning project for my research. This will involve selecting a community issue, such as homelessness, and guiding students towards meeting a need within that particular group, such as a lack of food or shelter. I will administer a questionnaire for students during the first week, which will offer possible topics of interest. I will analyze the responses and bring two topics to discussion. As a class, we will then work together to select a final topic, and our work will take shape through both action and reflection.

This project will be done within the context of project-based learning, and I have found through prior research that your school embraces this style of curriculum. This will allow students to take more responsibility in their learning, form better relationships with their peers, and to challenge themselves whilst building important skills and learning integrated content throughout their work.

The service component will teach civic engagement, and it will make learning meaningful and authentic for students. Students will have the opportunity to actually make a difference in their communities, which will teach them valuable lessons. Alongside, students will learn important content and short lessons will supplement the project work.

Both of these approaches will align with the learning standards to ensure that students are

held accountable. I look forward to this project and the learning that will happen both with

the students and myself.