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High School Teachers' Use of Project-Based Learning to Address Issues of Equity, Social Justice, and Cultural Relevance

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2025

Abstract

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MPhil, Walden University, 2023

MS, Nova Southeastern University, 2000

BA, Newberry College, 1996

Dissertation Submitted in Partial Fulfillment

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Learning, Instruction, & Innovation

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Abstract

In many educational settings, marginalized populations—African American or Black students, Hispanic students, students in special education programs, and economically disadvantaged students—struggle with traditional assessments, which may create learning gaps. Grounded in Dewey, Vygotsky, and Bruner's theories, the research problem and purpose of this qualitative single context exploratory case study was to explore high school teachers use of PBL as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. Purposeful sampling was utilized to identify 11 high school teachers who employ PBL from multiple campuses in a single school district. Data sources were two asynchronous bulletin board focus groups and six individual asynchronous interviews analyzed through reflexive thematic analysis. Three themes developed: teachers (a) shift instruction to employ strategies that provide access and foster personal growth, (b) challenge students to learn to work together to address issues that are relatable and important as members of communities—local and global, and (c) employ strategies that allow students to develop relationships with content/curriculum, culture, and world— which mirror their lives and broaden their experiences. This study may contribute to positive social change by informing future teacher development that supports the effective use of PBL to engender student innovation, foster critical problem-solving for real-world issues, and prepare marginalized students to become agents of social change.

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Dedication

I am a lover of quotes because they remind me that we are all connected, and we may rise together if we can learn to lift each other up. This is dedicated to all children: the dreamers of a better world and the builders who can construct it. This is dedicated to teachers and staff and administrators who show up because they truly believe in the power of education. This is dedicated to the changemakers who are on this journey with me to bring about social change. This is dedicated to women like Rosalind Franklin, Hedy Lamarr, Mary Katherine Goddard, Ruby Bridges, Katherine Johnson and so many other innovators who inspire me and other women daily and who worked to better the world around them, even when those efforts often went unnoticed or were underappreciated. This is dedicated to my students—thank you for sharing your hopes, enthusiasm, and energy—may you always keep learning and spread those ideas throughout the world to do good things.

Frederick Douglass (1857) “If there is no struggle, there is no progress.”
Thurgood Marshall (1978) “Where you see a wrong or inequality or injustice, speak out, because this is your country. This is your democracy. Make it. Protect it. Pass it on.”

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This learning journey would not have been possible without guides who offered wisdom, support, and time as illustrated by their commitment to see me reach my destination. To my parents who not only supported my education but taught me to love learning—even when it's challenging; thank you for proofreading my many assignments, dissertation iterations, and reminding me, when I struggled, of the end goal to help others. You both walked with me on this journey; Mom, you started it by modeling how to love teaching and to understand it's the pathway to a better world. Dad, you reminded me to stay the course. From Dr. McFeeters, who taught me how to think about and research education at more advanced levels in my very first course; to Dr. Ku, who posited challenging questions which made me more reflexive along the path from prospectus to submission; to Dr. Harland, who nurtured my innovative and creative side while teaching me how to be a stronger communicator to share my findings to the world in the hopes of making a difference via positive social change, I could not have accomplished this endeavor without your help and inspiration. Thank you to the Walden family. To my family and closest friends, you taught me about the kind of person I wanted to be every day and reminded me of my "why" when I needed to hear it—you are invaluable to me. And to my local cheerleaders as well as my work colleagues who have supported me, given me grace, and encouraged me daily, I could not be luckier or more blessed to see wonderful people doing great things to keep me going. Finally, this is a really isolating process, so to my cats, who curl up on each side of me while I work, you might never read this, but I'll continue to let you know you made a difference. Thank you everyone.

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Chapter 1: Introduction to the Study

Since the early 1900s, project methods and the concepts that build the foundation for project-based learning (PBL) have been a part of the sphere of educational assessment in the United States, as scrutinized by Kilpatrick (1929/2018) and Snedden (1916), the "fathers" of U.S.-based project-based learning. Kilic and Ozel (2022) defined project-based learning as an exploratory approach in which students are asked to create innovative solutions and answer relevant, real-world questions. This strategy has been touted to address inclusive education (Snyder & Fenner, 2021). Moreover, Kozleski (2020) explained that creating truly inclusive educational environments included four tenets: "(a) the design and use of classroom assessment; (b) attention to culture as the embodiment of learning; (c) reframing possibility; and (d) inspiring imagination" (p. 349). Additionally, Snyder and Fenner (2021) noted the authentic experiences provided in project-based learning allow for the practice of higher order thinking skills while demonstrating the incorporation of equity, social justice, and cultural relevance. For this study, the final project that students create as part of their project-based learning experience will be considered an innovative assessment which has been implemented with students at their developmental levels to allow for mastery demonstration via collaboration and problem-solving both locally and globally (Greenstein, 2012).

Elements of project-based learning have been shown to be effective with students from different backgrounds. However, much of the body of literature surrounding the implementation of project-based learning is based on the general population rather than that of underrepresented, struggling learners (Park & Scanlon, 2024). An example of this

may be seen in the number of English language learners (ELLs) as of 2017, 4.86 million, and multilingual learners, almost 12 million (Snyder & Fenner, 2021; U.S. Census, 2017). Many such students may not receive language supports and would benefit from assessments like project-based learning because the units would allow for collaboration, learning about community, self-advocacy, and building an understanding of different perspectives (Snyder & Fenner, 2021). Economically disadvantaged students may also benefit from the implementation of innovative assessments like project-based learning in the classroom (Jensen, 2022; Stemmann & Freiwald, 2019) because when students collaborate on projects which they find culturally meaningful, the brain minimizes distractions and increases focus. Additionally, minority students often report that they perceive classroom environments and curricula are not conducive to learning because they do not relate to the learning, causing stress and diminishing buy-in, which impacts performance (Frazier et al., 2019; Jensen 2022). Furthermore, in a study that focused on the impacts of teacher practices and noncognitive factors like poverty on student achievement in mathematics, Hann (2020) found that assessments were relevant to the context of students' lives, like the incorporation of project-based learning, not only lead to the potential for academic achievement but also created "experiential learning opportunities as they [students] work together to achieve a shared goal" (p. 25).

In this chapter, the background of the study, problem, purpose, RQs, theoretical framework, nature of the study, definitions and the shifts in terminology, assumptions, scope and delimitations, limitations, significance of the study, and the social implications of the research are examined.

Background

Marginalized populations often struggle with standardized or traditional assessments, which put them at a disadvantage (Francois & Hood, 2021). As one way to address this problem, innovations like project-based learning have been used to create engagement, foster authenticity, and improve academic performance (Burks, 2022; Park & Scanlon, 2024; Renzulli, 2021). Some studies have been completed to examine the influence of project-based learning programs on marginalized populations. For example, Burks (2022) was able to demonstrate improved academic outcomes at a Historically Black College and University by implementing project-based learning and nontraditional assessments in a freshman biology course. In addition to examining students' learning outcomes, students' needs and preferences have also been studied. In another study focused on a Native American minority population, qualitative results showed that students wanted learning environments which are culturally responsive, supportive, allow for assessments in which students learned from peers about their culture, and opportunities at the collegiate level (Hunt & Oyarzun, 2020). Similar results were found in secondary studies. Imm (2021) noted, in a study exploring minority students' experiences in a high school math class, that students need to feel represented in the curriculum and they need to relate to the concepts in a culturally responsive manner using innovative practices.

Project-based learning allows for varied avenues for demonstration of mastery that may address "opportunity gaps and disparate treatment remain crucial educational issues that affect proximal and distal outcomes of students from historically marginalized

groups" (Sullivan et al., 2020; p. 449). Authentic assessments, related to students' lived experiences, have shown deeper student growth (Miller, Severance, & Krajcik, 2021). Moreover, Hann (2020), in a study investigating the impact of teacher practices and noncognitive factors on student growth in math, found that while there are racial disparities in math achievement among students, with lower growth occurring in marginalized populations, project-based learning ranked above truancy, gender, and school poverty as a predictor of greatest effect on growth. In a study with Asian American and Pacific Islander students, Sullivan et al. found that students are often incorrectly identified for support services and do not receive necessary accommodations for learning processes. Diffusing the innovation of project-based learning might be a way to provide an avenue for equity in the classroom as well as a way to provide student agency, which was one of the four factors in strengthening and promoting the integration of culturally responsive practices by classroom teachers (Min et al., 2022). I examined secondary education--specifically how teachers in Grades 9 through 11 used innovations like project-based learning to address equity, social justice, and cultural relevance to engage marginalized populations.

This study addressed a gap in the understanding about the use of project-based learning by high school teachers to address issues of equity, social justice, and cultural relevance to engage marginalized high school populations in current literature. For the study, marginalized high school students included special education students, students living in poverty, and underrepresented minority students. Project-based learning was considered a responsive assessment used to meet students at their developmental levels

and demonstrate their ability to problem-solve, create, and think locally and globally (Greenstein, 2012), tenets which align with the four common features of project-based learning models: driving questions, learning stretch, collaboration, and real-world application to community or cultural relevance (Escobar & Qazi, 2020; Leggett & Harrington, 2021; Miller, Reigh et al., 2021). Waite (2020) highlighted that while some literature exists surrounding project-based learning, there are gaps in information about how and with whom it is implemented.

Rodriguez and Morrison (2019) examined how project-based learning may create equity and social justice via cultural relevance by allowing students to start where they live: their communities. As Duke et al. (2021) demonstrated, project-based learning is not a new educational framework; it has been built upon by theory and practice of researchers like Dewey (1902/2008), Snedden (1916), and Kilpatrick (1929/2018) but is not often viewed as an innovation which could be used in high schools to address issues of equity, social justice, and cultural relevance. Greenstein (2012) posited, consequently, that assessments should meet the needs of today's students academically, emotionally, and mentally; thus, assessments should incorporate the concepts of thinking, acting, and living skills to develop 21st century learners. While research exists on project-based learning used with marginalized populations at the collegiate and middle school levels, this research filled a gap in lack of understanding at the high school level.

Problem Statement

The social problem is that marginalized populations often struggle with traditional assessments which puts them at a disadvantage (Francois & Hood, 2021). According to

the Virginia Department of Education (2022), in the 2021-2022 school year at the school selected for study, students in four populations (Black, Hispanic, students with disabilities, and economically disadvantaged) had learning gaps based on standardized test scores. One way this social problem has been addressed is to use innovations like project-based learning to create engagement, foster authenticity, and improve academic performance (Burks, 2022; Cannon & Carr, 2020; Papp, 2020; Renzulli, 2021). New studies based on summer programs for minority high school students in STEM fields demonstrate gaps in academic achievement, test scores, and representation but also demonstrate that project-based learning may act as an effective strategy to lessen gaps (Bhuyan et al., 2020; Cannon & Carr, 2020; Escobar & Qazi, 2020; Riestra et al., 2019).

Much of the current body of research on this topic was completed at the collegiate level and the middle school level. College research has shown the promise of project-based learning elements influencing equity for marginalized students by lessening achievement gaps (Bhuyan et al., 2020; Escobar & Qazi, 2020; Leggett & Harrington, 2021). Additional research with university students has shown positive impacts from elements of project-based learning, such as increased confidence in social justice issues and improved academic outcomes (Beneroso & Robinson, 2021; Bryant, 2021; Burks, 2022; Li et al., 2022; Saad & Zainudin, 2022; Ting et al., 2020). Other studies have shown that creating more culturally relevant and authentic assessments for marginalized students is effective with middle and university students (Miller & Krajcik, 2019; Rittle-Johnson et al., 2021; Wahbeh et al., 2021). Therefore, the research problem on which this study was based was that little was understood about high school teachers' use of project-

based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students.

Purpose of Study

The purpose of this qualitative single context exploratory case study was to explore high school teachers use of project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students.

Research Questions

To explore the specific research problem, the following research questions (RQs) were developed for the study.

RQ1: How do high school teachers use project-based learning as an innovation to address issues of equity to engage marginalized high school students?

RQ2: How do high school teachers use project-based learning as an innovation to address issues of social justice to engage marginalized high school students?

RQ3: How do high school teachers use project-based learning as an innovation to address issues of cultural relevance to engage marginalized high school students?

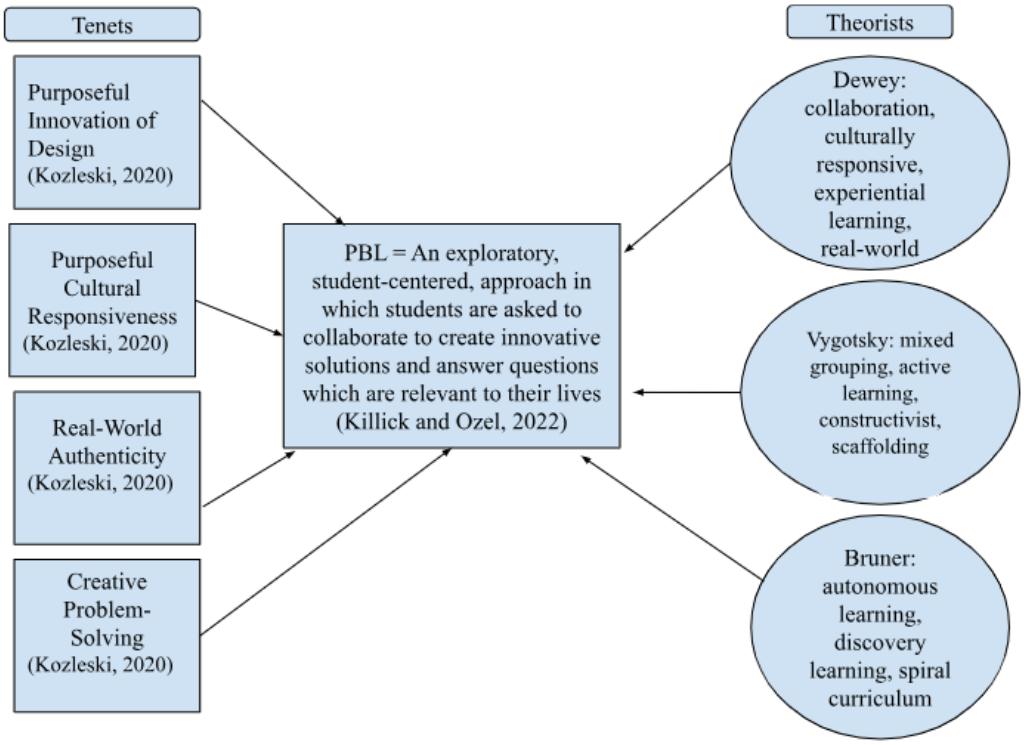
Conceptual Framework for the Study

The conceptual framework for this study included aspects of three theories. The foundational ideas in the conceptual framework included the theory of experience (Dewey, 1938/2015), in which learning is an active process which focuses on experience and real-world authenticity, and the principle of continuity (Dewey 1938/2015) focused on the concept in which a student's past experiences will scaffold learning for future

experiences which align with the concepts of collaboration and cultural responsiveness. The next was Vygotsky's (1978) theory of sociocultural constructivism which was used to ground this study based on the concept that cognitive development occurs via experiences with mentors and grouping, and further cognitive development surrounds the application of those experiences via active learning and scaffolding. Third, Bruner's learning theory (1960/2003) was used to help explore the use of project-based learning with students as autonomous learners who can construct knowledge and comprehend complex ideas via discovery. In the context of teachers' curricular design, Bruner's theory was also used because the theory states that curriculum and instruction should spiral by design (Bruner, 1961, 1966). It was a good theory for this study because it has been used to explain how obstacles such as the impact of poverty on cognition development may be reversible (Bruner, 1973). The theories speak to the learners' conceptualization, assimilation, growth, environment, and experience—related to both collaborative and individual learning. See Figure 1.

Figure 1

Alignment of Tenets, Definition, and Theories for Study's Conceptual Framework



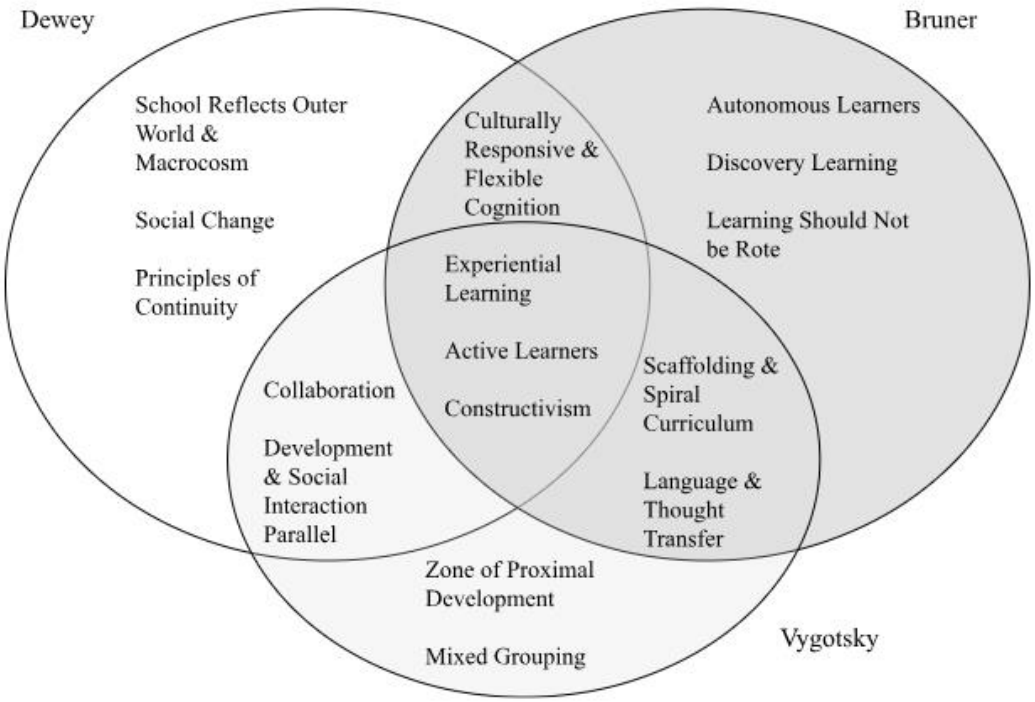
The logical connections between the framework presented and the research problem, purpose, and nature of this study formed the foundation for a qualitative single context exploratory case study which focused on the question of how project-based learning was used to address issues of equity, social justice, and cultural relevance to engage populations of marginalized high school students. The theories included Dewey's theory of experience and the principle of continuity (1938/2015), which focused on students' abilities to learn via experience. Dewey's theory also built upon the concept of one student experience building on another, which allows marginalized populations to build on their lived community experiences. Vygotsky's (1978) theory of sociocultural

constructivism posited that students may learn from mentors (teachers or peers) and build off experiences to scaffold learning and achieve greater success with an environment conducive to stretching their learning zones–this type of collaboration is an integral part of, which was the innovation on which this study was based.

Sharing commonalities with Dewey's (1938/2015) and Vygotsky's (1978) ideas, Bruner's learning theories demonstrated that discovery learning, rather than expository learning, promotes intrinsic motivation and retention (Bruner, 1961). Bruner built on that idea by positing that students can comprehend complex concepts and build knowledge on their own (Bruner, 1960, 1961), that curriculum should spiral to build knowledge, and that learning should be a process which involves and engages all students (Bruner, 1960, 1966). Bruner's ideas are concepts which align with the use of innovative learning assessments like project-based learning, which addressed issues of equity, social justice, and cultural relevance with marginalized high school populations by allowing students to start where they are, build upon what they know, and learn with and from their peers, mentors, and teachers. While each of these foundational theories supported the research, there is some overlap among these concepts (see Figure 2).

Figure 2

Conceptual Theory Venn Diagram Demonstrating Overlap of Concepts



I used this conceptual framework because it supported student-centered, experiential learning via collaboration and spiraling curriculum for real-world/authentic cognitive skills development to support my decision to use a qualitative single context exploratory case study. This conceptual framework allowed me to explore how high school teachers, with different levels of experience, used the innovation of project-based learning to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. I used asynchronous bulletin board focus groups, individual asynchronous interviews, and a reflexive journal to collect multiple methods of data. The constructivist nature of the framework aligned with the concepts of collaboration, working with peers, scaffolding ideas, and active participation as the

educators respond to the questions for the asynchronous bulletin board focus groups and individual asynchronous interviews. Targeted aspects of the theories within the framework were used to develop the a priori coding for data analysis. More detail will be provided in Chapter 2. I used the conceptual framework to inform the data collection tools as well as data analysis. This will be discussed more thoroughly in Chapter 3.

Nature of the Study

For the study, I used a qualitative single context exploratory case study approach to explore teachers' use of the innovation of project-based learning to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. Yin (2018) and Hancock et al. (2021) described a case study as an in-depth analysis and study of a program of study or group with multiple data collection sources, which is bounded by space and time and studied in its typical context. From a foundational standpoint, case studies are constructivist because truth is dependent upon the person or group who is participating within a study because each individual teacher's truth or experience is relevant to their practice (Baxter & Jack, 2008; Stake, 1995; Yin, 2003). Specifically, I chose a qualitative single context exploratory case study design.

Single context exploratory case studies are qualitative studies which explore RQs that ask "how" and "what" questions, by examining relationships which may not have a single answer or conclusion, and which allows researchers to explore different levels of use within a single context (Baxter & Jack, 2008; Hancock et al., 2021; Yin, 2018). The single case was bound by teachers' utilization of project-based learning for exploring equity, social justice, and cultural relevance at multiple campuses of a high school in one

district. The units of analysis within the case were defined by teacher's experience level with the utilization of project-based learning (intermediate and advanced). The research design was justified because a case study is best used when collecting multiple sources of data (see Hancock et al., 2021; Yin, 2018). In this study, collecting data from two data sources (asynchronous bulletin board focus groups and individual asynchronous interviews), allowed for better triangulation of the data (see Hancock et al., 2021; Krueger & Casey, 2015; Patton, 2015; Yin, 2018).

For the study, the first data source came from two asynchronous bulletin board focus groups (see Krueger & Casey, 2015)—intermediate and experienced--with researcher designed open-ended questions (see Barbour, 2018; Danner et al., 2018; Krueger & Casey, 2015). While each group was to have between four to five participants, more participants requested to participate, and the participant numbers rose from five to six per group. Initially, they were to interact over a 3-week period, but they interacted asynchronously over a 4-week period instead. The second data source was four to six individual asynchronous interviews (two participants from one group and three participants from the other based on level of experience) with open-ended questions (see Rubin & Rubin, 2012). A researcher reflexive journal was kept during the research process to track experiences and as an audit trail (see Orange, 2016; Weatherford & Maitra, 2019), was used to act as a check-in for bias/positionality (see Orange, 2016), and was used to ensure triangulation (see Patton, 2015). More detail about data collection will be provided in Chapter 3.

For data analysis of my study, I employed a priori or deductive coding for first-cycle coding and then employed emergent or inductive coding for subsequent cycles. Saldaña (2016) asserted that coding will depend upon the type of study and the questions being asked. A priori coding is often used with larger bodies of data or with data to organize or chunk data which revolves around theory (Creswell, 2016; Elliot, 2018). Open coding, or emergent coding, is a technique which is more descriptive and often employed by novice researchers (Schoch, 2020). Researchers are encouraged to utilize both deductive coding and inductive coding to not only narrow the focus of the data for analysis but to also maintain alignment with the questions. The use of both types of coding is also referred to as blended and abductive (Alvesson & Kärreman, 2007; Creswell, 2016; Graebner et al., 2012; Linneberg & Korsgaard, 2019; Stuckey, 2015). More detail on data analysis will be provided in Chapter 3.

Definitions

While I completed research for the literature review, patterns began to emerge and evolve with terminology. Some terms like *poverty* had multiple meanings and some terms like *socioeconomically disadvantaged* and *economically disadvantaged* were used synonymously in literature. There are three terms, *equity, social justice, and cultural relevance,* which were not defined purposefully. I asked the teachers to define these terms during the asynchronous bulletin board focus groups as the concepts related to their pedagogy.

Cultural capital: A theory which states that cultural resources and students' access to them directly impacts their academic growth because they have a more

advanced, due to accessibility, grasp of social norms and expectations (Bourdieu & Passeron, 1977). Thus, the idea is that students with opportunities in their environment and access to those opportunities will have an advantage (Coulangeon & Fougére, 2022).

Engagement: According to Hammond (2014), within the shift to an academic mindset in a culturally responsive classroom, engagement takes place when a student's attention is hooked by curiosity, emotion, or via movement which causes students to engage in thought and actively learn.

Marginalized populations: For this study, the marginalized populations refer to those populations which will be examined within the bounded unit. According to the Virginia Department of Education (2022) in the 2021-2022 school year, students in four populations: Black, Hispanic, students with disabilities/special education students, and economically disadvantaged students had the largest achievement gaps based on test scores. Two populations living in "high poverty" by racial/ethnic groups for fall 2019 are Black and Hispanic as noted by the National Center for Educational Statistics (2022). Some students may fall into more than one category.

Poverty (generational and situational): According to Payne (2019), generational poverty is explained as a family which has lived in poverty for two or more generations and a low level of support, in areas of finance as well as mental/physical/emotional aspects of life. However, situational poverty is based on an event which may cause a lack of resources (e.g., homelessness, divorce, chronic illness). Situational poverty impacts resources quickly and often unexpectedly.

Project-based learning (PBL): Project-based learning is an innovative assessment which allows for students to develop critical thinking, collaboration, and communication skills while using foundational classroom knowledge to solve a real-world problem which relates to their environment (could be local, national, or global) and allows for student autonomy (Beneroso & Robinson, 2022; Coulangeon & Fougére, 2022; Revelle, 2019).

Socioeconomically disadvantaged/economically disadvantaged: According to the bounded unit and the federal government, socioeconomic status is based upon a combination of elements including parental income, parental education, parental occupation, and size of family (U.S. Department of Education, 2019). The U.S. Department of Education (2019) *Stats in Brief* noted that in 2014, the poverty level for a family of five was $27,910. Based on government definitions, the bound unit would consider a child economically disadvantaged if the child were on free or reduced lunch or were food insecure.

Assumptions

An assumption, according to Merriam-Webster (n.d.), is a notion or concept which one presumes. An assumption in research is a belief or idea which is carried by a researcher without examining or acknowledging it, which might, if left unaddressed, impact the veracity and integrity of a study (University of Louisville, 2023). I made several assumptions going into this study. First, I assumed that people would volunteer for individual asynchronous interviews, knowing that confidentiality would be maintained, that they could withdraw from the study at any part of the process, and that

the volunteers would answer honestly. My second assumption was that strategies like the sampling strategy and plans for data collection would be appropriate for the study. For example, criteria for inclusion—teachers who used project-based learning at the high school level, those who provided data and wanted to participate to engender change via research and sharing their experiences, and any backup plans were appropriately well-aligned should they become necessary for my study and would work according to plan/process. Finally, I made assumptions about my role in the process–that this study was to collect data to answer questions in the least biased manner with transparency and reflexivity.

Scope and Delimitations

The scope of this qualitative single context exploratory case study encompassed high school teachers' perceptions regarding the use of project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized populations. Research showed that using innovations like project-based learning can foster authenticity, create real-world learning opportunities, and lessen learning gaps (Burks, 2022; Parks & Scanlon, 2024; Renzulli, 2021). However, much of the current literature and research addresses the use of project-based learning as an innovation at the elementary, middle school, and collegiate levels, leaving a gap in knowledge at the high school or secondary level. Therefore, to be included in the research study, teachers had to work in a high school setting, had to have received training and/or had to have experience with implementing project-based learning with mixed-ability classrooms and with populations that include marginalized students to teach issues of

equity, social justice, and cultural relevance. Teachers who did not use project-based learning or who did not work with marginalized students were included in the study.

Initially, I considered other frameworks and theories like Cummins's (1989) empowerment of minority students framework or Tomlinson's (2008) framework of differentiated instruction, when considering all the ways in which project-based learning as an innovation could engender learning through experience, environment, choice and voice, problem-solving, real-world change implications, and opportunities, the scope of these two frameworks did not seem to encompass enough of the tenets of project-based learning. While Cummins's conceptualized issues and worked towards models of learning, the focus was on special education (albeit primarily bilingual) students. While Tomlinson's framework worked for all students, it did not align with all the tenets and focused primarily on the marginalized populations for the chosen bounded unit. That is why I examined the interwoven ideas of Dewey (1938/2015), Vygotsky (1978), and Bruner (1960/2003, 1961, 1966, 1973). Together, their theories and concepts created a broader foundation upon which to base the research.

While transferability is discussed more in-depth in the next section, transferability in qualitative case studies revolves around context rather than a single, specific replication. Each decision of the research study impacts transferability, so the methodology must be aligned. Researchers must be transparent, cognizant of bias, and create a validity construct which is consistently checked and taken into consideration.

Limitations

Possible limitations when collecting primary data included partner site agreement, and difficulty recruiting participants for individual asynchronous interviews and asynchronous bulletin board focus groups in grades nine through twelve due to a lack of willingness to participate. The goal was to have four to five teachers for two asynchronous bulletin board focus groups and four to six participants for individual asynchronous interviews. The school has over 300 teachers, so it was feasible to recruit enough participants to participate in the asynchronous bulletin board focus groups and to reach the interview goal. Access to participants could have posed a challenge due to timing, but I accommodated as best I could. In qualitative research, the objective of a study is not to transfer findings in a mirror-like fashion but rather to generalize findings contextually (Lincoln & Guba, 1985; Ravitch & Carl, 2021). The goal was transparency and the creation of a validity construct, which allowed for generalizability of context even when considering bias and limitations.

Bias is ever-present in life and research. Having been an educator for 29 years, I certainly have an implicit bias towards the use of innovative assessments and have had experience working with marginalized populations at the secondary level. Researchers may take precautions to ensure trustworthiness at each stage of the process to ensure that there are no negative observer effects, that emerging patterns are accurate, and that research is reliable (Stewart & Hitchcock, 2020) through steps like noting potential pitfalls for transparency, using member checks, and reflecting regularly. Reflexive journaling provides an avenue for researchers to take a step back and examine as well as

analyze their progress as they informally record their assumptions, ask questions, and outline relationships (Braun & Clarke, 2022; Crawford & Lynn, 2020; Cronin, 2012; Matteson, 2021; Orange, 2016; Ravitch & Carl, 2021). Patton (2015) explained that the term reflexivity relates to the researchers' means of considering and being mindful of their thoughts, the research, the decisions, and the data while acting as the main tool in the process itself. I utilized each of these strategies to create transparency and trustworthiness.

Credibility refers to recursivity--ensuring design structures are aligned and attended to. Transferability equates to a depth of description to initiate an understanding of the description and context so that generalizations can be made (Ravitch & Carl, 2021; Stewart & Hitchcock, 2020). Ravitch and Carl (2021) described dependability in qualitative research as "stability of the data" (p. 171) and noted that researchers should seek alignment and strive for triangulation. It should be noted that confirmability, according to Ravitch and Carl, is the goal to acknowledge that not only bias and prejudice exist but also the need to strive for transparency to minimize both their impacts. For the study, I considered the alignment of all my choices from the outset. I used reflexive journals to track my thoughts, record observations and notes, note questions, and consider positionality, as recommended by Orange (2016). I used member checks and debriefs for the asynchronous bulletin board focus groups and individual asynchronous interviews (see Slettebø, 2021). I spoke with an administrator prior to setting up the individual asynchronous interviews to glean any pertinent information from both culture and power

perspectives which might have shaped the data collection, and I worked towards triangulation.

Significance

This study is significant because it has the potential to fill in gaps in educational knowledge and understanding about how project-based learning is used to address issues of equity, social justice, and cultural relevance to engage marginalized populations at the high school level and to change educational training and practice. The results of the study could inspire additional research on innovative assessments, like project-based learning, and close more learning gaps. Additionally, there is a need for additional exploration surrounding the way educators address equity, social justice, and cultural relevance in relation to marginalized populations in education and a need for wider awareness. This study also has the potential to bring about change not only in one district but also farther afield at similar schools.

Summary

In this chapter, I introduced this qualitative single context case study by exploring the perceptions of high school teachers who use project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. I scrutinized the history and tenets of project-based learning and examined the scope and current gap in research. The overlapping theoretical frameworks and concepts of Dewey, Vygotsky, and Bruner were described to demonstrate the conceptual framework. The nature of the study--method, data collection, and planning--were briefly discussed along with the definition of terminology for clarification. Chapter

1 concluded with assumptions, delimitations, limitations, and significance as they relate to the research.

In Chapter 2, I will create a more in-depth explanation of the theory and concepts which scaffold each other to support the research on project-based learning. The literature review will include a synthesis of current research surrounding project-based learning as an innovation in elementary, middle, and college courses, further highlighting the gap in research at the secondary or high school level. The focus of the research will examine the marginalized populations as described in Chapter 1.

Chapter 2: Literature Review

The purpose of this qualitative single context exploratory case study was to explore high school teachers' use of project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. Current literature has suggested that while there is a dearth of research on project-based learning, in different areas, at the college (Riestra et al., 2019; Ting et al., 2021), elementary (Duke et al., 2021; Yang & Chittoori, 2022), and middle school levels (Rittle-Johnson et al., 2021; Rodriguez, 2021b; Wilson, 2020), there is a gap in knowledge at the high school level, and much of that research revolves around after school programs for disadvantaged youth (Bhuyan et al., 2020; Escobar & Qazi, 2020). Current literature surrounding the implementation of the innovative project-based learning has also suggested that project-based learning can promote life skills through authenticity (Bhuyan et al., 2020; Bowen & Peterson, 2019; Hindun et al., 2024; Hizqiyah et al., 2023; Nurfuadi, 2023), improve relevancy and academic achievement (Leggett & Harrington, 2021; Lien et al., 2023; Salma et al., 2021; Tarling, 2023), and enhance creativity and possibility-thinking/sense-making skills (Avci & Durak, 2022; Dou et al., 2021; Pan et al., 2022). Finally, current research has indicated the need for additional research to be undertaken in project-based learning's benefits to marginalized populations like low socioeconomic students (Leggett & Harrington, 2021).

The organization of this chapter will be divided into three main sections. In the first section, I will define as an innovation and provide a description of the literature search strategy, including library databases and search engines which were used. Key

search terms will then be outlined as the iterative search process is examined, followed by a discussion of how research was selected and included. In the second section, the foundational theories and concepts will be provided along with their origins and the major propositions or ideas put forth. An analysis of how the concepts have been utilized in other studies which share similarities will come next. Then, a rationale for the selections of the theories will follow, and an explanation of how and why the theory relates to the current study will be provided. The final section will include descriptions of studies related to the concepts, constructs, and methodologies chosen, will examine ways in which researchers have approached the problem prior to the study, will provide a justification for the selected concepts and variables, will synthesize important concepts, and will provide a rationale for the selection of the approach. Additionally, in the final section, themes in literature will be addressed, a summary of what is known and still unknown will be provided, and an explanation of how the study may add knowledge to the field while helping to alleviate gaps in knowledge will be examined.

Literature Search Strategy

Throughout the research process for appropriate literature, multiple strategies were employed. I met with several librarians to gain perspective on which databases might be used, different terminology to consider and research, and different insights on my topic. Similarly, I went back through my coursework to pull relevant articles, texts, and materials to create a checklist of search terms and to build a scaffold for research. I pulled my keyword lists from prior courses and narrowed those words down to relevant search terms. From there, I accessed the following databases to search for literature via

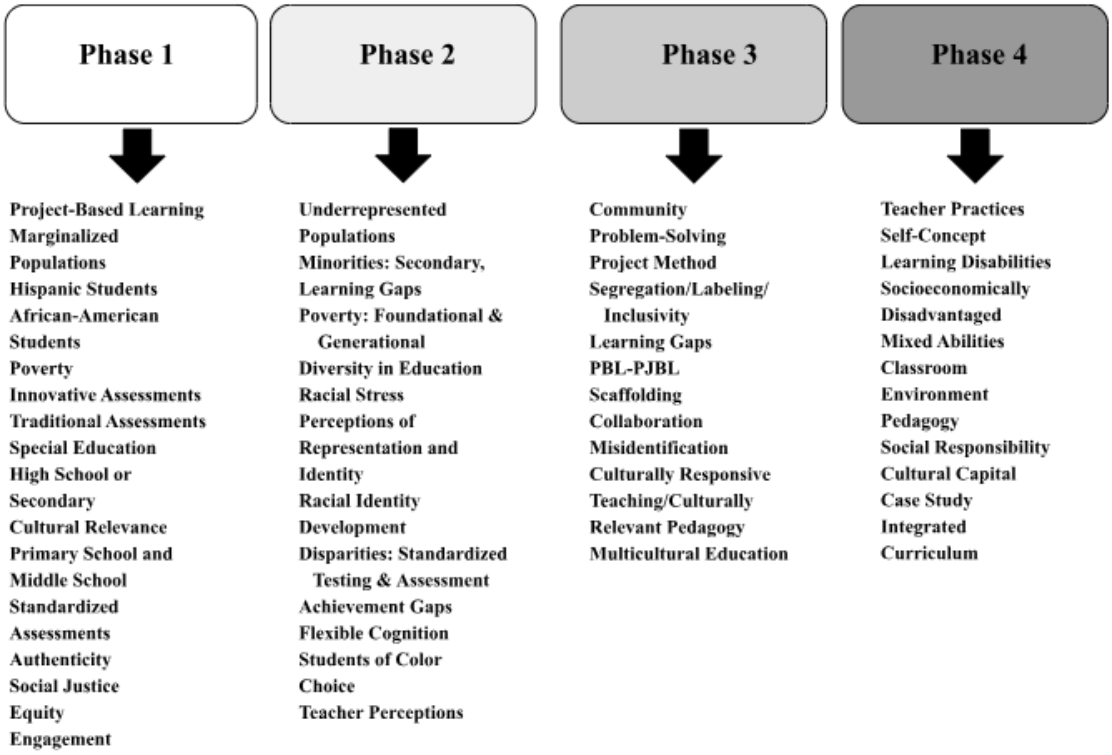
the Walden Library: ERIC, SAGE, and CGScholar Knowledge Base. Additionally, with the help of librarians, I pulled several dissertations on similar topics to provide ideas and to determine whether I truly had a gap or whether I was researching a well-covered topic. Moreover, I read conference papers to gain a better understanding and looked at the sources for the conference papers to guide me to new studies as well. Furthermore, I set up daily and weekly alerts via EBSCO and Google Scholar. Finally, I asked my professors, chair, and program head for suggestions as I worked.

Outline of Key Search Terms

The search term that began my research process was *project-based learning,* along with the synonymous descriptor *PBL*. For each term, if synonymous descriptors popped up in the search, I expanded to include those terms as well (noted below in parentheses with the terms *or* and *also*). In the initial phase of my research, I also researched the following terms in relation to PBL: *marginalized populations, Hispanic students*, *African American students* (also *Black students*), *poverty* (also *low socioeconomic status* or *low SES*), *innovative assessments*, *traditional assessments*, *special education* (also *special needs* and *disabled*), *high school* or *secondary school* (or *adolescents*), *cultural relevance, primary school* (or *elementary school*) and *middle school* (or *junior high*), *standardized assessments, authenticity, social justice, equity*, and *engagement.* This search yielded a great deal of basic information, but exceptionally limited combinations of the terms, so I completed additional searches (see Figure 3).

Figure 3

Progression of Keywords Researched



In the second round of search terms on which I focused after reading through initial research, I expanded to include the following terms (and synonymous terms where they arose) and combinations of terms: *underrepresented populations*; *minorities* (also *minority students*): *secondary*, *learning gaps*; *poverty: situational and generational*; *diversity in education* (also *diverse students*); *racial stress*; *perceptions of representation and identity*; *racial identity development; disparities: standardized testing assessment*; *achievement gaps*; *flexible cognition*; *students of color*; *choice* (also *voice* and *differentiation*); *teacher perceptions*; *inquiry* (also *inquiry-based teaching*); and *cultural wealth* in order to begin to understand both the problems and positive outcomes

associated with project-based learning and terms like equity, social justice, and cultural relevance.

Upon completion of working through the terms and finding plenty of articles on individual topics but few related directly to my search or included all the relevant concepts, I shifted and began to add in the following terms: *community*, *project method*, *segregation* or *labeling* or *inclusivity*, *learning gaps*, project-based learning *as PjBL*, *scaffolding*, *collaboration*, *misidentification*, *culturally responsive teaching* or *culturally relevant pedagogy*, *multicultural education*, *cognitive diversity*, *opportunity gap*, and *instructional practices*. I could locate a dearth of information on cultural relevance and different ethnicities; however, most of those articles did not focus on project-based learning and many did not use the same definitions for concepts. For example, *social justice* could equate with addressing issues students face or *social justice* could be the purpose of the lesson: teaching students through activism. Many of these articles focused on university students, elementary STEM programs, middle school programs like robotics, and, in articles where high school were mentioned, it related to after school or summer enrichment programs. For my final set of search terms, I tried to go back and cover any gap areas I might have missed since there were not a lot of articles.

More recently, more articles have started to become available; however, during the 5-year span of my search, this was not the case. For example, Elvianasti et al. (2022) noted that in the last 4 years, in their area of the global educational world, there have not been many studies of project-based learning and few, if any, qualitative studies. Similarly, Yoon et al., (2023) concluded that future studies on in their area need to be

conducted on more of a variety of student populations. Next, I went back through previously researched terms and added the following concepts to continue to both narrow the process and to fill in any gaps in relation to project-based learning: *teacher practices*, *self-concept*, *learning disabilities*, *socioeconomically disadvantaged* or *economically disadvantaged*, *mixed abilities, classroom environment*, *pedagogy*, *social responsibility*, *cultural capital*, *case study*, *integrated curriculum*, and *cultural diversity*.

Discussion of Selection and Inclusion

When considering which articles to include in the literature review, I consulted Dawidowicz's (2010) *Literature Review Made Easy*. I had Dr. Dawidowicz for a course and asked for guidance, especially because my topic is narrow; our discussions and the text provided insights into the process. First, for the literature review, I used sources between 2018 and 2024 which have been peer-reviewed. I used some sources which were published prior to the five-year search because they are considered seminal works. I included my own area of education and searched through other areas like the medical and dental fields and cyber security as well as a plethora of subjects at the university level ranging from the arts to engineering. Dawidowicz noted that "realistic limits" (p. 11) should be created for literature reviews and that the review should be narrow enough to focus on the RQs but broad enough to gain an overall impression and understanding of the topic.

For this study, since there are no universal definitions for terminology like *equity*, *social justice*, and *cultural relevance* because these vary from educator to educator, I broadened my searches to look for these terms as they relate to project-based learning and

as they relate to education in general in order to form a more well-rounded understanding. Because there were not many articles on any one of the variables of marginalized populations, high school, and project-based learning, I researched the topics in general versus the narrower topics to get an understanding but included those peer-reviewed articles which related directly to my topic. According to Dawidowicz (2010), articles selected for inclusion in a literature review should be reviewed and considered for appropriateness, for objectivity, and for bias. While I read conference papers to gain a better understanding because my topic was narrow, I did not use the conference papers. I did include programs relating to the College Board (2019) SAT programs, and the Lucas Educational Research Foundation (2021) because the articles had relevant information which pertained directly to the topic; however, I noted in the study that these articles were not peer-reviewed sources. Dawidowicz posited that, much like in terms of transferability, when considering an article or source of information, one must consider whether what one is learning may be applicable to one's current research and situation. Having considered the relevance of the sources above, that is, College Board (2019) and the Lucas Educational Research Foundation (2021), I considered the information, while not peer-reviewed, to be both relevant and important to understanding the bigger picture of gaps marginalized high school students face and have elected to include the sources.

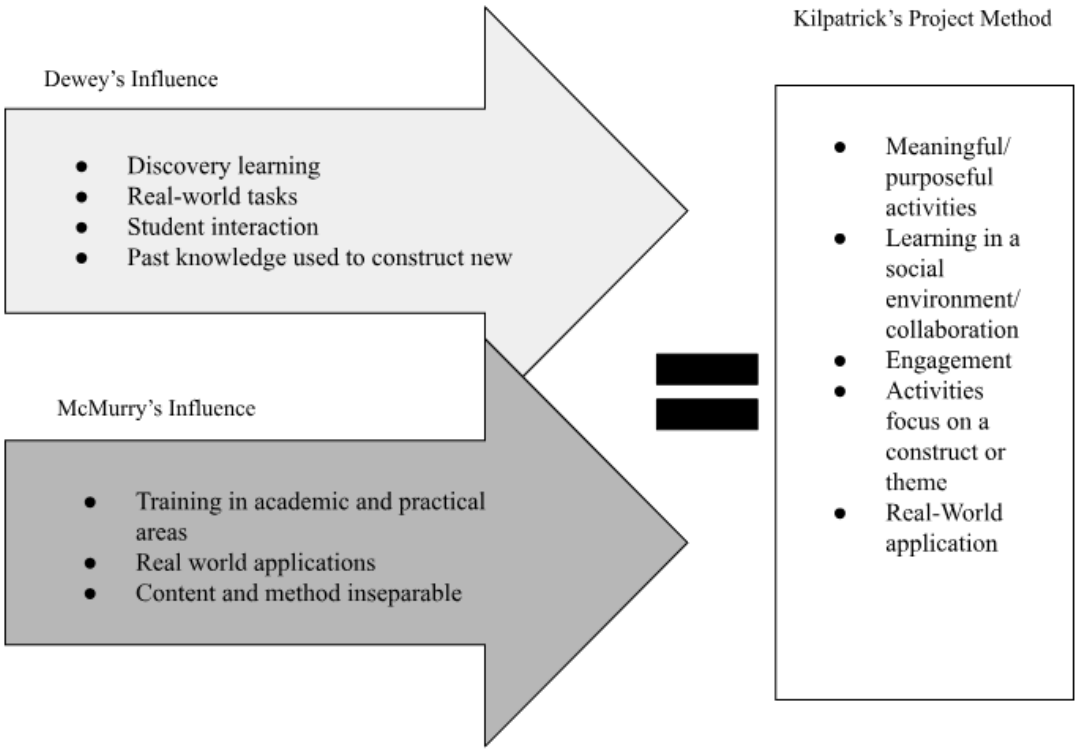
Conceptual Framework

Research throughout the years has been scaffolded to create and support educational theory. Each new concept and each new study allows for sense-making and fills in knowledge gaps. As new concepts are introduced, often ideas will overlap. Some

will work together to create a foundation. Hassan and Ahmad (2023) explained that while conceptual frameworks are integral to research because they illustrate how a concept shapes the design of a study, in the case of project-based learning, the framework may be built upon a plethora of theories. While Kilpatrick (1929/2018; see Figure 4) and Snedden (1916) are often described by researchers and academics as the fathers of project-based learning in America, the foundations are built upon significant constructivist ideas posited by Dewey (1902/2008), Vygotsky (1978), and Bruner (1960/2003, 1961, 1966, 1973) as well as McMurry (1929/2009).

Figure 4

Ideas Behind the Project Method



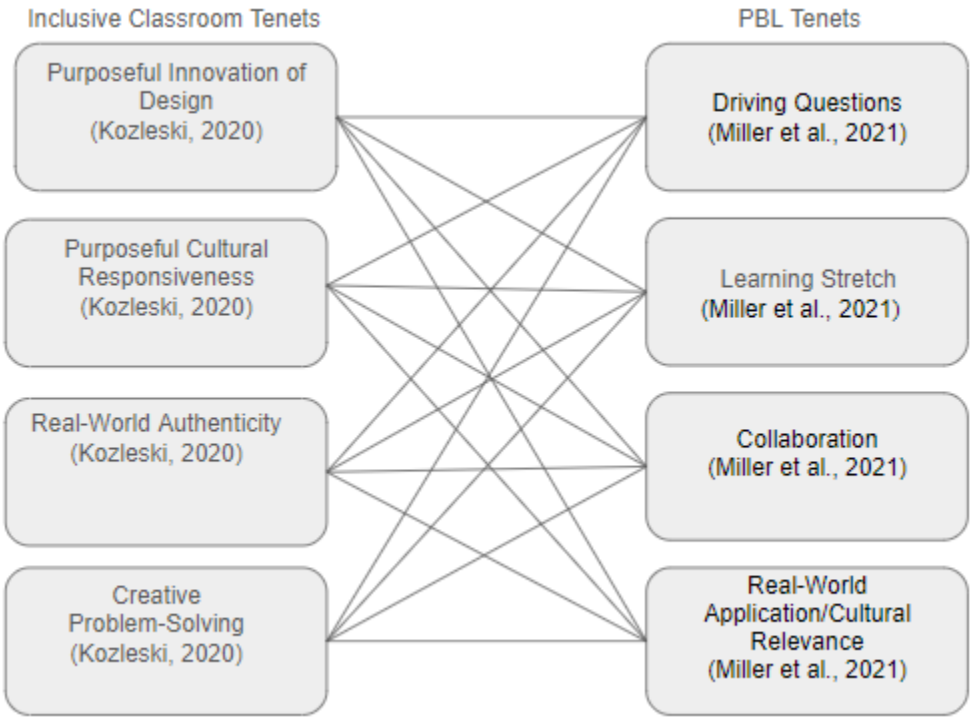
In other words, the educational theories and concepts are connected like a web to support the innovation project-based learning. As noted in Figure 4, many of the ideas

seem to overlap and researchers may note the influence of one academic upon another. For example, Dewey's (1902/2008) ideas about learning and interaction appear in Kilpatrick's (1929/2018) concept of the project method as learning socially and collaboratively.

Constructivism or constructivist theory is a concept in which ideas are formed and knowledge is assimilated through experiences and interactions. From an ontological perspective, Burkholder and Burbank (2020) posited that truths are co-created through interaction because each person experiences things differently and truth is subjective. However, from an epistemological perspective, knowledge is socially constructed, and ideas or truths are given weight and meaning through experience (Burkholder & Burbank, 2020). Correspondingly, Patton (2015) deferred to Crotty's (1998) explanation of constructivism as "the meaning-making activity of the individual mind" (p. 122). Given the nature of constructivist beliefs, learning would be considered a process that builds off prior experience, is individualized because it is subjective, and takes place via social interactions, like discussions with others. Constructivist educational approaches entail concepts like discovery learning, collaboration, choice and voice, and applications to the real world, which often require students to develop a product or deliverable of some sort to show evidence of making connections and constructing meaning during knowledge acquisition. This foundation aligns with the topic because the tenets and inclusive classroom tenets, as noted in Chapter 1, revolve around an individual's unique learning experiences and often overlap (see Figure 5).

Figure 5

Tenet Overlap



Dewey, Theory, and Common Tenets of Project-Based Learning

Dewey, the American philosopher and educator who lived from 1859 to 1952, believed strongly in the ideas of discovery learning because education stems from experience and that people grow and assimilate knowledge as they interact with others and participate in experiences that shape their perceptions. Dewey's (1938/2015) theories of experience and principles of continuity suggest that as active learning is taking place, people are changing and growing to make sense of situations, to problem-solve, and to lay a foundation for new learning; this is a process which he refers to as the "experiential continuum" (p. 28). According to Dewey (1938/2015), students should construct

knowledge by experience that is meaningful and allows for connections to be made to the outside world so that the skills needed to survive outside of the classroom are acquired and developed. Dewey (1902/2008) also noted that children's growth should be rooted in creativity and imagination and should be seen as transitional because growth is the desired intent. Building upon Dewey's (1902/2008) idea of transnationality or transformation, his principles of continuity (Dewey, 1938/2015) posit the idea that while students are being "guided" in classrooms and their knowledge bases scaffolded, the student becomes reflective. Dewey (1902/2008) noted, "A person who has gained the power of reflective attention, the power to hold problems, questions, before the mind, *is* in so far, intellectually speaking, educated" (p. 147).

There are four common tenets of project-based learning: driving questions, learning stretch, collaboration, and real-world application to community or cultural relevance (Miller, Severance, & Krajcik, 2021) which are supported via Dewey's educational theories. Dewey (1938/2015) noted that learning should be contextually based on our experiences and the environment in which they occur, and that learning should engender the skills that students will need to live, succeed, and contribute to society. In this way, Dewey's ideas support the driving question and real-world application components of project-based learning. Dewey (1910/2009), in *How We Think*, extends the idea that there is a need for training of thought with intentionality, possibilities, foresight, problem-solving, drawing inferences, reflection, and perceptions (which may be influenced by society), much like the assimilation of knowledge in project-based learning and a learning stretch. Finally, Dewey (1938/2015) noted that both

children and communities are social groups and that children, like adults, have something to contribute; they can learn with and from each other, much like the tenet of collaboration in project-based learning.

An example of a study that used Dewey's (1938/2015) theory of experience for construction of knowledge as one of the framework supports may be seen in the study *The Role of Project-Based Learning in Developing Students' Life Skills* by Wahbeh et al. (2021). The study tried to identify the role of project-based learning in two sixth-grade language classes over a 2-month period. The RQ focused on what the role of project-based learning is in shaping life skills in an Arabic language class. The researchers created a framework that incorporated the following competencies as life skills: personal and collaborative skills, self-orientation skills, and collective responsibility. When considering how Dewey's (1938/2015) ideas of knowledge construction supported this study, some connections may be made; for example, self-orientation skills relate to training of thought and a learning stretch (Dewey 1910/2009, 1938/2015), while collective responsibility relates directly to driving questions and real-world applications by reaching students' skills to solve problems they will face in the community (Dewey 1938/2015). Finally, the collaboration component study aligned with Dewey's (1938/2015) ideas about collaboration, discussion, and sharing ideas. The findings of the study indicated that project-based learning is a "viable context" (Wahbeh et al., 2021, p. 11) for improving students' life skills by motivating them, allowing for differentiation of lessons, creating engagement via collaboration, allowing for scaffolding in the

development of cognitive skills, and was recommended as a teaching strategy to help teachers support students in developing autonomy and self-directed skills.

Vygotsky, Theory, and Common Tenets of Project-Based Learning

Vygotsky, the Russian psychologist who lived from 1896 to 1934, believed strongly in the idea that thought and word were connected when he developed the sociocultural theory of cognitive development. Vygotsky (2012) once said, "The relation between thought and word is a living process; thought is born through words" (p. 270). Vygotsky (1978) posited the idea that cognitive development was socially constructed and that once children had an experience, they internalized it (Vygotsky, 2012) and shared their thoughts collaboratively. Furthermore, Vygotsky (1978) believed that by discussing, processing thoughts/language (internal speech), and sharing with others (external speech), children could reach their zone of proximal development (ZPD). ZPD (Vygotsky, 1978) is the cognitive development concept which states that there are three areas or levels of learning development: current knowledge, the proximal zone, and the distal zone. With the help of teachers and peers, Vygotsky (1978) asserted, students could reach their ZPD and learn more than they could assimilate on their own. The higher or more challenging mental functions would deal with problem-solving, synthesis, and application, and would invariably be influenced by the social and cultural aspects of the context of the learning environment/experience. From an educational perspective, the concepts presented in Vygotsky's (1978) theory would look like social interaction between teachers and students and collaboration between peers, having a learner-centered environment, and students actively taking part in learning: choice, voice, asking

questions, taking a lead in their learning, and solving challenging problems in a classroom.

There are four common tenets of project-based learning: driving questions, learning stretch, collaboration, and real-world application to community or cultural relevance (Miller, Severance & Krajcik, 2021) which are supported via Vygotsky's sociocultural theory of cognitive development (1978/2012) through language, social contexts, and culture. The project-based learning component of driving questions begins as a thought and a thought begins with language, according to Vygotsky (1978). Similarly, the aspects of project-based learning that revolve around collaboration, real-world application to community or cultural relevance, align with Vygotsky's (1978/2012) ideas on speech for self (internal) and speech for others (external), on social interactions, and on the impact of experience and interaction by culture and society. Finally, the idea of a learning stretch directly relates to ZPD–a learning process with levels that a student moves through as they process information–one in which they may advance to a higher level with support from peers and scaffolding from teachers (Vygotsky, 1978).

An example of a study that used Vygotsky's (1978) sociocultural theory of cognitive development is *Putting PjBL to the Test: The Impact of Project-Based Learning on Second Grader's Social Studies and Literacy Learning and Motivation in Low-SES School Settings* by Duke et al. (2021). The study was designed to investigate the impact of project-based learning on social studies and reading achievement for second graders. The study was predicated upon teacher training and, subsequently, instructional plans. The school at which the study took place was in a low-SES district, and the selection of

teachers to the experimental and control groups was random. Findings indicated that while the experimental group did show higher levels of achievement in both reading and social studies, there were no significant differences in levels of sub-categories like motivation. The researchers would like to conduct additional research on training for the teachers. They also found that some practices related to project-based learning are not practiced as frequently at low-SES schools. In one of these practices, inquiry was noted as little to none in low-SES schools but present in high-SES schools and districts. How does including an inquiry-based approach align with Vygotsky's (1978) proposed ideas? Inquiry-based learning allows for driving questions; a learning stretch, in which students have an opportunity to reach their ZPD; is guided and not just a solo journey; allows for collaboration and has real-world implications in which students can relate to the community–students created products about local history, economy, and proposals to solve local issues.

Bruner, Theory, and Common Tenets of Project-Based Learning

Bruner, the American educator and psychologist who lived from 1915 to 2016, was a proponent of many educational ideas and strategies ranging from discovery or experiential learning and scaffolding to create a spiral curriculum to flexible cognition and the transfer of knowledge to specific occurrences. Bruner (1960) believed that students, or children, were active, autonomous learners who constructed knowledge from experiences. Bruner explained his constructivist learning theory ideas in *The Act of Discovery* (1961): "For whether one speaks to mathematicians or physicists or historians, one encounters repeatedly an expression of faith in the powerful effects that come from

permitting the student to put things together for himself, to be his own discoverer," (p. 21). Bruner's work in *The Theory of Instruction* (1966) focused on cognitive development in the stages which were action-based, image-based, and language-based, and focused on language development to expand cognition–in other words, as more language is acquired and developed, more abstract concepts may be understood, and learning may be transferred.

The are four common tenets of project-based learning: driving questions, learning stretch, collaboration, and real-world application to community or cultural relevance (Miller, Severance, & Krajcik, 2021) which are supported via Bruner's constructivist theory of learning through concepts like discovery learning (1961). Bruner, in *Beyond the Information Given* (1973), asserted that given models of language, learners or people develop coding systems that help them to perceive and predict, or to classify items and concepts in relationship to each other. When considering the idea of perceptions or knowing, the ideas of discovery learning and autonomous learners very much align with the principles of project-based learning: creating driving questions, seeking a learning stretch through research and data collection, using all available resources (collaboration), and learning to problem-solve or transfer knowledge. None of these steps may take place without understanding language and being able to make predictions and transferring knowledge. Bruner, in *The Relevance of Education* (1973), also made the distinction that culture and environment may play roles in the development of language and cognition. Bruner (1973) used the example of IQ tests which, when introduced to the world on a global scale in the 40s and 50s, noted the people who were from the culture in which the

tests were developed scored higher than those who were not. Similarly, those who lived in environments which placed emphasis and import on language development (generally not those communities living in poverty) would have more opportunities for "richness in cognitive growth" (p. 139).

An example of a study which used Bruner's constructivist learning theory was seen in Amin et al. (2020), *Mathematical Learning Approach for Special Education Pupils: The Effectiveness of Mauselis Board in Improving Adding Skills*. Bruner's ideas aligned with Amin et al. (2020) via the process, Amin et al.'s study focused on using Bruner's stages of language development to build foundational language so that students could understand abstract concepts using discovery-type methods. Students were given realia to work with to develop terminology and understanding, then interacted with a facilitator to see and hear examples, and finally created a product to demonstrate mastery. This type of understanding also aligned with Bruner's belief that students may learn any topic if it is tiered for their levels and the curriculum is spiraled from a foundation. Amin et al. studied the processes of students with learning disabilities and math cognition and found that hands-on and discovery-type approaches worked better for this population than rote learning.

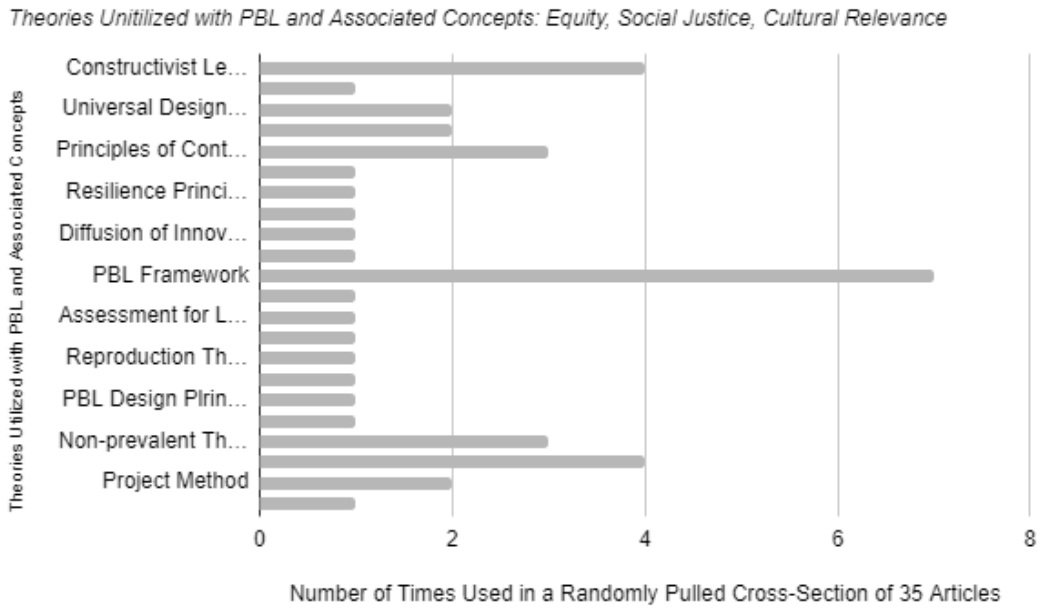
Analysis of Utilization of Theories and Concepts in Other Studies

Project-based learning is defined as an approach, strategy, or framework that may be used to engage students in complex, inquiry-based learning which requires students to problem-solve, work with peers and surrounding resources, and culminate in a product with real-world applications (Chen & Yang, 2019; Lien et al., 2023; Rehman et al., 2023;

Saad & Zainudin, 2022; Widyaningrum & Prihastari, 2023). Furthermore, it may be noted that while project-based learning is grounded in multiple theories (Hassan & Ahmad, 2023; Miller & Krajcik, 2019) and theoretical frameworks, project-based learning is described as having a variety of tenets, generally four or five, but ranging up to eight. For this study and as noted by Miller and Krajcik (2019) and Miller, Reigh et al. (2021), there are four tenants that remain consistent in the various descriptions: a driving question, a learning stretch (this generally involves critical thinking, problem-solving, and research), collaboration, and real-world application. Furthermore, as noted in early studies and in more recent studies like Miller and Krajcik and Cacciamani (2024), because project-based learning revolves around student interests and allows students to begin at their learning levels and in their communities, project-based learning is responsive to diversity, culture, gender, learning levels, and socioeconomic status. The literature reviewed, which examined the foundational theoretical underpinnings, was varied. Out of a random review of a cross-section of 35 articles, 20 different theories and frameworks came to light. Those theoretical and conceptual frameworks (see Figure 6) included but were not limited to social constructivism, project method, assessment for learning, academic identity framework, compassionate pedagogy, computational thinking, discovery learning, the learner centered paradigm, the project-based learning framework, constructivism learning theory, and culturally responsive pedagogy.

Figure 6

Theoretical Frameworks Associated With Project-Based Learning



Dobson (2023) posited that based on the teacher's use and the ideologies of the wider school and district beliefs, the theories could apply in different contexts. It should also be noted, however, that some of the frameworks are similar in nature and just have slight differences in terminology. Finally, it should be noted that in some, if not many, cases frameworks are selected and explained with one theory but illustrate another. For example, Saad and Zainudin (2022) list their foundation as computational thinking (CT) based but later explain that "CT echoes the concept of constructivism learning theory, where learners construct knowledge," (p. 2) via experience, which is Bruner's (1960, 1961) discovery learning and transfer of information. Many of the more recent studies appear to have patterns of using newer theories or frameworks when the seeds of the frameworks are based on older educational theories which are scaffolded.

Three studies that have incorporated the theoretical underpinnings which were utilized in this study are (a) Hassan and Ahmad (2023) who developed project-based learning instruments and rubrics for students with autism; (b) Burks (2022) who studied student attitudes and academic performance in biology using a project-based learning community; and (c) Duke et al. (2021) who studied the impact of project-based learning on second graders' social studies and literacy learning motivation in low-SES schools. Hassan and Ahmad completed a study in which they used design and development research, predicated on Vygotsky's (1934) social constructivism theory, Dewey's (1938) learning by doing, Bruner's (1983, 1996) constructivist learning theory, and Gardner's (1993) multiple intelligence theory to design and develop tools and strategies which would allow autistic students learning English to discover language; acquire knowledge, understanding, and concepts; and apply them through experiences because the process would not require all students to start at one place or be too structured.

While Burks (2022) did not specifically state one framework, the study examined 76 underrepresented minority students who are first-generation college students taking nonSTEM biology courses in science in a Historically Black College and University on experiential learning. A course was redesigned to merge art and biology with a culminating nontraditional project-based learning project, and students' grades rose from 70.5% to 81.6%. It was noted that when the initial diagnostic score was removed, the scores rose from 81.6% overall to 86.5% overall. Students were described as having few positive experiences with science prior to the class; however, after starting the course,

close to 87% of students explained in a survey that they felt they had learned real-world skills.

The third study that used the same theoretical framework as my study was Duke et al. (2021) who described the history of project-based learning based on the work of Dewey, Kilpatrick, and Snedden, and referred to Vygotsky's (1978) social constructivism and Fitzgerald and Palincsars's (2019) sense-making as their foundational premises. Fitzgerald and Palincsar also used Vygotsky's *Thinking and Speech* (1934/1987) as a part of their framework, so both foundations were aligned. It should be noted that Duke et al., posited the lack of research on the inclusion of project-based learning in both high-SES and low-SES schools but found that there are some commonalities in practices related to nontraditional instructional strategies, like project-based learning, and their lack of implementation in low-SES locations. Duke et al., in a cluster randomized experiment of 48 teachers and 684 students, in which 24 teachers were provided training, support, and project-based learning units to implement with students and 24 were told to teach their traditional curriculum, found that there was a 63% gain with the group who incorporated project-based learning in the low-SES setting. These three studies were presented due to their alignment with the topic of project-based learning and marginalized populations as well as the frameworks which were selected and utilized.

Rationale for Selection of Theories and Concepts

When considering the works of Kilpatrick and Snedden--which impacted Dewey's ideas for schools reflecting the real world, collaboration and social change, as well as active experiential learning--and Vygotsky's social constructivist ideas of

collaboration and mixed grouping, it is observable to note how educational theory was layered and shaped by others' ideas. When Bruner's concepts were then taken into consideration, for example, autonomy and discovery learning, it was easy to see how educational theory shapes and reforms itself.

These theories are separate but work in conjunction with each other to build a stronger foundation. As explained earlier in the chapter, the framework aligns with the concepts of project-based learning. For example, Primavera (2021)—who used the term problem-based learning, though the culminating activity is a public, real-world, product–used driving questions to help students research social justice problems in the English class, collaborate and discuss, and then create products which promote social justice. Primavera had a driving question, a learning stretch, collaboration, and a product which was supported by constructivism, social change elements, autonomous learning, collaboration, cultural responsiveness, and flexible cognition–ideas put forth by Dewey, Vygotsky, and Bruner.

Miller, Bogiages et al., (2021), in *Embedding Activism in a STEM EdD Program*, trained up-and-coming educators to use STEM, innovation, action research, and project-based learning to incorporate classes that revolve around the following themes: social justice/multicultural education, community, and addressing inequity in institutions along with their regular coursework in order to bridge the gap between theory and practice in a cross-curricular, socially responsible and responsive manner. When considering the principles and ideas posited by Dewey, Vygotsky, and Bruner, the same foundations mentioned in the previous example applied here as well: social change, autonomous

learning, cultural responsiveness, and more. Part of my rationale for using the frameworks presented by Dewey, Vygotsky, and Bruner for my study is that they logically apply. I could use newer theories, however, much of the newer theory is based on or echoes seminal educational theories like these.

Another reason I decided to utilize these theories was that, in the current educational sphere, terms like equity are becoming increasingly fraught with negative connotations because of state and national politics. In a commentary on health equity in the medical field, Hooper and Pérez-Stable (2023) noted that "equity work reflects intentional efforts to remove access barriers and allocate high-quality, need-based resources," (p. 625) and posited that equity is not achievable without continued efforts to remove disparities and to remove obstacles. While the comment was applied to the health field, the concept, much like theory, may be transferred and applied to education. Additionally, Eagle et al. (2023), in a report that aimed to determine whether music science could be socially just, offered the idea that issues of equity and social justice must be normalized and ongoing to create real impact and responsiveness.

Post-COVID research has also been done related to the cultural relevance of curriculum. For example, Baize (2023) completed a study on cultural responsiveness during COVID-19 lockdowns and asserted the notion that while educational curriculums are often defined as being designed for the majority, the "perceived majority" (p. 2) does not always align with the actual majority, since marginalized populations make up more than half of the national student population (National Center for Educational Statistics, 2023). Andrews and Leonard (2023) expanded on what was meant by the term responsive

and the concept of responsive teacher education as educators who are not only aware of the current stigma surrounding terms like equity but who are also able to regularly and consistently support teachers and strategies that enable the implementation of equitable practices. Furthermore, Flynn et al. (2023) posited that there are growing calls for education to include culturally responsive pedagogy and justice-oriented practices. While those calls for responsive pedagogy mount, there is little training or support for teachers to understand that equity and social justice may be more than just a lesson (Andrews et al., 2018; Jong et al., 2023). Because of the growing concerns surrounding terms like equity in education, I decided to use more traditional, well-accepted, theorists–Dewey, Vygotsky, Bruner–rather than newer frameworks so that the study and any discussion surrounding it might focus on the topics of equity, social justice, and cultural relevance and how project-based learning is used as an innovation to address these rather than have the focus of the study shift solely to three words.

Explanation of Alignment Between Foundational Ideas and Current Studies

Dewey's theory of experience and principles of continuity (2015/1938), Vygotsky's theory of social constructivism (1978), and Bruner's learning theories (1960, 1961, 1966) allowed for autonomous, experiential learning, through discovery as knowledge is built via language and more concepts are acquired. The theories further placed emphasis on collaborative learning (from peers and facilitators) and allowed knowledge to be built by learners at their own starting points (and each may learn the same concepts from where they are with differentiated learning) and may reach their respective levels of potential. These theories aligned with project-based learning's four

tenets of student-centered learning: driving questions, a learning stretch, collaboration, and real-world applications. While the focus of my study was on four specific marginalized populations, other populations may also have similar experiences.

The theory aligns with the tenets, and the tenets work with marginalized populations as evidenced by studies with marginalized populations. An example of this may be seen in the study by Kee and Lai (2022) in which a quantitative study found that 87.8% of low-SES students in 15 families living in Hong Kong, during COVID-19, felt their study habits improved and felt that school/learning was more positive overall when project-based learning was implemented. Another example of this may be noted in a study conducted by Hsin and Wu (2023) on 98 young students, four to five years old, with scientific practices in urban and indigenous areas in Taiwan. The findings suggested that the project-based learning model showed improvement in scientific practices (measuring) in children with varying ages and ethnicities.

A third example of this was observed when examining the study by Alvarez (2023) in which seven Mexican immigrant families participated in a bilingual project-based learning project at school. The focus of the projects was on the children's experiential learning and, though there were minor operational issues in the pilot program, parents placed value on the learning because it related directly to their children's lived experiences and was culturally relevant. A final example of how the tenets align with marginalized populations was seen in a study conducted by Papp (2020) at a Canadian high school in which Aboriginal, nontraditional, students were given

multidisciplinary, culturally responsive, and project-based units as curriculum. Results demonstrated an uptick in student attendance, credit earned, and graduation rates.

The RQs for my study challenge and build upon existing educational ideas because they frame project-based learning as an innovation which may be used as a strategy to actively address social issues like equity, social justice, and cultural relevance rather than simply focusing on engagement and academic achievement, as has been the focus of project-based learning for many studies in the past. I used the framework in my interpretation of the data to determine how teachers use project-based learning in a self-directed manner as students acquire new knowledge and language skills. These questions build upon that by allowing for the examination of how that relates to different populations of children in society and have the possibility for social change by considering project-based learning as a purposeful and innovative tool. Therefore, I examined and analyzed data mindful of the concepts within these theories, and I developed code names and group codes reflective of the philosophies presented in the theories.

Literature Review

In the descriptive portion of the literature review, I will first examine project-based learning as an innovation, then project-based learning as it connects to academic achievement and life skills–two of the more common topics studied with project-based learning. Next, I will shift to discuss identity to create a more comprehensible platform for information pertaining to the concepts in my study. Next, I will examine themes surrounding the concepts of equity, social justice, and cultural relevance. Following that,

I will describe project-based learning in relation to low-SES students, minority students, and special education students. To conclude this portion of the literature review, I will describe a nonpeer-reviewed study which most closely aligns with my study.

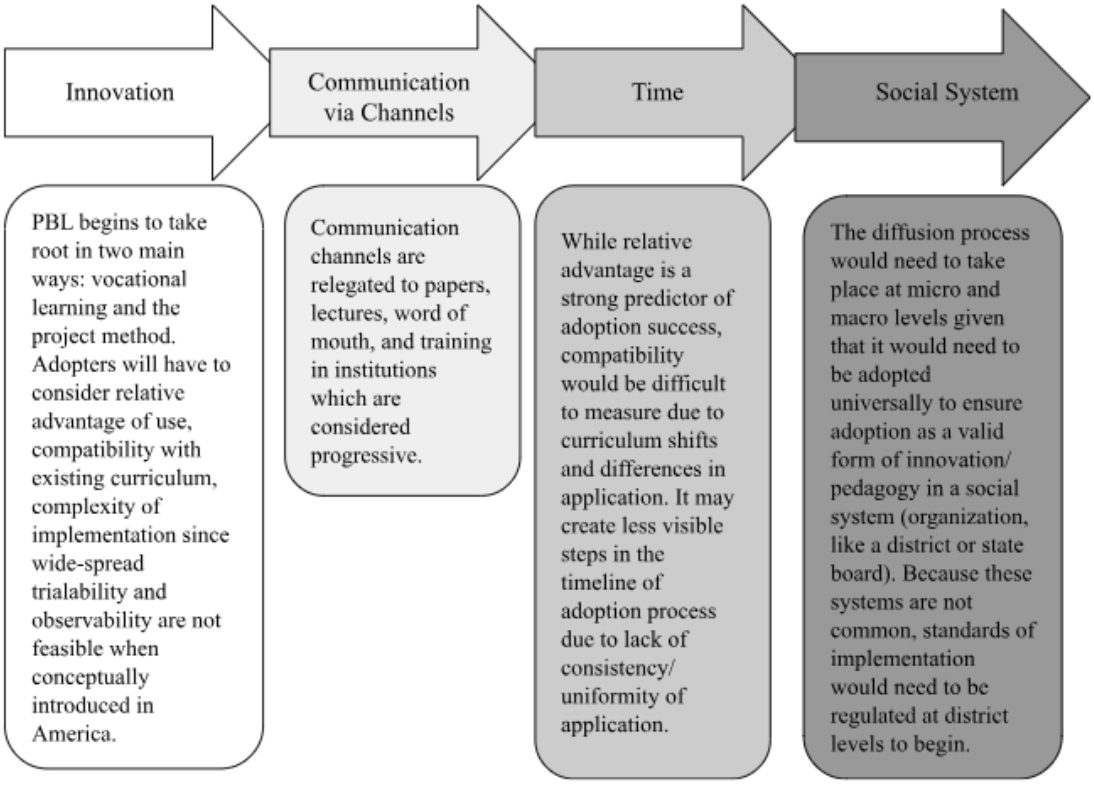
Project-Based Learning as an Innovation

Project-based learning has been present in the United States in various forms for over 100 years. While having many labels and sometimes having more than the four core tenets, the strategy has existed. Rogers (2003) defined an innovation as a regular or general practice that is perceived in a new way or an altered manner—that is, something that has been transformed. Creativity, though often used interchangeably with imagination and innovation, is an original idea which is deemed appropriate and purposeful to some sort of task while innovation is concerned with application (Kaufman, 2016). Through project-based learning, which culminates in a real-world product, creativity and innovation are visibly related (Avci & Durak, 2022; Dou et al., 2021). Though, conceptually, project-based learning has existed in some form in American classrooms, and there have been studies on topics ranging from cooperation and teamwork (Moreira & Rodrigues, 2023) to design thinking to self-regulation (Zarouk et al., 2020), few relate to the marriage of creativity and innovation. Project-based learning is an innovation because the focus of the study was to determine how teachers were using it to address issues of equity, social justice, and cultural relevance to engage specific populations–a study which may fill a knowledge gap. An example of this may be seen in Rogers's text example of diffusion theory with the British Navy and scurvy. Rogers's use of the example demonstrated how slowly most innovations are adopted. In 1601, Captain

Lancaster of the British Navy noted that men were dying of scurvy and completed a successful experiment noting that citrus could prevent this issue. It was not, however, until Dr. Lind repeated the experiment in 1747 that the British Navy took notice but still did not adopt the innovation on a large scale until 1795. While evidence of success was present, the adoption process often takes years (see Figure 7).

Figure 7

Project-Based Learning Adoption of Innovation Process via Rogers's Diffusion of Innovation Theory



There are four main parts of the diffusion of innovation process according to Rogers's theory: (a) the creation of the innovation (or the shift in perception), (b) the communication of the new idea through various channels, (c) the timetable for adoption, and (d) the social system. While project-based learning has been present, it has been used

in different areas, like engineering and STEM; at different levels, like middle school and universities; and for different reasons, to create cooperation and teamwork or to build autonomy. There is no one overarching area in which project-based learning has been universally researched and adopted, which means the process will take longer. For these reasons and other variables that impact the process, a gap in knowledge does exist which this study may fill, and project-based learning may be seen as an innovation in this instance.

Project-Based Learning and Academic Achievement

Historically, studies on project-based learning have taken place in relation to academic achievement and success. An example of this type of academic achievement may be noted in the study conducted by Chen and Yang (2019) in which a meta-analysis was completed to determine the effectiveness of students' academic achievement. In the study of 30 journal articles, over a period of 19 years, and based on information from 12,585 students from nine countries, findings showed that project-based learning has a medium to large positive effect (0.71) on students' academic success when compared with more traditional forms of assessments. Similarly, another meta-analysis of the effectiveness of project-based learning on students' academic performance completed by Baleman and Keskin (2018) included 48 studies in various fields of science that had similar findings. Studies included pre-tests and post-tests to meet the inclusion criteria of the analysis and based on the findings using Cohen's (1988) criteria (1.063), project-based learning was found to be 86% more effective in raising academic achievement than traditional assessments. In later research undertaken by Meier and Hendel (2019) and

predicated upon Baleman and Keskin's research, Meier and Hendel found the evidence so compelling that it resulted in the creation of a "How To" manual for third-grade science teachers which was created via the design process for a dissertation for St. Louis Public Schools.

Additional examples of the impact on student learning from project-based learning may be seen in a variety of courses ranging from university computer science and engineering classes to K-12 math classes. Kondo et al. (2023) completed a study on project-based learning and mechanical design using a computer-aided engineering structural analysis instead of the 3D computer-aided design system. The study followed a course in which students learned technical skills and developed the theoretical and practical skills to design original structures with specific, real-world, restrictions. The course materials consisted of nontraditional assessments (project-based learning), a text, a workshop text, and lectures. Kondo et al. noted that the data analysis results yielded a result of improved academic performance among students who took the course.

In one elementary school study relating to project-based learning and math, project-based learning was shown to increase students' active participation, problem-solving skills, willingness to collaborate, and discussion skills, which positively impacted their academic achievement (Rehman et al., 2023) based on results of a convergent mixed-methods approach in a study of 70 students (35 in an experimental group and 35 in a control group). Similarly, in a second elementary school mathematics study that included 72 second-graders, Wahyuningtyas et al. (2023) completed a quantitative study with experimental methods and a nonequivalent posttest-only control design, seeking to

determine whether project-based learning could be paired with flashcard media to effect positive academic achievement. Wahyuningtyas et al., noted results suggested that the pairing and implementation of project-based learning would incentivize active engagement through play. Essentially, multiple studies have found that the use of project-based learning may improve student achievement and further academic success regardless of age, grade, or subject.

The effect of project-based learning on state-mandated, standardized testing has also been examined regarding student achievement. Craig and Marshall (2019) conducted a study on a diverse population of students who have been taught in all subject areas only via project-based learning and included a comparison group from another high school that has been taught via conventional instructional methods. With a sample size of 100 students and a state-mandated benchmark, students were tracked via achievement levels in Grades 9, 10, and 11. Findings pointed to the students taught exclusively via project-based learning not only matching the scores of the traditionally taught students, but, in the case of closer examination of Grade 10, exceeding the benchmark performance of the traditional pedagogical approach by a scale score of 133.

Project-based learning has even been studied for its effectiveness and effect on student achievement as it relates to blended, online learning. Salma et al. (2021) studied a random sampling (cluster) of 72 students using a quantitative pre-test and post-test. An independent sample test and the gain normalization test were used, and the results demonstrated that there were significant differences and gains in student achievement. Salma et al. concluded that student achievement was positively impacted by the

implementation of project-based learning and blended online learning as opposed to a traditional curriculum.

Project-Based Learning and Life Skills

Project-based learning has also been examined to determine whether life skills may be learned by students via the real-world applications associated with the project-based learning process. More recently, though, project-based learning and life skills have become a major trend in studies in the realm of engineering and design. Engineering students need to acquire skills with real-world applications whether designing in a remote lab or taking a 3D design class (Benesero & Robinson, 2022; Gupta, 2022; Hayashi et al., 2023; Mou, 2020; Yang, 2021). Multiple studies have posited the idea that engineering requires the development of these skills, like collaboration and communication, presented in project-based learning instruction, and applicable technological skills needed to bridge the gap between university and professional life (Benesero & Robinson, 2022; Gupta, 2022; Hayashi et al., 2023; Mou, 2020; Yang, 2021). Engineering studies, which have focused on specific courses, have also detailed data analyses that indicate that project-based learning enhances student performance (Benesero & Robinson, 2022; Gupta, 2022; Hayashi et al., 2023; Mou, 2020; Yang, 2021). While engineering courses appear to take the lead in studies with project-based learning and real-world applications, other areas are emerging as well. Shiyamsyah et al. (2024) have completed a study in which project-based learning is being used to teach bio-entrepreneurship skills as well as life skills in Indonesia in one study, and according to Ortiz-de-Montellano et al. (2023), in another study, an 8-step methodology model for environmental sustainable development has been

designed by business engineering which utilized project-based learning to introduce 251 college students to authentic opportunities to innovate existing processes. Both studies have demonstrated positive learning outcomes from these types of project-based learning implementation.

Project-based learning has also been utilized by universities, according to more recent literature, to develop competencies. A quasi-experimental one-group pre-test and post-test study in South Korea found that implementing project-based learning instructional methods impacted post-test scores significantly in 30 junior college students' coursework in nutrition and demonstrated a marked, significant improvement in career aspirations (Yoon et al., 2023). One university case study in economics and finance, completed by Parrado-Martínez and Sánchez-Andújar (2020), found that students' perceptions of their employment eligibility increased as they acquired new competencies and that students found the implementation of project-based learning both "useful" (p. 1) and noted the "superiority of this technique compared to traditional methods," (p. 9) in gaining professional/life skills. Similarly, in a university mixed-method exploratory case study in educational leadership, Dana et al. (2021) examined how skills were developed as practitioner-researchers and, via project-based learning units of instruction, learned to bridge the gap between research and career practice. While researchers noted some issues with underlying tensions in the areas of self-efficacy, real research and application vs. simulations, collective learning, and public vs. private discussion, the obstacles and the themes which arose still provided practitioners with practical value. A similar mixed-method study of the usefulness of immersive virtual

reality software in project-based learning for students found that project-based learning has a medium to significant effect on student success as compared to traditional classes and teaches students professional and life skills (Travaglini et al., 2023). Furthermore, the skills that may be developed using project-based learning in classrooms may be utilized by students throughout their educational careers and into adulthood.

Life skills also appear in studies related to project-based learning as an instructional strategy when relating to language acquisition at nearly every level: elementary, high school, and university as posited by the following studies. Wahbeh et al. (2021) completed a study of 80 students in two sixth-grade Arabic language classes. The qualitative study included observation, semistructured interviews, and student documents to determine the role of project-based learning in developing life skills in a language class. Wahbeh et al. found that project-based learning helped students with self-regulation skills as well as communication between peers and teachers. At the university level, Avsheniuk et al. (2023) examined the effectiveness of project-based learning on English language acquisition in a Ukrainian university. The study included five groups of 59 students from various cultural backgrounds and used a qualitative, case study approach. From the perspective of life skills, Avsheniuk et al. found that the implementation of project-based learning engendered life skills which included autonomy in learning, communication, and collaboration, developing long-term memory skills, and improved students' digital literacy skills. In essence, the skills learned through project-based learning may be reflected in a myriad of ways such as more equitable access for

jobs--for example, underrepresented groups having the confidence and life skills to take on more STEM related fields.

At the high school level, a study conducted by Becerra-Posada et al. (2022) sought to examine how utilizing project-based learning strategies and units could develop confidence in beginning language speakers and the life skill of language competency. Becerra-Posada et al. employed a qualitative research design with one teacher and a group of eighth-grade students. The study, using action research, followed the stages of project-based learning as they were implemented with the low-SES group to determine the acquisition of language competence with lessons on food and nutrition. The results demonstrated that the students moved from mimicking the language via choral repetition to completing projects where students described processes and experiences on their own.

Finally, studies at the high school level were conducted in courses relating to biology at an Indonesian school and history/social studies at an eleventh-grade class in Taiwan to determine whether the implementation of project-based learning could increase the life skills of critical and creative thinking and possibility-thinking in relation to learning motivation. The two studies, one a quasi-experimental design involving 140 eleventh graders (Pan et al., 2022), and the second, a qualitative study, focused on content analysis, involving 20 articles on high school biology, sourced from biology/educational journals (Elvianasti et al., 2022) between the years 2015 and 2022. It should be noted that the second study found a downward trend in the number of studies on the use of project-based learning, related to high school biology, in publications over the last four years. Pan et al. posited that project-based learning is “highly recommended”

(p. 116) to develop skills in the Indonesian curriculum. Elvianasti et al. (2022) indicated that students in the experimental group, working to develop creativity, possibility-thinking, learning motivation, and content knowledge significantly outperformed the comparison group in skill acquisition. Additionally, life skills, such as those mentioned by Elvianasti, like creativity developed via project-based learning, align with Kozleski's (2020) creative problem-solving in an inclusive classroom and prepare the students for real-world applications in the working world.

Stress and Identity

Two important themes that came out of the literature review were the terms "stress" and "identity." While this may seem to be a tangent in the literature review, an understanding of these terms will engender a better understanding of the process and scope of the study since the study explores how teachers use project-based learning to address issues of equity, social justice, and cultural relevance with marginalized populations. Marginalized populations are often underrepresented and face obstacles in academia which may create learning gaps. Identity, and often stress, which accompanies academic obstacles, relate to the population of students. In a study involving 8,997 undergraduate students from 20 Midwestern schools, Frazier et al. (2019) sought to examine whether stress is an impediment to academic achievement among college students. Students completed online surveys using a 10-point scale to answer questions about stress. The median age of students was 21 years old and 68% were female. Respondents included 81.6% White students, 8.6% Asian students, 6.1% Black or African American students, 2.1% American Indian or Alaska Native students, 1.9% were

"other races," and 2.9% opted not to respond to the question of ethnicity. The findings noted that female students indicated that they had more stress. Male students and minority students were less likely to report having stress, though their participant numbers were smaller, and they did not have higher grade point averages. The study concluded that interventions should be made available to those who perceive stress as an obstacle and who have lowered academic achievement.

Based on the understanding that stress may be an academic hindrance, stress about identity, belonging, and being a part of an educational community/system merits consideration. In a study on social identity, Smaldino (2019) posited the idea that human social identity changes with context and that humans, that is, students, place an inordinate amount of value on demonstrating to others who they are, how they fit in, and where they fit on a regular basis. Layering this concept upon the idea that students who are unable to relate to others, materials, environments, and contexts, it may be feasible to believe that students who experience this will have a challenging time learning and will feel stress about academic achievement. A related study completed by Palashi et al. (2023) utilized a quasi-experimental quantitative study that looked at the impacts of project-based learning on student identity with 30 ELLs, not about project-based learning's effectiveness, but about whether traditional project-based learning or technologically driven project-based learning lent itself to even greater development of social identity and found that while traditional project-based learning was effective, technology-enhanced project-based learning offered additional opportunities for student empowerment.

Another qualitative study completed by Quigley et al. (2023) noted that 105 historically underrepresented students had a difficult time relating to computer science education; however, once strategies like project-based learning were incorporated into the curriculum, students felt a better sense of identity and could see themselves working in related fields as adults. Consequently, valuing relatability and relevance of curriculum as well as the concept of identity is not new to education; consider the seminal work of Carol Ann Tomlinson in the field of differentiation. In *Differentiation and the Brain: How Neuroscience Supports the Learner-Friendly Classroom* (Tomlinson & Sousa, 2010), Tomlinson spoke to developing lessons and strategies which support the individual's learning requirements (their individual identity in this context). Prior to this publication, she explained that students' individual learning requirements are not a new concept when she outlined the strategies of differentiation (Tomlinson, 2008).

In much the same way, Greenstein (2012) called for more varied, nontraditional assessments and approaches to serve and support 21st century global learners. One-sized education does not fit all and can, in some cases, cause stress which may become an impediment to academic achievement. Whether noted via the study conducted by Chen et al. (2023a) on engineering students developing a sense of identity in engineering or becoming aware of the requisite skills needed for survival in the professional world, or seen through the lens that bias may have in learning as described in the study by Copur-Gencturk et al. (2019), which examined teachers' levels of bias in relation to mathematical ability in female minority students, identity, and relevance matter.

Equity, Social Justice, and Cultural Relevance in Education

Current literature has demonstrated an uptick in articles relating to equity, social justice, and cultural relevance (and the need for it) in education. Rodriguez and Morrison (2019) noted, however, that there are no universal terms, so the words equity, social justice, and cultural relevance can have different meanings. Results from one study that focused on teachers' perceptions of how to teach and assess students within a culturally diverse classroom in an equitable manner, found that learner-centered strategies with innovative assessments which follow the theoretical concepts presented in this study (i.e., collaboration, active participating, and learning via discovery) and in the tenets of project-based learning actually work to yield positive results (Sigdel & Sharma, 2021). Sigdel and Sharma (2021) also noted that there must be access and opportunity for this type of learning to take place. Secules (2023) noted that even when equitable access is present, the environment created for collaboration and project design must be considered carefully, or stereotypical social norms may impact learning and creation. Other studies have also focused on equitable access (Darling-Aduana, 2021; Glazewski & Ertmer, 2020) but with a shift to culturally relevant practice, to include problem and project-based learning, and term this type of teaching "critical consciousness" (p. 1). Similarly, studies link terms like cultural relevance and social justice (Araujo Dawson et al., 2022; DeWalt & Barker, 2020; Shaw, 2022) or equity and social justice (Ridgeway, 2019; Rodriguez, 2021a). Sometimes, studies use new terms with or in place of more commonly used words. For example, Kalla et al. (2022) completed a study on project-based learning which focused on real-world problems, but instead of using social justice, they employed

"action competence" (p. 1) and "pro-environmental behaviors" (p. 1). Darling-Aduana (2021), in a study of authenticity and online coursework, asserted that the need for understanding and streamlining these concepts is requisite because "opportunity gaps" (p. 1) may be magnified as unequal access becomes more of an issue.

When considering the concept of equity and reforming education from a school-wide perspective, Evans et al. (2019) asserted that it must begin from a leadership level with an aim toward transformational change in which all students' needs are met responsively. While Evans et al. conducted a study of leadership reform with bilingual learners, the same shifts could be applied to other marginalized populations. Francois and Hood (2021), for example, posited that considerations of assessment practices and shifts from traditional assessments to more authentic assessments which serve diverse populations must also occur. Project-based learning has been used in studies with marginalized populations of students including low-SES students, special education students, and Black and Hispanic students to create equitable classroom goals (Anderson et al., 2023; Bowen & Peterson, 2019; Martin & Dixon, 2019; Miller, Reigh et al., 2021; Miller, Severance, & Krajcik, 2021; Wilson, 2020). Studies have shown that project-based learning allows students to learn at their level (Martin & Dixon, 2019; Pazey et al., 2024) and greets them as they are (Martin & Dixon 2019; Pazey et al., 2024) to create authentic learning assessments and provide opportunities for student achievement.

Often when considering graduate level research, an often-existing gap between research and practice may be noted; however, sometimes research and practice have parallels and common ground. Ridgeway (2019), in response to a paper in which

Rodriguez and Morrison (2019) defined the terms equity, diversity, and social justice as they pertain to research in science, reminds researchers that they must know themselves, their biases, and consider deconstructing those differences. In a similar vein, Jacobs and Perez (2023) completed a meta synthesis of 65 teacher self-studies in which they looked for commonalities in teacher perceptions of social justice in education in the classroom with a focus on three areas: identity, conducive environment, and critical consciousness. Jacobs and Perez, based on findings, created a framework of intentionality which may be included as part of teacher training rather than a "what to do" addition to the teacher's normal duties and responsibilities. Adah Miller et al. (2022) further noted that when incorporating social justice into the curriculum, and into strategies like project-based learning, the issues addressed should be local so that students may learn from where they are (authentically rather than theoretically) while learning to use their voice. Social justice curriculum should also relate to cultural responsiveness (Arat et al., 2023; Araujo Dawson et al., 2022; Chen, 2023; List, 2023).

The concept of cultural relevance is not a new term, but it may be defined in broad terms. Sometimes called cultural responsiveness (Ladson-Billings, 1995), this type of instruction has gained acknowledgment to support marginalized populations to lessen achievement gaps and to empower students; however, the ways in which cultural relevance or culturally responsive teaching is applied or utilized are varied (Chen, 2023; Mathis et al., 2023; Min et al., 2022). The levels of diversity according to the National Center for Educational Statistics (2023) are increasing. For example, as the percentage of White students dropped from 52% to 45%, the number of Hispanic students rose from

23% to 28%, and the number of students who are of two or more races rose to approximately one million students.

While the need for cultural relevance in education has become more realized, Vigren et al. (2022) noted in a quantitative survey-based study about teacher perceptions, understandings, and attitudes toward diversity, that teachers felt "a strong sense of responsibility," (p. 1) to the students but did not necessarily know how to go about properly supporting them (Pagán, 2022). Furthermore, recent studies at the college level have noted indigenous students asking for inclusion in the curriculum, more opportunities for interaction, and assessments like project-based learning, so that their culture and values may be included (Hunt & Oyarzun, 2020; Mertens, 2023). Current research has indicated that a shift has started to trend and that, at the college level, professors are problem solving to include more relevant curricula and multimodal approaches to make learning more authentic (DeWalt & Barker, 2020; Secules, 2023). There is some concern over the transition from high school to college; for example, with traditional vs. nontraditional assessment–if students are trained at the K-12 level in one style but meet another in college it may hinder success. Moreover, this may be especially precarious for marginalized populations, according to Shraga-Roitman et al, (2023), where students are still hoping for the transition to more innovative assessments. Examples of culturally relevant teaching, with marginalized populations, have shown promising results (Cannon & Carr, 2020; Chen, 2023; Imm, 2021; Novak & Khan, 2022; Rodriguez, 2021b; Sexton, 2020), and many of the concepts can be applied to innovative assessments like project-based learning since they share tenets like driving questions, collaboration, and real-

world problems. Correspondingly, Mathis et al. (2023) in a qualitative study, interviewed six physics teachers about disposition related to culturally relevant curriculum and found that a variety of instructional approaches are needed to support students from marginalized backgrounds. To summarize, while current studies demonstrate a need for equity, social justice, and cultural relevance to become normalized aspects of educational assessments like project-based learning, not all educators know what they should look like or how to go about the practice of implementation.

Project-Based Learning and Low-SES Students and Minority Students

The federal poverty level for an individual living in 2023 was $14,580. When a child/person was added to the "family," another $5,140 was added, making the federal poverty level earnings for a family of four $30,000 (HealthCare.Gov, 2023). This level of income is used to determine eligibility for admittance into support/social programs and services, including health insurance. In a study conducted by Hébert (2018), which was discussed and utilized in a study by Bryant (2021), Hébert found that in 2007, 3.5 million low-SES children in K-12 schools demonstrated scores which placed them in the top academic performance quartile, asserting that students, even without economic opportunity, can achieve. It should be noted that when researching the topic of low-SES status, out of 14 articles on the topic, 12 articles associated low-SES with race, primarily Black and Hispanic. One article (Bryant, 2021) was the only article of the 14 that mentioned White low-SES students and indicated that they often become invisible because they look like and are therefore assumed to be like their high-SES peers. Based on patterns, low-SES status seems to be inextricably tied to minorities and

underrepresented populations in current research. It should also be noted that, while research is increasing in the area of project-based learning and its effectiveness on student achievement with low-SES students, when Leggett and Harrington (2021) began to search the literature to complete a review on this topic published between 2012 and 2018, they only located 30 articles relating to the topic. Upon refinement of terms, they narrowed them to eight studies, and due to the size of the body of research, they stated a need for additional studies to be completed for more conclusive results.

There are certain patterns which have emerged in the literature on project-based learning and students living in poverty. According to Matthews (2023), research has demonstrated that students who live within higher income brackets and who have parents with higher levels of education have wider margins of success, and the inverse is also applicable. The first notable pattern relates to low-SES high school students; most notably, in districts with limited resources, project-based learning is being used via after school and summer programs rather than in regular curriculum (Bhuyan et al., 2020; Escobar & Qazi, 2020; Yang & Chittoori, 2022). While examples of studies that support the lack of use of project-based learning in lower SES schools, at other levels, like elementary and middle school, exist more readily (Duke et al., 2021; Rittle-Johnson et al., 2021), there is a gap in the literature at the high school level. Additionally, Renzulli (2021) noted that many of the soft skills required for college and workforce entry, which may not be encompassed in assessments for underrepresented populations, may be learned via project-based learning. Upon arrival at college, Bryant (2021) noted that many low-SES students do not have the experience or support systems in place, which

means that many do not persist to completion. Consequently, Burks (2022) and Riestra et al. (2019) noted that including more responsive courses allows students to feel empowered by learning at their levels and may lessen achievement gaps.

Project-based learning, according to a qualitative research study completed by Akirav (2023), may also engender competency and a desire to become community and civically engaged. Akirav focused on nonJewish students studying in Israel and while the researcher uses the term *PjBL* for project-based learning as an instructional tool rather than project-based learning, Akirav agreed that since cultural diversity may negatively impact marginalized populations because of perceptions surrounding them, it is important to incorporate equitable and culturally responsive curricula with a nod toward social justice. Others have agreed that project-based learning is a form of instruction characterized by collaboration, problem-solving, active learning, scaffolding, and authentic practices (Akirav, 2023; Chen & Yang, 2019; Virtue & Hinnant-Crawford, 2019) and provides marginalized students the types of instructional opportunities to use their voices to become a civic member of their community at large.

Additional studies of the use of project-based learning with college students demonstrated the ways in which project-based learning may support marginalized students' learning but still help illustrate the gap in the literature for high school students. A study by Chen et al. (2023b) examined an educationally sustainable pilot project-based learning instructional program created for underrepresented students in data science and digital storytelling in STEM fields. According to the National Science Foundation (2021), marginalized populations are underrepresented in these fields. The semester-long

initiative was carried out at a minority serving institution and a community college that focused on project-based learning products which combined data science skills with digital storytelling to promote real-world concerns and issues (Chen et al., 2023) found project-based learning to be beneficial to students for assimilation of knowledge and positive introduction to fields of study.

Similar findings were concluded in college studies conducted by Sperling et al. (2024) which, based on survey results, determined that marginalized populations had lower self-efficacy and less academic success in college level engineering design classes as a result. Further findings related a lower level of self-efficacy to fewer students going into the field (Sperling et al., 2024). The initiative used project-based learning and work with clients to bolster students' self-efficacy (Sperling et al., 2024). Based on research, there is a general link which appears in many studies that connects lower SES students to Black and Hispanic labels; however, studies have also shown that project-based learning can promote soft skills, real-world authenticity, and provide a sense of belonging which may engender confidence and the skill set needed to close learning and career representation gaps.

Project-Based Learning and Special Education Students

When considering how and why project-based learning may create an inclusive classroom, it is important to know the laws which relate to student learning. In 1975, the Individuals with Disabilities in Education Act (IDEA), formerly known as the Education for All Handicapped Children Act, was created to support educational agencies to meet the individual needs of students with disabilities (U.S. Department of Education, 2024).

Unlike its predecessor or earlier version, the Education for all Handicapped Children Act (Public Law 94-142), IDEA also met the needs of the students' families while supporting students with disabilities by ensuring their right to attend school and to receive special education services (U.S. Department of Education, 2024). Additionally, the Americans with Disabilities Act (1990) ensured that students are protected against discrimination in relation to state and government services, which include free and appropriate educational opportunities (U.S. Department of Education, 2024).

These laws, along with a 1990 revision of the IDEA, provided early access (interventions) to support students who needed it and those who were underserved and amended the IDEA to ensure that students with disabilities had access to general education courses. For example, "In the 2022-2023, more than 66% of children with disabilities were in general education classrooms 80% or more of their school day," according to IDEA Part B Child Count and Educational Environments (2024). While these laws and their revisions focused on providing access, additional educational policies like No Child Left Behind (PL 107-110, 2001) shifted focus from access for students with disabilities to progress measurements. Throughout the years, policies and programs have been modified to include definitions of disabilities, to regulate standardized testing, to define placement regulations for classroom time, and to respond to issues of inequity surrounding referrals for behavioral issues, but few have addressed student standards of achievement regarding instruction for life skills/college and career preparation and ensured multiple means of assessing students. Two examples are the Race to the Top Program (2009) and the Every Student Succeeds Act (2015) which were

centered around this more student-centered inclusive type of instruction (U.S. Department of Education, 2017).

As noted in Chapter 2, the tenets of project-based learning and inclusive classrooms overlap. Pazey et al. (2024) noted that in today's society, classrooms and schools are created of communities of diverse learners which include students with different dis/abilities. Currently, educators are bound to support the needs of all students and to not only prepare them for life after school by helping them to develop the requisite skills needed but also to create inclusive educational environments to do so authentically (Pazey et al., 2024). Kozleski (2020) asserted that all students need to have more equitable opportunities to learn and notes that, in 2020, "about 40% of students with dis/abilities do not graduate," (p. 346). Using more strategies for individualized education, like differentiation, and more innovative assessments and laws that promise equitable learning environments and protections for responsive academics, schools can be inclusive and need to be redesigned accordingly (Kozleski, 2020). This has the potential to reframe possibilities by using innovations that are cross-curricular and using collaboration to learn from and with each other and using students' individual interests and needs to drive learning (Kozleski, 2020). This process would also need to be inquiry-based and draw on the lives of the students, closely aligning with project-based learning. Others go as far as to say that project-based learning in inclusive classrooms is necessary because the innovation supports learners by providing high level instruction for different students with varying levels of dis/ability while maintaining flexibility to authentically support all learners at their stages of learning (Boardman & Hovland, 2022).

Currently, while special education has been studied for many years, Sullivan et al. (2020) noted that there is still a dearth of areas that need additional focus. Sullivan et al. posited that there are extensive gaps in relation to the placement of certain populations of students in special education classrooms to obtain services, whether due to cultural obstacles or lack of focus. For example, Asian students and special education students receive much less extensive study than other ethnicities, making them seem "invisible" (p. 449). Through a multi-study investigation, Sullivan et al. explored the patterns in inclusion and representation in special education programs and found that while the disparities and gaps associated with children of other ethnicities are noted and even the curriculum and classroom experiences are studied, much less often are Asian American and Pacific Islander students discussed.

Opposite to the issues faced with underrepresentation in special education, some groups are overrepresented. Becker and Deris (2019) noted that ELLs are often overrepresented in special education classrooms, begging the question, how much study and research has been focused on the equitable curriculum when current studies are focusing on placement? Becker and Deris (2020) asserted that ELLs are often placed in mainstream classes to their detriment initially because they have little language support and then wind up in special education classes–an issue of equitable placement over equitable curriculum. Consequently, Hassan and Ahmad (2023) posited, in a study designed to develop project-based learning instruments and rubrics for students who are autistic and ELLs in Malaysia–with data showing that 76,832 students had disabilities and 25% of those were autistic in 2021–that project-based learning is an active strategy

which allows students autonomy to begin at their own levels, set their own goals, collaborate, and learn from real-world experiences. Hassan and Ahmad found that utilizing project-based learning and working with holistic scoring via rubrics not only allowed students to achieve but also allowed them to begin to self-assess and take ownership of their learning.

Project-based learning is not only used across subject areas but with all types of students, as indicated by Mulcahy and Wertz (2020). They described a "car project" in which students in a diverse business math class implemented a project-based learning unit with a local dealership. Mulcahy and Wertz asserted that while project-based learning has been used primarily in general education classrooms, it works in all levels of schools with a diverse population including low-SES students, students with attendance issues, academically at-risk students, and students with disabilities. Mulcahy and Wertz defined disability, in the article, as emotional disorders, health impairments, behavioral disorders, and learning disabilities. In their study of project-based learning, Mulcahy and Wertz posited that while there is confusion about what project-based learning looks like because the terminology is so varied, project-based learning incorporates "high leverage practices" (p. 343) which support learning for students with disabilities and allows for scaffolding and collaboration which may engender engagement. Additionally, according to Mulcahy and Wertz, project-based learning lends itself to inquiry-based instruction and provides time for teachers to closely monitor student work in individualized ways, for example, with standards or via life skills. Finally, project-based learning allows for

choice and voice in driving questions, inquiry, and the type of authentic product submitted, thus offering all students at all levels an opportunity to present their best work.

Nonpeer-Reviewed Studies: Project-Based Learning and Cultural Responsiveness

In addition to empirical research in the literature, nonpeer-reviewed studies have been cited in a peer-reviewed study by Culclasure et al. (2023), highlighting the use of the innovation of project-based learning as a positive and equitable tool for instruction. The Lucas Educational Research Foundation (2021) recently funded research on project-based learning and marginalized populations. The study conducted by Krajcik et al. (2021) was completed by researchers who have previously completed peer-reviewed research on project-based learning. It should be noted that the study entitled *Using Project-Based Learning to Leverage Culturally Relevant Pedagogy for Science Sensemaking in Urban Elementary Classrooms* (Krajcik et al., 2021) aligns more closely with my study than any of the other research reviewed as part of this literature review because it focuses on underresourced communities serving low-SES students, culturally relevant pedagogy, and the connections between culturally relevant pedagogy to address social justice. While it was undertaken at the elementary level, the premise is the support of all students to "build usable knowledge to understand the world in which they live" (p. 2). The noted theoretical underpinnings, though not directly related to the theorists I elected to focus on, assert ideas of actively building knowledge, experiential learning, collaboration, and cognitive strategies, echoing the prior educational theory which I used as a foundation. The findings of the study, which took place in an urban district in the Midwest and, out of 78 elementary schools, had a third-grade population of 4037

students. Among these students, 82% were African American and 13% were Hispanic, demonstrated that the implementation of project-based learning in this manner supported the academic achievement of the randomly selected population of students. Furthermore, the results indicated that academic achievement could be sustainable with the development of further practices utilized in this way.

Summary and Conclusions

For this study, because the concepts have not been regularly connected via peer-reviewed research before, more nuanced connections in theme occurred between the use of high school teachers' use of project-based learning as an innovation with marginalized populations and the issues of equity, social justice, and cultural relevance. Several themes emerged from the literature. These themes, while nuanced, revolve around the main concepts in the study. First, there is an ever-growing need to address issues of equity, social justice, and cultural relevance in classrooms today (Miller, Severance, & Krajcik, 2021; Papp, 2020; Sidgel & Sharma, 2021; Steele & Jeong, 2023). An example of this was seen in Miller, Severance, and Krajcik's (2021) study when the implications directly stated the need for teachers to consistently address the issues of equity, especially as they relate to poverty and marginalization. Steele and Jeong (2023) propelled the idea of addressing equity forward by proposing ways to redesign education through a social justice lens for students to learn to address current political and social issues.

Another emerging theme is that low-SES research and ethnicity are often inextricably linked in current research. Many studies address both simultaneously rather than distinguishing between the two topics (Riestra et al., 2019; Rittle-Johnson et al.

2021; Saavedra et al., 2021). Some studies noted gaps by ethnicity and low-SES as opportunity gaps (Riestra et al., 2019), while other studies noted disparities in achievement (Saavedra et al., 2021); however, both examples connected race with economic status. Rodriguez and Morrison (2019) and Pazey et al. (2024) added to that growing body of thought by positing the need for reform and a shift in thinking about how curriculum is shaped by students' environments. The emerging themes relating to project-based learning justify a need for further research into the exploration of how high school teachers use project-based learning to address issues of equity, social justice, and cultural relevance with marginalized populations.

An additional theme that may be noted via patterns in current research is the need for innovative assessments in special education; however, a predominant area of research focus revolves around student placement (Becker & Deris, 2019; Pazey et al., 2024; Sullivan et al., 2020). A small number of studies have noted the feasibility of using project-based learning to meet special education students at their individual levels to build achievement, autonomy, and self-regulation skills (Hassan & Ahmad, 2023; Mulcahy & Wertz, 2020). Finally, research has shown that project-based learning may be used with marginalized students to meet them where they are and to overcome impediments to achievement (Duke et al., 2021; Renzulli, 2021; Riestra et al., 2019). An example of what this might look like may be noted in Miller, Severance, and Krajcik (2021) when the researchers explained that learners need to (and may) "build their own knowledge over time and know that each interaction along a trajectory is a success in itself," (p. 17). Project-based learning allows learners to start where they are, work on

problems which relate to their environment, and collaborate with others to build life skills.

This study is significant because it has the potential to fill in gaps in educational knowledge and understanding about the use of project-based learning to address issues of equity, social justice, and cultural relevance to engage marginalized populations, which has the potential to change educational training and practice. The results of the study could inspire additional research which could lead to the use of additional innovative assessments and the closing of learning gaps. There is a need for additional exploration surrounding the way we address equity, social justice, and cultural relevance in relation to marginalized populations in education and a need for a wider awareness of the learning gaps to inspire important questions to be considered and additional research to be undertaken. The study not only has the potential to contribute to the existing body of educational knowledge but also to shape curricula and educational choices in the classroom and the district and, if published, findings could be generalized for districts with similar populations.

In Chapter 3, I will provide a rationale for the research design, examine the role of the researcher, describe the methodology, and illustrate the data collection process. In Chapter 3, I will also outline my data analysis plan. Finally, I will examine the issue of trustworthiness relating to credibility, transferability, dependability, confirmability, and ethical procedures.

Chapter 3: Research Method

The purpose of this qualitative exploratory single context case study was to explore high school teachers' use of project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. In this chapter, I will explain the research design and rationale as well as examine and explain my role as a researcher. Additionally, I will discuss the methodology as well as identify the population, explain the sampling strategy, and discuss participant selection criteria and saturation. Finally, I will discuss the process I will use to collect data, as well as the analysis methods, ethics, and issues of trustworthiness.

Research Design and Rationale

The phenomenon of interest was how high school teachers used project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized populations. In this section, I describe the selected design for research and the chosen methodology. I used asynchronous bulletin board focus groups and individual asynchronous interviews to collect data which allowed me to gain insight into the phenomenon. The following RQs are aligned with the problem, purpose, conceptual framework, and methodology of this case study.

RQ1: How do high school teachers use project-based learning as an innovation to address issues of equity to engage marginalized high school students?

RQ2: How do high school teachers use project-based learning as an innovation to address issues of social justice to engage marginalized high school students?

RQ3: How do high school teachers use project-based learning as an innovation to address issues of cultural relevance to engage marginalized high school students?

Rationale for Research Design

A qualitative exploratory single context case study approach was suitable for this study (see Yin, 2018) because it is exploratory, asks questions revolving around "how" and "why," focuses on teachers from different schools in one school district to explore in a more in-depth manner, and has the option of using multiple sources for data collection. Single case studies, according to Yin (2018), investigate or examine a phenomenon through research and collection of multiple data sources bound by a unit and set in a single location. Multiple context case studies may be instrumental (Stake, 2005) and allow researchers to understand complex issues while examining a larger context and purpose in nature so that participants or cases may be able to provide insight into the area of exploration (Yin, 2018). According to Stake, when a case study focuses on the case or single entity, it may be intrinsic, but when it focuses on a larger "quintain" (Stake, 2005) and looks at the bigger picture, it would be considered instrumental. Quintains, in multiple context case studies, are how the cases are categorized or grouped together (Stake, 2005).

Case study research, overall, allows researchers to study a concept or organization authentically—in its real-world setting (Houghton et al., 2013; Stake, 1995; Yin, 2018). I originally considered utilizing a multiple context case study design because of the different grade-level campuses which fell under the heading of one high school. However, the merging of the schools so that all campus locations will house Grades 9

through 12 changed the context. Based on the changes, a qualitative exploratory single case study design, which uses multiple data collection sources (Houghton et al., 2013) and allows for multiple types or points of triangulation (Thurmond, 2001), best aligned with the design of the study.

For my research design, I have chosen a qualitative exploratory single context case study. Multiple context case study design is different from a single case study design because the objective of a single, common case study approach is to "capture the circumstances and conditions of an everyday situation," (Yin, 2018, p. 50) because of the insight it may provide into social processes of the bounded unit, whereas a multiple context case study design allows for different perspectives under one overarching umbrella or program. Single case studies may raise awareness, or they may be used as a "pilot" (Yin, 2018, p. 51); however, by design, the primary objective of case studies is to study the "how" and "why" of a current event. Yin (2018) explained that a rationale for using a single context exploratory case study is that it falls into one of five categories: critical, unusual, common, revelatory, or longitudinal. In the instance of this study, the topic, approach, and methodology would lend themselves to a common single context exploratory case study because of the regularity of use of the strategy: teachers in a high school in one district employing project-based learning more than once.

Qualitative exploratory single case studies are also appropriate when the researchers need to examine pertinent contexts surrounding the conditions of the research study (Baxter & Jack, 2008). Baxter and Jack (2008) cited an example of an earlier study (Baxter & Boblin, 2008; Baxter & Rideout, 2006) in which nursing students had to make

decisions that could only be made based on particular contexts. Sometimes, in case studies, definitions or boundaries may overlap in context (Baxter & Boblin, 2008; Baxter & Jack, 2008; Baxter & Rideout, 2006; Yin, 2018). This was what I planned to do in the study by examining how equity, social justice, and cultural relevance are used to engage marginalized learners via project-based learning.

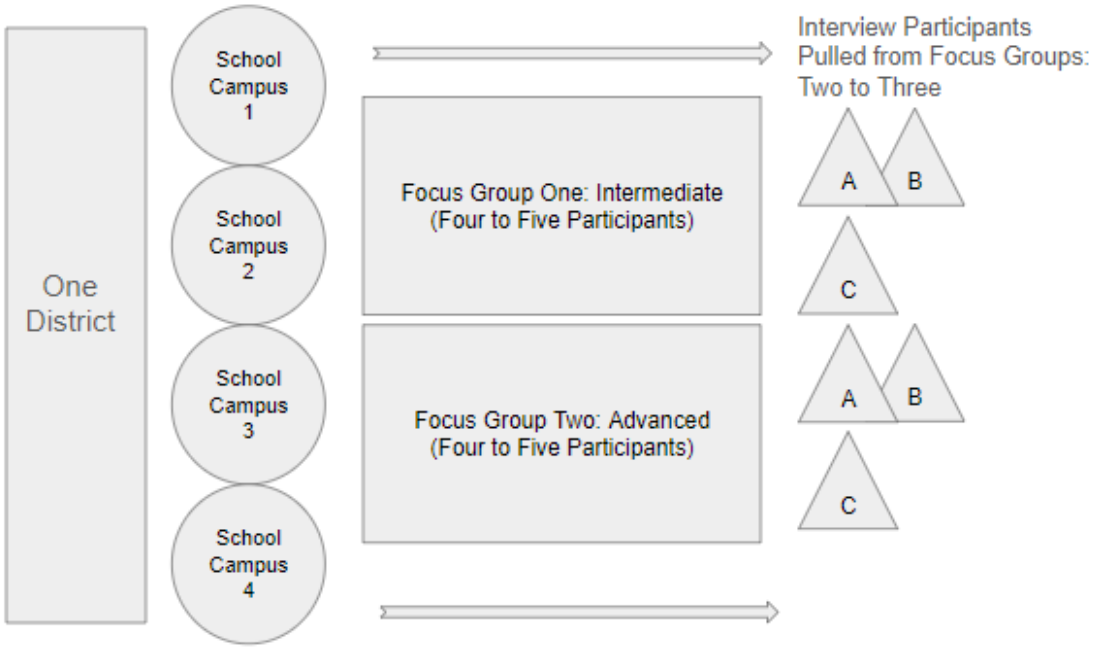
There are many different types of case studies, and Yin (2018) asserted that the case study should fit with the RQs, the selection of case study as a method, and the type of case study, which is dependent upon the questions, the type of phenomena, and the access the researcher has to participants/locations/events (cases). Case studies may be exploratory, descriptive, or explanatory, depending on whether a researcher seeks to build upon existing theory, describe a phenomenon, or examine relationships (Yin, 2018). Case studies may be single cases and examine one case that may be revelatory in nature or multiple cases, where two or more replicable cases are present (Yin, 2018). Case studies may be holistic or embedded, with multiple units of analysis (Yin, 2018).

A qualitative exploratory single context case study method was justified for my study because qualitative research is described as a sense-making process in which humans describe and analyze their experiences (Ravitch & Carl, 2016), and my topic was exploring how teachers used an innovation to address issues. The case study research included two types of data collection asynchronous sources: asynchronous bulletin board focus groups and individual asynchronous interviews. Yin (2018) noted that when using multiple data sources, patterns may be examined based on the intersecting of the information and may aid in triangulation.

All case studies must be bound by time and place to narrow the focus (Yin, 2018) or context (Baxter & Jack, 2008). In this case, teachers were asked how they used project-based learning. The bounded unit for the study was teachers across multiple school campuses, which combine to make a school of over 4,000 high school students. These students came from over 120 countries and had various cultural backgrounds (see Figure 8).

Figure 8

Boundaries of Qualitative Exploratory Single Case Study



In this study, the four populations classified as marginalized were African American students, Hispanic students, special education students, and students living in poverty. The focus of the study was on how teachers use the innovation of project-based learning to address issues facing marginalized populations. The qualitative exploratory

single context case study design also allowed for purposive sampling to enlist appropriate participants, which aligned with qualitative study design (see Ravitch & Carl, 2021), or to use snowball sampling (see Patton, 2015), if it became a necessary fallback, to gain enough qualified participants. The case study approach allowed for rich data to be collected in one setting because it allows for multiple data collecting methods. These methods included asynchronous bulletin board focus groups and individual asynchronous interviews from a bounded unit (see Patton, 2015; Schoch, 2020; Yin, 2018), which may impact social change due to the context of the study. Accordingly, using a qualitative exploratory single context case study method aligned best with the study because a basic qualitative study would include data collection from only one source and a multiple context case study would require a different type of bounded unit.

Role of the Researcher

According to Stake (1995), a researcher can play many roles: teacher, advocate, evaluator, biographer, and interpreter but, first and foremost, the researcher describes and substantiates meanings of experiences. Stake noted that it is the role of the researcher to look for patterns, to make connections, and then to share that information and understanding with others. Alternatively, Ravitch and Carl (2021) deemed the researcher as a tool used within a study to "connect (and reconnect) the dots between all of these intersecting parts," (p. 64) as the researcher designs and later carries out a study. Ravitch and Carl also noted that the researcher is the ethical instrument who ensures that the participants are treated with proper care; IRB guidelines are followed; and prejudices, misinformation, and bias are reflected upon, alleviated when possible, and noted for

transparency when not. Similarly, Schoch (2020) explained that the role of the researcher in case studies is that of an active participant because the researcher will recruit participants, set up focus groups, conduct interviews, observe, analyze data, and more, while being situated within the bounded unit to an extent. For example, the bounded unit for my study is a high school with multiple campuses.

I was a secondary teacher who has implemented project-based learning with marginalized students. However, my role as a researcher needed to be separate from that role. I looked for participants within ninth through 12th grades at various locations under the umbrella of the school. To ensure participant confidentiality and to try to alleviate bias, as well as take ethical standards into account, I kept a reflexive journal to consider consistently and constantly bias and work towards researcher subjectivity, as recommended by Cox (2020). A researcher reflexive journal may be kept for data purposes to track experiences (Orange, 2016; Weatherford & Maitra, 2019) and may function as a check-in for bias/positionality (Anney, 2015; Orange, 2016), and to ensure triangulation (Thurmond, 2001; Patton, 2015). Additionally, a sticky-note chunking process followed by a spreadsheet was utilized for thematic organizing to provide a two-step substantiation. I planned to have a peer review of my materials to look for other perspectives. This is also important to ensure, and to demonstrate, that there are no ethical concerns related to power relationships. Therefore, I had no supervisory role over any of the participants in my study. I followed the IRB guidelines for ethical standards when completing a study, ensured that I had informed consent, maintained participant

anonymity, and ensured transparency with debriefing (see Cox, 2020). Any biases that exist were reported.

Methodology

Participant Selection Logic

The participants for my study came from a pool of teachers at the chosen high school who incorporate the use of PBL into their pedagogy. The inclusion criteria for my participants included teachers who (a) taught within the district; (b) taught at the secondary level—ninth through 12th grades; and (c) taught utilizing project-based learning. Within the district, students hailed from over 120 countries, and because the 2025 strategic goal for the district was equity-based, students had opportunities to participate in any classes--often without prerequisites--so all teachers had a mix of students to include those who would be in the four categories of marginalized students as described in Chapter 1 (Black, Hispanic, low SES, and/or special education students).

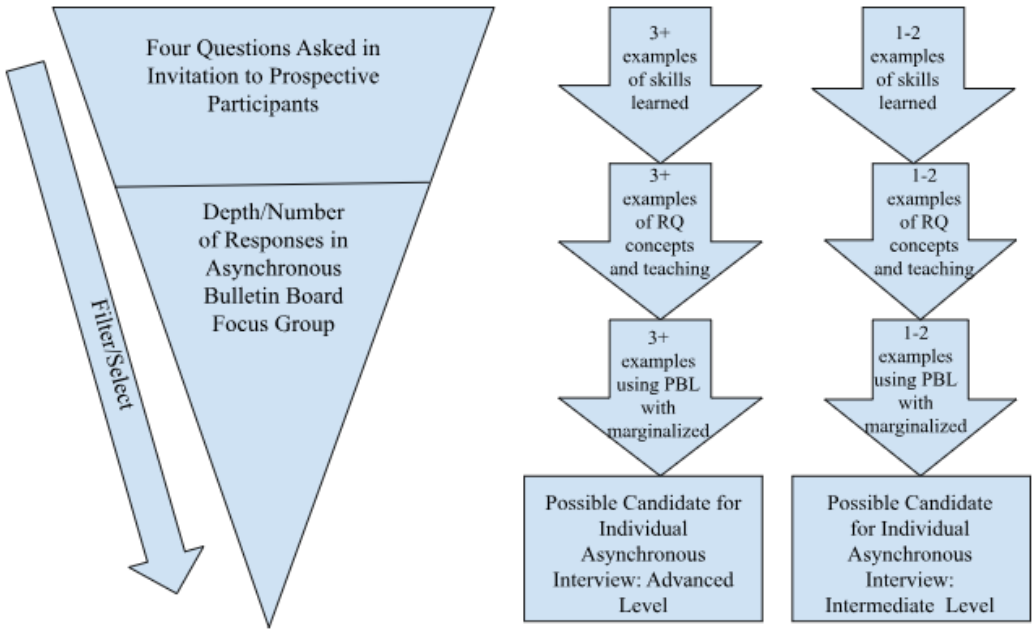
I planned to use purposive sampling to recruit eight to 10 teachers from multiple campuses, under the umbrella heading of one high school, in which there are over 4,000 students from over 120 countries and with over 300 educators and staff members. The utilization of purposive sampling, or purposeful selection of participants, aligned with this type of methodology because it allowed me to focus on teachers who may provide more in-depth information on the RQs posited (see Anney, 2015; Cohen et al., 2011; Patton, 2015). I also planned to use purposive sampling by the participants' experience, from fully integrating project-based learning (these participants would be deemed "advanced") to having received some training in project-based learning to beginning the

process of implementing lessons (these participants were deemed “intermediate”) but varied in subject area/curriculum taught, age, experience, gender, race, and ethnicity. Asynchronous bulletin board focus groups would be comprised of four to five teachers per group from the secondary high school campuses.

Barbour (2018) posited that online focus groups may provide accuracy over the immediacy of data collection in face-to-face focus groups because participants may reflect as they respond and react to other perspectives. As a rule, Danner et al. (2018) suggested using purposive sampling when employing focus groups because it enables researchers to create groupings which have commonalities so that time will not be wasted having to explain terminology or concepts which would be easily comprehensible to participants with similar experiences. Additionally, Krueger and Casey (2015) noted that focus groups may be employed when researchers want to be able to use additional research methods to dig more deeply into concepts. The focus groups allow researchers to note participants who have rich experience and may provide greater insight. Once focus groups have been completed, based upon the participant responses, two to three participants will be selected from each level of asynchronous bulletin board focus groups to gain deeper insight into the phenomenon and asked to complete an asynchronous interview (see Figure 9).

Figure 9

Participation Selection Process



Teachers were invited to participate in individual asynchronous interviews based on the following criteria: their responses to the initial invitation, and after they consent to participate, their responses to the questions asked in the asynchronous bulletin board focus groups (see Appendix A), and a ranking system which classifies them into three categories: (a) advanced--with multiple experiences, more than a year of teaching, more than three shared examples per week during the focus group sessions, and some training; (b) intermediate--with some experience, first year or 1 to 2 years of teaching, one or two shared examples per week in the focus group sessions, and minimal (if any) training; and (c) novice--with no experience (novice teachers with no experience using project-based learning would not be able to provide rich data so they are not eligible for study participation).

According to Mason (2010), sample size should align with the study and be directly related to the types of questions being asked. In a qualitative study, Mason noted that sampling sizes may range from 1 to 95. Mason also explained that while sample sizes may be small and saturation may happen early, sample size is not the main factor but rather, the analysis and the quality of the data are of the utmost importance. In focus groups, sample sizes varied based on number of sessions, population, type of research, questions, and location, and a sample size of 7 to 10 is an average size for a group (Barbour, 2018; Danner et al., 2018; Krueger & Casey, 2015).

Rubin and Rubin (2012) posited that many interviews are not necessary to "demonstrate balance and thoroughness" (p. 63); data are carefully analyzed, and all perspectives shared by participants in interviews and focus groups are noted. Ravitch and Carl (2021) noted that the term "strategic" (p. 83) sampling, which is synonymous with purposive or purposeful sampling, allows researchers to select populations of participants purposefully to provide great potential for rich data collection (Patton, 2015). My sample was purposive. I asked to make an announcement at the start of the school meeting, sent out an email, posted flyers in the mailrooms, and sent department heads the recruitment flyer to post, but not to endorse, in the monthly email in the "news" section; I used the same flyer for the email, mailroom, and department head mailer to create continuity. None of the transmissions were encouraged or endorsed by administrators, department heads, or anyone connected with teacher evaluations. Correspondingly, Papp (2020), in a study with a similar approach, which focused on nontraditional students with whom project-based learning strategies were being implemented via culturally responsive

techniques, noted that a purposive sample which included seven respondents exemplified the RQ and design.

Instrumentation

For my qualitative single context exploratory case study, there were two data sources: asynchronous bulletin board focus groups and individual asynchronous interviews. Both instruments were researcher-created. Table 1 shows the asynchronous bulletin board focus group protocol which were utilized for four to five candidates at each of two levels, intermediate and advanced, from a purposefully selected pool. Table 2 shows the interview protocol which was utilized in individual asynchronous interviews for two candidates at each level, intermediate and advanced, who have been purposefully selected from the asynchronous bulletin board focus groups. Table 2 also shows the RQs aligned with the interview questions and the related prompts. According to Ravitch and Carl (2021), researchers should utilize structured interviews when trying to achieve a level of consistency for coding and semistructured interview questions, like those for a focus group, to create open-ended questions that result in individualized responses. Using semistructured and structured data collection sources drawn from a purposive sampling may lend more rigor and credibility to a study (Houghton et al., 2013; Yin, 2018). Patton's (2015, pp. 444-445) six types of questions--"experience and behavior, opinion and values, feeling, knowledge, sensory, and background" guided the creation of both sets of questions along with the RQs.

Focus Group Protocol

Rubin and Rubin (2012) noted researchers need to align personality with the type of information desired to be collected and the model to create a style of their own; Rubin and Rubin characterized "responsive" (p. 38) interviewing as conversational in nature and open—more peer-to-peer than formal in style. This type of interview style aligned with an asynchronous bulletin board focus group. The questions in the Focus Group Protocol (see Table 1) and the style—bulletin board—allowed teachers more time to reflect, chat, and provide richer contexts than a traditional face-to-face focus group (Krueger & Casey, 2015). Hancock et al. (2021) posited that case studies may vary in length from hours to weeks (or longer), which aligned with the extended bulletin board focus group that lasted over a period of days or weeks (Krueger & Casey, 2015). The asynchronous bulletin board focus groups stretched over a 3-week period in length and are formatted as a series of questions posted intermittently by a host, as recommend by Krueger and Casey (2015). Participants responded to the board and to each other with prompting when necessary. While there is not a universal group size for focus groups, it is preferable for researchers to have at least two groups to lend gravity to patterns noted in analysis (Barbour, 2018), so I had two groups with four to five participants each. Furthermore, strong qualitative focus group questions should be characterized by open-ended stems, begin with question words like "how," and focus on one phenomenon (Creswell, 2013; Danner et al., 2018; Yin, 2018). The full asynchronous focus group protocol (see Appendix A) includes an introduction with instructions, rapport building questions, and main questions, which were created with the characteristics above and aligned with the RQs in the same pattern

of the interview—two questions relate to RQ1, two questions relate to RQ2, two questions relate to RQ3, and one question relates to all three RQs. I believe consistency made the participants comfortable and less unsure of themselves as they navigated the process.

Table 1

RQ and Asynchronous Bulletin Board Focus Group Question Alignment

Date of access	Question	Prompt	RQ1	RQ2	RQ3
Week 1	In what ways, if at all, do you use project-based learning to address issues of equity for your marginalized students? Share an example or a learning moment that stands out if you are not sure how to begin.	How is your answer similar or different to those of your peers?	X		
Week 1	How do you assess your learners participating in your project-based learning lessons? Speak not only about assessing what content they have learned but also about skills they are building (such as critical and reflective thinking). Feel free to share any assessment tips and tricks that have worked particularly well, or some that have not with marginalized students.	How effective do you believe this is in creating a more equitable form of assessment for marginalized high school students?	X		
Week 2	Describe ways that you think your use of project-based learning may promote social justice, such as inclusion, representation, and developing voices for your marginalized students.	What are the challenges you and your peers face in developing project-based learning units related to social justice issues? How have you overcome these challenges?		X	
Week 2	What collaboration/ interaction strategies have you used in project-based learning units with marginalized students? How effective are these for teaching social justice?	How can the collaboration and interaction strategies involved in project-based learning and used by your peers foster social justice for marginalized students in your classroom?		X	
Week 3	Define cultural relevance. How do you relate to what you learn, and how do or can you engender that for your students in your classrooms?	How might you incorporate one of the ideas posited by your peers into your classroom setting?			X
Week 3	In what ways, if at all, have you seen project-based learning empower your marginalized students? How do you believe this benefits your students long term?	What do you consider to be an active learner, and how can project-based learning allow for active learning in your classroom?			X
Week 3	What would you include on a mind map with project-based learning at the center and the question: How do you think project-based learning can address issues of equity, social justice, and cultural relevance for your marginalized students at the top? Make a mind map. (You may use technology or draw a map and take a picture.)		X	X	X

Interview Protocol

The order of the questions included an opening that introduced the study and ensured that the participants understood the process to ensure procedures, then the primary interview questions related to the RQs and key tenets of project-based learning and inclusive classrooms, wrap up questions, and closing statements or next steps. Since the teachers had already participated in a focus group, questions were kept to seven in number. There were two questions that related directly to each RQ and one question that asked the participant to design/create a work which related to all three RQs. See Table 2. The last question demonstrated alignment with the naturalist-constructionist paradigm (Rubin & Rubin, 2012) but also acted as a reminder to the researcher to be aware of bias.

Table 2

Alignment of RQs and Individual Asynchronous Interview Questions

RQs	Interview question	Prompt
RQ1	Describe what equity looks like in your classroom. How, if at all, can you scaffold your strategies and/or spiral your curriculum in project-based learning units to create equity when learning gaps arise?	Share an example or a learning moment that stands out.
RQ1	What role do you feel creative problem-solving skills should play via project-based learning to help marginalized students to develop academically?	Share an example of how you provide opportunities for marginalized students to develop these skills.
RQ2	How, if at all, can project-based learning help students learn to reframe possibilities via creating authentic solutions for real-world issues?	What does reframing and reflection and look like, sound like, and feel like in your class, and how can it be used in project-based learning?
RQ2	What sort of training or experience, if any, do you draw upon to create purposeful classroom assessments like project-based learning while keeping marginalized populations in mind?	How can issues of social justice shape your instruction via project-based learning?
RQ3	How, if at all, can cultural relevance create authentic learning experiences which may prepare learners for adulthood through project-based learning lessons?	How do people relate to what they learn, how can they use reflective learning, and how can you pass those skills on to your students through project-based learning?
RQ3	Create a word cloud which illustrates cultural relevance and its importance for marginalized populations. (You may use technology or create a drawing/piece of art and take a picture.)	
RQ1, RQ2 and RQ3	As a teacher, awareness of and reflection on instruction and the world around you matter to make things equitable and culturally relevant. How do you teach those reflection and awareness skills to your students through your project-based learning units?	How can learning these skills, like social awareness and reflection, engender social justice or cultural responsiveness among students?

Procedures for Participant Recruitment, Participation, and Data Collection

In this section, I describe the procedures for participant recruitment, participation, and data collection. I applied for IRB approval after completing my proposal oral defense. Once I received approval, I began the recruitment process. The recruiting process was multistep in nature. I asked the administration if, at the start of the year during our preservice meeting, I could show a slide to introduce my study, describe the parts of the study: asynchronous bulletin board focus group and individual asynchronous interviews,

explained inclusion criteria, and provided my email address. As per IRB regulations, I asked to show the slide in the last few minutes of the presentation to introduce the study. I asked the administration not to verbally endorse the slide; however, I later printed copies of the same slide to place in mailrooms at the campuses of the high school. After the slide introduction, I asked administrators and department heads if they knew of anyone who matches the criteria for the study, and I emailed the informational email invitation to them. I received responses from those mentioned or if administrators/department heads do not have suggestions, I will ask administrators and/or department heads to forward an email from me to teachers in general. As per IRB regulations, I asked the administrator/department heads to forward the email but not to comment on it or endorse it. The email explained who I am (a doctoral student), provided contact information (my university email and phone number not associated with work), and introduced the title and background of the study. It also explained the procedures, provided sample questions, described the time involved, and mentioned that participants who completed the study would receive a token thank you gift card ($25 to a local restaurant). As a follow-up, after the email was sent, I printed the slide and posted it in the mailrooms at the various campuses of the high school. Any respondents were sent an informational email invitation. In this email, I requested that, if a teacher felt they met the criteria and were interested in participating, they could email me with the following information: (a) name, (b) email address and phone number, (c) to respond affirmatively or negatively as to whether they fit the inclusion criteria, (d) when they first began using project-based learning, (e) topics they have focused project-based learning units on, (f)

how often they use project-based learning, and (g) how much training surrounding project-based learning they have had. Currently, our schools were being restructured, so asking for class assignments or working locations were not feasible. Once I received this response via email, participants were sent the informed consent form, and they must clearly state "I consent" in their reply email. If they did not wish to participate, they could simply ignore the email. I tried to recruit four to five participants for each asynchronous bulletin board focus group (for both intermediate and advanced levels). From those pools, I invited two to three participants at each level of the asynchronous bulletin board focus groups—advanced and intermediate--to participate in additional individual asynchronous interviews. I needed to group participants according to their initial participant interest question responses. Once I had four to five participants for each focus group (eight to ten in total), I stopped seeking participants. As a backup plan, I would use snowball sampling if I could not gain enough participants, and I would ask the participants who have volunteered if they knew of other teachers who might be willing to participate.

Once I had the requisite number of participants, I needed to ensure that I had consent as well as the question responses. I sent out an email with the video instructions for how to use Padlet, instructions for how the asynchronous bulletin board focus groups would work, and the start date for the asynchronous bulletin board focus groups. I asked participants to contact me if they have any questions. Prior to the start of the asynchronous bulletin board focus groups, on the day before, I sent a brief email to remind participants that asynchronous bulletin board focus groups would begin the next day and that the first questions would be posted along with instructions. I also explained

what privacy and confidentiality were and reminded participants that, in a focus group setting, while those things could not be guaranteed, participants could be mindful to not share details or information outside of the groups, to use nonwork emails, and to close out browser tabs once they are finished with responses.

Asynchronous bulletin board focus groups took place over a 3-week period, so I started with the questions on the first day of each week and went in, asynchronously, to add prompts and/or ask for clarification if needed. The Padlet was set up in a column format so that participants could see each question and respond to the question and each other below the question. Prompts/requests for clarification were interspersed with requests for clarification only occurring when strictly necessary and prompts happening on Wednesday of each week. On the second to last day of the final week, I sent a brief reminder that the asynchronous bulletin board focus groups would be closed the next day.

I kept a reflexive journal throughout the entire process using Orange's (2016) questioning model. While participants' responses were located on the Padlet, I also took screenshots and made transcriptions. After the groups wrapped-up, I checked the transcripts for errors or omitted words. Once data were analyzed, I sent each participant a 1-2 page summary of how their contributions contributed to the final study findings and asked them to review them to determine whether they felt I had accurately captured their experiences and insights. All the data were stored in a password-protected computer in a secure location at my residence.

From these data, I looked for four to six teachers to create a purposive sample to interview: two to four from the intermediate level focus group and two to four from the

advanced level focus group. I asked the teachers who provided the richest level of detail and those who provided thick descriptions of their experiences. I emailed the six teachers and asked them to continue the study with the individual asynchronous interview phase portion. If they accepted, I emailed the other teachers, thanked them for their help, and told them that I would contact them again in approximately 3 to 4 weeks for member-checking of themes. I emailed the interview guide (see Appendix C) in a Word document via nonwork emails to the six teachers and asked that they return the interview responses within a week. Teachers were reminded to send responses to my university email address from a nonwork email for added measures to engender as much confidentiality as possible in a group setting. Prior to member checking, I sent an email of thanks to the participants with a $25 gift card to a local eatery. I also emailed participants, after coding, themes that have been generated for them to review. This information was stored in a password-protected computer in a secure location at the researcher's residence.

To prepare the asynchronous bulletin board focus group and individual asynchronous interview data, I reviewed all collected data to look for omissions of words and to ensure that I had completed and accurate responses that were easy to read. Next, I made notes and captured any additional reactions to the data. Saldaña (2016) noted that when preparing data, it is helpful to ensure that data are located in one place so that they may be highlighted or annotated to reduce what might not be pertinent and to ensure that there is enough data for analysis. I used an Excel spreadsheet to do this, and created a key, much like a map key, with their pseudonyms at this time as well. As a backup plan, if I found that employing an Excel spreadsheet did not feel comfortable or efficient, I

would create Word documents that combine information from the respondents question by question. I would employ both methods—annotation and summarization— so that I had a better understanding and visualization. Another step in this process was to screenshot any visuals created by respondents that could be used in the study and labeled them accordingly (pseudonyms) so that the visuals could not be linked to the participants. Saldaña noted that it is important to keep notes and reactions about visuals so that when analyzed later, there is greater context for more depth of analysis. I took screenshots of all collected data as a backup resource while the study took place and stored them as per university and IRB policy. However, I copied and pasted data for analysis so that the chunks of data did not become overwhelming based on the amount of data collected.

Data Analysis Plan

For this qualitative exploratory single context case study, I planned to conduct data analysis using two types of coding: a priori and open coding to complete a thematic analysis. Linneberg and Korsgaard (2019) posited that a mix of two types of codes, a priori also known as concept coding and open coding which is described by Linneberg and Korsgaard as story driven, is commonly used. Using two types of coding or a blended approach, deductive and inductive, helped to provide opportunities for patterns to emerge as well as new trends by creating fluidity in coding (see Elliot, 2018; Graebner et al., 2012; Linneberg & Korsgaard, 2019; Pierce, 1978). Also known as abduction (Alvesson & Kärreman, 2007), using (deductive) a priori coding as well as (inductive) open coding provided participant insights while allowing me to ensure that we were question centric. Baxter and Jack (2008) asserted that one issue that may arise in a

blended approach is that novice researchers may not view the data holistically and may see the analyses as independent; this was important for my coding, hand coding, as well as the application to both forms of data collection. Saldaña (2015) noted that there are generally two cycles of coding: first and second. The first cycle of coding revolves around collecting data from the participants and establishing vocabulary or concepts while the second cycle of coding relies more heavily on the analysis of data by the researcher to seek relationships and patterns so that themes may be noted (Linneberg & Korsgaard, 2019). Researchers then align their "coding schemes" (Stuckey, 2015) p.8) with the purpose and the umbrella concepts that they wish to communicate upon conclusion. I hand coded using Word and an Excel spreadsheet. First, I used a priori coding to set up codes (see Table 3) for my initial coding pass—in a priori, predetermined codes were created based upon a researcher key or codebook and were developed before collecting and reviewing data (Saldaña, 2021; Stuckey, 2015). Saldaña (2016) and Elliot (2018) noted that a priori coding consists of a code, a code description, and a connection to the framework (see Table 3). While reviewing collected data, it is important for the researcher to remember that codes may change so researchers need to remain flexible throughout the analysis process (Elliot, 2018; Saldaña, 2021; Stuckey, 2015).

Table 3

A Priori Codes for Data Analysis

A priori code	Aligned to literature topic or framework domain/element	Description of code based on literature
Driving Questions	Driving questions (Miller, Reigh et al., 2021) are initiating events in a student-centered exploratory approach (Killick & Ozel, 2022) necessary to design the lesson, project, or "classroom assessment" (Kozleski, 2020, p.349) purposefully. Dewey (1938/2015) noted that instruction should be built upon the experiences of the lives of the students to enable development of requisite skills needed to live in a community, so the learning should be driven by relevant contextual factors.	Questions designed to facilitate learning which promote collaboration, a learning stretch, and culminate in a solution to an authentic problem.
Authenticity	Real-world application with cultural relevance (Miller, Reigh et al., 2021) is the "attention to culture as the embodiment of living" (Kozleski, 2020, p. 349). It is also known as purposeful cultural responsiveness which makes project-based learning relevant to students' lives (Killick & Ozel, 2022). Dewey's (1938/2015) "experiential continuum" (p. 28) suggested that as students grow academically, a process evolves in which students create new foundations for learning which are meaningful to them because they are authentic to their lives.	Authenticity is the purposeful attention to connections between students' lives, cultures, and problems or issues which are relevant to their environment.
Learning Stretch	Learning stretch (Miller, Reigh et al., 2021) is also termed "reframing possibility" (Kozleski, 2020, p. 349) and embodies real-world tasks and obstacles which are relevant to students' lives (Killick & Ozel, 2022). Bruner (1961) asserted that students learn to perceive and later classify concepts via discovery and that they then learn to transfer that knowledge through process or a learning stretch.	A learning stretch is a process in which students learn to build background knowledge, assimilate new information, overcome obstacles and/or transfer knowledge
Problem-solving	Collaborating to create innovative solutions and answer questions (Killick & Ozel, 2022; Miller, Reigh et al., 2021) or "inspiring imagination" (Kozleski, 2020, p. 349) is equivalent to creative problem solving. Vygotsky (1978) posited learning should consist of collaboration in which students are provided opportunities to develop voices through choice and use those skills to solve complex problems.	Problem-solving is when students note, examine, evaluate, and work collaboratively to overcome a problem through effective use, synthesis, and application of information.

As I collected and reviewed data, I completed a second stage of coding in which codes emerge called open coding (Saldaña, 2021; Stuckey, 2015) in which I noted codes which may be categorized and then grouped thematically using this inductive coding process. I used attribute coding and descriptive coding. Linneberg and Korsgaard (2019) noted that coding should be seen as staged because researchers should move back and forth when examining data to determine when additional patterns arise. One way to seek additional patterns is to use emergent coding which is more participant centric because it focuses on the perspectives of everyone, so more terms will show up in the data (Linneberg & Korsgaard, 2019).

Data analysis of focus group data requires additional steps (Krueger & Casey, 2015). While purpose should guide analysis, unlike in interview data collection and analysis, focus group data collection and analysis should note patterns and variations between groups as well as within them (Krueger & Casey, 2015). From the data collection, codes were categorized, refined, and then themed into overall themes and subthemes when necessary (Elliot, 2018; Linneberg & Korsgaard, 2019). When considering the number of themes during the coding process, it is noted that while having too many themes may become cumbersome and challenging for data analysis, there is no requisite for qualitative exploratory single case studies (Elliot, 2018; Saldaña, 2016). While I had two coding cycles and made multiple passes to examine the data, I loosely followed Bingham's (2023) five-phase process of qualitative data analysis since I was using multiple forms of data collection. Those phases are organizing data, developing

categories through sorting, open coding, identifying patterns, and relating findings and the stages are cyclical or recurrent in nature (Bingham, 2023).

Part of the data analysis plan is knowing how to treat discrepant data. Discrepant data are data that do not fit the codes or expected outcomes or themes that have emerged (Bashir et al., 2018). It is important to identify discrepant data because the data may be different, but they still represent constructivist perspectives. My plan for dealing with discrepant data included incorporating this data to provide full transparency and to allow other researchers to draw their own conclusions, especially when transferability is considered. As Bashir et al. (2018) noted, while data may contradict existing themes, as a researcher, it is my place to document the data not to exclude it so that other researchers have the broadest picture available.

Issues of Trustworthiness

Trustworthiness, according to Stewart and Hitchcock (2020), is not only about researchers feeling confident in their purpose, approach, methods, data collection, and analysis, it is also about creating consistency. According to Lincoln and Guba (1985), trustworthiness is often described as credibility, dependability, confirmability, and transferability—concepts posited, to allow researchers to determine levels of rigor in a study. Bashir et al. (2008) noted that, unlike quantitative research, qualitative research is more difficult to define and defend because human perspectives are steeped in subjectivity. Multiple strategies for increasing rigor in qualitative studies like prolonged engagement, triangulation, audit trails, reflexivity, and thick or rich description may be

utilized (Anney, 2015; Bashir et al., 2008; Houghton et al., 2013; Thurmond, 2001; Yin, 2018).

Researchers may take precautions at each stage of the process to ensure that there are no negative observer effects, that emerging patterns are accurate, and that research is reliable (Stewart & Hitchcock, 2020) through steps like noting potential pitfalls for transparency, using member checks, and reflecting regularly. Credibility refers to the recursive process of research ensuring that all the design structures are aligned and attended to (Ravitch & Carl, 2021). For example, researchers may establish credibility through member checks, reflexive journals, working with other researchers for peer debriefs or auditing, and endeavoring to provide rich, thick descriptions. Anney (2015) purported credibility to be a multi-step process, to include employing strategies like peer debriefing and member checks as well as appropriate lengths requisite for deeper data collection, in which a researcher conducts a study in a plausible and convincing manner, while Patton (2015) and Bashir et al. (2008) equate credibility with validity and reliability in research.

For my study, I purposively selected participants who met the chosen criteria and who provided multiple perspectives (Anney, 2015) as I explored the chosen phenomenon. I utilized multiple data collection methods, both semistructured focus group questions and structured interview questions to enhance rigor (Hughton et al., 2013). This also allowed for data source triangulation and within-method triangulation (Thurmond, 2001). I used open-ended, iterative questions, reflexive journaling, rich or think description, and member checking to help add credibility to my study (Houghton et al., 2013; Orange,

2018). I sought alignment in the problem, purpose, questions, and each part of the study. I member-checked my observations with the responses of the interviewees to look for patterns and check for consistency to ensure that I eliminated bias (Anney, 2015; Houghton et al., 2013). Additionally, I continued conducting asynchronous bulletin board focus groups and individual asynchronous interviews until data saturation occurred and then analyzed the data in a systematic manner using multiple techniques: a priori and open coding (Patton, 2015; Thurmond, 2001).

Triangulation, according to Houghton et al. (2013), is a process in which points throughout the process of a study may be "confirmed" (p. 13) and deemed "complete" (p. 13). In case study research, the use of different data collection methods and different analysis techniques allows for multiple points of triangulation, which is considered a positive feature of the design (Houghton et al., 2013; Yin, 2018). In the case of the study, triangulation occurred at various points: data source triangulation, multiple sources and times of collection; within-method triangulation, two data collection procedures within a single method; and data analysis triangulation, the use of multiple techniques for analysis (Thurmond, 2001). The use of asynchronous bulletin board focus groups and individual asynchronous interviews as well as a priori and open coding allowed opportunities for multiple points of triangulation and provided a more complete picture of the phenomenon being researched.

Credibility

Validity, or credibility, according to Ravitch and Carl (2021) is a "systematic way for addressing a study's rigor," (p. 167). Therefore, to create credibility for my study, I

checked my purpose, design, approach iteratively, and monitored and adjusted. I used debriefs for asynchronous bulletin board focus groups and individual asynchronous interviews. I spoke with an administrator prior to setting up the individual asynchronous interviews to glean any information that I should have known from both culture and power perspectives which might shape the data collection, and I worked towards multiple points of triangulation.

Dependability

Ravitch and Carl (2021) described dependability in qualitative research as "stability of the data" (p. 171) and noted that researchers should have rationales for their choices when collecting data. Dependability equates with reliability in quantitative research (Bashir et al., 2008; Lincoln & Guba, 1985). Aside from the need for rationales to explain selections during the process, researchers should explain all steps as comprehensively as possible. Throughout the process, as a researcher, I obtained feedback on questions created for asynchronous bulletin board focus groups and individual asynchronous interviews from peers and committee members. My data analysis included accurately transcribed individual asynchronous interviews, reflexive journal entries, and a thoughtful process for coding the collected data. I obtained feedback with a focus towards clarity in all steps, from creating questions to analyzing descriptions, if my descriptions seem vague or ambiguous as I document my process. Any feedback and all data collection, along with a reflexive journal, became a part of an audit trail. Audit trails provide documentation of the process and decisions which may

enhance rigor and demonstrate dependability and confirmability (Anney, 2015; Houghton et al., 2013; Koch 1994).

Confirmability

Confirmability, according to Ravitch and Carl (2021), is the goal of researchers to acknowledge not only that bias exists and prejudice is sometimes present, but also to make those concepts transparent to minimize both their presence and their impacts. Confirmability equates to the verification of data and findings presented in a study (Anney, 2015). Confirmability may be established through audit trails, reflexivity, and triangulation (Anney, 2015; Cutcliffe & McKenna, 2003; Lincoln & Guba, 1985). As an educator, I recognize that sometimes bias in relation to educational ideas can creep into research simply because concepts are ingrained, so it is imperative to think reflexively and to examine one's perspectives and interpretations constantly and consistently (Ravitch & Carl, 2021). To promote confirmability, I kept a journal for considerations surrounding data and a journal for processes and perspectives in general. Since transparency, impartiality, and a lack of bias were the goals, I kept an open mind going into individual asynchronous interviews, used debriefing after individual asynchronous interviews, and ensured that participants could see the transcriptions and check them for the accuracy or propose changes. In addition, I ensured that my verbiage and diction for definitions were clear and that my notes were written in a consistent style so that I could look for patterns. For all steps in the process, I considered each step critically and addressed any issues of bias that arose and made any issues transparent.

Stewart and Hitchcock (2020) posited the need for researchers to be reflexive about data collection. Crawford and Lynn (2020) similarly explained that reflexive journaling provides an avenue for researchers to take a step back and examine, as well as analyze, their progress as they informally record their assumptions, ask questions, and outline relationships. In addition, Cronin (2012) described researcher reflexive journals as their own sort of peer or friend which may cause one to think more critically of one's work. Likewise, Matteson (2021) noted that journals are researchers' unique spaces to think and organize their collected thoughts and data. In general, Orange (2016) posited that journals acted as a type of researcher commentary which captures snapshots of the process. To clarify, Ravitch and Carl (2021) noted the informality of journaling and explained that the focus should remain on quality not formality. Moreover, Patton (2015) explained that the term reflexivity relates to the researchers' means of considering and being mindful of their thoughts, the research, the decisions, and the data while acting as the main tool in the process itself. Orange (2016) noted, however, that while researcher reflexive journals are avenues for increasing rigor, often novice researchers do not have enough experience with the practice; therefore, some structure may be beneficial. For the study, I utilized a structure for my reflexive journal based on Orange's 2016 model.

Transferability

Transferability equates to the depth of description which occurs in a study so that other researchers may read the study and findings and may understand the description and context to the extent that judgements and generalizations can be made (Houghton et al., 2013; Ravitch & Carl, 2021; Stewart & Hitchcock, 2020). While true or exact

transferability is rarely feasible because no two researchers will have the same experience, by providing rich description, other researchers may come closer to replication (Houghton et al., 2023). This means that specific data like quotes should be included in the descriptions in addition to the description or process, methods, decisions, and findings so that researchers may have a broad understanding of context. For my study, I ensured that I had described the settings and participants in-depth (Ravitch & Carl, 2021) to provide a better baseline or foundation for understanding and can ensure that analysis of data will provide an overarching illustration of information so a more holistic picture may be formed by another researcher to create stronger external validity.

Ethical Procedures

Ethical considerations for the undertaking of a study are both imperative and fundamental. According to Ravitch and Carl (2021), from consideration of participant inclusion to informed consent to lack of use of identifying information and disclosures, the safety and security of participants are of the utmost importance. In the case of my study, I followed ethical guidelines by submitting the appropriate forms and applications to the IRB and followed their suggestions and requirements. Once approval was obtained, I worked with teachers within my school district. I did not have a supervisory role in my school district, so prospective participants did not feel pressured to participate or have concerns with power structures by receiving an informational email invitation from me. After I received teacher responses, I sent consent forms to those who met the criteria for the study and who wished to participate. I sought to maintain confidentiality, throughout the process, by creating pseudonyms for teachers involved (Ravitch & Carl, 2021) and to

ensure privacy by safeguarding data and using nondistrict means of communication (i.e., using my Walden email instead of my district email to maintain privacy).

Orange (2016) posited, for instance, that reflexivity enables researchers to be aware of potential ethical issues as well as bias; I used my reflexive journal to reflect upon and monitor decisions related to ethical considerations. To safeguard participants and create transparency, I outlined the process of my recruitment, consent, and data collection methods within my study and procedures. Similarly, data were stored on a personal computer that was kept in a secure location and had both password and two-step verification protections. To further safeguard participants, identifying details like ethnicity, age, and other personal demographic qualifiers would be removed so that readers may not be able to discern individual's identities. This information would also be redacted for any additional files, materials, results, or findings that may be disseminated. Raw and individual data were shared with no one other than my Walden supervisors. Data will be stored on my personal computer and password protected for 5 years after the conclusion of my doctoral program, submission of the study to ProQuest, and publishing of the study for the academic community.

I was, once approved to move forward by the district and IRB, forthright and transparent with prospective participants (see Ravitch & Carl, 2021) and obtained informed consent, and I kept everything that might identify the teachers involved confidential. When completing the asynchronous bulletin board focus groups and individual asynchronous interviews, I used a script to ensure that I explained what would happen during the interview and after and provided the interview questions prior to the

actual interview time to disclose all requisite information. I also explained how the information would be used, offered the participants a chance to review the transcripts for accuracy and made changes if necessary, and provided the participants the opportunity to see the final study once completed for full transparency (see Saldaña, 2016). Again, data will be maintained for the requisite amount of time as stated by the university—5 years under password protection on a personal computer at a private and secure location. To the best of my knowledge and understanding, there was not any professional, psychological, economical, emotional, or legal risks to my participants. Since the school/buildings are being restructured, I knew some of the participants, but there were no power issues involved and, if I had been placed in a leadership role, I would strictly avoid selecting participants from my academy. The recruitment process was voluntary, and the compensation was minimal with a gift card to a local diner with a value of no more than $25. While the amount might seem high, some participants participated in both a focus group and an interview.

As a rule, written communications to the prospective participants and participants used conversational language and participant-friendly diction. The informational email invitation included the study purpose, the criteria for participants, the outline of the two data collection methods (i.e., detail what they were and how long they would take), and the compensation. The informed consent, which was emailed to teachers after prospective participants send an email response to the invitation, reiterated the information listed in the informational email invitation and discussed any conflicts of interest, explained that the participants could leave the study at any time without issue, censure, or penalty, and

provide an avenue for asking questions via the university's Research Participant Advocate. Additionally, the informed consent explained the number of participants and outlined the process for the study. It included the benefits of the study to society, outlined any potential discomfort involved, and explained how privacy would be maintained as well as the data storage plans. Finally, the consent form explained that no part or portion of the study would waive the participant's legal rights, included my contact information for general participant questions or concerns, and invited the participant to keep a copy for their records. I received IRB approval on October 22, 2024, and began data collection soon afterward (#10-22-24-1043076).

Summary

The design selected—a qualitative exploratory single context case study—is appropriate for the exploratory nature of the study, according to Yin (2018). The study focused on the exploration of how high school teachers use project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized populations which may provide foundational research for other teachers.

In this chapter, I examined and critically considered my selections for my research design and rationale, methodology, instrument, analysis, and procedures for the process. Rationales were provided for the decisions made to align my study. Additionally, issues like trustworthiness and ethical considerations were discussed. In the next chapter, I will include results from asynchronous bulletin board focus groups, individual asynchronous interviews, and data analysis.

Chapter 4: Results

The purpose of this qualitative single context exploratory case study was to explore high school teachers' use of project-based learning as an innovation, to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. To accomplish this purpose, I employed a single context exploratory case study with a focus on a high school in one district with multiple campuses since this allowed for the use of multiple sources of data collection (Yin, 2018). Figure 10 shows the sources of data.

Figure 10

Sources in the Data Collection Process

As noted by Ravitch and Carl (2021), rehearsing instruments may be a means of refining data collection tools, so data are still gleaned from the inclusion process. Additionally, researcher reflexive journals, often considered one of the most important research tools in thematic analysis (Braun & Clarke, 2022), illustrate the processes of research on the journey. Aside from those sources, I employed two asynchronous bulletin board focus groups: one intermediate level and one advanced level, with a total of 11 participants followed by individual asynchronous interviews with a total of six participants, drawn from both focus groups. The data, to include the participant-generated documents from both the asynchronous bulletin-board focus groups and the asynchronous interviews, were collected and then thematically analyzed to gain insight into the phenomenon. Finally, to maintain alignment, I created a checklist from Chapter 3 to use in writing Chapter 4.

In this chapter, I will report the results of this qualitative single context exploratory case study. It includes the setting and demographics. From there, I will explain the process of data collection and data analysis. Finally, I will address the evidence of trustworthiness, and the results.

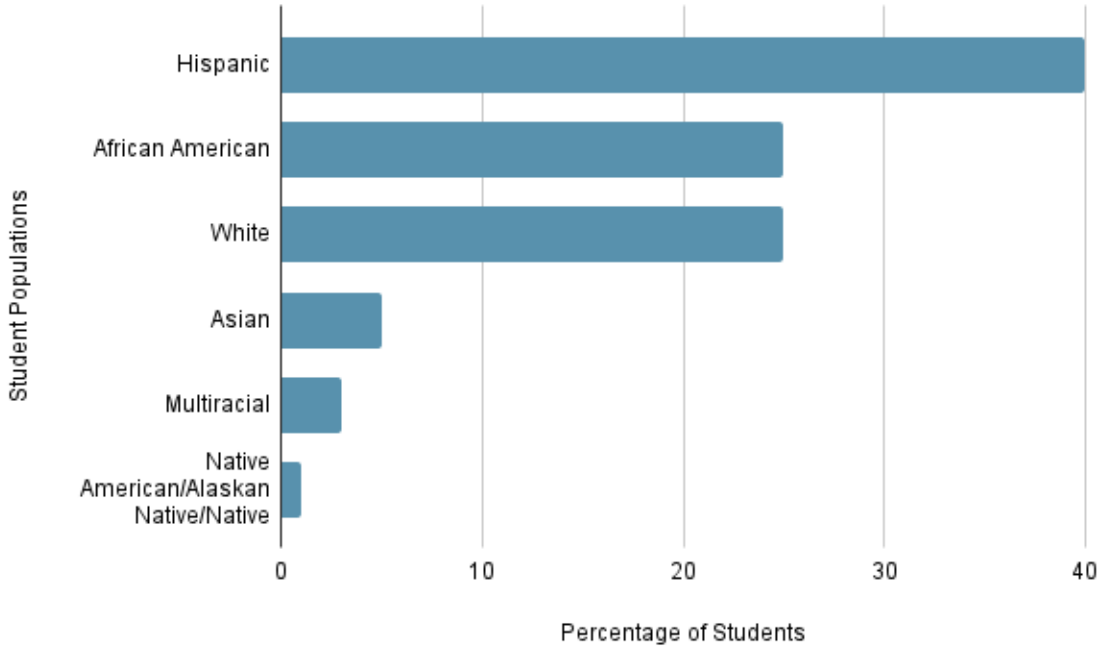
Setting

The research site for this qualitative single context exploratory case study was East High School (a pseudonym). This high school is comprised of approximately 5,000 students from 144 countries. The school has four main campuses: one satellite campus, one campus which works as a short-term setting for students who may have behavioral issues and/or need a different structure and schedule while getting back on track, and two

standardized campuses. Standardized means the campuses share students, follow a standard rather than modified setting, and have normal operations. The two standardized campuses have the largest populations of students with around 1,000 students at the smaller campus and approximately 3,500 at the larger campus. Students are bused back and forth between campuses as needed throughout the school day. These numbers shift slightly throughout the year as students who face different challenges may transfer back and forth between campuses with approval. There is an international campus within the largest campus; this campus houses students who are ELLs—by design, they would test into WIDA Levels 1 and 2 so that they receive optimum support for language acquisition within their subject areas District demographics indicated that students, at the end of the year, identified themselves as these approximate demographics: 40% Hispanic, 25% African American, 25% White, 5% Asian, 3% Multi-racial, and less than 1% Native American/Alaska Native or Native Hawaiian/Other Pacific Islander. See Figure 11.

Figure 11

Student Populations at East High School



Graduation rates fall between 78 and 86%; 984 students graduated at early graduation—there are two: one in May and one in July of 2025.

Several organizational conditions may have influenced the interpretation of study results. During the time of data collection, the government changed hands and immigration and deportation came to the forefront of the nation. The teachers and staff were being sent information regularly about how to support students, within the guidelines of the new policy changes, and almost daily updates on where students could find help. Some of our students left school because their parents lost their visas. At this time, also, many federal jobs were being cut; this impacted many of the spouses of staff and teachers and the parents of students. Budget cuts have also played a role in posing

obstacles for teachers and staff—this has been ongoing throughout the data collection and analysis phase. Finally, questions about how diversity, equity, and inclusion in politics would impact the school system arose. Since the topic of this study was about how teachers address social issues to engage marginalized students, this may have influenced which individuals choose to volunteer for the study, and how they responded during data collection. Additionally, shortly before data collection began, there was a snowstorm in which 17,000 people lost power, and school was closed for nearly a week; this led to the focus groups starting slightly later than originally planned.

Demographics

The participants for this study included 11 overall participants at two of the four campus sites. The demographics included two male teachers and nine female teachers with subjects that encompassed but were not limited to art, English, world languages, history, special education, science, and international studies. Participants taught a variety of populations—special education through Advanced Placement and all four marginalized populations on which the study would be based.

The participants are made up of four races. Participants had had a variety of levels of training with project-based learning ranging from none to year-long university courses and professional development. Participants had been using project-based learning in their classrooms for 1 year to 20+ years. One thing of note was that some of the participants themselves faced issues which students might face, like anxiety, organizational disorders, vision impairments, and hearing impairments. To combat those

obstacles, some participants asked for accommodations like reminders or closed captions and so forth if they became necessary.

Table 4

Participant Demographics of Current Position

Participant	Content area	Intermediate group or advanced focus group	Individual Interview Yes/No
1	International Academy/Technology	Advanced	No
2	English	Advanced	Yes
3	AVID/English	Advanced	Yes
4	Earth Science	Advanced	Yes
5	English	Advanced	No
6	Social Studies/World History	Advanced	Yes
A	Co-Teacher/English	Intermediate	Yes
B	AP Human Geography	Intermediate	No
C	Spanish/Heritage Learners	Intermediate	No
D	Nurse Aide	Intermediate	No
E	Art	Intermediate	Yes

Data Collection

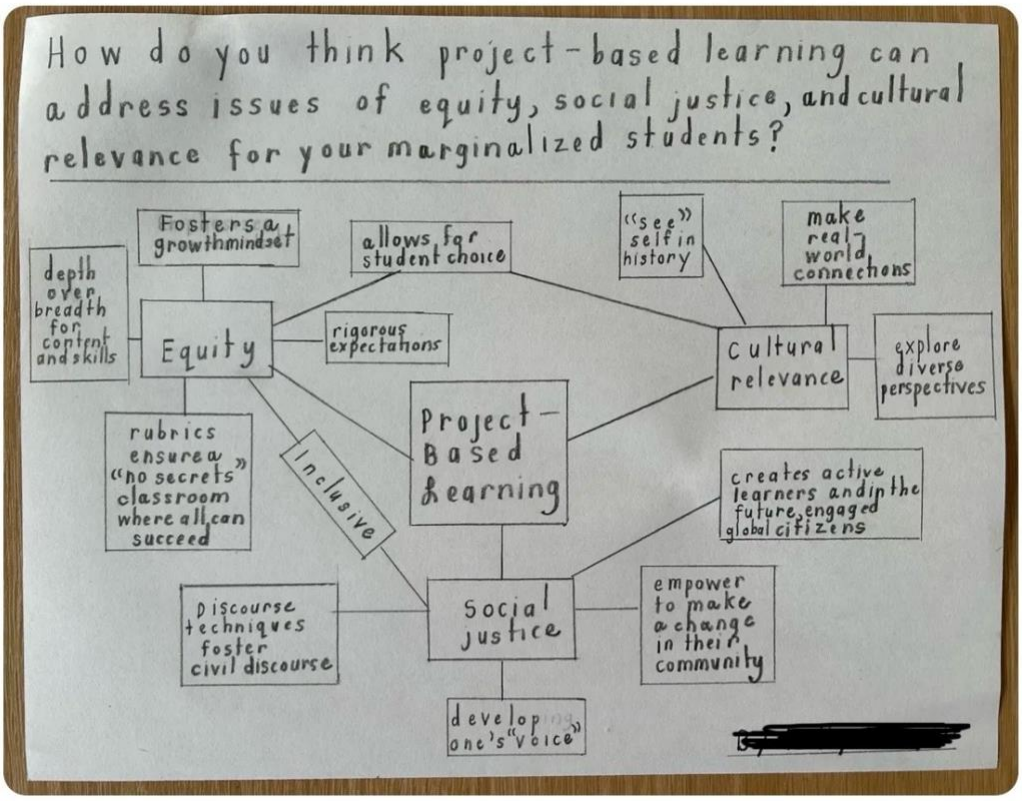
For this qualitative single context exploratory case study, I collected data in two ways: first in asynchronous bulletin board focus groups, then from individual asynchronous interviews. For focus groups, participants were placed into one of two focus groups, intermediate or advanced, based on levels of training, numbers of topic/unit areas of project-based learning used—that is, is a participant using the same unit over and over or are they using project-based learning in different contexts and with different content, number of times used on average per year, and when the participant first employed it. To ensure less chance of bias, I removed all recognizable descriptors and called a teacher from another state to go over my process to determine whether it made sense and was easily understandable by others.

For the asynchronous bulletin board focus groups, I used Padlet to create a password protected discussion-board style bulletin board poster. I used a tool that was familiar to participants in the district; I did not add any unnecessary or new technology with which they might have been unfamiliar, and I loaded "how to" videos into the space so that participants could request help if they needed it or watch a video as recommended by Krueger and Casey (2015). I created a format with a single row of questions across the top (linear fashion) which were in order chronologically by response date. For example, I began each of the 3 weeks of questions with a conversational question and then moved to the right with each additional question. In this way, participants could move back and forth to respond fluidly, address each other's previous comments/responses as they had new considerations/ideas and/or their perspectives changed, and add to current questions. It also allowed them to post questions for each other. As noted by Krueger and Casey, this format gave participants the option of checking in for a short time each day or every other day so that they could respond when it was best for them; this also allowed more time for reflection amongst participants before answering questions. I kept the asynchronous bulletin board focus group access restricted, as recommended by Krueger and Casey and in alignment with IRB policy, by making it password protected and using a special link to access the Padlet. Participant 6 described the bulletin board focus group in this way: "This process served as professional development that enabled me to refine how I implement project-based learning in my classroom." Through this use of the asynchronous bulletin board focus group created on Padlet, participants were also able to load rubrics, samples of student work and student art, and to create mind maps which I

was able to convert into data, load into Dedoose, and code. While asking questions which prompted participants to create mind maps might have seemed unorthodox, Krueger and Casey recommend their use because they can be useful because they are unexpected and can create new ideas, participant questions of each other, and perspectives. This is particularly important since one of the downsides, according to Krueger and Casey, is that focus groups which are not live and face-to-face can lose their "spontaneity." For example, Participant 6, who mentioned that they saw the asynchronous bulletin board focus group as professional development, created a hand-drawn mind map which focused on their subject area and how to bring about change as their students become global citizens (see Figure 12).

Figure 12

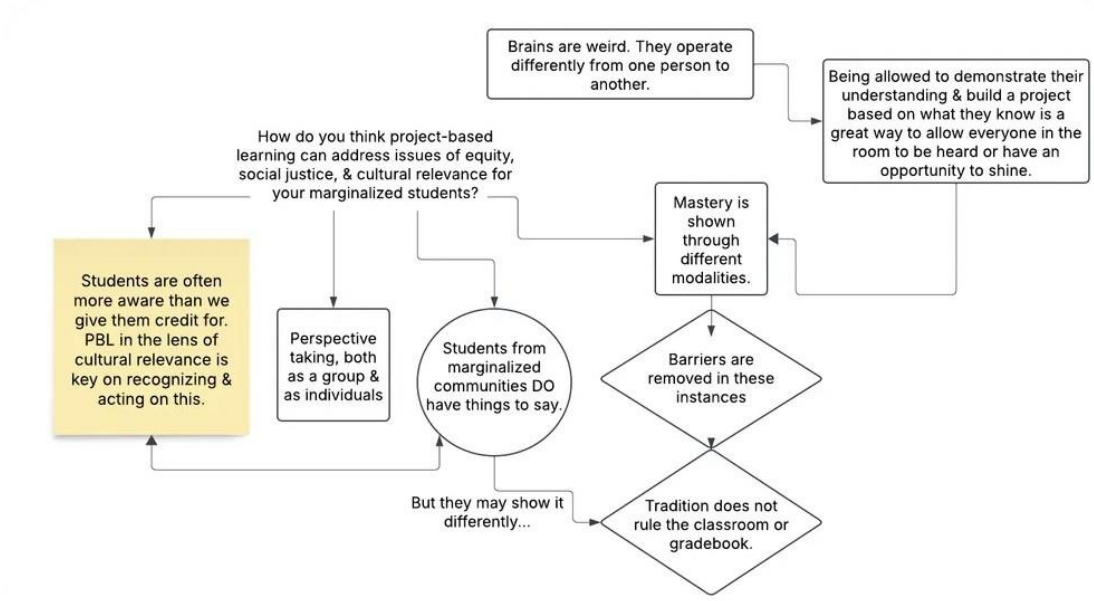
Participant 6 Mind Map



Whereas Participant A created a mind map using technology which focused on the populations of students with whom they work from a differentiation and brain-based assimilation perspective (see Figure 4). The difference in examples, from two different asynchronous bulletin board focus groups, demonstrates that though the participants teach within the same district and attended the same district trainings, and answered the same questions, their foci were different, thus prompting data which helped me to posit additional questions.

Figure 13

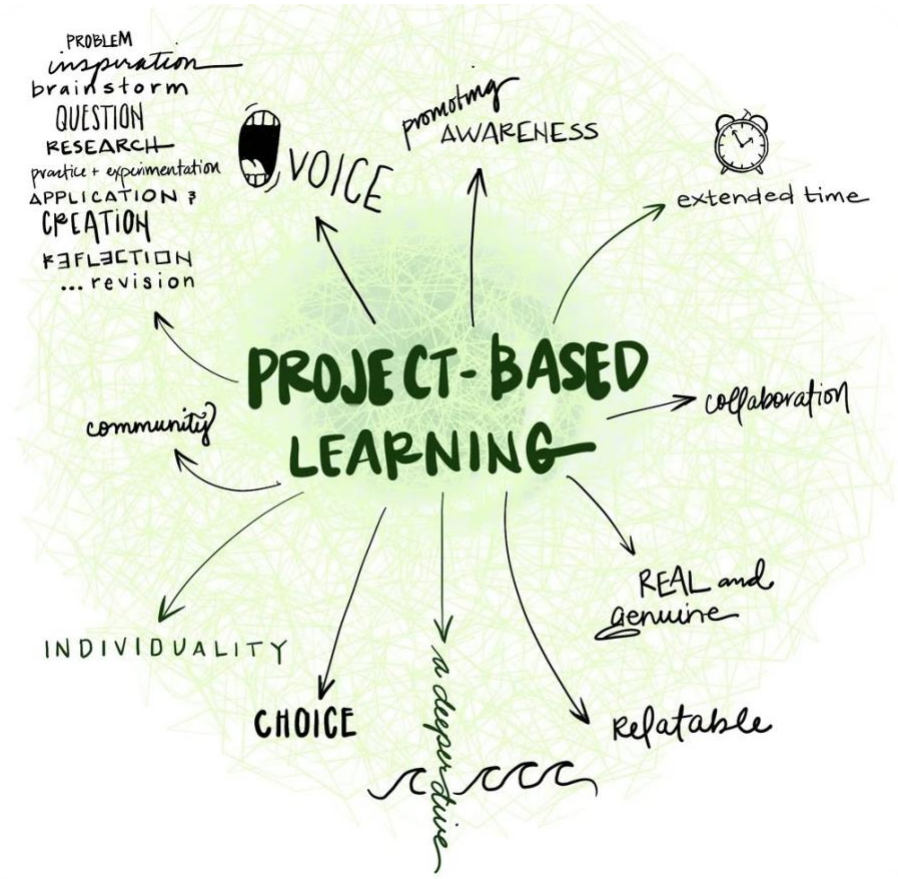
Participant A Mind Map



Participant E created a more artistic mind map using technology by incorporating illustrations of some of the concepts incorporated (see Figure 14). The participants saw each other's mind maps, noted the differences, made comments, and asked questions, which elicited additional information without me having to ask. By noting the differences and speaking to each other about them, this allowed me to make the connections about participant comments in regards to professional development (PD) during coding. As a researcher, I was able to see patterns in how the adults learn, think, perceive, and discuss in individual ways like students do.

Figure 14

Participant E Mind Map

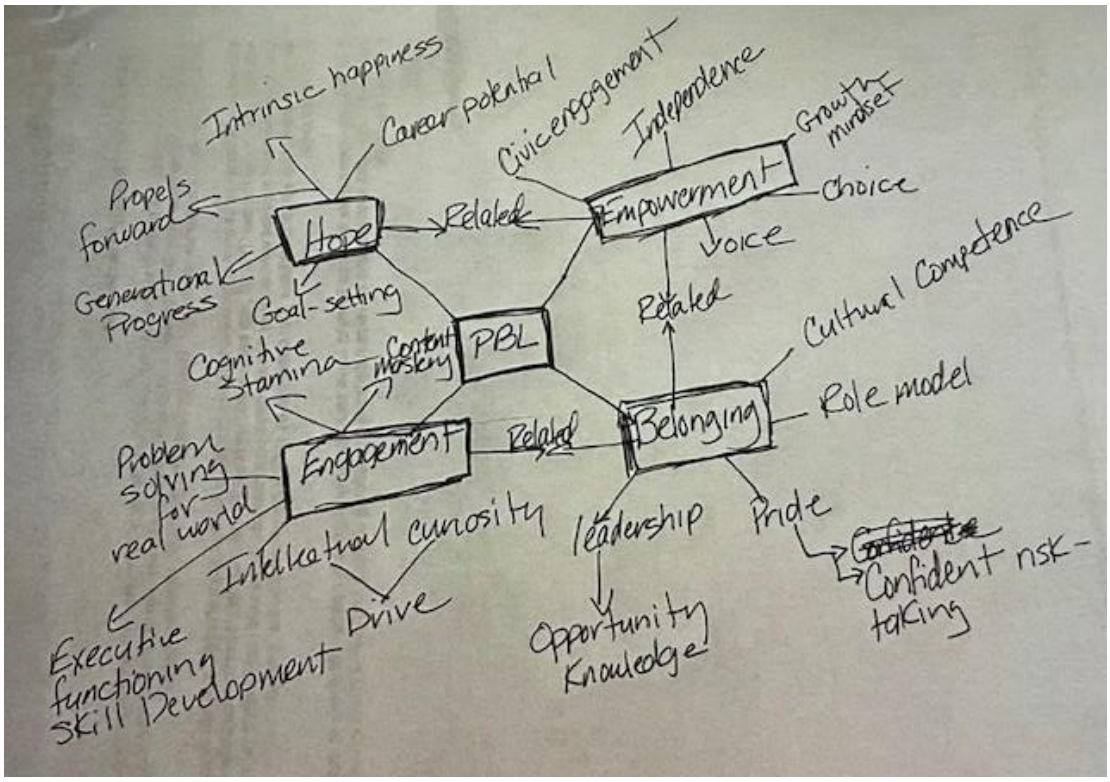


I learned that the responses not only related to the instructional experiences of the participants as teachers but also to how they learned and processed as human beings, which showed up later in coding. This is important to note because it arose from data collection and the use of nontraditional or unorthodox questions and alternatives, as recommended by Krueger and Casey (2015). The mind map provided by Participant 2 added another level to this pattern because it demonstrated how, while data were collected, a journal was needed to document not only what the data meant but how it

applied to each participant contextually. Participant 2's mind map includes concepts like "hope," "intrinsic happiness," and "generational progress," along with more traditional responses seen in the other mind maps (see Figure 15).

Figure 15

Participant 2 Mind Map



The samples in Figures 3-6 were randomly selected from mind maps created by all teachers I facilitated the group by cheerleading when people responded ("Thank you," and "I appreciate you," messages), clarifying questions when participants had them, asking for clarification when necessary, and messaging reminders when asked. I was able to export their responses into a PDF which I then uploaded to Dedoose for coding. For the individual asynchronous interviews, I used word documents with a series of questions of which they typed in their responses. I also asked the participants to create word clouds

at the end to summarize their thoughts. No transcriptions were needed. I loaded the documents into Dedoose to code their excerpts and loaded their word clouds, mind maps, and art for coding as well.

I kept a reflexive researcher journal during the data collection process, and I will describe details of this throughout this section. Unless noted, data were collected as described in Chapter 3. The only derivation from this was that I had an additional member in the focus group. Originally, the focus groups were to have four to five participants. I had a lot of interest and had one additional participant request to participate, so I accepted the person since they met the criteria. Additionally, no unusual circumstances occurred during the data collection process, unless explicitly stated.

When I initially delved into the world of focus groups, I learned about studies that had interviews which led to focus groups; however, in the text by Danner et al., (2018), *Using Focus Groups to Listen, Learn, and Lead in Higher Education*, an exemplar was provided of a case study in which multiple interviews were conducted by different people and the interviewers were all different from the people who analyzed the data. As the writers of the book reviewed and analyzed the case study, they posited the idea of using small focus groups to dig more deeply into the questions which were being asked so that a better understanding of a range of positionalities could occur. This idea aligned with my belief that data collection would resemble inverted triangles with focus groups acting as starting instruments which would help indicate which participants to interview for richer depth of responses for the RQs—purposeful sampling. Therefore, my individual

asynchronous interview data collection follows that of my asynchronous bulletin board focus group data collection.

Prior to reaching out to participants, I enlisted a colleague to read through the questions to give me feedback. This colleague is not in the classroom currently but has worked in the district for more than 10 years and has had extensive experience with project-based learning. The peer did not know who was participating and did not see the data from the asynchronous bulletin board focus groups. The colleague advised me that the questions would quickly illustrate which participants have had extended project-based learning training and which participants actively used project-based learning. They felt that while the questions were different in nature, a novice teacher using project-based learning might perceive some of the questions as being the same or overlapping. I asked whether the colleague felt that the questions should be changed, and the response was negative. They explained, during the conversation, that the distinction made by the questions would be important data as well.

When considering participant selection and considering the definition of purposeful or purposive sampling—not only a method to ensure that richer data may be collected, but also, according to Anney (2015), a way to enhance transferability and trustworthiness. I tried to ensure that I would not only ask participants who yielded a large amount of information during the asynchronous bulletin board focus group, but also participants who could clarify or add to the depth of that information. I reviewed my asynchronous bulletin board focus group data multiple times, and then I stepped back from it for a short period before reviewing it again. I then went back to the chart that I

made for grouping the asynchronous bulletin board focus groups so that I could list possibilities who would be representative of the teachers within the district but who also thoroughly contributed to the prior data. I made a list of possibilities and went down the list of candidates and emailed those participants. At the time, I received such rich data that I asked my chair if I could broaden my interview numbers, but she cautioned against doing that since I am a novice researcher, and I had already accrued a large amount of data.

Once I received a confirmation response from each participant to whom I reached out, I emailed the interview instructions and questions. Participants had a week to complete the interview and to send it back to me. There were two discrepancies from the plan I outlined in Chapter 3. The first was that one of the participants who agreed to participate from the Intermediate Group backed out after receiving the interview questions. A member from the Advanced group asked to participate on the same day, so I asked my chair for permission and included that participant instead of the first. The final discrepancy was that other participants from the asynchronous bulletin board focus groups later asked if they could participate, too.

Recruitment

After IRB approval, I started recruitment on November 1, 2024. While IRB approved my study earlier, I had to wait for approval to come from my district Office of Accountability. They requested my chair to send notification of IRB approval. Due to time constraints, I was unable to have my administration share a slide at the start of the 2024-2025 school year preservice week. To initiate the process, I had a colleague who

has both taught and used project-based learning but has taken on a lead position answer the questions to gain feedback and to see if the questions used for recruitment were clear from the perspective of an educator who might participate. My first step in recruitment was to place approved copies of the slide in mailrooms on the various campus sites. I did not need to ask administrators or department heads if they knew of anyone who was willing to participate; there were enough people who sent emails and/or sought me out. Prospective participants emailed me via my university email address and/or stopped me in passing to ask about the study. I asked them to email me via my university email address after speaking with them if they felt that they matched the criteria and wanted to participate. I had two participants ask if they could mention the study to additional colleagues. I had no issues with imposter participants while recruiting. All of the participants fit the criteria of the study and were willing to participate.

During the recruitment phase, I used my researcher journal to record the context of school environment as I tried to enlist participants, the number of participants who signed up and questions they had as well as noting any concerns which arose (i.e., having to repeatedly ask a few to use nonwork emails). I also used the journal to keep notes on submissions of consent forms and to detail my set up of the Padlet as I recruited—noting accessibility options through font and design. It was helpful because it kept me on track with my next steps, allowed me to keep track of ideas and questions so that I remembered to ask my chair, and enabled me to reflect on why and how I was doing what I was doing in this process.

Asynchronous Bulletin Board Focus Groups

I finished designing the asynchronous bulletin board focus group Padlet at the start of January 2025. The participants began to respond to their assigned asynchronous focus groups on January 15, 2025, and they had 4 weeks to complete their responses. While there is no single recommended size of focus group, it is generally suggested that researchers have two or more groups with anywhere from seven to 10 participants per group (Barbour, 2018; Danner et al., 2018; Krueger & Casey, 2015; Ravitch & Carl, 2021), though some groups may be as small as three participants. I kept the focus groups smaller in size to engender interaction by creating a level of intimacy or comfort amongst the participants who had similar background experiences in their shared career field of education. I also provided pseudonyms for all participants; the same pseudonyms were used for the participants who are interviewed.

Initially, respondents were supposed to address questions within a three-week period; however, one participant became ill. The others needed to be able to interact with the respondent, so an additional week was provided in this unusual circumstance. As recommended by Krueger and Casey (2015), directions were posted about how and when to respond in the first column of the Padlet, and questions were organized week by week. Each week included a conversational question and two additional questions, except for Week 3, which had a wrap-up or summary question (so, Week 3 had three questions in total). Each question had a prompt to allow for clarification, understanding, levels of training, etcetera, so that participants would feel that there was an alternative way to contribute if they did not initially relate to the core question.

While the focus groups were running, I asked questions after participants responses to draw out additional data, asked questions for clarification, and asked for examples when needed. I also prompted people, when I had not heard from them every 3 days, by asking questions to ensure that they were still okay with participating. I used my researcher journal to record noticings, thinkings, and to distract myself. For example, Participant 3 noted that one of the subjects they taught lent itself more to the topics of equity and social justice than the other subject taught because the "students in that class fall often into the 'marginalized group' of students," so it was easier to incorporate those concepts into coursework and project-based learning "more directly," which begs the question of how teachers integrate these concepts with mixed grouping in classes. Is there training for those types of situations and, if so, what does that look like?

At the same time, Participant C discussed the comparison of Latin America and the U.S. in a Heritage Language class and underdevelopment in rural areas vs. cities of both. When considering this, I noted in my journal that current politics could play a role in not only the content of the lesson but also how the lesson would be taught differently. I also considered whether teachers would feel comfortable creating project-based assessments around issues such as this one now. On the inverse, Participant A created a lesson on voting rights and used the lesson to teach the students and parents how to register to vote, so I noted that the comfort levels of teachers must play a role in the concepts of equity, social justice, and cultural relevance in the classroom now. While I would like to say that I checked on the discussion posts every two days as planned, I noted that my enthusiasm for hearing what they had to say and the participants'

excitement for discussion, learning from, and growing with each other; my direct statement in my reflexive journal was, “I find myself obsessively checking them [Padlets] for responses like an infatuated high school student in a new relationship.”

Preparing Asynchronous Bulletin Board Focus Group Data for Analysis

To prepare interview data for the data analysis phase, first, I looked for omissions in data, then I downloaded the Padlet responses from Focus Group One in a PDF format and saved them on my computer. While I originally planned to use an excel spreadsheet to code and transcribe, the amount of data I collected was large—one PDF from one focus group was over 90 pages, so I decided to use technology. Dedoose was suggested both by my chair and the Ravitch and Carl (2021) text, and when I went to a training session, I learned about the Thematic Analysis text and process by Braun and Clarke (2022). Dedoose allowed me to quickly organize large chunks of data.

While I thought simply downloading the PDF from Padlet would work initially, I was unable to correct the PDF—remove identifying markers—it was not editable. So, I then copied the PDF, in its entirety, and pasted the information into a word document. I also took screen shots of visuals created by respondents, labeled them, and made notes about them as recommended by Saldaña (2016) so that I could use them in Chapter 4 of my dissertation. From this point, I removed identifying information, and then I uploaded the document into Dedoose. During my initial attempt to load the documents into Dedoose, I learned that, while Mind Map pictures and Word Clouds were easily loaded and recognizable, some of the rubrics and student artwork were not. I made the artwork pictures smaller and spaced them out more on the document, and then I loaded them. I

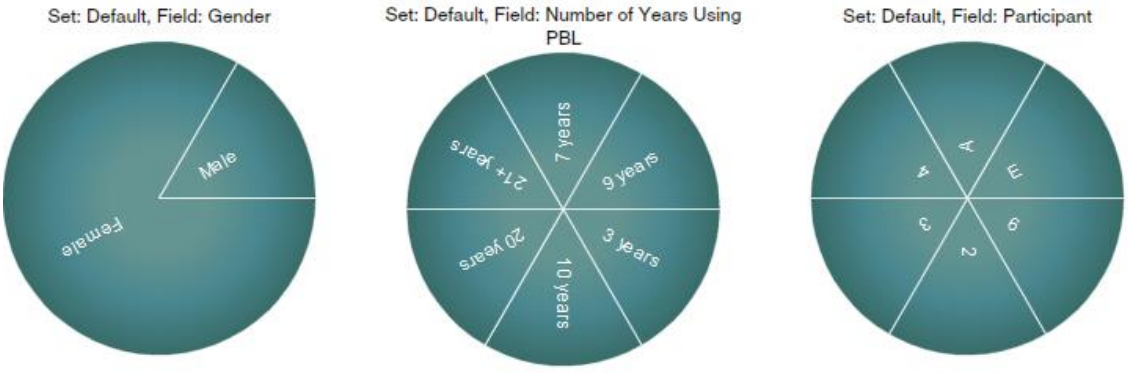
determined that the rubric samples shared were not universal to project-based learning, and I downloaded copies in Word for collection purposes, but I did not load them into Dedoose. I followed the same steps with Focus Group Two. Throughout the process, I took notes in my reflexive journal and took screenshots.

Purposefully Selecting for Individual Asynchronous Interviews

For interviews, I worked to ensure that I had a broad range of perspectives/ participants to ensure that data would be representative of the larger population of teachers as recommended by Ravitch and Carl (2021). I used purposeful selection to ensure that I had a variety of participants including (a) both male and female (b) teachers from different content areas, (c) teachers serving different populations, and (d) teachers from both marginalized and nonmarginalized groups. I also wanted to ensure that I had participants from both asynchronous bulletin board focus groups: intermediate and advanced so that teachers with different levels of training and experience could provide data for the interviews. I made a sticky-note chart to cross-reference teachers and began at the top of the sticky-note chart by asking people to participate. As someone agreed to participate, I removed notes until I had reached the goal. The demographics of the interview participants were noted in the Descriptor Ratios Multi Chart created in Dedoose (see Figure 16).

Figure 16

Descriptor Ratios Multi Chart



While I had initially planned on using four participants to interview in total, I decided to use six instead because I collected so much data during the asynchronous bulletin board focus group. The only issue which arose was that I had three from each group until one from the intermediate group backed out at the last minute, and the next person on the list to ask for an interview was from the advanced group, so I had four participants from the advanced group and two from the intermediate group to participate in interviews.

Individual Asynchronous Interviews

I started individual asynchronous interviews during the third week of February. Two things I did not consider, when creating a timeline, were that participants would check their emails as soon as I sent them and would respond to them either quickly or on the same day. So rather than the interviews taking place at the same time, I received responses and "interviewed" participants—that is, they responded affirmatively that they wanted to participate and began the interview process—between February 18, 2025, and February 25, 2025. While I considered that people would respond differently and may

need clarification for questions or aspects of the survey, I had not realistically understood how different from a face-to-face interview this would be. Similarly, once they received an email stating that they wished to participate and I sent the questions, they worked at their own pace, even if I gave them instructions. For example, some responded and completed the interview within 24 hours, and I had to contact some on the last day or expected deadline to see if they were going to complete the interview. As mentioned previously, one participant who stated they would participate dropped out, so that added time to the data collection timeline as well, as I worked to pivot. The steps, in order, were that (a) selected participants were asked to participate in interviews via email, and (b) participants responded via email affirmatively or negatively. Once someone responded affirmatively, I (c) emailed the interview questions to them. Other than clarifying questions, replacing the participant who dropped out, letting any additional people who wanted to participate know that I had reached my pool limit, and asking participants whether they felt they could finish once they reached the deadline of a week (dates varied by individual), I only emailed to confirm that I had receipt of their interview and to thank them.

During this phase of data analysis, I used my researcher journal to record questions participants had about the interview questions—for example, Participant A did not understand the difference between the mind map which was completed in the focus group and the word cloud which was requested in the interview. Similarly, I noted patterns, in my reflexive journal, of the participants making connections and having "a ha" moments. Participant E noted that training in project-based learning is not given to

teachers in their subject area but that what they do in class, even if they had not realized it prior to participation in this study is project-based learning. Their subject is art, and art is not always associated with project-based learning in education. I used my reflexive journal to note patterns which emerged from multiple interviews; for example, teachers noted that there is not enough time to be reflexive with their instruction in the manner they would like to be.

Participant 3 noted that they liked to be in control of their instruction, but, this year, they were more open to sharing ideas, and they have realized that they really enjoyed what they have learned. Additionally, I noted a pattern which emerged in terminology. The teachers, because they have had training of various levels and in different places, do not necessarily use terms the same way. For example, Participant 2 and Participant 3 both responded differently when speaking about social justice. Participant 2 spoke about social justice explicitly via terminology as noted in the quote:

> If we are not teaching content through a social justice lens, we are not only gaslighting marginalized populations by teaching them there is no need for social justice when they experience social justice regularly, but we are also not preparing these students to compete with their privileged peers. If we do not empower everyone by teaching through a social justice lens, we lose generations of potential innovators and progress makers.

While Participant 3 stated that they did not consider themselves to incorporate social justice per se; their students were studying topics to include food insecurity, climate change, and people earning enough to survive/purchase basic living necessities. In

making notations in my reflexive journal, I was often able to more easily move back and forth to consider new patterns and themes, and I was able to build off of questions and noticings from earlier in the study. This was important because of the amount of data with which I worked.

Preparing Individual Asynchronous Interview Data for Analysis

To prepare interview data for the data analysis phase, first, I looked for omissions which might need clarification or communication with participants. Then, I downloaded the Word files and saved them to my computer. Next, because I did not need to transcribe the materials because the interview responses were typed by participants, I removed the identifying data. Much like I did with the asynchronous bulletin board focus groups, I took pictures of participant-created word clouds, labeled it, downloaded it, and made notes for contextual purposes for reporting (see Saldaña, 2016). Finally, I uploaded the interviews into Dedoose.

Data Analysis

Braun and Clarke (2022) defined thematic analysis as a method for noting and understanding patterns in data in order to develop themes which demonstrate "stories" (2019) across a compilation of data in a study. As recommended, I used a blend of inductive and deductive approaches to coding in order to create opportunities to note patterns in the data (see Elliot, 2018; Graebner et al., 2012; Linneberg & Korsgaard, 2019; Pierce, 1978). I followed the six phases of reflexive thematic analysis that Braun and Clarke recommended for qualitative data analysis: familiarization; doing coding; generating initial themes; developing and reviewing themes; refining, defining, and

naming themes; and writing matters for analysis. I chose to use a combination of high and low technology modes for data analysis. Originally, I planned to use Bingham's (2023) five-phase process of qualitative data analysis since I used multiple forms of data collection; however, Braun and Clarke's stages of thematic analysis seemed to be a better fit for my study because it seemed more straightforward, and with the large amount of data collected, the six-phase thematic analysis felt more fluid. Findings from the data analysis resulted in three themes—one for each RQ, 12 categories, 40 codes, and six subcodes.

Phase 1: Familiarization

During Phase 1 of familiarization, I read and reread the transcripts from the asynchronous bulletin board focus groups and individual asynchronous interviews, as recommended by Braun and Clarke (2022) and Ravitch and Clarke (2021). I also had meetings and talk-throughs with my chair about questions or concerns of which I made notes in my reflexive journal. For example, there were some concerns about reporting too much background about participants that might breech confidentiality. Similarly, considerations arose about how to prepare for coding because the themes and concepts seemed to bleed into one another. Additionally, there were concerns about whether my RQs were too similar in nature and a discussion about what steps I would take if I were not a novice researcher in school.

One thing that was particularly helpful was to make sticky notes of terms which kept popping up. This was helpful to see patterns visually—at this time, I was not yet in the doing coding phase, but later those same notes would help shape the codes. Another

thing that was helpful was stepping away from the data. I took time off in between reviewing data so that I had a fresh approach or a clear mind when I went back over it. Each time I did this, I learned something new. During this phase, I used my reflexive researcher journal to note patterns, questions, and concerns, like those mentioned above, including but not limited to participants' use of terms and lack of the use of terms. An example of the lack of the use of terms could be the term “stakeholders” and the term “marginalized populations.” After reviewing the data and making notes as recommended by Braun and Clarke (2022), I realized that many of the participants did not include the specific terms explicitly because they were contextualized or understood. This was helpful because it made me consider nuance and exact wording—it made me realize that I could not take every statement at face-value, but I needed to dig deeper. The familiarization phase helped me submerge myself in the data, but it also taught me about the types of changes I would need to make in future studies.

Phase 2: Doing Coding

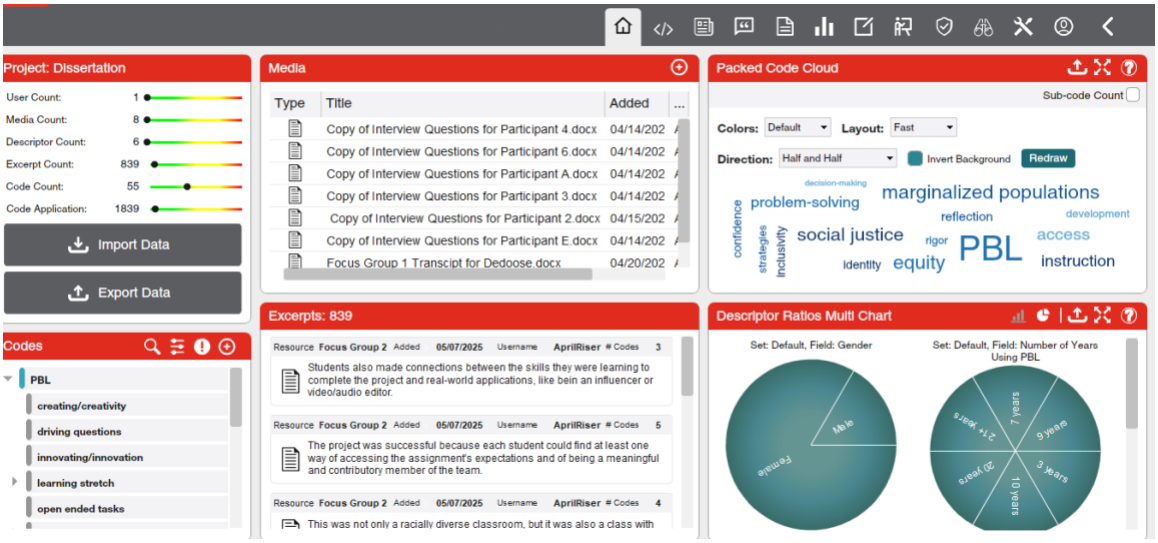
Braun and Clarke (2022) posited that coding should happen on multiple rounds via multiple levels, to include a mixture of semantic and latent coding, to ensure that researchers actively interact with data to begin to gain insight and perspective. To do that, I had to have organizational structures in place, which allowed me to move back and forth through the data. For Phase 2, called doing coding, originally, I planned to use Excel and to hand code. My concerns with using technology were that I would lose the nuance and humanness involved in respondents’ messages and qualitative research on the whole. I created an Excel spreadsheet and began hand coding, but I found it challenging

to move back and forth between such large amounts of data in a manner which would allow me to see patterns. I met with my chair to discuss data and review my progress, and I was moving incredibly slowly. My chair and I decided to attend a training session on using Dedoose for mixed-methods studies.

While the training did not align with my study design, it did show me the manner in which technology could organize the data so that I could focus on making sense and deriving meaning from it (see Figure 17).

Figure 17

Sample of Organization of Data



I, then, decided to shift to coding with Dedoose. During the coding process, I coded in the following order: individual asynchronous interviews, media from interviews, asynchronous bulletin board focus groups, and media from focus groups. On a side note, when I began coding art and media (word clouds) created by participants, I ensured that I did this twice—partially because it was my first time coding media, and I wanted to ensure that I had done this correctly and meaningfully. First, I loaded my transcripts, and

I familiarized myself with the data. I, then, went through the data and coded with the a priori codes I created for analysis (see Table 3) which included the following terms: driving questions, authenticity, learning stretch, and problem-solving.

After that, I made notes of the most used words in my reflexive journal and began creating a codebook to include my open coding. I did this by hand so that I could step away once I had finished and come back the next day with a fresh perspective and reread through the data to determine if the same words applied from my perspective. This gave me additional time away from the first round of coding so that I could process. I then returned and reviewed the a priori codes. I was concerned that I was chunking too much information initially; however, Braun and Clarke (2022) noted that chunking may occur during coding.

Once finished with the a priori coding, I used the list I created to make the codebook in Dedoose. During the first round of this coding, I did not use parent-codes and child- or sub-codes; I simply went straight through the data and coded. Additionally, I deactivated the part of the codebook in Dedoose in which the number of times a term had been coded appeared by the word because I did not want this knowledge to subconsciously add bias by making me worry about whether a word was being coded too much or too little. Again, I stepped away from the data—this time for close to a week—and then returned to work through the data again. This time, I added child- or sub-codes and merged four codes that needed to be combined since data indicated that they were too similar in nature and could be confused for each other. DeCuir-Gunby et al. (2011) noted that “code development is an iterative process” (p. 138). I made notes of this in my

reflexive journal. At this time, I had another talk-through with my chair, and we discussed code co-occurrence and how data which might appear minimally may have as much import as data which appears in higher numbers. I went back through my code co-occurrence to make notes in my reflexive journal to see if anything stood out as unusual to me, and then I went back to reread the data.

Dedoose allowed me to organize large chunks of data and it collated all of the text excerpts by code; however, there were some technical glitches as Dedoose changed from Versions 9 to 10 while I was working, which sometimes proved difficult to navigate. While the program does organize the codes and excerpts, I still wanted to be able to work through the data in a hands-on manner, so I printed all the collated materials and, using a highlighter and sticky notes, went back through the data and made additional notes for myself for use in my next steps. Using my reflexive journal was helpful to me because it allowed for space away from the program to consider codes and applications. The reflexive journal also allowed me to ask questions that I could work through as the coding process progressed—it kept me on track and, more than that, kept me focused.

Although Braun and Clarke (2022) did not emphasize the use of a predetermined codebook, I did keep a list of code labels and full description of the meaning of each code as described by DeCuir-Gunby et al. (2011). They noted that codes can be theory-driven (a priori) or data-driven (open coding) and I utilized both. This code list with definitions is in Appendix D. Keeping this list was helpful because it allowed me to see potential connections, to merge codes which were too similar, and shaped my perceptions of the data. DeCuir-Gunby et al. noted that specific codes make sense-making of the data more

accessible to researchers, so having the codebook helped me to clarify my thoughts and understandings of the data in Phase 2.

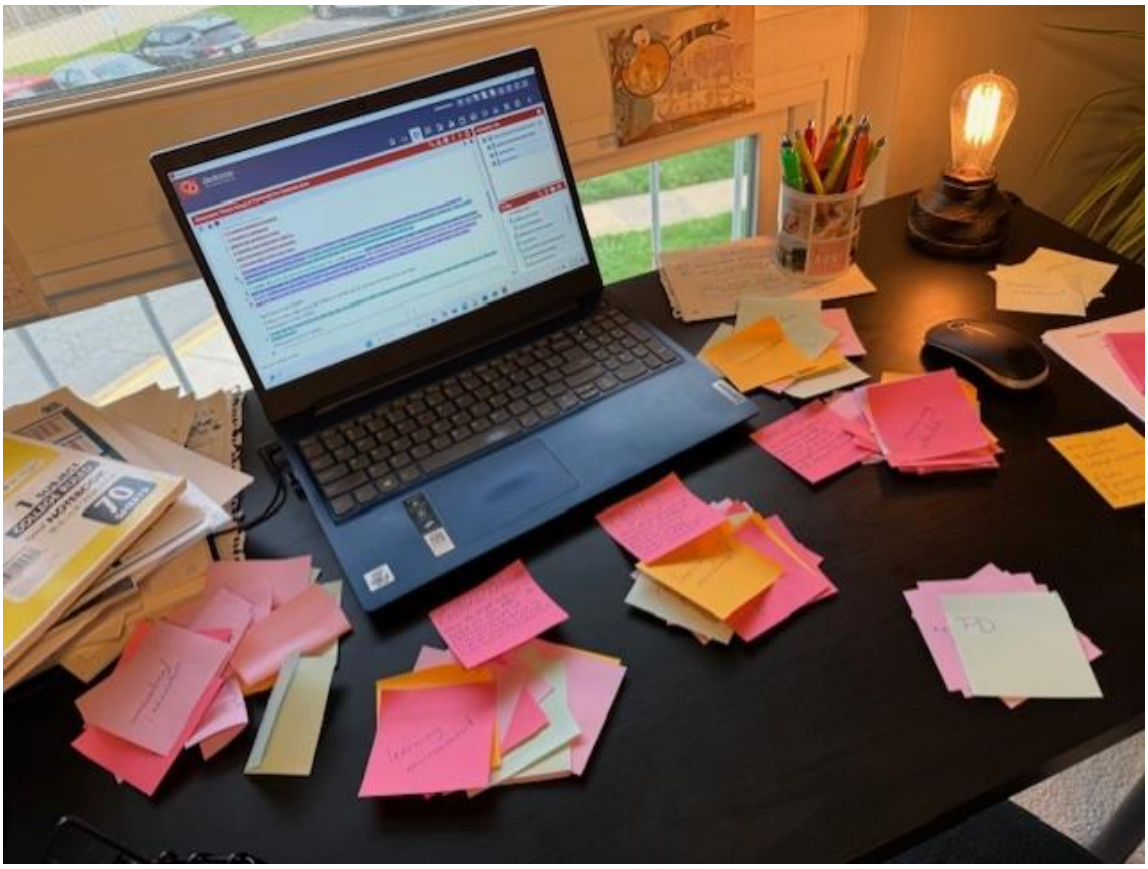
When coding, I began with the intermediate asynchronous bulletin board focus group responses followed by the advanced asynchronous bulletin board focus group responses. From there, I coded the individual asynchronous interviews, in much the same order as I collected data. It should be noted that one member of the intermediate asynchronous bulletin board focus group was asked to complete an interview and later withdrew, so I opted to extend invitations to other participants to see if they would be interested and took the first participant who replied affirmatively. Given the time and the opportunity, I would have liked to interview all of the participants because the asynchronous bulletin board focus groups gave them time to reflect on their practice, and I feel that additional data of value could have been gleaned.

Phase 3: Generating Initial Themes

In my transition to Phase 3, which is generating initial themes, I had a total of 37 codes, which I then began to group into categories which revolved around a concept. The first time I went through, I realized that I was grouping topic summaries and had to start over. First, I used a sticky note process with the RQs/concepts as starting points to sort codes in order to consider possible theme ideas. I had sticky notes with the RQs and "equity," "social justice," and "cultural relevance." I went back to the Braun and Clarke text chapter on "Theme Captures" (p. 77) and began again by sorting codes which might answer/relate to the RQ (see Figure 18).

Figure 18

Initial Compilation of Code Clusters



The codes included were those mentioned in Phase 2. After sorting and resorting multiple times, as noted in my reflexive journal, I began to see patterns.

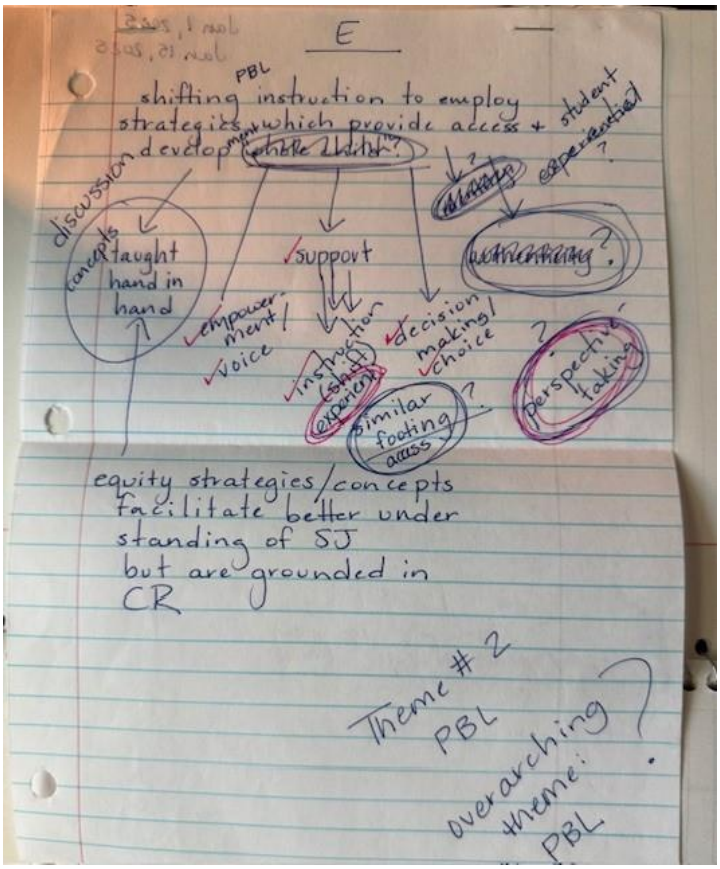
Throughout Phase 3, I used mind maps to help visualize my data and to look for patterns. It was at this point that I began to note, or began to visualize, possible boundary lines of the RQ answers or themes. For example, when I started coding, “student choice” and “student voice” seemed to apply to all RQs, but during this turning point, “student choice” was clearly related to RQ 1 and “student voice” was more clearly delineated by RQ3. During this point in coding, once I had reordered and merged codes and looked

across the data, I printed out the coded excerpts by code, grouped them according to possible theme candidate, then reread the data, highlighting evidentiary support to cross check that there was evidence to support the developing theme candidates.

Figure 19 shows an example of my initial thematic mapping at this phase for RQ 1 and theme candidate 1 (see Figure 19).

Figure 19

Initial Mind Map for RQ1 and Theme Candidate



Generating theme candidates is like looking at an impressionist painting: I review and review the data and am mired in the dots, but when I take a few steps back, an entirely new picture begins to form. At the end of Phase 3, I created new versions of thematic

maps for each RQ to visually connect my provisional themes and to better see relationships between them (see Braun & Clarke, 2022).

Throughout Phase 3, I was using my reflexive researcher journal to sort my thoughts and to posit questions about codes, categories, and sorting. I also used my journal to ask "what ifs" in relation to theme candidates. I used my reflexive journal to note codes and changes. This was helpful because I feel that Phase 3 is the messiest part of the thematic analysis process. Like Freytag's (1863) plot graph, the climax or turning point of the drama equates with the turning point of the data where collation and refinement begins. If there were blurred lines amongst the data in answering the RQs, this is the point at which I had to start to darken the lines and create the spaces between them. That cannot be accomplished without making copious notes, which means that a reflexive journal is particularly requisite to this phase. I stapled my mind maps and additional notes into my reflexive journal so that I have all the information together. Additionally, I used mind maps throughout this process to visualize the stages; for example, I created a series later to make the connections visible with my conceptual framework.

Phase 4: Developing and Reviewing Themes

When I moved into Phase 4, or developing and reviewing themes, I was reviewing my code categories and worked to further develop my theme candidates. At this time, I developed theme claim tables as described by Rockmann and Vough (2024) to identify text segments that supported each of my current theme candidates. Rockmann and Vough examined the plethora of issues that crop up when writing about/reporting data. One of the ways to alleviate the lack of information or too much information, is to

create a claims list which is backed by evidentiary support from participants (Rockmann & Vough, 2024). The claims support theme candidate development as well as writing the definitions of the themes to ensure that themes are meaningful and encompass all categories. In this process, there are four types of quotes which should be incorporated into the claims table (Rockmann & Vough, 2024). I used the process to locate and write balanced claims and findings supported directly with evidence from participants. The process helped me to ensure that I included varied and appropriate information. I kept notes and quotes in my reflexive journal. I found that, for me, it was better to hand write the claims table information so that I would remember it—I am better at processing with writing and remembering than with typing and remembering, so I stapled those into my reflexive journal as well.

At the end of Phase 4, I had one theme candidate for RQ1, I had one theme candidate for RQ2, and I had one theme candidate for RQ3. I considered additional theme candidates but rejected them in the end because I felt that the theme candidates were broad enough to encompass and illustrate the deeper overall meaning and felt that further clarifying the current theme candidates would be more fruitful than creating additional theme candidates. I also felt that merging themes might become confusing since the RQs are so closely related; merging might make boundary lines fuzzy. I used my reflexive journal to flesh out the theme candidates—for example, I began with short phrases like "shifting instruction" and "providing access" and worked with those and the codebook to develop a full theme candidate: a complete thought which answers the RQ. During this phase, I shared my ideas with my chair, reviewed my data, and looked again at code co-

occurrence to see if I was missing anything. I made notes in my journal during the process as the themes evolved on my journal pages, and I sent a revision to my chair. From there, my chair helped me to further distill the theme candidates. Using my reflexive journal was helpful because I could look back at my handwritten list of codes, and I could track my progress with the theme candidates: changes in structure, diction, and tense; I also had supporting quotes/evidence to back my claims. As I worked through the process, I added to my mind maps and stapled them into my reflexive journal, which helped me visualize the steps I was taking.

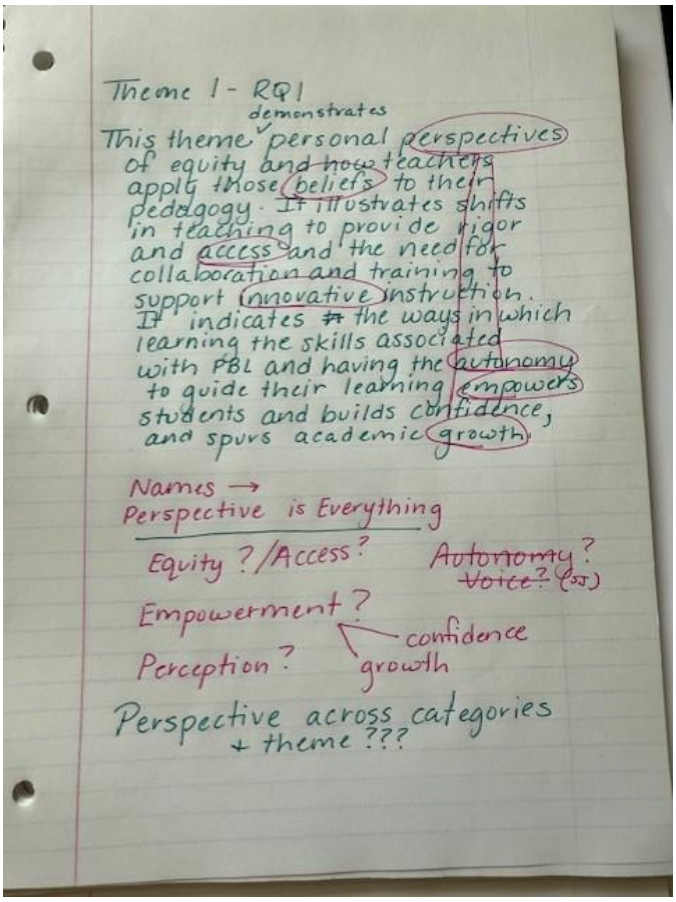
Phase 5: Refining, Defining, and Naming Themes

By Phase 5, refining, defining, and naming themes, I did additional thematic mapping and storyboarding to determine final names and the best order for the theme candidates to address each RQ as recommended by Braun and Clarke (2022). I continued to edit and finalize the names of the themes determined and began editing text excerpts into quotes that I was considering using in my reporting of the results. This section was important to me as a researcher to cross-check my sense-making of the themes and whether I could communicate those clearly. I used my reflexive journal to make notes as I went through the process. Initially, I included participant data in the theme definitions because I felt that the participants' words supported the idea of humanness in the definitions, begging the question: "Why does this matter to us as teachers and community members?" but, then, went back to refine them without evidentiary support to create a more uniform definition. I made a checklist for working through each definition to ensure that I included all requisite information. I stapled the checklist into my reflexive journal

by the name progression. This process proved to be as challenging as creating the definitions. I tracked the progress in my reflexive journal. Once I refined the themes, I turned to naming them (see Figure 20).

Figure 20

Developing Name for Theme



At the end of Phase 5, I finalized my themes by writing a theme definition, as recommended by Braun and Clarke (2022). I reported the full theme descriptions in the results section. While I worked to create theme definitions and names for each theme, I also ensured alignment of the final themes to the RQs (see Table 5).

Table 5

Alignment of RQs to Study Themes

#	Theme	Aligned to RQ
1	Teachers shift project-based learning instruction to employ strategies which provide access and foster personal growth	RQ1
2	Teachers challenge students to work together to address issues which are relatable and important as members of communities—local and global	RQ2
3	Teachers employe strategies which allow students to develop relationships with content/curriculum, culture, and world, which mirror their lives and broaden their experiences	RQ3

Similarly, I began working to note the alignment of the themes with the framework to ensure that I was progressing in the correct direction. Figure 21 shows an example of my final thematic mapping at this phase.

Figure 21

Mind Map for RQ 1 and Theme 1

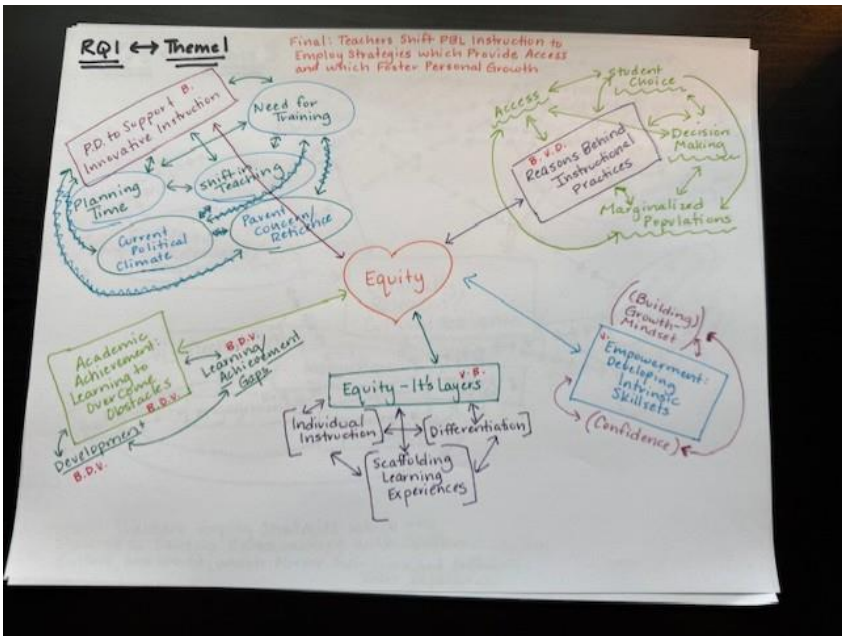


Figure 21 shows a code tree for Theme 1, which addressed RQ1: How do high school teachers use project-based learning as an innovation to address issues of equity to engage marginalized high school students? Theme 1 was teachers shift instruction to employ strategies which provide access and foster personal growth. There were five categories in this theme: (a) instructional practices starting with access, (b) equity and ways to promote it, (c) professional development to support innovative instruction, (d) academic achievement—learning to overcome obstacles, and (e) empowerment—developing intrinsic skills & practices. A total of 14 codes and two subcodes contribute to the categories and those are listed in Figure 22.

Figure 22

Code Tree for Theme 1: Teachers Shift Project-Based Learning Instruction to Employ Strategies That Provide Access and That Foster Personal Growth

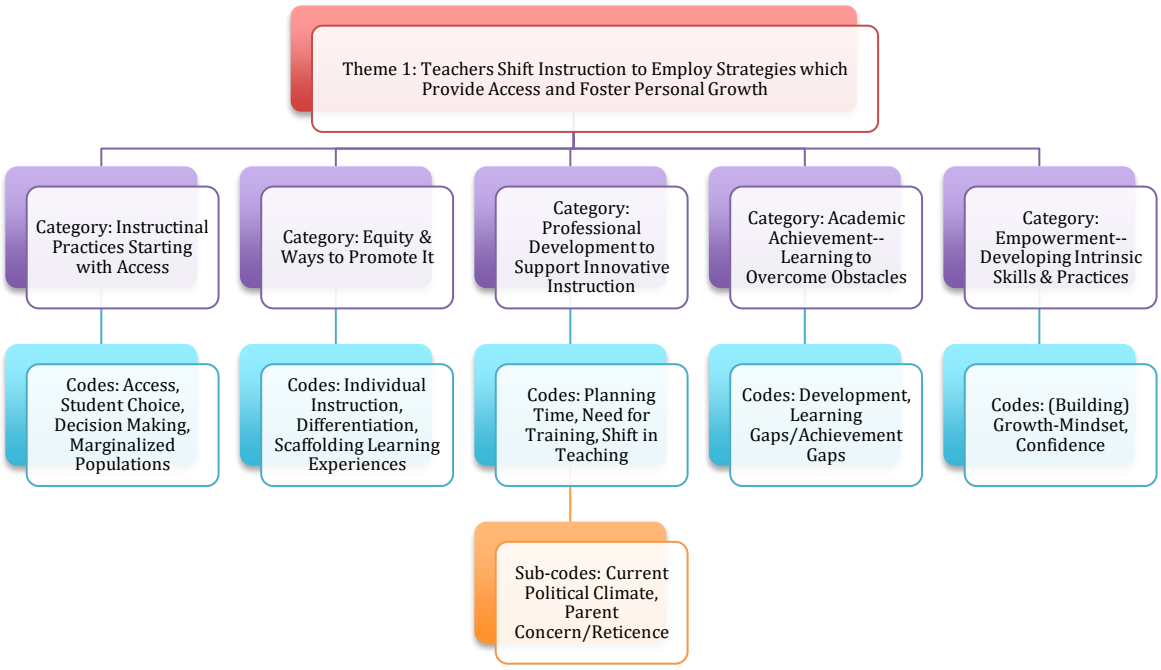


Figure 23 shows a code tree for Theme 2, which addressed RQ2: How do high school teachers use project-based learning as an innovation to address issues of social justice to engage marginalized high school students? Theme 2 was teachers challenge students to learn to work together to address issues that are relatable and important as members of communities—local and global. There were two categories in this theme: (a) social justice topics to build community and (b) creativity and open-ended tasks drive Project-based Learning lessons. A total of 12 codes and four subcodes contribute to the categories and those are listed in Figure 23.

Figure 23

Code Tree for Theme 2: Teachers Challenge Students to Learn to Work Together to Address Issues That Are Relatable and Important as Members of Communities—Local and Global

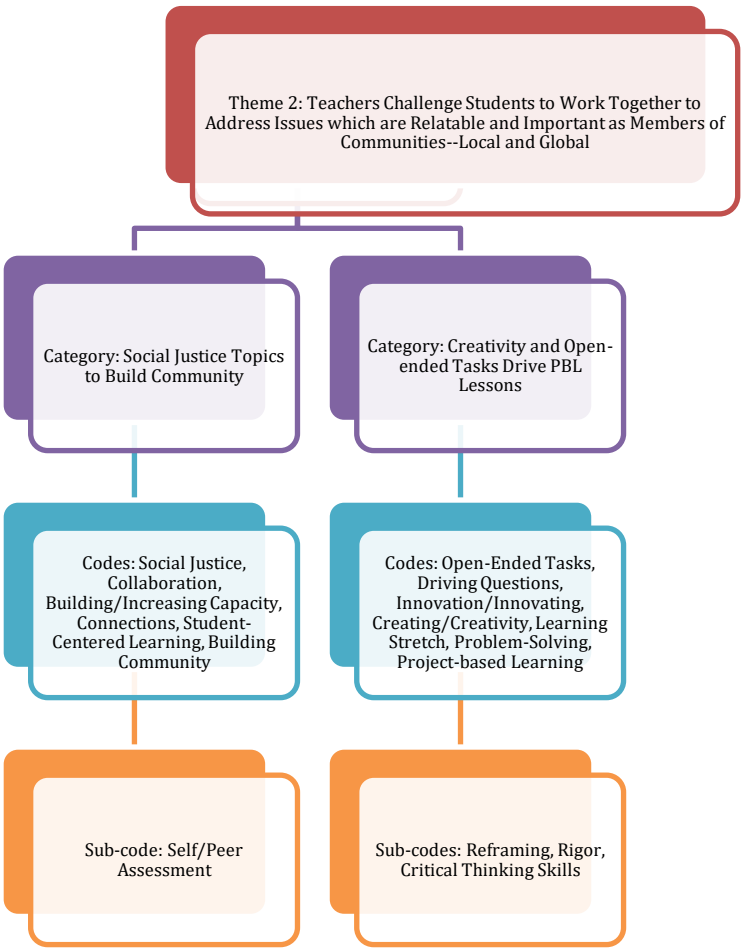
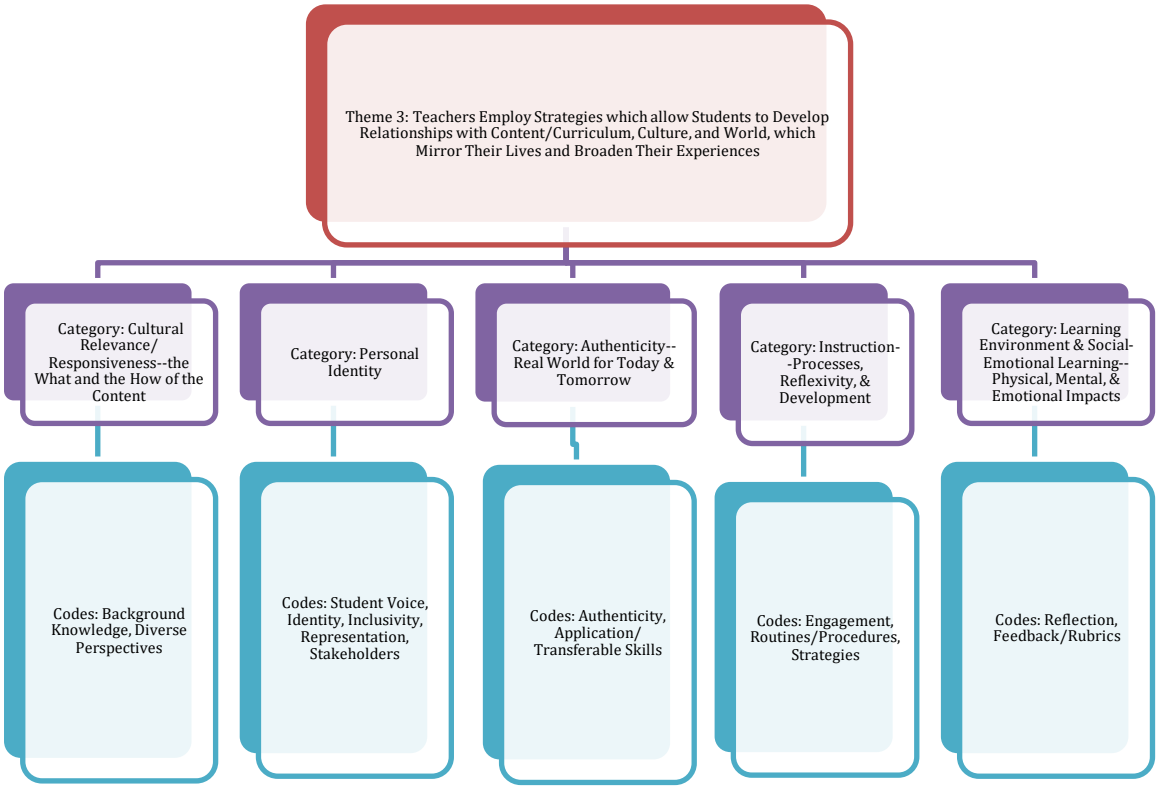


Figure 24 shows a code tree for Theme 3, which addressed RQ3: How do high school teachers use project-based learning as an innovation to address issues of cultural relevance to engage marginalized high school students? Theme 3 was teachers employ strategies that allow students to develop relationships with content/curriculum, culture, and world, which mirror their lives and broaden their experiences. There were five categories in this theme, which were (a) cultural relevance/responsiveness--the what and how of the content; (b) personal identity; (c) authenticity—real world for today and

tomorrow; (d) instruction—processes, reflexivity, and development; (e) learning environment/social emotional learning physical, mental, and emotional impacts. A total of 15 codes contribute to the categories, and those are listed in Figure 24.

Figure 24

Code Tree for Theme 3: Teachers Employ Strategies That Allow Students to Develop Relationships With Content/Curriculum, Culture, and World, Which Mirror Their Lives and Broaden Their Experiences



As I completed data analysis, I did not have any discrepant data in my study. I was able to code an use all the data provided to me from my participants.

Phase 6: Writing Matters for Analysis

To help me prepare for the writing of my results in Phase 6, I developed show and tell tables, as explained by Rockmann and Vough (2024). Similar to the Braun and Clarke (2022) describing the “adventure” of thematic analysis. Phase 6 is the introduction to the

story. Rockmann and Vough created a structure which allows researchers to highlight different types of quotes to develop a solid case of evidentiary support while telling a tale which will envelop the readers. This process allowed me to go beyond simply selecting pieces of analysis to understand how the extracts may paint a picture for the audience to help them more fully understand not only how meaningful the RQs may be when applied, but to also understand how, from a Walden University social justice perspective, a narrative like this could bring about social change. It also taught me how to purposefully select extracts from across the data to provide a balanced representation of the narrative. I used my reflexive journal to guide the extracts, note my perspectives, and track which extracts I was pulling and from whom (for balanced representation).

Evidence of Trustworthiness

I did my best to uphold issues of trustworthiness in several ways in order to create transparency and consistency. Lincoln and Guba (1985) posited that trustworthiness is created when researchers analyze their processes introspectively to create rigor. In this section, I will describe how I ensured credibility, transferability, dependability, and confirmability.

Credibility is confidence in the accuracy of the data/results being presented. First, I ensured credibility by systematically checking to ensure that the purpose, design, and approach of my study were aligned and adjusted as needed; I debriefed with my chair regularly and went over suggestions for streamlining the processes and procedures for clarity. Additionally, I gave participants in the asynchronous bulletin board focus groups time/space to offer additional information, provide clarification, or to make changes as

recommended by Anney (2015), at the close of the asynchronous bulletin board focus group session and again at the end of the individual asynchronous interview in the internal document with closing questions. I also spoke with an administrator over any concerns about power perspectives or imbalances and culture which might have impacted data collection. I employed those strategies, which I described in Chapter 3, as I worked towards triangulation.

Triangulation in case study research is considered positive (Houghton et al., 2013; Yin, 2018) because multiple sources of data are collected (for example, asynchronous bulletin board focus groups and individual asynchronous interviews) at different times (one type of data collected before the other) via different techniques. This type of study allowed triangulation to occur throughout the process and allowed for multiple analysis techniques (see Thurmond, 2001) to be employed (for example, a priori and open coding). I completed member-checking by sending the themes, codes, categories, and RQ alignment to the participants to see if they had concerns, needed clarification, or felt that they were accurate representations as recommended by Anney (2015) and Houghton et al., (2013). As recommended, I used my informal reflexive journals throughout the process to document changes I made, decisions about what and how to include data, thought processes, feelings and perceptions, and notations to remember and/or consider new perspectives (see Anney, 2015; Braun & Clarke, 2022; Crawford & Lynn, 2020; Cronin, 2012; Matteson, 2021; Orange, 2016; Ravitch & Carl, 2021). Each of these strategies used in conjunction allowed for a more complete understanding to be gleaned from the overall data and to increase credibility.

Transferability refers to the level to which the results of a study might be applied to a similar situation (Houghton et al., 2013; Ravitch & Carl, 2021; Stewart & Hitchcock, 2020). Purposive sampling and thick description which is recommended by Houghton et al. (2013), which I endeavored to include, lend themselves to transferability by creating clarity and transparency. I used purposive sampling to ensure that the participants had enough in common to provide detail and rich data to answer the RQs (Barbour, 2018, Danner at al., 2018, Krueger & Casey, 2015). I created a chart to group teachers into the Intermediate and Advanced Focus Groups, and I made a second chart to determine who I would ask to participate in focus groups. I described the methodology and the setting with as much detail as possible without disclosing the location and participants' information, and I verbally and visually illustrated my thought processes whenever possible in the study so that other researchers might be able to replicate the study in similar circumstances, as recommended by Ravitch and Carl (2021). I struggled with this because, due to the internet, it is easy to obtain information about a person's location, so I had talk-throughs with my chair about what information to include to allow for transferability without creating an ethical issue.

Dependability is demonstrated by illustrating the decision-making processes utilized and steps taken to show the strength, rationality, or dependability of data (Bashir et al., 2008; Lincoln & Guba, 1985, Ravitch & Carl, 2021). First, I had a peer provide feedback on questions created for data collection. Next, I sought clarity and clarification throughout the data collection process in both asynchronous bulletin board focus groups and individual asynchronous interviews. To convey and exhibit dependability, I created

an audit trail by cross-checking data (both transcripts and documents/media created by participants), feedback from the peer examination of questions, feedback from my chair, notes from my reflective journal (Braun & Clarke, 2022), and ensured that I aligned the steps with the process previously outlined. I utilized tools to collect data—Padlet and online interviews—to minimize possible errors in translation.

I also employed the code-recode or code agreement strategy recommended by Anney (2015) by coding my data and then stepping away from it for a period of time and then revisiting each code to determine whether the first coding made sense or agreed with the second coding. I kept notes in my reflexive journal and used sticky notes to trace the process (Braun & Clarke, 2022)—this worked well because the process made me realize that some codes needed to be reparented and some codes needed to be merged. As a novice researcher, I also checked my codes, categories, and potential themes with my chair, much like peer-examination which is recommended by Anney (2015) to consider how to best arrange and rearrange them, merge them, and how to develop the themes by teasing out the nuances. I found this particularly helpful because, at the start of the process, I thought that the data merged and the three RQs overlapped, but as the codes and categories developed, I could see that the questions had separate boundaries.

Confirmability is the concept of verifying the veracity of data and findings according to Baxter and Eyles (1997, as cited in Anney, 2015). As noted by Bowen (2009), Braun and Clarke (2022), Koch (2006), and Lincoln and Guba (1985) and cited and recommended in Anney (2015), I created an audit trail, used a reflexive journal throughout the process, and worked to create triangulation on different levels to provide

the rationale and demonstrate evidentiary support for my data collection and thematic analysis processes. I used the reflexive journal for several purposes. First, I used it as an audit trail to describe my data collection and thematic analysis plans and processes. The reflexive journal was also a place where I asked clarifying questions and made notes about my personal perspectives and to keep me informed of any biases which might arise as recommended by Braun and Clarke (2022) and Ravitch and Carl (2021). Last, the journal was a place to make notes about tangents which I could then revisit at a later time (Braun & Clarke, 2022). Similarly, I worked to keep my diction clear and precise so that my notes would be easy to follow and engender sense-making and pattern-seeking. Additionally, I asked participants to review their materials for clarification or changes to ensure accuracy of data collection.

Results

In this section, I have organized the results by theme, which I aligned to address my study's RQs. Theme 1 addressed RQ 1, Theme 2 addressed RQ2, and Theme 3 addressed RQ3. For each theme, I will provide the theme, the theme definition, and then I will use quotes from my participants to show evidence of the interpretive claim I make for that theme. Prior to reading the results, a few items should be mentioned in relation to data. First, there may seem to be an imbalance of quoted material and perspectives mentioned in the results; please note that there were two asynchronous bulletin board focus groups and six individual asynchronous interviews. To further clarify, the intermediate asynchronous bulletin board focus group had participants who have had less

training or have used project-based learning less of this group, there were five participants. For example, Participant B stated,

> PBL is a newer thing to me in my practice as a teacher. About a year ago I applied for a pilot program with the College Board. At present, there are 18 teachers in the country that are piloting using PBL in this AP class. I have also been able to leverage that into teaching AP Summer Institutes this coming summer to prepare other educators to use it in their class.

The advanced asynchronous bulletin board focus group had six members, who have had more training or who have been using project-based learning more regularly. The individual asynchronous interview participants were pulled from the focus groups. Due to one member of the intermediate asynchronous bulletin board focus group dropping out, there were only two members from that group participating in interviews. There were four members from the advanced asynchronous bulletin board focus group—one to replace the participant who dropped out and three additional participants. So, there may be more excerpts from some participants simply because they had more time with data collection (i.e., they participated in both a focus group and an interview). In contrast, there may be less data excerpts from teachers who are just building their repertoire and have not had as much experience with project-based learning.

Theme 1: Providing Access and Fostering Personal Growth

Theme 1 is teachers shift project-based learning instruction to employ strategies which provide access and which foster personal growth. The theme name is perspective is everything. By definition, this theme demonstrates personal perspectives of equity and

how teachers apply those beliefs to their pedagogy. It illustrates shifts in teaching to provide rigor and access and the need for collaboration time and training to support innovative instruction. It indicates the ways in which teachers learning the skills associated with project-based learning and having the autonomy to guide their learning empowers students, builds confidence, and spurs academic growth.

This theme, according to data provided by 11 high school teachers, in response to the individual asynchronous interviews and asynchronous bulletin board focus group questions provided data which after analysis, helped me to answer RQ1: How do high school teachers use project-based learning as an innovation to address issues of equity to engage marginalized high school students? The reflexive thematic analysis illustrated the reasons behind strategies and instructional practices used to engage marginalized high school students. Five main categories were developed from data collected via two asynchronous bulletin board focus groups and six individual asynchronous interviews: (a) instructional practices starting with access, (b) equity and ways to promote it, (c) professional development to support innovative instruction, (e) academic achievement--learning to overcome obstacles, and (e) empowerment: developing intrinsic skills and practices.

Category 1: Instructional Practices Starting With Access

Under the category of instructional practices, the participants noted the importance of access, student choice, decision making, and their impacts on marginalized populations; however, while the participants discussed using all of the strategies included, access and student choice stood out the most. Marginalized populations was

mentioned the largest number of times; however, it should be noted that during an Asynchronous Bulletin Board Focus Group, a teacher queried whether respondents had to use the term since it was implied based on the RQs. So, the number of times the term was specifically coded may be less than the understanding exhibited by participants simply based on the formal use of the term Marginalized Populations in discussions.

All teachers seemed to agree that equity allows for making learning personal, which increases engagement; teachers noted this may be accomplished in different ways, and access was discussed the most. Participant 2 highlighted the definition of equity as it relates to access when they said, "Equity looks like designing lessons that have multiple access points that include opportunities to display strengths and identity," showing the interconnectedness of categories and concepts, like equity and access. However, other teachers connected the idea of access to their reasons for instruction and their use of project-based learning in other ways. Participant A, described an assessment from an English class when they shared that they had a student with severe autism who struggled with verbal and written communication, but when the student was given an innovative assessment, the student "created an actual concert," and connected, "each song back to the standards and EQs [essential questions]," noting that giving Access to different ways to demonstrate mastery. Based on data, project-based learning can address issues of equity through access to curriculum via different methods of mastery.

Another example of this was demonstrated in a different subject, a Nurse Aide course, by Participant D who teaches about access via content and experiential learning. Students study how different populations have different levels of access to medical care

while they learn the skills to work at a facility. While they problem-solve to find solutions to better health care of all and learn about access, they also learn concepts like taking blood pressure in a medical setting and are grouped with different members of class so that they may learn with and from each other by practicing. This also allows students to develop real-world skills working with students who might come from different backgrounds, which they might otherwise not have experiences to interact and practice communication skills since they will need those skills in real medical practice. Participant D noted that the hands-on portions of the innovative assessments put students who might not have experience with medical care "on an even field" with students who come from families that do.

Participant A posited that access may mean many things and could come in the form of materials and time. They stated, "when it came to economically disadvantaged students, they did face hurdles," and further explained, "If I were to do PBL options again, I would ensure I have plenty of resources stocked up or could meet with them [students] before or after school to understand what supplied they might need." Based on 10 teacher responses across the board (P1, P2, P3, P4, P6, PA, PB, PC, PD, and PE), while access can range from prior knowledge with books or experiences, to limited English proficiency with limited tiering/choices, and more, access is integral to active learning. Participant 3 stated that access "means trying to start with everyone on the same playing field," and Participant A responded, "This supports marginalized students (provided that they are given supports that they need along with the resources). It allows students the time and space to develop and deepen their understanding." A common

understanding indicated by all 11 participants who teach various grade levels and different subject areas in the high school setting is that providing access to materials, resources, a variety of avenues to demonstrate mastery, etcetera, is important to students and aligns with their perspectives and pedagogical beliefs about addressing issues of equity. Access was coded the largest number of times under the category of instructional practices starting with access, followed by student choice.

Student choice was also mentioned by participants during data collection, though student choice was higher in the number of occurrences in teacher perceptions than decision making. Teachers use student choice as a catalyst to engender equitable access for student growth. Participant E, an art teacher, explained that they:

> work with students who have disabilities, and PBL does allow them to explore and express themselves. Because each student chooses their own processes, they can choose their own comfort level when working with material or technique. They are in control of the challenge they place on themselves.

Participant E later elaborated by sharing a sample project in which students design their learning through a series of choices. Participant E noted that students craft their own:

> guiding questions for their sustained investigation that exemplify personal choice, experience, and culture: [samples include] How does conformity in society cause me to reshape my identity? How can I show the impact of immigration on cultural identity through lighting and composition? How can I represent cities as living entities and their impacts on me?

Student choice permeates every stage and aspect of the project-based learning assessment to engender the development of a plethora of skills on the students' levels in relevant ways. Even in classrooms in which students have more prescribed lessons like Advanced Placement (AP) World History, project-based learning may be used to address content and issues like equity. For example, Participant B employed a dorm room scenario to teach about sovereignty, borders, and territory and how the United Nations works together with countries to solve the dilemmas. In this scenario, paired students must arrange a dorm room in which each student gets half. Students have to practice making choices based on what to take and leave behind, where to place things, and so forth, and then create rules to abide by as well as problem-solve about how to deal with issues which arise. Additionally, they also learn about third parties and how outside agencies may come in to solve problems. Participant B shared that there is preteaching involved and support for students who have never had family members go to college, so they research dorm rooms and have discussion prior to this portion of the lesson. Also, Participant B noted that while they teach an AP course which generally has a prescribed curriculum, over the last year AP has started to provide training with more project-based learning curricular experiences. Participant 5 believed, "The amount of choices that comes with PBL also allows students to feel more in control of their education and leaning while giving them a higher success rate as opposed to the classic format of testing." One pattern that may be noted across all subject areas and participants is that providing choice engenders equity as well as engagement. Participant 4 explained,

> Listening to students, incorporating their choices, and involving them in democratic decision-making processes invites them to civically engage in the processes of the classroom while supporting their autonomy, mastery, and purpose when participating in their education.

The participants shared perspectives in that there were many ways in which BPL provided opportunities for marginalized populations; however, they shared different examples of how to accomplish this. Participant 4 remarked,

> The main strategy I would use to hook marginalized [students] is to involve them in the planning. PBL is more engaging when students are given a voice and choice in what they are learning and what they choose to explore. As long as I embed the elements of PBL, students should have opportunities to develop as much agency as possible in their learning.

While strategies like student choice and access were addressed earlier, the tone of the conversations around marginalized populations was softly serious and felt different. It should be posited, again, that in this context, marginalized populations consist of African American students, Hispanic students, Special Education students, and students living in poverty or low socio-economic students. Participant 4 noted,

> With marginalized students, education is often what is done "to them" instead of "with them." When they have the opportunity to express their identity and intersectionality in their learning, they are able to take more ownership of how they are involved in their learning.

Project-based learning brings the world to the classroom and the classroom to the world, according to all participants as they described projects which involved applications of real-world skills, working with community members, and off-site experiential learning. Participant 6 voiced the belief, "Requiring the exploration of real-world issues and the creation of authentic solutions plants the seed that a student can change their circumstances and builds in them the skills necessary to accomplish that feat."

Similarly, teachers shared perspectives about how not only real-world skills are developed. Teachers also explained how this has the potential to empower students and build confidence. Participant 3 built on that thought when they noted the importance of celebrating the finished products and publishing them in some form:

> For marginalized students to have their hard work on display, and to see a collective effort from the community, which they may feel has undervalued them in the past, take an interest in their work, can instill in them a sense of pride and dignity that might have been missing.

Category 2: Equity and Ways to Promote It

Along with incorporating student choice, decision making, and working to know their students in a contextual manner so that they may support them to take ownership of their learning and make learning personal, teachers perceive Equity to relate to students who may begin at a disadvantage. Strategies to create equity seem to be incorporated into all the participants' classes, though those vary by subject area and population. Under the category equity and ways to promote it, the codes individualized instruction, differentiation, and scaffolding learning experiences fall. Each code or concept was

discussed almost the same number of times, and the participants use each strategy as. needed. Participant A stated, " What is 'easy' for one student may not be for another," while Participant D explained that their class is "one of the most diverse in all aspects…I have ever taught," and stated that this is important to their class, which relates to the medical field because "this cultural awareness plays an extremely important role in treating patients." This diversity extends to different areas, with Participant 2 explaining that their students rely on public agencies for basic support, while Participant A explained that some students are often 'pigeonholed' because of learning disabilities, and others explain how their students struggle with learning English on top of familial expectations of support and coursework (Participant 1). Therefore, while equity is important to all teachers, it looks different and sometimes comes in the forms of individualized instruction, scaffolding learning experiences, and/or scaffolding learning experiences.

The teachers did not all consider themselves to be differentiating the work or making instruction more individualized, except in the context of special education, but they do use the term scaffolding and share examples of differentiating instruction within project-based learning. For example, Participant 4, who taught science explained,

> I have a plan which can be interacted with in literally 84 different ways (that's the number of students that I have this year). In other words, I know the target objectives, and I am given a lot of leeway in terms of how I develop experiences for my students to reach those objectives. Then each student uniquely responds to that experience, I consider teachers to be 'learning engineers,' and the challenge

> of continuously meeting unique and diverse needs drives me to continue to refine my practice.

Differentiation may take the form of tiering literature, providing choices in reading, rubrics, and choices for deliverables like Participant 3 or providing more individualized instructional ways of demonstrating mastery for someone who might otherwise shut down, like Participant A. Participant 3 shared that for one of their last project-based learning assessments students had the options of creating a podcast, a Brainpop movie, using WeVideo to make a documentary, or creating a Canva website based on their levels of comfort and knowledge with technology. All students have access to these programs on their one-to-one Chromebooks. For Participant A, this type of differentiation would not work because of processing difficulties. Participant A explained that if they have a student who has difficulties processing language but has "strengths related to designing and building things, PBL will likely open up avenues where they can explore a subject without solely begin asked to write or read a passage," which may create engagement and open opportunities for success.

Scaffolding can take on many forms like chunking, using sentence stems, and collaborative learning. Participant 1 explained,

> Newly arrived immigrants in the 9th and 10th grade are grappling with a new language and culture. They are just figuring out their new community. However, ELs in the 11th and 12th grade have developed the English language skills and self-agency to design their own projects and seek out community partners.

Participant 1 elaborated by explaining that though scaffolding strategies like sentence stems are used with new students, collaboration is a good way to work with all students. Though perspectives about what individualized instruction, differentiation, and scaffolding may look like varied, the teachers agreed that, as Participant 4 posited, "students will definitely engage more when their needs are met." Participant 3 shored that idea up by noting, "To me, this is equitable because it does not favor one type of learning, one type of skill, one way to demonstrate learning."

Category 3: Professional Development to Support Innovative Instruction

The category professional development to support innovative instruction houses three codes: planning time, need for training, and shift in teaching, and encompasses two subcodes: current political climate and parent concern/reticence. In order to select and embed appropriate strategies, teachers must have planning time and need training for a shift in teaching to occur. While teachers discussed all three codes, it should be noted that the shift in teaching was the least coded as a standalone code; in other words, the shifts in teaching came as a result of or need for the other codes. It should also be noted that teachers in the study included collaborative time as a part of planning time and that teachers consider professional development and training in the same vein. While almost all teachers showed interest in additional training, one was unsure they would be able to use it because it does not often relate to their subject area, and one said that they would be open to it but did not have specific comments or requests.

The teachers in the advanced asynchronous bulletin board focus group had definite thoughts and requests. Participant 1 stated that the "biggest challenge to PBL, for

me, is not having the time to develop it," and Participant 4 seconded that thought and added that collaboration time was important, too. Participant 3 also mentioned that time to create the assessments around the curriculum was challenging because they wanted to do justice to the lessons and queried if training on project-based learning could also have a "time management" segment. Participant 4 spoke for themselves and others:

> Every project that has been successful and has intentionally included all students, while making sure all students' voices are developed and represented has required a lot of time outside of contracted planning. I don't mind using that time because my children are adults and no longer require my care. Because I don't have familial responsibilities, I have the additional time. Colleagues who are raising children or are caring for aging parents may not have as much. Personally, I have addressed this challenge by scheduling work blocks during my free time.

Teachers also noted that they are all in agreement about more planning time being needed and that, while some are not great at collaborating with colleagues, they definitely see benefits. Participant 3, an English teacher explained,

> I need to be open to collective planning and collaboration with my peers. In the instance of my recent *Frankenstein* PBA [project-based assessment], the whole idea came from a colleague who suggested doing it. …being open to suggestions and other's ideas, I have found myself both challenged and excited about doing more PBAs in my classroom.

This sentiment seemed to run throughout the participants. However, Participant A noted that co-teachers needed to be included, and their ideas needed to be heard as well. Participant 6 remarked,

> The Padlet asynchronous discussion with colleagues exposed me to innovative ways of thinking about project-based learning as well as practical techniques that I can use in my classroom with students. For example, one teacher [Participant 1] shared a rubric to address not only content but skills. I appreciated the scaffolding and sentence starters for EL students, and I could easily modify this rubric for social studies.

Overall, participants from the intermediate asynchronous bulletin board focus group had less training, specifically with project-based learning. However, it is worth noting that this is not because teachers simply do not attend trainings. Participant E discussed the fact that training for project-based learning does not typically extend to art teachers. Participant D is a teacher who teaches Career Technical Education (CTE) classes in nursing and, while their work is almost entirely project-based, many of the CTE teachers are professionals from other fields and have had little training in educational coursework that deals with innovative assessments like project-based learning. Some of the teachers, like Participant B, taught classes who have prescribed curriculum which does involve project-based learning, but not much pacing time to deviate from the traditional schedule.

> Even the teachers from the advanced asynchronous bulletin board focus group who have been teaching project-based learning for many years have discussed the

> need and desire for more training and planning time in order to make project-based learning assessments meaningful. Participant 3 remarked that training "has to happen in conjunction with seeing real examples that other teachers have used. To just learn abstractly about PBA is a good place to start, but for me, if that's all there is, I feel like I am less likely to incorporate it into my lessons.

When asked, "What does meaningful project-based learning look like?" Participant 6 shared,

> For years, I asked students to complete a culture project in human geography. In groups, learners would choose a location and research its folk culture, language, religion, and ethnic patterns. Afterward, they created a poster displaying their research. After receiving formal PBL training, I improved the project to make it more authentic and relevant to the students' lives. For example, I added a scenario and roles. Now, students work at the Department of State. Their task is to select the first location the newly elected president should visit. They prepare a presentation convincing the president to visit the location and provide necessary information to ensure a smooth trip. Each member assumes a different role—anthropologist, linguist, theologian, and sociologist—as they research and create a slideshow. On presentation day, the president (me) and cabinet (other students) choose the location based on the most persuasive presentation. In the future, I'd like to bring in a panel of experts, such as former or current White House staffers or state department employees, to serve as judges.

Training matters to the teachers, according to Participant 6, it elevates rigor through these high expectations of learning and all students, including the marginalized students, will rise to meet them. Teachers explain that in order to engender a shift in their teaching, it requires a shift in thinking as well as training. Participant E indicated that "many teachers use an aspect of PBL in their teaching," whether they realize this or not. Furthermore, Participant 6 completed that line of thought when they remarked,

> I did not receive formal training in project-based learning until 2021. At that time, I completed an eight-week online course called "Becoming a PBL teacher" via PBL Works. This course gave me a formal framework for understanding project-based learning and enabled me to refine elements of existing projects to ensure greater authenticity and relevance to students' lives.

Category 4: Academic Achievement—Learning to Overcome Obstacles

The category of academic achievement—learning to overcome obstacles houses two codes: development and learning gaps/achievement gaps. Shifting instruction to employ strategies which provide access and foster personal growth have a direct impact on academic achievement, development, and narrowing learning gaps. Learning gaps/achievement gaps was mentioned more than development because teachers voiced that development would come from narrowing the gaps. The participants who are using the strategies previously mentioned that innovative assessments can raise academic achievement. Participant 3 stated, "Student success is based less on their ability to perform in one rigid way only, but their ability to tackle more higher-level thinking scenarios and create answers or solutions that don't have one, single, correct answer."

The teachers mentioned their excitement when seeing their students create excellent deliverables when they created assessments which could level the playing field when it came to resources, background knowledge, prior experience, and options. Teachers did note that preteaching was utilized when needed due to learning gaps. Participant 6 added,

> Furthermore, the quality of the work is top-notch. This project [a human geography project-based assessment] is usually a student's most exemplary piece of work during the course. Unbiased sources agree, as it's not every day that a national newspaper like the Washington Post is willing to publish a 15-year-old's letter to the editor!

Similarly, academic achievement may be noted in areas like attendance and participation as a step in narrowing learning gap/achievement gaps. Participant 4 noticed that since her students have had the opportunity to help plan the science units, attendance has increased. Participant 3 agreed, responding,

> That's awesome to hear about student engagement increasing, even better attendance. I'm finding some of the same things in a current PBA I'm doing. Since students have a fair amount of freedom in choosing a topic, I'm hearing strong opinions from students during our class discussions, that I don't often hear from.

This sort of academic success also demonstrates development on the parts of the students. Participant E said, "One of the most rewarding aspects of teaching for me is witnessing my students creative journey, what they create, and how the process and final product makes them feel about themselves." Participant A added to that by explaining that they

truly think that the students "internalize these skills" and that they "apply them outside of the classroom" in a real-world setting. Additionally, Participant 2 added, to the topic, when they described how student's change, "Students, through the process and struggle of learning how to analyze the material to answer the question, and more importantly, to learn to think, become independent, naturally curious, intellectually brave lifelong learners." Narrowing learning gaps/achievement gaps may require many strategies. All 11 teachers mentioned preteaching to provide background knowledge, using innovative assessments, crafting assignments with rigor to create learning stretches, using driving questions, incorporating materials which require critical thinking and problem-solving skills, and making things relevant and authentic.

When considering how to teach students to overcome obstacles and learning gaps via innovations, certain things must be taken into consideration and support strategies may be needed, even with project-based assessments. Participant 3 cautioned their colleagues to remember that "marginalized [students] might not have the same background cultural knowledge and might not have parents with the same cultural knowledge. They are essentially starting out at a disadvantage." Furthermore, Participant 4 noted that "traditionally, there are students who have the answers and students who do not feel comfortable engaging, asking questions, and actively participating in the daily lesson. They aren't truly given the space to do so." Achievement gaps, like access and equity, can look like many different things. Participant 5, an English teacher, believes that varying reading materials and helping them to see themselves in their learning by

writing their own stories makes a difference. For their Creation Story Unit, Participant 5 had students research their own histories:

> Breaking down culture in this way and allowing students to expand upon it in their own creation story has allowed for every student to be included, regardless of how much they participate in or know about what society has deemed to be their culture (in regards to race, ethnicity, and religion).

Extending that reasoning further, in their project-based assessment, Participant 5 made sure to have various exemplars and rubrics which are chunked so that students will not get lost or give up along the way. Furthermore, Participant 3 built on the ideas of making learning personal when they mentioned that teachers often ask students to use their background experiences, but "unless they use them in meaningful ways, there is a lot of untapped potential there." Giving students the opportunity to demonstrate personal growth by making the learning their own is important, but, as Participant 3 stated, "For me, allowing students to resubmit assignments is also a good way to deal with learning gaps," because sometimes students who begin at a deficit, may struggle even with preteaching because of stress, anxiety, or other factors.

Category 5: Empowerment—Developing Intrinsic Skills and Practices

The category empowerment—developing intrinsic skills and practices houses the codes building growth mindset and confidence. Of these codes, confidence was discussed more. According to seven participants (P1, P2, P3, P4, P6, PA, and PE), when students relate to what they are learning, they care more about the learning itself. This care empowers marginalized students to gain a sense or feeling of confidence, in some

circumstances, as a result of things like building growth mindset. Participant 6 stated, "Project-based learning empowers students to effect change in their own communities." In addition, four teachers (P1, P2, P3, and P4) discussed that when students learn how to follow through the process of project-based learning, they develop skills applicable to life in and out of school. Participant 2 explained that they become intellectually brave learners. When asked to clarify the descriptor, Participant 2 responded,

> Intellectually brave learners are students who have the confidence to explore challenging content and skills. In fact, they welcome the challenge because they have the confidence and growth mindset that helps to remove barriers to exploratory learning. In other words, the embrace the struggle of learning.

According to Participant 2, this empowerment comes from engagement which engenders active learning. Similarly, Participant 4 added,

> An active learner is a person who has a drive and purpose to what they are working on. They develop mastery for specific purposes, and they are self-driven to do so. They are highly motivated to engage and participate with increasing autonomy.

According to five teachers (PA, PE, P1, P2, and P4), students can be empowered by developing confidence in their abilities. Participant 3 explained that for the development of growth mindset, project-based learning assessments must be relevant or they will not buy in based on their experience and according to professional reading they have read by Carol Dweck. Participant 3 supplied, "I think PBL has some strong connections to ideas about Fixed vs Growth mindset, because students who find success in PBL can see it's

more about the process and perspective." Learning from mistakes is a part of the trial and error process involved in project-based learning, according to teachers. Participant 3 communicated,

> I think ideally, that confidence would become a part of who that individual is. Instead of some students saying and feeling things like, 'Oh, I'm not good at _____ subject' or 'I'll never be a _____ because I'm not good at that,' their whole mindset could shift. If they found success doing PBA in their English, history, math, science, language, PE, and elective courses, they would see that success doesn't always come from being naturally gifted or good at a thing. It can come from having the right mindset and approach to an issue, problem, or roadblock.

The five teachers (P1, P2, P3, P4, and P5) were focused on embedding problem-solving and thinking skills as well as giving students opportunities and space to try new things to grow, and to redo things when they do not master them the first time. This intimates their perspective towards teaching students growth mindset. For example, Participant 3 explained this idea when they stated,

> One thing that greatly empowers students through PBA is seeing and recognizing that they can accomplish that task, that they can create something interesting and meaningful, that they did something that maybe they thought they couldn't do when they started out. To me, that kind of confidence to face something new and maybe intimidating, but knowing with hard work and determination, they can accomplish it, is a long-term benefit to doing PBA.

The participants indicated that this type of empowerment, confidence, and growth-mindset is not only encouraged but also appreciated and celebrated.

Theme 2: Members of Communities

Theme 2 is teachers challenge students to work together to address issues which are relatable and important to them as members of communities—local and global. The theme demonstrates that teachers use collaboration to develop social, communication, and problem-solving skills which are relevant to the students' lives: where they are currently, where they are from, and where they are going. Teachers challenge students with learning stretches to build capacity and make connections, often social-justice related, through real-world tasks to develop critical thinking skills which enable students to create innovative, meaningful solutions to improve the communities of which they are a part.

This theme, according to data provided by 11 high school teachers, in response to the RQ: How do high school teachers use project-based learning as an innovation to address issues of social justice to engage marginalized high school students? illustrates the reasons behind strategies used to engage marginalized high school students within the context of project-based learning. Two main categories were developed from data collected via two asynchronous bulletin board focus groups and six individual asynchronous interviews: (a) social justice topics to build community and (b) creativity and open-ended tasks drive PBL lessons (see Figure 23). One thing of note that happened during the asynchronous bulletin board focus groups was that the five teachers (P1, P2, P4, PB, and PE), for one question and at various points throughout, mentioned how much

they loved the connections they formed with students, how much they loved seeing their students find their way and reach their potential, and how much they loved seeing the students shape their communities. While all teachers expressed their love for teaching in general, they also indicated a love for watching them start to enjoy learning—something that may be more readily accomplished with open-ended tasks with a social justice lens. This is important for the teachers as well as the students, as noted by Participant 5: "I strongly enjoy being able to teach valuable lessons that can transcend the boundaries of the classroom."

Category 1: Social Justice Topics to Build Community

The category of social justice topics to build community housed five codes and one subcode. The five codes and one subcode included social justice, building/increasing capacity, collaboration, connections, student centered learning, and self-peer assessment. The subcode was self-/peer-assessment. The concepts and/or strategies, which were coded and discussed the most, were social justice, building/increasing capacity, and collaboration.

When considering social justice and the other codes under the category heading of social justice topics to build community, one pattern which emerged dealt with terminology. This pattern may be seen across all RQs. Participants do not use all of the same terminology for all of the same words. There are differences which may occur in relation to number of years teaching, training and professional development experienced, education (i.e., college/university specific terminology), and/or experience with the terms. An example of this may be noted with the use of the term Social Justice was

discussed. Teachers who had more experience delved immediately into the need for social justice and explicitly explained what that looked like when teaching students (Participants 2 and 6) while teachers who had less experience were more hesitant to approach the topic because they did not immediately make the connections with district curriculum which connect with the term. For example, Participant 3 stated,

> I wouldn't automatically associate doing a PBA would tap into cultural relevance and social justice. I have learned that reflection is so important because it forces me to consider elements of what I'm doing in the classroom that I really don't recognize on a daily basis.

After the conversation, Participant 3 noted that they were allowing students to select foci which were important to them. The assignment, which was taking place at the time of the asynchronous bulletin board focus group, was a project-based learning unit on *Frankenstein* and technology. Students had to research an emerging technology and locate credible sources:

> explaining and analyzing the topic, considering the potential benefits and potential risks. Issues of Social Justice could relate in the sense that it is often marginalized groups who are disproportionately affected by current global issues concerning to access to food, extreme environmental/climate change, and unemployment/inflation. They might be researching Lab Grown Food and discover that more development in this field could lead to less food scarcity worldwide. Students looking into Climate Change Mitigation technology could stumble upon ways we can help to alleviate climate disasters and better predict

> future calamities. We are currently in the middle of this PBA and being the first time doing it, I'm excited to see what the results will look like and imagine that some of these projects will directly relate to issues of social justice.

While Participant 3 was a part of the advanced group due to educational training and experience, a teacher from the intermediate group, Participant D, who works with students studying health care noted that their students learned about social justice every day with topics ranging from lack of access to historic inequities in research but that their training is primarily as a nurse who has not been a teacher long, so their educational terminology and knowledge of the tenets of project-based learning are not as developed as some of the other educators. It is important to note that sometimes, though teachers provide the option of framing their own learning to be more student-centered, the participants do not necessarily use those terms intentionally. It is also important to note that sometimes the social justice lens is just aimed at providing an opportunity for students to consider and reflect upon how to address issues which are relatable and important to them. Participant 2 added, "If we do not empower everyone by teaching through a social justice lens, we lose generations of potential innovators and progress makers."

Social justice can take many forms in the educational arena, and it can be the trigger for building/increasing capacity. Participant A, from the intermediate group, explained that they were working with a class of juniors and seniors and some of the students were nearing voting age. Participant A created project-based learning experiences which taught students who their representatives were, what their rights were,

how to tell if they were registered, and how to register if they were not registered. After the electives, students returned to let her know that not only had they voted but that they had taught their parents and other family members how to register after the lesson. Incorporating social justice issues may be used in more explicit ways. According to Participant A, "picking issues that are social justice in their nature to allow the students to explore solving whatever they might come across." An example of this might also be seen when Participant C, from the intermediate group, has their classes looking at the contrasts between life in the United States (U.S.) and life in Latin America. The classes look at various aspects of life. For example, one unit has students examining access and development issues in rural regions vs. cities in both the U.S. and Latin America, and sometimes embedding social justice issues involves students learning about their immediate communities. Moreover, Participant 2 connected literature, communication, and writing with social justice issues and, to do this, they teach, "social justice language like equity, human rights, and being 'invited to The Table', and are also given historical background to the problem so that they learn how to reframe it and posit solutions in an inclusive way." This language was taught as a precursor to a project-based lesson in which students read Othello and learned about the main character, a Black man, not having a support system, or access. Students discussed the ramifications of limited access for marginalized people and looked at problems within their city. They researched issues and reached out to local representatives to ask for interviews to get answers to questions for which they could not find answers. When one local representative did not show for a

scheduled interview, the students regrouped and located someone who could come and speak with them.

Collaboration, housed under the category of social justice topics to build community, follows the code Social Justice in ranking for being discussed most often. Collaboration, according to teachers, may range in group size from two to six students, and teachers have varied strategies. For example, Participant 6 selects groups based on their prior assessments, learning needs, and skills levels, but allows students to select roles within the groups. Participant 4 shared, "Collaboration interaction strategies foster social justice by eliminating the 'haves and have nots' dynamic that can occur in a traditional classroom."

Moreover, other respondents concurred stating that PBL allows students to start on the same footing so that focus may be placed on real-world issues. For example, Participants 3 stated, "These collaborations can often show students' 'blind spots' in their own prejudices and view of the world as they share and discuss." On the other hand, Participant 5 explained that, in art, not every project-based assessment will involve collaboration on the project itself but will always have components via discussion and peer review and peer assessment. Four teachers (P3, P4, P5, and P6) agreed that even if a project does not necessitate collaboration throughout the process, it should be a portion of the process for a plethora of reasons. Participant 6 explained, in reference to a group project in which students after water testing and researching, were given roles and responsibilities, and must work together to create a plan to restore Jaffrey Lake. As a part of the process, they had to send press releases, manage money, interview others, and

more. Participant 6, who required students to debrief after each project, stated, "Requiring students to evaluate their behaviors during collaborative tasks fosters social awareness." Participant 6 has also created materials, like "brag sheets" so that students may share positive progress made by peers. Participant 1 had a similar idea when they and their cohort peers created a rubric which quantifies collaboration. Other teachers in the advanced asynchronous bulletin board focus group were notably excited about the rubric and had an offshoot discussion about whether the rubric, created for ELLs in the International Academy, could be modified for other courses like social studies, science, and English. Participant 3 rounded out the conversation when they stated, "In an ideal classroom, this [collaboration] would mean collaboration over competition, community over isolation, and mutual respect over sarcasm and negativity." True collaboration, as based on this definition, could be, to some extent, a social justice issue in and of itself if positive procedures and strategies are not implemented.

Social justice can also segway into building/increasing capacity. Building/increasing capacity is the ability to develop the skills needed to reach one's potential and to reach one's goals. For marginalized students, building/increasing capacity will help them to be successful in school and in life, according to four of the respondents (P2, P3, P4, and P6). For example, Participant 2 posited,

> If we are not teaching content through a social justice lens, we are not only gaslighting marginalized populations by teaching them there is no need for social justice when they experience social injustice regularly, but we are also not preparing these students to compete with their privileged peers.

A positive that has been identified by seven teachers (P1, P2, P3, P4, P6, PD, and PE) is that incorporating project-based learning can build/increase capacity for other courses as well as for life outside of school. The skills learned, from problem-solving to resiliency to communication and more, enable the students to build on their foundational knowledge to accomplish more difficult tasks. For instance, Participant 6 stated, “By designing projects with realistic scenarios, authentic roles, and legitimate audiences, I can better prepare students for adulthood.” In addition, Participant 3 mentioned that “PBL asks students to ask questions and find answers that might not have an easy answer.” Furthermore, Participant 1 noted that one way they build capacity as an International Academy teacher is to take students on college field trips so that they can see what is coming, “because these milestones are relevant to their future goals.” Therefore, building/increasing capacity may take on more experiential roles as well as more in-class academic roles. Participant 5, an English teacher, builds capacity by “chunking the overarching project into multiple sections,” the sections will have “multiple grades” and a “planning document” for students to follow. Students receive feedback at each step and have the opportunity to revise. Participant 5 noted, “This ensured that each student had a clear understanding of what was expected from their final product that would then be shared with the class.” Similarly, building/increasing capacity also takes place by teaching explicit ideas which may be internalized throughout the year, according to some teachers. Participant E remarked, “Risk and failure must be recognized and normalized through guidance and encouragement, so the reward for risk and success is the student’s

innovation and determination to work through the problems." Furthermore, Participant E shared that they accomplish this by stating,

> From the beginning of my class, I tell them they will make mistakes and create work that is not successful, and that they may have to start over at some point and will be okay as long as they keep moving forward.

Building/increasing capacity appears to be a practice in which teachers involve multiple strategies to support students to build strong foundations.

Category 2: Creativity and Open-Ended Tasks Drive Project-Based Learning Lessons

Problem-solving, learning stretches, and driving questions were the most discussed codes which fall into the category creativity and open-ended tasks drive project-based learning lessons. The most widely discussed code was project-based learning. Participant 3, when considering the use of project-based learning, stated, "Real-world issues don't have easy answers, real-world questions aren't simple ones, and real-world issues might require students to reframe or even reconsider preexisting ideas a notions."

Project-based learning works as an innovative assessment to address students' issues of equity, social justice, and cultural relevance to engage marginalized high school students in a variety of ways, depending upon how it is used and the subject for which it is used and depending upon the participant. For example, Participant 6 reasoned, "Developing creative, problem-solving skills is a fundamental goal of project-based learning." The nature and design of project-based learning necessitate the need for students to look at problems from various vantage points to devise solutions. An example

of this may be seen in the unit taught by Participant B, in which students were to research the infant mortality rates of a country and to then determine what supports are offered and what supports are still needed for mothers before creating a deliverable, when they explained,

> To utilize one of the gold standards of PBL, all culminating tasks (projects) have a semblance of this. For example, in the second unit students were to make a baby box to help a country lower its infant mortality rate. Some students brought in actual products which were then donated to the domestic shelter of ____.

Project based learning, according to teachers, allows them to connect their student content with their communities and with the larger world. Participant 6 shared,

> As a social studies teacher, I want to foster productive global citizens. Therefore, it brings me joy when students connect what we are doing in the classroom to another discipline and/or the real world. In my experience, project-based learning increases the frequency of those connections.

While teachers appear to agree that project-based learning created opportunities for access, as noted previously in results, builds increased capacity, and academic achievement, six teachers (P2, P3, P6, PA, PB, and PE) note that this may be accomplished via the incorporation of many different strategies. For example, Participant E stated, “In my classes, I believe PBL addresses equity for all students, especially marginalized students, by offering choice.”

Learning stretches, which are an integral part of project-based learning, according to teachers, may look different for each student and each class. A learning stretch is a

process in which students learn to build background knowledge, assimilate new information, overcome obstacles, and/or transfer knowledge. Participant 3 noted that they encourage students to look back at their process in order to see the progress they have made. Participant 3 explained,

> Maybe through their research, they have come upon information they did not know before or were unaware of. Maybe misinformation or disinformation was recognized and corrected. In this sense, students can identify ways in which their project relates to social justice and cultural relevance.

Students can learn how to evaluate materials and concepts, and they can also learn to dig more deeply when they learn about an issue. According to Participant 2, students can guide the learning stretch as well as the driving questions. They noted,

> Out of their research, they decided to focus on the history of access to public pools in our city. Students had to define access and realized that access can be literal as in being able to get to a pool, but that it also involves being allowed to go to the pool. Students realized, in their research, that some recreation activities that were free in our city now cost money and that costs, in general, in our city have gone up, limiting access to poorer families. They also discovered that we only have one pool that accommodates people with physical disabilities.

Students developed research skills which led to calls to action and later reached out to local officials to learn more about public and community access through learning stretches with a focus on writing and communication skills via interviews. The final

assessment was a podcast series to which students sent copies to all of the representatives who were interviewed.

Problem-solving is when students note, examine, evaluate, and work collaboratively to overcome a problem through effective use, synthesis, and application of information. Teachers, across the data collection tools, shared examples and perspectives about the importance of developing problem-solving skills, especially with marginalized populations. For example, Participant 6 mentioned a project-based unit called Jaffrey Lake in which students have to develop a sustainability plan to clean up the lake; building on the innovative side of the project, the project also requires students to "balance the interests of all stakeholders," and the problem-solving component incorporates, "data analysis, reasoned decision-making, and time management." Units with similar topics may be noted across the board academically. For example, when students in the science classes of Participant 4 studied whether local waterways were healthy, a unit similar in nature to Jaffrey Lake, they learned that "70% of the surfaces in the city… are hard surfaces, which accounts for increased run off. [However], they did not find a policy that would require construction and roadwork sites to restrict debris from running into our local waterways." Therefore, students developed their own plan to address the issue and to incorporate additional green spaces, which they shared with city council members and the mayor. Seven teachers (P2, P3, P4, P6, PA, PB, and PE), in particular, noticed that students are engaged and "energized" (Participant 4) by taking action to address issues in their communities which they do not find fair.

According to participants, driving questions are important and may be crafted by the teachers or the students themselves. Similarly, driving questions may be very broad or focus on a single topic with space to expand. For example, Participant 4 noted that in one unit they ask: “What problems exist in our community? Why do they exist? What can we do to bring solutions?” But when studying local waterways, Participant 4 asks, “Are our waterways healthy?” and follows with, “What steps can I take to develop solutions? What can I change?” From these examples, it may be noted that questions may be broad or more focused. Driving questions are questions designed to facilitate learning which promote collaboration, a learning stretch, and culminate in a solution to an authentic problem. As a hook, Participant 6 uses the driving question, “What are the three biggest problems facing the U.S. today that could lead to its decline?” when the students study the fall of the Roman empire. From there, students consider topics like terrorism, climate change, and political squabbling before jumping into the project-based unit. Student crafted questions may also work for project-based learning, as illustrated by Participant E who shared these student-created driving questions:

> How can I translate Catholic ideology and stores through a modern feminist lens? How can I analyze famous stories from Medieval culture through a feminist lens in order to emphasize how culture is still able to hold onto harmful stereotypes disguised as harmless fiction? How can I personify war through connection?

Student-created driving questions matter to students, as noted by participants, which engenders engagement. Through driving questions and how they are disseminated, issues which marginalized populations face may be addressed and levels of access may be

opened. Student-created driving questions have the potential to lessen achievement gaps through engagement.

Theme 3: Developing Relationships Which Broaden Horizons

Theme 3 is teachers employ strategies which allow students to develop relationships with content/curriculum, culture, and world, which mirror their lives and broaden their horizons. The theme demonstrates teachers' beliefs that identity is integral to learning and communication, and that representation matters. It illustrates that cultural relevance matters but how such instruction is disseminated determines whether it is meaningful and engenders active learning. It indicates that authenticity and knowing and acknowledging culture are a part of the teaching process. It exemplifies the belief that cultural relevance can, according to teachers, shape our communities. Furthermore, more than just speaking to students' lived experiences, it should teach them individualized transferable skills.

This theme, according to data provided by 11 high school teachers, in response to the RQ: How do high school teachers use project-based learning as an innovation to address issues of cultural relevance to engage marginalized high school students? illustrates the reasons behind strategies used to engage marginalized high school students within the context of project-based learning. Five main categories were derived from data collected via two asynchronous bulletin board focus groups and six individual asynchronous interviews: (a) cultural relevance/responsiveness—the what and the how of the content, (b) personal identity, (c) authenticity—real world for today and tomorrow, (d) instruction—processes, reflexivity, & development, and (e) learning environment &

social emotional learning (SEL). This theme demonstrates that, according to Participant 2, “People learn by seeing themselves in the content. If people cannot connect a subject with an individual schema, we cannot process information and retain it on a deeper level.” The teachers utilize the strategies in the categories to have students feel represented by content, to teach it objectively and respectfully, and to make it meaningful.

Category 1: Cultural Relevance/Responsiveness—the What and the How of the Content

According to participants, cultural relevance/responsiveness is not one dimensional. In other words, unlike the first two themes, the answer to this RQ is more nuanced because culture overlaps; it is evolving--being shaped and reshaped by experiences, and it is a reflection of belief structures in individuals. This section of results will be formatted differently than the last two because, when looking in a mirror, different aspects of ourselves are viewed, but they all fit together to form a bigger entity; while this section has categories, they work in conjunction with one another. According to Participant 5,

> Cultural relevance is the acknowledgement and appreciation of experiences, beliefs, and traditions of a group of people. When this is used in a classroom, I believe it involves and incorporates an accumulation of everyone’s culture, and even some which are not present. I think it’s also important to note here that just because someone might ethnically or racially be a part of a certain group doesn’t mean that they adhere to what society sees as the main culture of that group. It’s

> important to meet students where they are at in terms of their own cultural identity.

It is important to remember, according to six participants (P1, P2, P3, P4, PA, and PE), that culture may overlap and that teachers cannot make assumptions about students and learning based on perceived culture—some students are trying to figure out their own identities, so making assumptions will not support them. Participant 5 described a student who was struggling with his identity because he felt he was between cultures. They said of the student,

> He is Ethiopian, and he was trying to explore how his identity had been defined as an immigrant, balancing two different cultures together as one. However, in the beginning, he was struggling with his sustained investigation. For example, his first guiding question was, 'How can I combine two cultures in an art piece and create contrast?'

The teachers also believed that each student is impacted differently by various things and so cultural relevance impacts the responsiveness which accompanies this. Participants state that they employ many strategies to be responsive, from offering a variety of texts and materials to trying to acknowledge the culture of students to providing access as they provide assessments which relate to students' lives authentically and "cater to multiple learning modalities" (Participant 6). Teachers feel that when students are cared for and cared about, it "creates a sense of belonging" (Participant 4), and "builds their schema" (Participant 2) because "Narratives are an important part of the human experience" (Participant 2). Diverse perspectives are also a part of cultural responsiveness which

should not go unnoticed, according to teachers. Furthermore, Participant 3 described project-based learning and project-based assessments as, “a great way to see what makes cultures unique while at the same time recognizing the human elements that connect us all, regardless of background,” and later added to the concept of project-based learning and diverse perspectives by stating, “It was a great way for students to see the value in collective knowledge and collaboration.” Additionally, six participants (P2, P3, P4, P6, PD, and PE) stated that they offer opportunities for collaboration and publishing work with class peers to allow for discussion and for students to have opportunities to learn from class members who come from diverse backgrounds, with which they might not have otherwise had opportunities to connect .

Category 2: Personal Identity

Student voice, identity, and representation are all a part of cultural relevance/responsiveness according to collected data. Student voice may be taking part in conveying messages they feel are important, in positively advocating for change, creating social awareness, and/or it may take the form of many other avenues. Participant C shared that a few years ago, celebrating culture via ethnic holidays was not a priority when it came to Hispanic Heritage Month, but through a district program called Civic Trek, Participant C and their world language students and Heritage Speakers learned how to share ideas and use their voices to create an annual celebration of the culture imbued in the holiday. Participant 4 adds on to this idea of voice when they explain that in teaching students how to use their voices, it builds their “agency and power.”

Student voice is also about learning to share thoughts and ideas with others; participants note that this will be an important skill for students to carry into adulthood because people they must interact with will be diverse, and students need to know how to work with them civilly and diplomatically, especially in the case of disagreements or issues. Teachers offer students opportunities through project-based learning from the start of the planning process to making the deeper dive by creating questions, to researching and problem solving. Participant 6 notes that students practice advocacy skills when they work in groups. In Participant 6's class, students have a collaboration "report" to complete and will also have to complete a self-reflection, so their advocacy skills and voices will help them in coursework as well as life outside of school.

Identity and representation play important roles, often working together, to shape the student experience. These two concepts, in the role of project-based learning, allow students to start where they are and be unique in thoughts and background experiences because that can add to collaboration. Participant 4 explained, "When everyone is included and valued, and all voices are heard and considered while building solutions together, we build more affinity with each other and seek solutions for the common good." Teachers encouraged students to make connections between real life and the curriculum in areas that mattered most to them. Participant 2 stated that students "get to show us as who they are and express themselves. This includes honoring student funds of knowledge."

Category 3: Authenticity—Real World for Today and Tomorrow

Authenticity is the purposeful attention to connections between students' lives, cultures, and problems or issues which are relevant to their environment. Authenticity also creates opportunities for transfer of knowledge. Participant 4 went so far as to claim, "Cultural relevance creates authentic learning experiences by considering who is engaging in the process." All 11 participants across the data collection tools indicated the value of engaging students by making learning authentic. Participants also mentioned that in making learning authentic, students learn that they have something to contribute to classes, and the outside world, that is valuable. Participant 3 remarked,

> I think PBAs that are culturally relevant and have students draw on that background and experiences can see that there is strength and uniqueness in being able to use their own experiences and present different viewpoints. I hope this reinforces for them that the real-world does value their unique experiences and backgrounds and that they are strengths to be shared and not things to hide or be ashamed of.

All of the teachers endeavored to make learning more authentic by having students explore real-world issues and then allow them to narrow their focus to topics which relate directly to them as students. Six teachers (P1, P3, P4, P5, PA, PB) planned around the needs of the students in case they may not know exactly what they need to learn. For example, Participant 5 taught a project-based learning, researched focused unit in which students focused on career paths and included the incorporation of a resume, an elevator speech, and other needed deliverables. Once completed, the students, "apply to do the

senior experience and, hopefully, land internships at local businesses." Teachers, across data collection tools, agree that students are more invested when they are contemplating ideas, problem-solving, and finding answers for issues which impact their lives. Participant 6 posited, "Students see value in learning experiences which mimic work they might actually do in the real world."

Category 4: Instruction—Processes, Reflexivity, & Development and Category 5: Learning Environment & Social Emotional Learning

In the world of education and in project-based learning, instruction and the learning environment can shape each other. While separate codes and categories, they may work in symphony with one another. Participant 2 explained, "Cultural relevance is not just using culturally relevant content, which is absolutely important, but it is also HOW the content is taught, the choice of pedagogical tools used to ensure a students' existence and relationship with content."

According to the participants, knowing your students, providing elements of social and emotional learning (SEL), structuring supports, and materials influence both the learning environment and engagement. Based on collected data, Participant 4 noted that in this type of learning environment, desks are "arranged in groups to support collaboration," because "many of our students come from cultures that are community-oriented, so I organize spaces to build community." Inspirational messages adorn walls, and students are greeted at the door as they enter, and participants endeavor to make the space feel, according to Participant 4, "as physically, emotionally, and psychologically as safe as possible so that they can take risks and engage their prefrontal cortex in more

higher order thinking." Additionally, other teachers noted that students need to feel, "welcomed, respected, appreciated, and included, so student voice and agency are encouraged," according to Participant 4.

Students are provided with opportunities to redo work which did not meet expectations and are given feedback via rubrics and self-and peer-assessment strategies. Furthermore, Participant 5 noted that they chunk the assignments and have a rubric for each part so that no students feel that they will fall so far behind on a project that they give up. Additionally, Participant 6 mentioned that they use debriefing strategies for collaborative work so that all students feel their time spent working together is fruitful and equitable. Similarly, Participant E shared that students often receive very "specific" feedback from their peers which might be from a different perspective than they would give as a teacher and that it is often received well because it comes from a peer. Participant E further explained that "students do a good job giving specific feedback on how the artwork of their peers has impacted them and made them 'think' differently or become more aware of an issue or topic." The learning environment created shapes the instruction and strategies used; this creates another level of engagement. Many different strategies are used across the board with the participants, but all appear to agree that the learning environment can shape instruction and that part of the instructional process is knowing their students. This knowing can transform project-based instruction by making it more relevant to the lives of students and by offering the students an opportunity to learn how to share that information with others. Participant 4 concluded that project-based learning, "prepares students for adulthood because we will always encounter

people who are very different from ourselves, and it is important to develop the skills so that we can still build a better world together."

I did not have any discrepant data in my study.

Results in Context of the Conceptual Framework

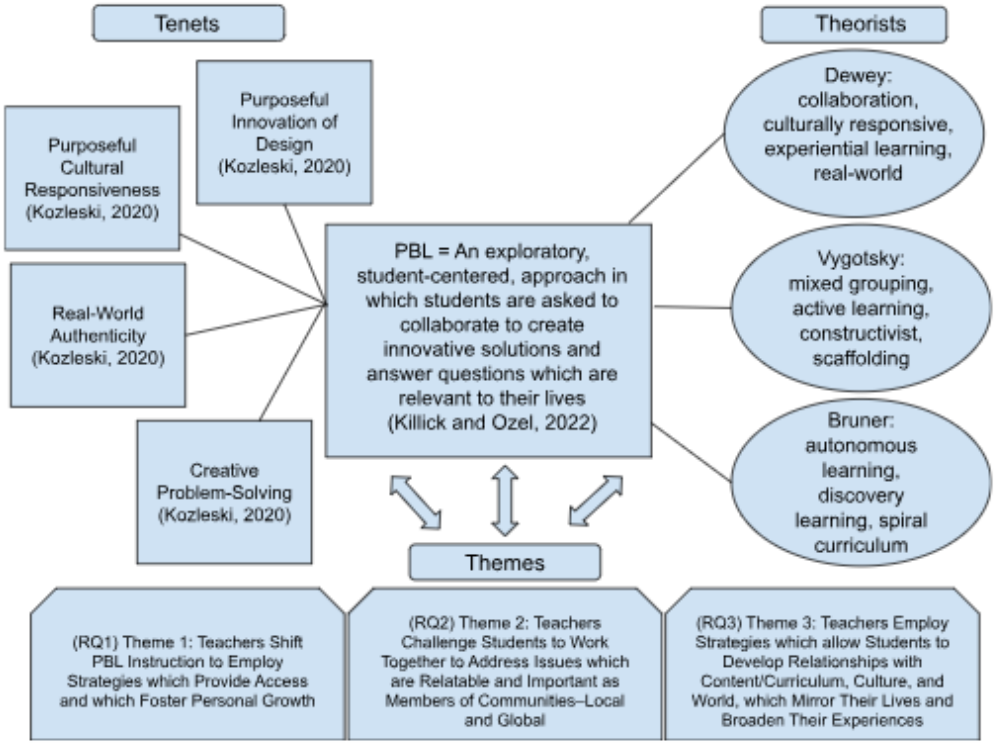
The results in the context of the contextual framework form a tapestry. While the theories and ideas are nuanced, layered, and often overlap, they also work in concert. The conceptual framework for this study includes concepts from three theorists: Dewey, Vygotsky, and Bruner. Dewey's theory of experience (1938/2015) and principle of continuity (1938/2015) describe learning as a process in which students actively participate and explain that, as children learn, each newly assimilated experience will scaffold the next, like the foundation of a building. Vygotsky's theory of sociocultural constructivism (1978) illustrates how cognitive learning and development take place as well as the roles which mentors (including peers) shape learning in real time or authentically similar to the ideas put forth by Dewey, the learning experiences layer on top of each other or are scaffolded. Bruner's learning theory (1960/2003) not only supports the use of innovative assessments like project-based learning because it concludes that students are autonomous learners who learn best via experience and discovery, but it lends itself to instruction/curriculum and pedagogy which should spiral for optimal scaffolding and assimilation. The RQs focus on how high school teachers use the innovation of project-based learning to address issues of equity, social justice, and cultural relevance to engage marginalized populations. The tenets of project-based

learning, according to Kozleski (2020), revolve around four tenets: design innovation, cultural relevance, authenticity, and critical thinking.

The themes that developed and were finalized were based on categories which directly relate to the tenets, definition, and theories used in the study. For example, in Theme 1: Teachers shift project-based learning instruction to employee strategies that provide access and that foster personal growth, Dewey's theory and principle (1938/2015) may be noted in the codes student choice and decision making under the category of instructional practice starting with access, and Vygotsky's theory (1978) supports the code development under the category of academic achievement—learning to overcome obstacles (see Figure 25).

Figure 25

Alignment of Tenets, Definition, Theorists, and Themes



Bruner's theory (1960/2003, 1961,1966) may be related to the categories instructional practices starting with access or may be noted in the code building growth mindset under the category of empowerment—developing intrinsic skills & practices. Furthermore, all the theorists' ideas may be considered to support the code scaffolding learning experiences under the category of equity—it's layers. The use of project-based learning connects the theme to the definition of project-based learning by Killick and Ozel (2022) and to the tenets by Kozleski (2020).

Similarly, in Theme 2: Teachers challenge students to work together to address issues that are relatable and important as members of communities—local and global,

codes, categories, and sub-codes relate directly to the theories, tenets, and definition. For example, Dewey's theory and principle (1938/2015) supports the social change aspect of the code social justice topics to build community as the educational concepts revolve around the outer world. Vygotsky's (1978) constructivist theory supports the codes open-ended tasks, building/increasing capacity, and self/peer assessing, relating to experiential learning, development, and social interaction. Bruner's conceptual ideas (1960/2003) support student-centered learning, learning stretches, and connections, and relate to autonomous learners, discovery learning, and culturally responsive instruction. Additionally, the category creativity and open-ended tasks drive project-based learning lessons connects directly to the definition of project-based learning and the tenets, such as Kozleski's (2020) creative problem-solving.

Finally, in Theme 3: Teachers employ strategies that allow students to develop relationships with content/curriculum, culture, and world—which mirror their lives and broaden their experiences directly connects to the codes and categories of the study as illustrated by the code transferable skills, which falls under the category authenticity—real world for today and tomorrow, which may be supported by all theorists via the concepts of experiential and discovery learning, construction of knowledge, autonomous learning, real world opportunities, and more. Dewey's (1938/2015) principle and theory connect to this theme in codes like background knowledge and perspective, which fall under the category of cultural relevance/responsiveness, with a focus on the reflection of the real world, the cultural responsiveness, and active learning, which is based on background knowledge via prior experiences. An example of Vygotsky's (1978) theory

relates to the category learning environment, social emotional learning because of the theory's focus on development, social interaction, and constructing knowledge via experiences with peers. Furthermore, Bruner's learning theory supports the category of instruction—processes, reflexivity, and development, which includes codes revolving around teacher instruction, feedback and communication, and procedures.

Summary

In this chapter, I reported the results of my qualitative study. Based on my reflexive thematic analysis, I generated three themes that came from 40 codes, plus six subcodes, and 12 categories to address the study's RQs. I distilled the themes into single-sentence key findings, one per RQ. The key finding related to RQ1 is that teachers are shifting their pedagogy by including strategies like student choice; incorporating skills to build growth mindset; scaffolding options, curriculum, and opportunities, to create layers of equity and promote access to enhance growth when incorporating project-based learning. The key finding related to RQ2 is that teachers are building connectedness and challenging students to see themselves and others as a part of communities, local and global, and providing opportunities for them to realize that their voices make a difference in the real world through learning stretches, problem-solving, and open-ended project-based learning tasks through a social justice lens. The key finding related to RQ3 is that teachers employ strategies which make instruction and curriculum relatable to them individually and help them shape their identity by using their voices to authentically apply their knowledge to construct their lives.

Chapter 5 will include discussions, conclusions, and recommendations. I will briefly touch upon an interpretation of the findings, the limitations of the study, and posit recommendations for additional research. Finally, I will note the implications of the research study.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this qualitative single context exploratory case study was to explore high school teachers' use of project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. A single context exploratory case study was employed due to the qualitative nature of the study, the constructivist nature, and the structure which allows for multiple data collection sources to be utilized with a group which is bounded by space and/or time. The study included multiple data sources: the first data source included two asynchronous bulletin board focus groups consisting of two levels: intermediate and advanced, each group included five or six participants; the second data source included six individual asynchronous interviews with participants being pulled from both focus groups. A reflexive journal was kept to record the process. Both deductive and inductive coding were used throughout multiple rounds of coding. The study was undertaken because there have been gaps in the literature surrounding how innovative assessments have been used to mitigate the struggles marginalized populations have faced in regards to traditional assessments, engagement, and learning gaps. The gap on which the study was based was that little was understood about how high school teachers employed project-based learning to address equity, social justice, and cultural relevance to engage marginalized populations.

Data analysis resulted in three key findings to the RQs. The key finding for RQ1 was that teachers shift PBL instruction to employ strategies which provide access and foster personal growth. The key finding for RQ2 was that teachers challenge students to

work together to address issues which are relatable and important as members of communities—local and global. The key finding for RQ3 was that teachers employ strategies which allow students to develop relationships with content/curriculum, culture, and world, which mirror their lives and broaden their experiences.

Interpretation of the Findings

The phenomenon of interest in this qualitative single context exploratory case study of how high school teachers used project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized populations were viewed through a conceptual framework which include aspects of theories by Dewey, Vygotsky, and Bruner—the theory of experience (Dewey, 1938/2015), the principal of continuity (Dewey, 1938/2015), the theory of sociocultural constructivism (Vygotsky, 1978), and learning theory (Bruner, 1960/2003). As a researcher, it is important to avoid generalizations in the process of conducting a study and interpreting findings so that generalizations do not create misconceptions of shared or published results and interpretations so that future research may take place and extend knowledge. Some of the findings from the current study confirm, contradict, or extend the findings from the literature reviewed. I interpreted these results in relation to theme, organized by RQ; however, I will begin by addressing the gap in knowledge and will also posit connections about the theories in the conceptual framework as they confirm and/or extend some of the literature.

Addressing the Gap

The gap in literature that was addressed by this study is that, according to literature, there is a wealth of knowledge about project-based learning in relation to certain populations of students: at the college level (Riestra et al., 2019; Ting et al., 2021); at the middle school level (Rittle-Johnson et al., 2021; Rodriguez, 2021b; Wilson, 2020); and at the elementary level (Duke et al., 2021; Yang & Chittoori, 2022). While high school work with project-based learning, at the time the literature review was conducted, primarily revolved around after school programs for marginalized populations (Bhuyan et al., 2020; Escobar & Qazi, 2020), a gap in knowledge existed surrounding marginalized populations to include Black students, Hispanic students, low socioeconomic students, and special education students at the high school level.

This research adds to or extends that body of knowledge by including participants who teach and co-teach a variety of subjects to include Advanced Placement Art, Art Honors, Art--Standard, Avid, English Honors, English-Standard, World History, Advanced Placement Human Geography, Human Geography, Spanish, Heritage Speakers, Nurse Aide, and the International Academy in Grades 9 through 12. Additionally, Leggett and Harrington (2021) indicated the need for additional research to be undertaken with marginalized populations in their studies, to include low socioeconomic students; this study confirms that need. Similarly, Yoon et al. (2023) found that there was a gap in the variety of student populations and made recommendations for future research in that area; this study confirmed that and addressed or extended that knowledge. Moreover, it should be noted that among the themes which

emerged from the literature, several may be confirmed by the findings of this study. For example, one theme was generated which posited that there is currently a need in education to address issues of equity, social justice, and cultural relevance in classrooms by using innovations and/or reframing education (Miller, Severance, & Krajcik, 2021; Papp, 2020; Sidgel & Sharma, 2021; Steele & Jeong, 2023).

This study confirms that need via the populations taught by participants and extends it to demonstrate what that might look like in various grades, subjects, and classrooms across different campuses. Steele and Jeong (2023) took that recommendation a step further by noting that education may need to be reframed to teach through a social justice lens to address current national and world issues. My study confirms that finding and extends it by illustrating that teachers may challenge students to work together to address issues which are relatable and important as members of communities—local and global (Theme 2, which addressed RQ2). Finally, it should be noted that Elvianasti et al. (2022) posited that few studies on project-based learning in the educational world existed and that there were even fewer, if any, qualitative studies; this study extends that knowledge via methodology.

Conceptual Framework Theories

Hassan and Ahmad (2023) explained that conceptual frameworks, though a building block to the design of a study, may emerge from more than one theory. This study is just such an example. As new theories have developed throughout educational history, they have confirmed, contradicted, or extended concepts; sometimes they overlap as the knowledge they share intertwines to fill new gaps. Much like the fathers of project-

based learning as it caught on in America, after earlier educational notions spread from Italy, Kilpatrick's (1929/2018), Snedden's (1916), and McMurray's (1920/2009) ideas, the foundations of project-based learning, as it is known today, are built upon constructivist ideas from Dewey (1902/2008), Vygotsky (1978), and Bruner (1960/2003, 1961, 1966, 1973).

While the tenets of project-based learning, as explained by Miller et al. (2021), are supported by Dewey's educational theories, it is important to note that this study confirms Dewey's (1902/2008) ideas of transformation where teachers facilitate student learning and students assimilate more knowledge, they become aware and reflexive. It also confirms Dewey's (1938/2015) ideas that the classroom is a macrocosm of the outside world and that as students learn how to navigate via experience, they can contribute to the larger community. Given Dewey's (1938/2015) theories of experience and principles of continuity and their context at the time of conception, it could be posited that this study confirms the theories/principles and extends them by extending the idea of contributing to the larger community/society as learning to solve issues via a social justice lens through project-based learning and teachers employing the strategy as an educational tool to achieve this.

Vygotsky (1978) posited the connection between thought and language and expanded that connection to include the construct that as students assimilated language via experience, since it was socially constructed. Additionally, he posited that through this process of assimilation, discussion, and interaction students could move from current knowledge to the proximal zone. From an educational standpoint, this learning process

parallels the interactions in a classroom which incorporates collaboration and is inclusive of the same tenets used in project-based learning. Vygotsky (1978/2012) referenced this type of learning as social cultural theory of cognitive development which incorporated development via language, social interaction, and culture. Vygotsky (1978/2012) used the term culture to illustrate social mechanisms which, stemming from identity and community, influence the development of a child in the same vein that students learn in specific environments. This study confirms the manner in which students assimilate knowledge and language to aid in processing and assimilating but posits the idea that the theory may be extended by its application to culturally relevant and culturally responsive instruction.

Among ideas like spiral curriculum and the beliefs that learning should be discovery-based and learners should be autonomous, Bruner (1960, 1961, 1973) believed that culture and environment had a direct impact on learning because marginalized populations would not have as many opportunities for language development. This study confirms that idea and extends it in the area of marginalized populations. While Bruner (1973) mentioned students living in poverty, in society and education today, those populations still include low socioeconomic status but extend to also include access and other populations, like special education, as noted via examples from participants. An example of a study examined in the literature review which points to this inclusion, like my study, is Amin et al. (2020) and his use of realia to develop requisite academic terminology to aid in assimilation of math skills with students in special education who had learning disabilities. My study confirms the findings of Amin et al. (2020) as well

and extends those findings to include a variety of subjects and a broader range of grade levels.

RQ 1: Addressing Equity

The theme for RQ1: Teachers shift PBL instruction to employ strategies which provide access and which foster personal growth connects to the literature reviewed in a plethora of ways. In a review of the literature, one of the connections is academic achievement and project-based learning. Studies have found at various levels of learning, from elementary school to middle school to college programs, that project-based learning can and does improve academic performance for students (Baleman & Keskin, 2018; Benesero & Robinson, 2022; Burks, 2022; Chen & Yang, 2019; Gupta, 2020; Hayashi et al., 2023; Kondo et al., 2023; Leggett & Harrington, 2021; Lien et al., 2023; Meier & Hendel, 2019; Mou, 2020; Rehman et al., 2023; Salma et al., 2021; Tarling, 2023; Wahyuningtyas et al., 2023; Yang, 2021).

This academic performance includes improvements in study and practice of subjects and academic skills (Avsheniuk et al., 2023; Kee & Lai, 2022; Hsin & Wu, 2023), as being utilized for instruction with and demonstrating academic improvement in relation to benchmarks and tests (Craig & Marshall, 2019). The findings of this study confirm and extend the current literature because it includes participants who teach high school students; thus, the study adds knowledge to fill the gap and via the methodology. Because my study fills in a gap in populations at the high school level through different subject areas, this may indicate that project-based learning is a viable innovation which can address student issues and engender rigor but replace more traditional assessments.

Moving forward this could provide access as well as opportunities for achievement with marginalized populations at all levels.

Another way the theme for RQ1 connects to the literature, surrounds training and project-based learning. Other studies have found that while training is integral to the implementation of project-based learning with efficacy (Duke et al., 2021), the necessary training is not always provided (Andrews et al., 2018; Jong et al., 2023). The findings of this study confirm those results and extend by adding the idea that teachers need additional time for planning and collaboration in order to make time effective in addition to positing that accommodations need to be made for adult learners in training. This may indicate a need for additional training and for the redesign of training and professional development to suit the needs of adult learners.

While current political associations with the word equity might be less than positive, equity in relation to considerations like universal access, must become a norm in order to effect real change for all students to include marginalized populations (Darling-Aduana, 2021; Eagle et al., 2023; Glazewski & Ertmer, 2020; Hooper & Perez-Stable, 2023; Kozleski, 2020; Miller, Severance & Krajcik, 2021; Secules, 2023). The findings of this study confirm and extend the current literature because they add to the body of knowledge via population, methodology, and illustrations of different ways in which teachers are working towards providing this access. This may indicate that equity is still relevant and access is needed. This may also indicate a need for reform surrounding innovation and wider avenues of access may need to be created.

In a review of the literature on shifts in practice and project-based learning, the theme for RQ1 connects to the literature by demonstrating a need for shifts in practice and instruction from more traditional to more innovative/nontraditional assessments (DeWalt & Barker, 2020; Francois & Hood, 2021; Hunt & Oyarzun, 2020; Mertens, 2023; Secules, 2023) at the request of students and based upon data (Shraga-Roitman et al., 2023). The findings of this study confirm the current literature that teachers are shifting instruction to meet the needs of a diverse population of students with a focus on closing achievement gaps and expand the literature via the ways in which teachers are using that shift to directly address issues of equity and access for students. The literature review focused on college level students but called for a shift which would impact more diverse populations, which my study does. My study also extends via design. This may indicate that researchers and educators see the gaps in learning for marginalized populations but have not yet found ways to fully diffuse the change which needs to take place to serve all populations.

Finally, the theme for RQ1 connects to the literature on student development of confidence and empowerment, studies found that incorporating project-based learning into instruction can raise student levels of confidence and empower and/or motivate students in the classroom setting (Becerra-Posada et al., 2022; Burks, 2022; Riestra et al., 2019). The findings of this study confirm and extend the current literature because the findings add to knowledge via the population and age/grade levels included and taught by respondents. This may indicate that project-based learning may address challenges faced by students and engender motivation and positive feelings associated with

accomplishment in students of different ages, with different ability levels, in different grades, with different backgrounds.

RQ 2: Addressing Social Justice

The theme for RQ2 connects with creativity, innovation, and possibility/sense-making and project-based learning through a review of the literature because project-based learning has been shown, in studies, to engender and create opportunities for creativity, innovation, and possibility which increase sense-making via the process (Avci & Durak, 2022; Dou et al., 2021; Elvianasti et al., 2022; Ortiz-de-Montellano et al., 2023; Pan et al., 2022). The findings of this study confirm and extend the current literature because the exemplars of the different populations and subject areas involved as well as the study design. The literature has examined some students at a variety of levels but does not include exemplars from all of the subject areas and from co-taught classes. This may indicate that additional research should be undertaken to confirm that creativity and innovation opportunities can enhance or increase sense-making/assimilation for all populations and should be utilized with all populations.

Additionally, in a review of the literature on defining project-based learning, studies have found that project-based learning is an approach which includes tenets that direct students to ask/create questions, problem-solve (learning stretch), collaborate, and create a deliverable with authentic applications (Chen & Yang, 2019; Lien et al., 2023; Rehman et al., 2023; Saad & Zainudin, 2022; Widyaningrum & Prihastari, 2023). In addition to this inquiry-based educational strategy, studies have found that the process further develops critical-thinking skills (Elvianasti et al., 2022;Pan et al., 2022), which, in

turn, engenders intrinsic motivation. The findings of this study confirm the definition of PBL as it applies the current literature because the manner in which teachers employ PBL to address issues like social justice illustrate the process as well as the student-centered focus to build capacity.

Furthermore, in a review of the literature on the normalization of social justice in education and PBL, in relation to the theme for RQ2studies found that there was a need for the normalization and consistent application of the term social justice in education (Eagle et al., 2023) and inclusion of that lens in curriculum (Adah Miller et al., 2022; Miller, Bogiages et al., 2021) to create contributing members of a larger community (Akirav, 2023; Chen & Yang, 2019; Virtue & Hinnant-Crawford, 2019). The findings of this study confirm the need for normalization of the concept/curriculum and the need for normalized terminology, not simply inclusion of the educational concept expressed in the current literature as because, as described by participants in this study, teachers have not necessarily been trained or taught to incorporate this type of curriculum via project-based learning, though participants do because they see the importance. This study may extend the research by demonstrating the scope of student impact in a variety of areas like immigration and food insecurity. This may indicate a need for formal professional development in the area of using project-based learning to address issues relating to social justice in education.

Finally, in a review of the literature on collaboration/teamwork and project-based learning as they connect with the theme for RQ2, studies have found that project-based learning fosters collaboration/teamwork, which develops life and communication skills

(Avsheniuk et al., 2023; Benesero & Robinson, 2022; Gupta, 2022; Hayashi et al., 2023; Moreira & Rodrigues, 2023; Mou, 2020; Rehman et al., 2023; Sigdel & Sharma, 2021; Wabeh et al., 2021; Yang, 2021). The findings of this study confirm the current literature because participants describe how collaborative opportunities are fostered and how teacher grouping is sometimes needed to do so. This may indicate a need to conduct additional research in the area of how grouping can foster collaboration within mixed populations.

RQ 3: Addressing Cultural Relevance

In a review of the literature as it connects with the theme from RQ3, studies have shown how cultural relevance strengthens learning via project-based learning by creating connections with students' lives (Flynn et al., 2023; Kalla et al., 2022; Miller, Severance & Krajcik, 2019; Papp, 2020). Additionally, studies have shown that project-based learning is responsive to diverse perspectives, cultures, and populations through their lived experiences (Alvarez, 2023; Cacciamani, 2024; Miller, Severance & Krajcik, 2019). The findings of this study confirm the current literature because the findings demonstrate how culturally responsive/relevant teaching may create learning connections for students at all levels of language, at different grade levels, via different populations, and through different instructional methods. This study may extend the foundational knowledge via methodology/design through type of study and data collection methods. This may indicate that a deeper dive into shifting more, if not all, instruction to be culturally responsive may create increased engagement, achievement, and sense of belonging.

Additionally, in a review of the literature on the topic of authentic life skills and their transfer/application as they connect with the theme from RQ3, studies have shown that students, through project-based learning, can develop authentic life skills (Bhuyan et al., 2020; Bowen & Peterson, 2019; Hindun et al., 2024; Hizqiyah et al., 2023; Nurfuadi, 2023; Shiyamsyah et al., 2024) ranging from general life skills to personal/self-orientation skills (Wabeh et al., 2021) to memory skills (Avsheniuk et al., 2023) to professional life skills (Parrado-Martínez & Sánchez-Andújar, 2020; Travaglini et al., 2023). Studies also indicate that students, through project-based learning, can learn to transfer and apply the skills authentically to their lives outside of the educational arena (Dana et al., 2021). The findings of this study confirm the current literature because respondents provided similar development of life skills when they used project-based learning to address issues faced by students. This study expands on that knowledge base because of the multiple subject areas covered and the different ways within one study, respondents used project-based learning to address these issues. This may indicate a shift in the focus of education from a focus on academics to a focus on teaching life skills in authentic and transferable ways which relate to students on an individual level.

Finally, in a review of the literature on the theme relating to RQ3, studies have shown that teachers may employ project-based learning to create a sense of belonging and allow students to further develop their social identities and/or voices as stakeholders and members of a community (Adah Miller et al., 2022; Chen et al., 2023a; Palashi et al., 2023; Quigley et al., 2023; Smaldino, 2019). The findings of this study confirm the current literature because respondents demonstrate how project-based learning allows

students the autonomy to develop a sense of self and the voice to advocate for themselves and others, in an inclusive manner, when needed. This may indicate that providing students opportunities for developing autonomy, via project-based learning or other innovative approaches, may connect students with learning in a deeper context in order to enrich their lives in and out of school.

Limitations of the Study

In research studies, the goal is to generalize findings in a way that is transparent enough to create a validity construct (Lincoln & Guba, 1985; Ravitch & Carl, 2021) so that other researchers might confirm or extend findings. To create that transparency, researchers must ensure that research is well founded (Stewart & Hitchcock, 2020) or trustworthy by taking precautions whenever possible. Bias and limitations play a role in that reliability. As a teacher with 29 years of experience, I have preexisting beliefs about pedagogy, strategies, and education. As a practitioner, I have been exposed to limitations and issues marginalized populations have faced as an observer and teacher trying to make a difference. As a researcher, it is important to note and make transparent my own potential biases based on my experiences as an educator and my interpretations of data as a researcher.

"Reflexivity" refers to the mindfulness researchers use (Crawford & Lynn, 2020; Cronin, 2012; Matteson, 2021; Orange, 2016; Ravitch & Carl, 2021) to reflect and attempt to reduce, limit, or note bias if it exists when considering the research, data, thoughts, and decisions which are made throughout the process, and reflexive journals are a tool which may be employed to record that data. I used reflexive journaling to track my

process and my progress by recording questions, assumptions, and noting thoughts, perspectives, and perceptions. Additionally, to limit biases, I created an audit trail and tried to be mindful of each step of the process; for example, not noting the number of times a code was used during the data analysis so that it would not influence my coding of new excerpts. Similarly, I had check ins with my chair to discuss progress, interpretations, and next steps.

Additional limitations were related to research design. While the length of time for each data collection method seemed lengthy, 4 weeks for the asynchronous bulletin board focus groups and a week for the individual asynchronous interviews, the teachers were ready to keep going. Some teachers stated that the study felt much like a professional development session or training session since they had time to converse, collaborate, and reflect. Another limitation was that, since this is part of a graduation requirement, time was limited which made data collection more limited—in other words, I was required to limit data collection to six participants for the individual asynchronous interviews, and more participants were willing to participate. Finally, the study was limited because I discovered that I had additional data that could have contributed to addressing another RQ (i.e., participant requests for accommodations needed relating to how they learn/their needs). This additional data were not used.

Recommendations

Recommendations for further research are based on study results and limitations of the study. The first recommendation is related to the finding for RQ1 that teachers shift instruction to employ strategies which provide access and foster personal growth.

Therefore, more research needs to be done about how training and professional development may be used to develop innovative instructional practices which provide more differentiated experiential learning access to all students so that deeper understanding can not only bridge learning gaps but provide equitable opportunities for all students to reach their academic potential and empower them to do so in all subject areas and in all grade levels. For example, additional research on using project-based learning in classes like art and nurse aide or perhaps music, economics, and physical education—subjects, which are not necessarily associated with project-based learning but could offer real-world opportunities for academic growth--needs to be undertaken. Another additional recommendation is that future research should be conducted on teacher collaboration time and teacher training opportunities in relation to innovative assessments like project-based learning and how teachers use the training to address issues which are faced by students in today's world.

The second recommendation is related to the study finding of RQ2 that teachers challenge students to work together to address issues which are relatable and important to members of communities—local and global. Therefore, future research needs to be conducted about how social justice can build connectedness and community among students and their environments as well as how creativity and innovation can be used as problem-solving catalysts. For example, social justice topics may be framed not only as advocacy skills but also as community building skills in which students may contribute to solutions to real-world issues. Additionally, future research could extend the research of

this study by including participants from different locations across the United States and/or college and high school educators.

The third recommendation is related to the study finding of RQ3 that teachers employ strategies which allow students to develop relationships with content/curriculum, culture, and world, which mirror students' lives and broaden their experiences. Therefore, future research needs to be conducted to extend the research in this study and examine high school students' experiences surrounding how well project-based learning connects authentically with their experiences, how well learning is transferred, and the skills they develop.

A fourth recommendation is related to the study findings of RQ1 and RQ3 under the subthemes in the areas of equity, reasons behind instructional practices, academic achievement--learning to overcome obstacles, empowerment, as well as personal identity and belonging, authentic—real-world learning for today and tomorrow, and instruction—processes, reflexivity, and development. As noted by multiple studies in the literature review, future research needs to be undertaken on all aspects of special education (Boardman & Hovland, 2022; Kozleski, 2020, Sullivan et al., 2020), to include but not be limited to how innovations like project-based learning may offer students a chance to succeed academically and learn transfer knowledge needed to survive and to thrive.

A fifth recommendation is to use the theories which build the conceptual framework of the study—those by Dewey, Vygotsky, and Bruner—to further examine other aspects of project-based learning and how it may innovate education. The theories could be used as a foundation for studies which dive deeper into the learning gaps of each

of the populations and how project-based learning may close those gaps. The theories could be employed as a conceptual framework for studies which focus on project-based learning in other courses and how marginalized populations in those classes could benefit. The theories could be layered with newer theories to demonstrate how much of what is utilized as something "new" in educational practice today has roots in traditional educational theory and how those innovations shape education today. The possibilities are endless.

The last recommendation is related to the limitations of this study. This study was conducted with 11 teachers at a multi-campus high school. Therefore, this study should be replicated in both smaller and larger high schools, below 5,000 students and above 5,000 students, and in smaller and larger cities within the United States to determine if results are similar. In addition, this future research conducted should include how accommodations are made for teachers during training/professional development. For example, trainings often take into account the grade levels, experience levels, and subject areas of the adult learners who will be present but often do not employ the best practices for those in need of accommodations, which teachers are expected to practice with their students.

Implications

This study will contribute to positive social change in several ways. First, at the individual level, this study may create opportunities for individual teacher growth, for opportunities for marginalized students to reach their potential academically, and for marginalized students to shape/reshape their perceptions of themselves (bolster and shape

identity) as they achieve success. Additionally, on an individual level, the study may highlight accessible ways to create college and workplace readiness in coursework.

There is also potential for change at the organizational level. This study could be used to inform and shape future research which may be utilized by teacher training programs in high schools, in colleges, and in districts—to include helping to normalize some of the academic vocabulary shared by teachers in a school setting and/or to illustrate a possible need for it. Similarly, it may be used to develop new professional development, surrounding project-based learning and the ways in which it may be used to address issues faced by marginalized students, which is inclusive of the various needs and accommodations of adult learners/teachers. While adult learning theory parallels the tenets of project-based learning, often accommodations which may be provided to students are not included when teachers need to learn new strategies or pedagogies. Therefore, a shift in training might include how the materials are disseminated to all adult learners. Furthermore, while training for equity has been in the spotlight recently and in some instances, training has been removed, this might shed a new light on what that training might look like and why it is important, as well as incorporate another sphere of training which focuses on social justice in school districts.

On a broader level, the study may promote teacher collaboration. This study may also advance knowledge in the field of innovation in education by laying the foundation for the implementation of other innovative assessments because teachers may see the results and research and make the decision to incorporate something new into their repertoires; also, they may develop new innovations themselves, and/or shift their

teaching, as some of the participants did, to implicitly and explicitly include practices which address the issues of equity, social justice, and cultural relevance with nontraditional methods. Furthermore, the study may create social change by shifting the ways in which administrators posit educational issues to teachers to be solved, design the content of professional development, and evaluate instruction.

One possibly less obvious but equally important aspect of social change which cannot go unsaid is that as students learn to think critically because they are given opportunities to do so. When problems arise on local, national, and global levels, students who might not have had the training or opportunities to work in those areas may still have the experience to posit solutions. Additionally, students may, based on those experiences, build foundational skills which shape their academic and career pathways as well as their voices and perspectives.

The study may have methodological implications on future research in a couple of areas. First, utilizing asynchronous bulletin board focus groups which lessen costs and provide safe spaces and extended periods of time for participants to process and contribute may become more widely used. Next, using asynchronous bulletin board focus groups first and individual asynchronous groups second may help to shape student research in the future to gain more data and, hopefully, a deeper understanding of what they are researching by moving from a wide array of responses to smaller deeper responses. Also, the study may shape student research because they may look at how educational theories overlap and may focus on more than one theory to answer questions in the future if they cannot find a single theory which fits exactly or if they feel that

multiple theories connect to their questions. Finally, in reviewing this study, it may become more common for students to employ single context exploratory case studies for their research within organizations to have access to larger participant pools.

Another contribution that this study makes to positive social change is in relation to improved professional practice concerning curriculum design and implementation. The ways in which teachers employ strategies are as relevant as the strategies themselves. Additional research may be considered and completed on how innovations like project-based learning work in conjunction with interdisciplinary instruction to create entirely new ways of allowing for demonstration of mastery and authentic connections between school and world. This study, based on the variety of teachers' subjects and their experience levels with project-based learning, may work in different subject areas for which it is not commonly associated, like art and at any grade level. Along that same vein, this study might illustrate the need for toolkits of strategies, possibly by district, which could serve as resources for new teachers and which build from year to year since strategies vary, people employ them in different innovative ways and planning and collaboration time are often limited.

Conclusion

The social problem related to this study is that marginalized populations often have achievement gaps because they struggle with traditional assessments (Francois & Hood, 2021). During the 2021-2022 school year, the location at which the study took place was noted to have learning gaps on standardized testing based on statistics from the state department of education for that school year. The four populations with learning

gaps were comprised of Black students, Hispanic students, students with disabilities, and economically disadvantaged students. The innovation project-based learning has been implemented by teachers to address this problem because it fosters improved academic performance and creates engagement through real-world experiences (Burks, 2022; Cannon & Carr, 2020; Papp, 2020). While project-based learning has been shown to be an effective strategy for combating issues like representation and test scores, much of the research surrounding high school, at the start of this study, was based on summer programs for minority students (Bhuyan et al., 2020; Cannon & Carr, 2020; Escobar & Qazi, 2020; Reistra et al., 2019). The gap also existed because much of the body of literature, when the study was started, was completed at the middle school and college levels.

The purpose of this qualitative single context exploratory case study was to explore high school teachers' use of project-based learning as an innovation to address issues of equity, social justice, and cultural relevance to engage marginalized high school students. Key findings were that (a) teachers shift project-based learning instruction to employ strategies which provide access and foster personal growth, (b) teachers challenge students to work together to address issues which are relatable and important as members of communities—local and global, and (c) teachers employ strategies which allow students to develop relationships with content/curriculum, culture, and world, which mirror their loves and broaden their experiences. Increased understanding of how teachers employ this innovation to address the issues of equity, social justice, and cultural relevance to engage marginalized high school students may increase awareness of the

innovation, additional use of the innovation, and additional research about the social problems and possible solutions.

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Appendix A: Asynchronous Bulletin Board Focus Group Protocol

Thank you for your willingness to participate in this focus group. The purpose of this discussion board is to provide you with an opportunity to share your experiences using PBL with marginalized students. I encourage you to take time to thoughtfully post an initial response to the prompt I've posted. I'd like for these original posts to be a minimum of 200 words. Additionally, to encourage interactions with others in the focus group, end your post by sharing a probing question that others might respond to, in connection with the ideas you shared. (Questions might be something, like... "I often find myself caught between X and Y....do any of you have similar experiences and how do you manage this?) I ask that you come back to this discussion board a couple of times between days one and three of each week to reply to the posts of other teachers, and to respond to those who may have posted a response to your ideas over the three consecutive weeks. While I would like you to reply to at least one other person, there is no maximum number of posts. I am just looking forward to the conversations you all have. Note, I will also be involved in the discussion, occasionally asking follow-up questions.

Tips: You might consider crafting your original response in a Word document and copying and pasting it over. Maybe even using voice-to-text options to capture your ideas quickly.

Date of Access (Day Posted)	Question	Prompt	RQ1	RQ2	RQ3
Week 1 Conversational	Introduce yourself and explain how and why you started using project-based learning.	What do you love most about teaching or what about the process brings you joy or satisfaction?			
Week 1	In what ways, if at all, do you use project-based learning to address issues of equity for your marginalized students? Share an example or a learning moment that stands out if you	How is your answer similar or different to those of your peers?	X		

	are not sure how to begin.			
Week 1	How do you assess your learners participating in your project-based learning lessons? Speak not only about assessing what content they have learned but also about skills they are building (such as critical and reflective thinking). Feel free to share any assessment tips and tricks that have worked particularly well or some that have not with marginalized students.	How effective do you believe this is in creating a more equitable form of assessment for marginalized high school students?	X	
Week 2 Conversational	Describe one of your biggest project-based learning successes. What was the most successful project-based learning lesson you have ever done? Why do you think/ consider this to be your most successful?	Share an example or learning moment if you are not sure how to begin. How is your answer similar or different to those of your peers?		
Week 2	Describe ways that you think your use of project-based learning may promote social justice, such as inclusion, representation, and developing voices	What are the challenges you and your peers face in developing project-based learning units related to social justice issues?		X

	for your marginalized students.	How have you overcome these challenges?		
Week 2	What collaboration/ interaction strategies have you used in project-based learning units with marginalized students? How effective are these for teaching social justice?	How can the collaboration and interaction strategies involved in project-based learning and used by your peers foster social justice for marginalized students in your classroom?	X	
Week 3 Conversational	Imagine the possibilities for the most creative, exciting project-based learning unit you could design. How would you hook your marginalized students? What type of unit would you design?	Why do you think this would be a good unit/strategy for your marginalized students?		
Week 3	Define cultural relevance. How do you relate to what you learn, and how do or can you engender that for your students in your classrooms?	How might you incorporate one of the ideas described by your peers into your classroom setting?		X
Week 3	In what ways, if at all, have you seen project-based learning empower your marginalized students? How do you believe this	What do you consider to be an active learner, and how can project-based learning allow for active		X

	benefits your students long term?	learning in your classroom?			
Week 3	What would you include on a mind map with project-based learning at the center and the question: How do you think project-based learning can address issues of equity, social justice, and cultural relevance for your marginalized students at the top? Make a mind map. (You may use technology or draw a map and take a picture.)		X	X	X

RQs:

RQ1: How do high school teachers use project-based learning as an innovation to address issues of equity to engage marginalized high school students?

RQ2: How do high school teachers use project-based learning as an innovation to address issues of social justice to engage marginalized high school students?

RQ3: How do high school teachers use project-based learning as an innovation to address issues of cultural relevance to engage marginalized high school students?

Appendix B: Criteria for Eligibility/Selection for Individual Asynchronous Interviews

Based on the responses from the Invitation to Perspective Participants and posted in the Asynchronous Bulletin Board Focus Group Protocol, teachers will be asked to participate in individual asynchronous interviews.

For the Invitation to Prospective Participants, I ask the following questions:

1. When did you first start using project-based learning?
2. What are some topics of your project-based learning?
3. How often do you use project-based learning?
4. How much training have you had in project-based learning?

Teachers who have used project-based learning for longer than a year, have multiple topics, have used project-based learning four or more times a year, and have received some level of training would be considered for the advanced-level individual asynchronous interviews. Teachers who have used project-based learning for less than a full year, have only one or two topic areas, may have only completed two or three units, and have had no training (but perhaps have read books or attended independent workshops or worked with peers) would be considered for intermediate-level asynchronous interviews. From that point, this process would be refined based on responses in the asynchronous bulletin board focus group based on the levels of information they provided in relation to experience and comfort levels.

When teachers are asked to respond to Week 1 questions, if teachers provide multiple examples for each question, preferably three or more examples and/or skills, then they will be considered for the advanced-level individual asynchronous interviews. If I do not receive responses which provide that level of depth but have one or two examples, then they will be considered for the intermediate-level individual asynchronous interviews.

Week 1	In what ways, if at all, do you use project-based learning to address issues of equity for your marginalized students? Share an example or a learning moment that stands out if you are not sure how to begin.
Week 1	How do you assess your learners participating in your project-based learning lessons? Speak not only about assessing what content they have learned but also about skills they are building (such as critical and reflective thinking). Feel free to share any assessment tips and tricks that have worked particularly well, or some that have not with marginalized students.

When teachers are asked to respond to Week 2 questions, if teachers can relate multiple specific examples (three or more) to demonstrate the relationship between the RQ concepts and their instruction using project-based learning, they would be considered for the advanced-level individual asynchronous interviews. If teachers can provide minimal

examples (one or two) of how the RQ concepts could relate or be loosely connected with their instruction using project-based learning, then they would be considered for the intermediate-level individual asynchronous interviews.

Week 2	Describe ways that you think your use of project-based learning may promote social justice, such as inclusion, representation, and developing voices for your marginalized students.
Week 2	What collaboration/ interaction strategies have you used in project-based learning units with marginalized students? How effective are these for teaching social justice?

Similarly, teachers who could demonstrate relationships between their pedagogy using project-based learning and their marginalized populations with multiple examples (three or more) would be considered for selection in the advanced-level individual asynchronous interviews. Teachers who could demonstrate relationships between their pedagogy using project-based learning and their marginalized populations with one or two examples would be considered for participation in the intermediate-level individual asynchronous interviews.

Week 3	In what ways, if at all, have you seen project-based learning empower your marginalized students? How do you believe this benefits your students long term?
Week 3	What would you include on a mind map with project-based learning at the center and the question: How do you think project-based learning can address issues of equity, social justice, and cultural relevance for your marginalized students at the top? Make a mind map. (You may use technology or draw a map and take a picture.)

Teachers who could not provide exemplars within their responses would not be considered for participation in individual asynchronous interviews.

Appendix C: Individual Asynchronous Interview Guide

Greetings Participant:

Thank you so much for sharing your time, thoughts, and experiences; I appreciate you. Let me tell you why this is important. This study will focus on how high school teachers use project-based learning (PBL) to address equity, social justice, and cultural relevance to engage marginalized populations. By learning about how high school teachers use project-based learning as an innovation, it may be possible through research to lessen learning and achievement gaps for populations who need support the most. In participating in an interview after taking part in a focus group, you are providing thicker data and deeper insight into the RQs through your experiences. By sharing your thoughts, experiences, and time, you can provide valuable research which could make a difference.

Before you begin, there are a few things I want you to remember. The interview should take 40 to 60 minutes in total. Once you have answered the questions, you will email this information to me at XXX@Waldenu.edu. I want to remind you that identifying factors will be removed so that you will feel comfortable enough to respond honestly about your feelings, thoughts, and experiences in relation to your instruction.

Interview Questions:

RQs	Interview Question	Prompt
RQ1	Describe what equity looks like in your classroom. How, if at all, can you scaffold your strategies and/or spiral your curriculum in project-based learning units to create equity when learning gaps arise?	Share an example or a learning moment that stands out.
RQ1	What role do you feel creative problem-solving skills should play via project-based learning to help marginalized students to develop academically?	Share an example of how you provide opportunities for marginalized students to develop these skills.
RQ2	How, if at all, can project-based learning help students learn to reframe possibilities via creating authentic solutions for real-world issues?	What does reframing and reflection look like, sound like, and feel like in your class, and how can it be used in project-based learning?
RQ2	What sort of training or experience, if any, do you draw upon to create purposeful classroom assessments like project-based learning while keeping marginalized populations in mind?	How can issues of social justice shape your instruction via project-based learning?

RQ3	How, if at all, can cultural relevance create authentic learning experiences which may prepare learners for adulthood through project-based learning lessons?	How do people relate to what they learn, how can they use reflective learning, and how can you pass those skills on to your students through project-based learning?
RQ3	Create a word cloud which illustrates cultural relevance and its importance for marginalized populations. (You may use technology or create a drawing/piece of art and take a picture.)	
RQ1, RQ2 and RQ3	As a teacher, awareness of and reflection on instruction and the world around you matter to make things equitable and culturally relevant. How do you teach those reflection and awareness skills to your students through your project-based learning units?	How can learning these skills, like social awareness and reflection, engender social justice or cultural responsiveness among students?

Final Questions/Wrap-Up:

1. What have you learned about your teaching practice through this process?
2. What have you learned about yourself from this experience?
3. Do you have anything else to clarify or add?

RQs:

RQ1: How do high school teachers use project-based learning as an innovation to address issues of equity to engage marginalized high school students?

RQ2: How do high school teachers use project-based learning as an innovation to address issues of social justice to engage marginalized high school students?

RQ3: How do high school teachers use project-based learning as an innovation to address issues of cultural relevance to engage marginalized high school students?

Appendix D: Codebook

Code Label	Code Definition
academic achievement	student development as noted by feelings of success and/or higher grades
development	forward moment and higher achievement in a various area (academic learning, social and emotional regulation, a specific skill, etc.)
learning gaps/achievement gaps	gaps in student learning because of lack of background knowledge, lack of opportunities, lack of resources, and more
authenticity	authenticity is the purposeful attention to connections between students' lives, cultures, and problems or issues which are relevant to their environment
application/transferable skills	applying thinking skills, concepts, and processes learned in school to real life scenarios and situations
representation	seeing one's self in others--a portrayal of a persona in a certain light to which one may relate
student choice	the autonomy for students to make decisions about their learning (used to create drive and intrinsic motivation)--relates to Adult Learning Theory
student voice	the ideas and perspectives of the students which are shared in the learning environment to shape the learning processes and learning outcomes
building community	creating a sense of shared space and goals
building/increasing capacity	providing opportunities to help students learn to strengthen skills and knowledge-base
connections	recognizing similarities/links/associations between content and/or context (can pertain to real-world/real-life connections)--bridges to concepts
cultural relevance/responsiveness	understanding, acknowledging, and purposely seeking to employ learning strategies and pedagogy which supports and relates to students' perspectives, lived experiences, and backgrounds (in order to overcome learning/achievement gaps)
background knowledge	Preexisting foundational knowledge or skills paired with lived experiences a student brings to new content or a learning situation/experience
diverse perspectives	when global understandings and/or cultural experiences and perceptions from a variety of backgrounds/learning levels are shared, accepted, understood and supported, and brought to a learning opportunity or experience (inclusivity)
decision-making	as students create driving questions and face new obstacles, they will evaluate possible solutions to problems and/or choices (directions for advancement) and make decisions based on data/knowledge
empowerment	creating the intrinsic drive and motivation to problem-solve, innovate, create
building growth-mindset	creating a sense of intrinsic motivation, empowerment, and resilience to be applied/used in the face of setbacks

confidence	feelings of empowerment developed as success is encountered
equity	accessibility and opportunities for all students to reach their goals and potential (academic, creative, innovative)
access	equitable opportunities to learn, grow, obtain resources and materials
differentiation	tiering, scaffolding, varying materials and resources to help students learn at their levels
individualized instruction	providing supports, options, resources for students to ensure they have what they need to learn equitably
scaffolding learning (experiences)	layering concepts and materials so that students may use existing knowledge to build newly assimilated ideas
identity	sense of self
inclusivity	as students become more situationally aware of themselves and others and develop a better understanding of diverse populations, they openly include and consider new perspectives
instruction	to encompass but not be limited to pedagogy, delivery of curriculum, methods, and facilitation of learning in class
engagement	learning activities, strategies, and pedagogy which intrinsically motivate students and engender active learning (often connecting to their lives on multiple levels and creating enthusiasm and/or excitement)
feedback/rubrics	standards, criticism, critiques as applied to student work, collaboration, and/or discussion
learning environment	the space in which a person learns to include but not be limited to physical environment, general and/or perceived atmosphere, temperament, openness--goes beyond the physical to include psychological, social, pedagogical, cultural, and contextual space
reflection	considering practice, processes, actions more deeply
social emotional learning	a process, taught in our school system via advisory, in which students learn to apply coping mechanisms and skills to manage emotions, learn how to communicate those emotions and communicate with others, learn goal setting, and learn life-skills like making good choices and viable decisions
routines/procedures	structures which facilitate student learning and promote success and achievement
strategies	the resources, methods, activities, tiers of support, and techniques employed by instructional staff/teachers to disseminate content materials, build context, and engage learners
marginalized populations	populations of students and/or people in general who face obstacles like poverty, learning gaps from lack of resources and/or opportunities, limitations in supports and/or resources due to socioeconomics, gender, race, ethnicity, etcetera
PBL	project based learning (four tenets--innovation, cultural responsiveness/relevance, authenticity, and problem-solving as they relate to the process—driving questions, etc.)

creating/creativity	the skill, ability, or realized potential to design or produce a deliverable which is original and useful (thinking and acting/producing)
driving questions	questions designed to facilitate learning which promote collaboration, a learning stretch, and culminate in a solution to an authentic problem
innovating/innovation	inventing or adopting a process or structure, generally using existing materials, which when applied/diffused, will create change (i.e., patterns, social change, better world, etc.)
learning stretch	a learning stretch is a process in which students learn to build background knowledge, assimilate new information, overcome obstacles, and/or transfer knowledge
reframing	the idea that students may learn to see an obstacle as a learning process (i.e., reframing opportunities, possibilities, problems)
rigor	learning standard, structures, processes, or practices which are challenging or more demanding and push students to higher levels (or to reach their realized and/or perceived potential)
open-ended tasks	questions or tasks which have multiple applicable responses which may/will vary by student based on their perceptions, thinking processes, background knowledge, and lived experiences
problem-solving	problem-solving is when students note, examine, evaluate, and work collaboratively to overcome a problem through effective use, synthesis, and application of information
collaboration	students plan and work together by considering various perspectives, discussing options and ideas, positing information and thoughts, and inclusively supporting peers in their working groups to create solutions to issues or to create and achieve goals
critical thinking (skills)	skills which are used to break down, evaluate, synthesize, problems, and apply solutions (sometimes known as or related to higher order thinking skills)
self and peer assessing	self and peer reflection used in a nonevaluating manner to support with editing and strengthening work (may be collaborative)
social justice	learning about and addressing systemic inequities which are faced by certain groups, communities, populations, or places (the concept that people and places should have equitable rights and access and that, when they do not, steps are made to remedy the situations/issues)
student-centered learning	the active process of learning is focused on the students and their needs with less conversational time and output from the teacher and more experiential learning, discussion, etcetera, taking place at the student end of learning
professional development	this encompasses programs designed to foster teacher reflection and growth in practice (this may include resources and/or community partners because of the way the system is structured)
current political climate	government response to social justice in education

parent concern/reticence	parent not wanting a child to participate in social justice, equity, or other issues
need for training	request for additional teacher training in PBL or another designated area
planning time	time to develop projects
shift in teaching	teachers commenting about how their teaching pedagogy and/or ideas have changed toward PBL and/or equity, social justice, and/or cultural relevance
stakeholders	students/global citizens