SECONDARY SCHOOL SENIOR CAPSTONE PROJECTS:

A DESCRIPTIVE AND INTERPRETIVE CASE STUDY

ON POST-SECONDARY STUDENTS'

PERSPECTIVES OF LEARNING TRANSFER

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Dedication

For my son August,

I truly appreciate your sacrifice for my selfish pursuit.

Your resilience and optimism always amazes me, may those dispositions remain with you for all of your years.

Abstract

This descriptive and interpretive case study investigates how 12 undergraduate college students perceived participation in their high school Senior Capstone Project (SCP) impacted their college academic experience. Learning transfer was explored from the learner's perspective. Data was collected using qualitative methods in three sequential phases in the spring and summer of 2016. Triangulated data sources include: online questionnaires, focus groups, artifacts, artifact-based interviews, participant reflective journals, and final interviews.

For this study, SCP is defined as a culminating project based learning (PjBL) experience students elect to take part in their senior year of high school. Participation in the SCP encompasses experiential techniques of self-direction, authentic problem solving, mentor collaboration, and reflection to complete a research paper, fieldwork, a portfolio, and a presentation. Data analysis produced four key themes: (1) acquisition of skills, abilities, and dispositions took place following two dynamic relationships: concurrently with interdisciplinary content and simultaneously while learning and using, (2) participants described how their SCP acquired content knowledge, skills, abilities and dispositions were later applied in the far transfer setting of college, (3) examination of three embedded case studies surfaced career and college preparation connections, and (4) participants perceived self-efficacy resulting from their SCP experience provided confidence for their college work. Throughout all four themes learning transfer was found to cross boundaries and contexts, from the acquisition setting of the high school SCP to the far transfer setting of the college academic experience.

Participation in the high school SCP was found to positively impact students later in college. This study added to the available literature on the SCP, PjBL and learning transfer. The evidence of the positive impact of PjBL activities provided by the voices of the participants of

this research should be considered when decisions are made regarding allocating limited classroom time.

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Chapter 1

Introduction

Overview

As a high school business teacher in the state of Hawai‘i between 2006 and 2011, I found project based learning incredibly beneficial to my students. When my accounting students applied ethical decision making approaches within authentic case study scenarios, they were highly engaged and motivated throughout the project. Students' boisterously participated in round table discussions on topics ranging including embezzlement of company funds, donations to non-profit charities, and even dilemmas involving being asked to misreport company profits in exchange for a bonus or promotion; they drew upon their lived experiences and readily applied learned accounting knowledge to resolve ethical predicaments. Their newfound interests in these learning activities were so significant that they eagerly committed extra time to their research and collaborative discussions. The teacher-assisted, student-led project approach appeared to permit students to take risks and build their confidence in purposeful and practical ways. My students grew well beyond how they performed on a pencil and paper assessment and learned more than the required content (i.e., complex thinking, self-direction, and communication). The senior capstone project (SCP), an interdisciplinary culminating experience completed during the high school senior year, was one such learning activity that drew upon previously learned skills (such as communication and critical thinking) and content knowledge gained during K-12 education (Egelson, Harman, & Bond, 2002; Summers, 1989).

SCPs were a match for my Career and Technical Education (CTE) classes due to their real-world, hands-on approach. Some of my most memorable teaching experiences involved advising a handful of students throughout their SCP experience. As part of the SCP, students developed their own year-long learning plan and project. The year progressed as my advisory

students chose their business related topic, developed their thesis, planned their inquiry, researched their topic, spent 20 hours with a community mentor, managed their time and progress, wrote a research paper, and presented their work to a panel of community members. It was fascinating to witness my students' struggles and breakthroughs, how they took interest in the content, and sought to become agents of their own learning. The autonomy of topic selection and project management gave my students the drive to proceed through the interdisciplinary requirements. The experience of SCP appeared impactful as if it were building knowledge, skills, and dispositions that would prove useful for a student's future. Yet, I wondered about its actual long-term impacts and to what extent did that learning transfer to collegiate study.

Senior Capstone Project background. SCP is described as an opportunity for high school seniors to select purposeful lines of inquiry, embark on experiences of their own choice, develop individual learning plans and prepare for desired outcomes (Shaunessy, 2004). It is a culminating experience of a student's K-12 education and is intended to develop planning, research, time management, writing, presentation, and interpersonal skills needed for college or career readiness (Egelson et al., 2002). Due to the autonomy of project type and topic, each SCP is unique to the student's design.

Student choices are prevalent for SCPs, beginning with three main project types: (1) career learning, (2) service learning, and (3) performance based (Harada, Sirois, & Yamamoto, 2008; Wee, 2000). Career learning projects provide students an extended learning experience where they associate the academic with the vocational to expand their knowledge and skills in both areas (Ancess, Darling-Hammond, & Einbender, 1993; Darling-Hammond, Ancess, & Ort, 2002). For example, a student may research dental careers and serve as a protégé under the tutelage of an orthodontist. Service learning projects take the form of community service events

or information campaigns and allow students to gain hands-on experience while they apply previous learned skills to real-world situations (Berman, 2006; Wheeler & McCausland, 2003). A student conducting a service learning project may research ecology of nearby streams and in turn, work with environmentalists to develop and implement a protection awareness program in elementary schools. Performance based projects permit students to develop and demonstrate a skill, ability, or talent that has an impact on the community (Hawai‘i State Department of Education, 2010). For example, a student may research the culture and history behind Japanese taiko drums, train with a temple to learn to play, and perform at a bon dance. All three project types are inquiry-based, allowing students to determine a problem and develop possible solutions (Berman, 2006).

While Hawai‘i does not require students to participate in SCPs, some school districts across the United States require them for graduation. For example, Weymouth Public Schools in Massachusetts requires an academy pathway-related Capstone Project for graduation, which must include significant planning, preparation, and implementation (Weymouth Public Schools, n.d.). Idaho's Ada School District's Senior Project is a separate assessment required for graduation, where students are evaluated on knowledge and application of skills from state standards yet not assessed on the Idaho Standards and Achievement Test; they must demonstrate mastery of research, writing, and oral presentation skills (West Ada School District, 2002-2015). The School District of Philadelphia requires its graduates to complete a Multidisciplinary Project or a Service Learning Project where students demonstrate communication, problem solving, school-to-career, citizenship, or multicultural competencies (The School District of Philadelphia, n.d.). Rhode Island's statewide diploma system requires two performance assessments for graduation, exhibitions, and portfolios (Rhode Island Department of Education, 2015).

SCPs, at the secondary level, are not just unique to the United States; some are organized for international implementation. The Advanced Placement (AP) Capstone is designed to foster academic rigor and college readiness through critical, creative thinking, and research (The College Board, 2014); CTE projects, presentations, and portfolios emphasize real-world experiential learning through participation in Career and Technical Student Organizations (Association for Career and Technical Education, 2011; National Academy Foundation, 2012); and the International Baccalaureate Programme's (IB) culminating project applies in-depth research and interdisciplinary methods to create an extended essay and presentation (International Baccalaureate Organization, 2005-2014).

High school level culminating project based learning experiences were implemented similarly but were referred to differently: Graduation Project (Houston & Tharin, 1997); Graduation by Exhibition (Arces et al., 1993; Barnett, 2000; Fisk, Dunlop, & Sills-Briegel, 1997; Meier, 1995); Exit Exhibition (Cushman, 1990); Exhibition of Mastery (Sizer, 2004); WISE Individualized Senior Experience Project (WISE Services, 2014); High School Senior Capstone Projects (Skeldon, 2012); Senior High School Culminating Project (Erickson, 2007); Rite of Passage Experience (Cushman, 1990); Mentor/Community-Service Project (Cox & Firpo, 1993); Senior Exit Project (Troutman & Pawlowski, 1997); and Senior Project (a proprietary term for the Partnership for Dynamic Learning, PADL, 2008, Summers, 1989). Although studies referred to the project by different names, the participation experience followed the same general premise. The varying SCPs were completed in the senior year of high school, followed a project or problem based learning design with an interdisciplinary focus, required a career or community collaboration with a mentor, contained a college level writing component, and required a presentation to a panel of judges.

For the purpose of the study's investigation, I selected the term Senior Capstone Project (SCP) to refer to the culminating, interdisciplinary, senior year of high school learning experience. In addition, since this work comprised graduates from the Hawai'i Public School System, I based my interpretation and discussion of the SCP upon the HIDOE's (2010) project requirements, where students (1) choose their own project, (2) develop their own essential question and thesis, (3) reflect upon a learning stretch, and (4) demonstrate proficiency in the four main components: research paper, field work (collaboration with a community member), portfolio, and presentation.

Senior Capstone Projects in Hawai'i. ***History of Senior Capstone Projects in Hawai'i.*** Lahainaluna High School the first in Hawai'i to implement a SCP program and create an extensive senior project guideline packet, later became the model for the current Statewide guidelines (Goff, Graziillo, Shino, & Nakano, 2008). The HIDOE provided SCP guidelines for statewide implementation during the 2008-2009 school year (HIDOE, 2010). Hawai'i Board Policy 4550, titled *High School Graduation Requirements and Commencement*, was revised in March 2008 to require completion of a SCP for students to earn a Board of Recognition Diploma[1], beginning in the school year 2009-2010 (HIDOE, 2010). It was compulsory that all students engage in an SCP to fulfill Hawai'i's participation requirement in the American Diploma Project[2]. At that time, the HIDOE Strategic Plan (HIDOE, 2008) described the SCP as a vital learning experience and projected that by 2018 all graduates in the state of Hawai'i would have completed one.

In 2012, a newly appointed State of Hawai'i Board of Education (HIBOE, 2012) discontinued the Board of Recognition Diploma after the 2014-2015 school year, and in its place they created honors certificates beginning with the Class of 2016. Due to this policy shift, the

SCP was no longer part of a graduation requirement; the HIBOE left its continuation to be determined by individual high schools. Starting in the 2015-2016 school year, students could opt to complete a SCP as one of the six elective credits required to graduate (HIDOE, 1995-2013a). To receive Science, Technology, Engineering, and Math (STEM) Education honors, a STEM Capstone or STEM Senior Project is required. Projects are also required for CTE honors. Depending on school policy and project requirements, these honors projects may also be considered as a SCP.

Hawai'i's Senior Capstone Project requirements. For the HIDOE SCP, students must submit a proposed project type (i.e., career) and topic (i.e., the legal responsibilities of a pharmacist) for approval before developing their own thesis and design (Lahainaluna, 2008). Students have the ability to choose their project type among three options: (1) Community Service Project, (2) Self-Development Project, or (3) Career Project (HIDOE, 2010). Proficiency in four main components of the Senior Project is required: (1) research paper, (2) field work (project collaboration with a community member), (3) portfolio, and (4) presentation. Research papers are to be written according to college level expectations and must address the student's essential question and thesis. Fifteen to 25 hours of field work, alongside a community mentor, constitutes the students hands-on experience and learning in the topic. The portfolio component is a compilation of the SCP requirements and provides evidence of the student's learning and project development. The final component, the oral presentation, showcases a student's communicative proficiency in the area of study. It is assessed by a three member judicial panel comprised of volunteer community members selected by the school. The intention of the senior project is to help prepare students to be college and career ready.

Purpose of the Study

In order to examine how the SCP may have transferability and retention from one learning situation to the next, I investigated college students' perceptions of what they learned during their past high school SCP learning experience and what, if any, of those dispositions, skills, and content knowledge were still currently being used in college. Twelve current undergraduate students at a university in the Pacific region of the United States participated in this research study. Participants completed an online survey and participated in a series of focus group sessions. Varied perspectives were sought by selecting participants who had attended different Hawai'i public high schools, selected diverse SCP topics, pursued varying college majors, and represented multiple genders and ethnicities.

My research aimed to discover participants' perceptions about the extent that content knowledge, skills, abilities and dispositions learned from their SCP's transferred to their college academic experience. This study provides insight as to what students felt they gained from a project based learning experience, including the abilities and production skills deemed necessary to complete work such as research papers, fieldwork, portfolios, and presentations. The study's results add to the extant literature, informing educators and policy makers about the significant benefits of the SCP experience and the long-term impacts students perceived during their collegiate experience.

Research Question

The following research question guided my study—How do students in a four-year post-secondary institution perceive participation in their high school Senior Capstone Project has impacted their current college academic experience?

Qualitative research methods were used to conduct a descriptive and interpretive case study. Each individual participant was studied as a multiple case within the main bounded case. Snowball sampling (Cohen, Manion & Morrison, 2007) was used to obtain referrals for participants from teacher friends and peers within the College of Education. Twelve participants were purposefully selected (Teddlie & Tashakkori, 2009) to provide maximum variation based upon meeting the following specified criteria: attended various Hawai'i public high schools; had different SCP topics, attended Island University (IU), pursued diverse college majors, and represented multiple genders and ethnicities. The participants took part in an initial online questionnaire, one in-person focus group, and two in-person individual interviews; additionally, they submitted two college work artifacts, a reflective journal, three member checks of their interview transcripts, and answered follow-up questions via Electronic-mail, as needed.

Data was analyzed through thematic coding (Patton, 2002), resulting in the creation of a categorical organization of the narrative interview data. Each participant was treated as a smaller individual case of the larger case study. First within-case analyses took place before an ensuing cross-case comparison analysis examined any consistencies or differences between the cases (Patton, 2002). The comparison of smaller cases helped provide triangulation. A final comprehensive stage of analysis looked at data from the cross-case analysis and the within-case analyses. The final interpretations served to address the research questions and to contribute to the available literature on SCPs and project based learning.

Significance of the Study

After an exhaustive review of literature on high school SCPs, it was discovered that those research-based studies merely consisted of limited and focused investigations with findings that were not widely transferrable (Brandenburg, 2005; Duff, 2006; Erickson, 2007; Pennacchia,

2010; Skeldon, 2012). Some research existed describing the extent the SCP provided students an opportunity to develop planning, research, time management, interpersonal, presentation, and writing skills needed for college or career (Egelson et al., 2002; HIDOE, 2010; P4DL, 2008; Shaunessy, 2004). Dissertation and thesis studies had varied scopes of investigation including: SCP as a combatant of senioritis (Blanchard, 2012; Duff, 2006); judges' perceptions of rigor (Skeldon, 2012); a principal's perspective of planning and development (Mercurio, 2007); interaction of students' epistemological assumptions and their behavior during a SCP course (Urman, 2008), and SCP design focus on rigor, relevance, and relationships (Brandenburg, 2005). I also found studies that examined SCPs from different approaches: data review (Brandenburg, 2005); surveys of high school students (Duff, 2006); interviews of high schools students, parents, and teachers (Erickson, 2007); surveys and interviews of recent high school graduates (Pennacchia, 2010); and surveys and focus groups of judges (Skeldon, 2012).

Existing studies expressed the need for additional research on SCPs and included recommendations for future studies to be conducted (Brandenburg, 2005; Duff, 2006; Erickson, 2007; Pennacchia, 2010; Skeldon, 2012). Brandenburg (2005) suggested follow-up studies of SCP students after high school graduation. Erickson (2007) specified studies of their post-secondary achievement, while Duff (2006) further detailed that future research should address questions regarding how the SCP writing requirement enhances students' preparation for college writing, and the extent to which it contributes to the development of dispositions and skills associated with self-directed learners. Pennacchia (2010) suggested researching even further into self-direction with studies on how the SCP may develop a student's self-efficacy.

Throughout my search, I could only locate two studies (i.e., Egelson et al., 2002; Pennacchia, 2010) that investigated whether SCP participation had any lasting impact once

students graduated from high school. Because my study expanded upon their research, an overview of their findings is presented in this chapter. Pennacchia (2010) investigated to see if the SCP's intention of college and career preparation was met. Following a two-phase mixed methods explanatory design, 147 graduates of a Rhode Island high school who completed a SCP completed a questionnaire. After quantitative analysis, six were purposefully selected to be interviewed. Pennacchia found that 89% of the graduates who participated in the study:

> …viewed the senior project components in written communication, oral communication, research skills, and time management/study skills as valid indicators for college and work readiness. They believed they exhibited these skills during senior project and that they are confident that they use these skills in a college or work environment. (p. 106)

She also found that 82% of the respondents had a positive SCP learning experience. SCP was also deemed to have cultivated perceptions of self-efficacy to the Pennacchia's surprise.

A paper presented at the annual meeting of the American Educational Research Association (AERA) by Egelson et al.'s (2002) included findings of their longitudinal mixed methods research study of 12th grade high school students (N = 422) graduates (n = 163 surveyed with approximately half serving as a control group and the others participated in SCP), parents (~ 260), and teachers (n = 436) from four senior project schools and four control non-project schools in rural or small towns of North Carolina. The study also included qualitative interviews, focus groups, and document analysis of writing assessments. Responses of surveyed graduates were compared between the senior project and control (non-senior project) schools. About 75% of their participants who had graduated and completed a senior project responded that they agreed or strongly agreed that they developed or improved the following skills during their SCP experience: public speaking, interviewing, interpersonal, writing, research, planning,

organization, and other work-related skills. Graduates of who partook in senior projects reflected that they had learned more of the surveyed skills than graduates who had not participated in SCPs. Both groups of graduates reported they were required to use all of the skills surveyed to some degree since high school. Upon analysis of the participants' perceived experiences with SCPs, the authors concluded:

> The effects of the Senior Project experience are not necessarily evident in the short-run. The real value of Senior Project is not likely to be realized until students are out of high school and called upon to use their Senior Project – related knowledge and skills in a real-world setting, such as their workplace or an institution of higher education. (p. 22)

Building from Egelson et al.'s conclusion, my dissertation served to investigate the perceived lasting effects of SCPs as students continued their education at an institution of higher education. I examined transference of the SCP experience to the college academic experience, in part to see its ability to prepare students for future academic and career contexts. For it is the focus of our nation's schools (Cowan & Carter, 1994), including the HIDOE (2010), to offer learning activities that prepare students for the future roles in society such as post-secondary education or the workplace. Influenced by Egelson et al. and Pennacchia's findings, my study sought to discover if study participants had similar perspectives to those in North Carolina and Rhode Island, if the SCP prepared them for college, and more specifically if what they had learned while participating in their SCP transferred to their college academic experience.

Definition of Terms

There are five terms used frequently in this study that warrant further attention and clarification: learning transfer, project based learning, senior capstone project, senior capstone project experience, and college academic experience. Learning transfer, project based learning,

senior capstone project, and college academic experience are defined very differently in the literature. Senior capstone project experience is not contained in the literature at all. Therefore, details as to how these terms are to be understood for the purposes of this study are provided.

Learning Transfer—a theoretical approach to learning (Carraher & Schliemann, 2002) used to explain how new learning was influenced by prior knowledge, learning, and experience. Situated (Greeno,1998; Lave, 1988) to capture evidence with broad qualitative methods (Carraher & Schliemann, 2002; Lobato, 2003) to elicit participants' perspectives (Lobato, 2003) of how their prior learning (Bransford & Schwartz, 1999) was adapted and applied to another setting (Barnett & Cici, 2002) comprised of new context and content (Royer, Mestre, & Dufresne, 2005; Tuomi-Gröhn & Engeström, 2003).

Project Based Learning (PjBL)—a student led, teacher assisted instructional method where complex projects are "based on challenging questions or problems, that involve students in design, problem-solving, decision making, or investigative activities; give students the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations" (Thomas, 2000, p. 1).

Senior Capstone Project (SCP)—a culminating project of the high school students' K-12 academic experience, completed in their senior year, drawing upon multidisciplinary content as well as skills, abilities, and dispositions. The SCP is intended to provide opportunities for students to gain a firsthand understanding of a career, provide a service to the community, or to develop a personal interest while experiencing college level research, writing, and communication (HIDOE, 2010). Proficiency in four main components of the Senior Project is required: (1) research paper, (2) field work (project collaboration with a community member),

(3) portfolio, and (4) presentation. Where students demonstrate a breadth of knowledge and attainment of learner outcomes including: self-direction, complex thinking, and communication.

Senior Capstone Project Experience—holistic participation in the SCP including using and learning skills, abilities, and dispositions as well as the interdisciplinary content knowledge to complete the required SCP components (research paper, field work, portfolio and presentation). The SCP experience also encompasses participation in PjBL experiential techniques of self-direction, authentic problems and activities, mentor or teacher collaboration and feedback, and reflection.

College Academic Experience—all aspects of participation in collegiate courses and assignments including but not limited to: fieldwork, laboratory reports, classroom activities, essays, presentations, artwork, projects, and exams. The college work itself and the creation process to arrive at the culminating product including using previously acquired and transferred content knowledge alongside newly acquired skills, abilities, and dispositions.

Chapter Summary

Chapter 1 presented background information on SCPs and the need for additional research that resulted in the premise for this study. It included my interest in the topic as the researcher as well as the educational significance and purpose of the study. The literature review in Chapter 2 presents the conceptual framework of the study, which is guided by two essential lenses: SCP and learning transfer. Chapter 3 describes the methods by which research was conducted, including descriptions of using a bounded case, sampling procedures, participant selection, data collection, and data analysis. In Chapter 4 findings are presented before being elaborated upon in Chapter 5, where conclusions and implications are discussed.

Chapter Notes

[1]Board of Recognition Diploma: A high school diploma choice with additional requirements created by the State of Hawai'i Board of Education (HIBOE, 2011) in an effort to promote more rigorous learning and meet college entrance requirements. The SCP was one of the extra requirements needed to earn a Board of Recognition Diploma. The Board of Recognition Diploma began with the Class of 2007 and ended with the Class of 2015. The Board of Recognition Diploma with Honors began with the Class of 2010 and ended with the Class of 2015. The HIBOE replaced the Board of Recognition Diploma choices with a single diploma choice and various honors recognition certificates beginning with the Class of 2016 (HIDOE, 199 -20 3).

[2] American Diploma Project: A project created in 2005 by Achieve (2012), a nonprofit organization with the goal of preparing students for postsecondary education, work and citizenship, and a network of state governors, education officials, and business executives. As part of the education movement to improve college and career readiness among high school graduates, the network of 35 states gained attention when it initiated the movement to develop common core state standards and graduation requirements for high school students to complete college and career ready curriculum, including a SCP. The network was committed to improving student achievement and created provisions to increase graduation requirements.

Chapter 2

Conceptual Framework

This study examining college students' perceptions regarding the impact of previous high school Senior Capstone Project (SCP) learning on their current college academic experience was framed by three essential bodies of literature: SCP, learning transfer, and self-efficacy. In this chapter, I will describe how existing literature framed my study. First, the field of SCP laid a foundation of what constitutes project work and what students were expected to attain from the experience. Within the SCP lens, the topic of project based learning (PjBL) helped construct a description of the teaching and learning method that informs the SCP. Next, the field of learning transfer framed my study with information pertaining how to examine the manner which knowledge acquired in one setting was later applied in another. Within the learning transfer lens, the topic of college readiness was included to help specify types of knowledge that were under this study's examination, particularly what students were expected to do in college. Third, literature on self-efficacy framed my study with foundational knowledge on how one's belief in self impacts behavior. Studies of self-efficacy involvement with PjBL were of focus.

Senior Capstone Project

Existing literature about SCPs was used as a conceptual lens to help guide my research study. The SCP literature was useful in understanding what students were expected to learn through the SCP experience and how it was intended to be helpful for a student's future college academic experience or career. This section begins with an overview of articles describing SCPs and intended student outcomes from the PjBL method. Next, knowledge, skills, and dispositions that are expected to be gained during SCP completion are presented. Then, information regarding

the expected learning outcomes of Hawai'i's SCPs is included. The section ends with a review of SCP studies, and descriptions of how they framed the proposed research.

Intended purpose and outcomes of the Senior Capstone Project. In the articles under review, the SCP was seen to develop students' skills, abilities, and dispositions through self-directed long-term project work. The purpose of SCPs was described as promoting college and work readiness.

In their article, Cowan and Carter (1994) described how the push for culminating projects and student proficiencies in focus came out of a report by the Task Force 2000's The U.S. Department of Labor's Secretary's Commission on Achieving Necessary Skills (SCANS, 1991). In the early 1990's, the task force examined what work was required of schools by asking employers about their workforce requirements and then asking schools if those requirements were incorporated into their school curricula. The goal was to reshape the curriculum by the year 2000. SCANS Task Force 2000 focused on the question:

> What do students need to know to be successful?…They need to know how to ask questions and find answers, how to gather and analyze information, how to apply their knowledge to projects of their own creation while remaining realistic about limitations of time, money, resources, and support. They need to be able to use relevant technology. They need to be able to write and speak, clearly and concisely, about what they have learned. (Cowan & Carter, 1994, p. 58)

The skills SCANS reported such as communication, technology, self-direction, and writing were used in high school but also viewed as useful for their future, whether they pursued post-secondary education or a career immediately following graduation. According to Cowan and Carter (1994), the SCANS (1991) reports led to educational reform that included more cross-

curricular, hands-on learning experiences such as the SCP. Reflecting on my own SCP teaching experience, I believe that SCPs meet the new curricular needs as described by Cowan and Carter (1994) because they require students to go out into the community, learn through active participation, provide the opportunity to use the skills they learned previously in high school, and "understand that school is not just preparation for life. It *is* life" (Cowan & Carter, 1994, p. 58).

The HIDOE views the SCP as an addition to overall curriculum that has the intention to prepare graduates for their future role in society; upon completion of a SCP students are to have demonstrated skills and knowledge to be effective, competent, and appropriate post-secondary students or members of the workforce (HIDOE, 2010). Through their work on the four main project components (research paper, field work, portfolio, and presentation), high school seniors have the opportunity to use previous learned skills as well as demonstrate proficiency in newly developed skills needed for college and/or career (HIDOE, 2010; P4DL, 2008). Shaunessy (2004) further detailed skills built through the SCP experience to "offer students the opportunity to identify purposeful lines of inquiry and to approach them with the appropriate level of difficulty for their abilities as students develop learning plans, desired outcomes, and embark on experiences of their own choice" (p. 40). I considered the learning outcomes when examining any connections or transference participants may or may not have had to their current college work.

Acquiring a full inventory of student abilities is the objective of the SCP program developed by The Senior Project Center under auspice of the non-profit school consulting firm, The Partnership for Dynamic Learning (P4DL, 2008). They offer project management, research, and assessment tools aligned to the Common Core State Standards. The Senior Project Center partnered in the development of Hawai'i's SCP with the HIDOE (HIDOE, 2010). They

described that senior projects assess skills that are not usually demonstrated through required standards-based assessments. The center's 20+ years of SCP development and implementation experience led to the compilation of "attitudes, skills and knowledge" students are to attain from completion of a SCP (see Table 1).

Table 1

Senior Project Center's Citizens of the 21st Century: Attitudes, Skills and Knowledge

Basic Skills and Knowledge	Self-Direction and Collaboration
Deep Independent Thinking and Sophisticated Problem Solving Mental Flexibility Fluency of Ideas and Proficiency in Processes Reflective, Creative and Original Thinking Risk Taker	Communication Skills in Text, Video and Audio Modes Technology High Productivity and Quality Production Personal Characteristics Reflecting Work Ethic

Source: P4DL, 2008.

Several scholarly articles (Covan & Carter, 1994; Rickey & Moss, 2004, Shaunessy, 2004; Summers, 1989; Wheeler & McCausland, 2003) supported and added to discourse around similar knowledge, skills, and dispositions introduced by The Senior Project Center. The articles described a SCP as a beneficial student learning experience that helped prepare students for their future. The long-term project was seen as a way to enhance existing curriculum while preparing senior year high school students with skills, dispositions, and abilities needed for college. SCPs were seen as a venue for students to apply previously learned knowledge and develop new knowledge while further developing their critical thinking, research, collaboration, communication, planning, and time management abilities (Covan & Carter, 1994; Rickey & Moss, 2004, Shaunessy, 2004; Summers, 1989; Wheeler & McCausland, 2003).

The PjBL method was seen to increase students' opportunity to use inquiry and investigation while applying interdisciplinary knowledge and content to address authentic

problems or questions (Blumenfeld, Soloway, Marx, Krajcik, Guzdial, & Palincsar, 1991; Darling-Hammond et al., 2002; Harada et al., 2008; Pearlman, 2010). These studies influenced the scope of this study as they also sought to discover what students learned from a PjBL experience. However, these research investigated were constructed on the premise of what students were expected to learn from the SCP; in contrast, my study uses a novel approach of assessing what college students perceive to have actually experienced during their SCP experiences and documented views of transference of SCP learning to the college academic setting.

Hawai'i purpose and learning outcome for the Senior Capstone Project. This sub-section of the SCP conceptual framework helped to provide background on the relationship between project completion to its overall impact. According to the HIDOE (2010) guidelines the participants of my study should have attained abilities and college preparation through participation in the SCP. Hawai'i's SCP was designed to support one of HIDOE's main initiatives—college readiness (HIDOE, 1995-2013c). It was also designed to help fulfill the HIDOE (2010) vision for their high school graduate "graduates possess the attitudes, knowledge and skills necessary to contribute positively and compete in a global society" (HIDOE, 1995-2013c). In its SCP guidelines, the HIDOE (2010) detailed that the SCP is intended to provide opportunities for students to gain a first-hand understanding of a career, provide a service to the community, or develop a personal interest while experiencing college level research, writing, and communication.

Guidelines for the HIDOE (2010) SCP specified that "Successful completion of the Senior Project provides the student with the opportunity to demonstrate advanced proficiency in the attainment of the General Learner Outcomes (GLOs), career and life skills demonstrating

workplace readiness" (HIDOE, 2010, p. 1). The GLOs were initially developed to meet the accreditation requirements set by the Western Association of Schools and Colleges (WASC). The GLOs, a set of overarching learning goals that students should have acquired by the time of their graduation, include: Self-Directed Learner; Community Contributor; Complex Thinker; Quality Producer; Effective Communicator; and Effective and Ethical Users of Technology (HIDOE, 1995-2013b). SCP completers were described as 21st century learners who, through the culminating experience of demonstrating the GLOs, became "college, career and citizenship ready in reading, writing, speaking, listening and language" (HIDOE, 2010, Attachment D). Both the vision and outcomes of the HIDOE are intended to develop the student for their future workplace or post-secondary education and are skills, abilities, or dispositions observable in a student's SCP work.

The HIDOE (2010) guidelines also detail that students must reflect upon and present a "learning stretch," evidence of breadth of learning, that they "push himself/herself to go above and beyond what he/she already knows or what he/she thinks he/she can do, and a culmination of knowledge and skills from many different disciplines and life experiences" (HIDOE, 2010, p. 6). This breadth of learning requirement is designed to help fulfill the HIDOE's vision—to help students prepare to be productive 21st century citizens. According to the HIDOE (2010), the SCP will help high school graduates become equipped for their future societal and industry endeavors including citizenship, post-secondary education, and their career.

Existing Senior Capstone Project studies. Existing research on the SCP at the secondary level explored the perceived effectiveness in implementation and perceptions of intended outcomes (Blanchard, 2012; Brandenburg, 2005; Carolan, 2008; Duff, 2006; Egelson et al., 2002; Erickson, 2007; Skeldon, 2012). All but two of the existing studies described views on

SCP implementation had different types of people under examination and did not specify the project completers' experiences following their high school graduation. However, despite their differences from the proposed study's focus, they still are of value to inform through rich description and their findings of what encompasses SCPs.

Overall, the existing studies tended to agree that the SCP is a worthwhile learning experience that met intentions of college and work readiness through developing and building upon previously learned knowledge, skills, and dispositions; more specifically the SCP showed student development in planning, research, time management, interpersonal, presentation, and writing (Brandenburg, 2005; Duff, 2006; Egelson et al., 2002; Erickson, 2007; Skeldon, 2012). The studies examined SCPs using eclectic methods including a data review of high school students (Brandenburg, 2005); surveys of high school students (Duff, 2006); interviews and examination of personal documents of high school students (Carolan, 2008); surveys and interviews of high schools students, parents, and teachers (Egelson et al., 2002; Erickson, 2007); surveys, interviews, and focus groups of students, teachers and administrators (Blanchard, 2012); surveys and focus groups of judges (Skeldon, 2012), and a principal's perspective of planning and development (Mercurio, 2007). However, this group of studies was only able to indirectly inform my dissertation because they investigated participants who were high school students and did not look at transference after completion of the SCP. My study investigated college students, who had completed the SCP while in high school and their perceptions of any lasting effects experienced during their collegiate studies.

My research expanded upon the findings of two particular studies, Egelson et al. (2002) and Pennacchia (2010). These articles directly informed my research their premise was to unearth what happened to SCP completers once they had graduated from high school. A paper

presented at the annual meeting of the American Educational Research Association (AERA) by Egelson et al. (2002) included findings of their longitudinal mixed methods research study of 12th grade high school graduates as well as their parents and teachers in rural or small towns of North Carolina. About 75% of their participants who had graduated and completed a senior project responded that they agreed or strongly agreed that they developed or improved the following skills during their SCP experience: public speaking, interviewing, interpersonal, writing, research, planning, organization, and other work-related skills. Egelson et al. (2002) also found that, "Senior Project coordinators and parents' degree of agreement was even higher – over 80 percent" (p. 3). They found that students built several skills throughout their SCP experience [public speaking, research, [research] writing, presentation, interviewing, time management, planning, organization, interpersonal, and work-related skills, the skills embodied in the Senior Project" (p. 12). Graduates of senior project schools reflected that they had learned more of the skills surveyed while in high school than control group participants. Most graduates reported they were required to use all of the skills surveyed to some degree since high school.

Pennacchia (2010) investigated if the SCP's intended outcomes of college and career preparation were beneficial to participatory high school students. She found that 89% of the graduates who participated in the study:

> Viewed the senior project component in written communication, oral communication, research skills, and time management/study skills as valid indicators for college and work readiness. They believed they exhibited these skills during senior projects and that they are confident that they use these skills in a college or work environment. (Pennacchia, 2010, p. 106)

Eighty-two percent of the respondents claimed the senior project was a positive learning experience overall.

The work of Egelson et al. (2002) and Pennacchia (2010) helped to frame my study because they also included examination of current college students who completed a SCP while in high school. However, Egelson et al. (2002) and Pennacchia (2010) were specifically designed to evaluate their respective SCP program and contained a priori items suitable for program evaluation. Rather than describe or interpret, my study further examines the SCP with qualitative interpretation of participants' perspectives of how their high school experience later impacted their college academic experience.

Project based learning. Cowan and Carter's (1994) description (see pp. 16-17 of this chapter) of the early 1990s movement toward reshaping curriculum to include interdisciplinary project experiences where students gain knowledge, skills and dispositions for their future, described a form of project based learning (PjBL). This type of cross-curricular, real-world, hands-on project learning experience is referred to as PjBL (Blumenfeld et al., 1991; Harada et al., 2008; Markham, Larmer, & Ravitz, 2003; Newell, 2002; Thomas, 2000). This sub-section of the SCP lens contains a brief overview of PjBL, which helped underpin the philosophical and methodical SCP design. The PjBL overview helped to further define the SCP experience, and therefore assisted with understanding my participants' perspectives of how it benefited their future learning.

What is project based learning? The idea of educating students through a project experience is not new. In his article, *The Project Method* (1918), Kilpatrick wrote about the benefits of projects that had a real purpose. He described how new learning resulted by allowing students to identify, through their own ability, which skills to call upon and new ideas to generate

based on a situation of "purposeful activity." He explained that learning was strongest when projects originated intrinsically (child chosen) and not extrinsically (teacher assigned). Kilpatrick's (1918) description of self-directed learning through working on purposeful projects was later described by Dewey (1938) as experiential learning, where students acquired knowledge from what they did and experienced. He saw learning as a continuous process grounded in experience.

Kolb (1984) continued to conceptualize experiential learning as a process where knowledge was curated through a transformation of experience. Learning is seen as a holistic process of human adaptation to the world, where process and experience create knowledge. Kolb's learning cycle involved learners moving through concrete experience, reflective observation, abstract conceptualization, and active experimentation. Learning is an active process in which students take responsibility for their own edification. In the 1980s, just as in Dewey's time, Kolb's experiential learning theory was viewed as counter-cultural to mainstream transmission-oriented techniques. The SCP echoes these early views of experiential learning through projects; knowing and doing were integrated during SCP work, and students chose their own topic and project type.

Based on the work of Dewey (1938) and Kolb (1984), I classify SCP as a form of PjBL. PjBL is defined in part by its broad interdisciplinary scope (Harada et al., 2008; Newell, 2002). Definitions of PjBL do not reflect solely on core curriculum but often contain the development of various knowledge and characteristics (skills, abilities, or dispositions) but are not limited to problem solving and higher-level cognitive development (Markham et al., 2003; Wurdinger, Haar, Hugg, & Bezon, 2007); student led planning (Markham et al., 2003; Newell, 2002); student influenced inquiry and investigative activities (Blumenfeld et al., 1991; Markham et al.,

2003); and communication (Markham et al., 2003). The characteristics from the aforementioned authors helped describe what PjBL work entails; however, Thomas (2000) compiled the most comprehensive definition that best reflects my research on SCPs, saying that complex projects are "based on challenging questions or problems, that involve students in design, problem-solving, decision making, or investigative activities; give students the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations" (p. 1).

Blumenfeld et al.'s (1991) article detailed two essentials needed for comprehensive PjBL: (1) a problem or question that drives activities; and (2) the activities that result in a series of artifacts culminating in a final product. The authors described how factors in project design, teacher implementation, and technology support student motivation and cognition. The two essentials were seen to provide even greater potential for motivated learning with sustained thought when students were responsible for the creation of authentic real-world questions and activities. Projects were described to improve competence in thinking through practice with planning, progress monitoring, and evaluation. Blumenfeld et al. (1991) also indicated interdisciplinary projects were effective in engaging students in the active learning process towards meaningful content knowledge acquisition.

The development and implementation of the Hawai'i SCP (HIDOE, 2010) follows the descriptors in this review of PjBL literature, and as Hawai'i is the location of investigation for my study, I consider the SCP to be a form of PjBL. Particularly, the HIDOE (2010) guidelines for the SCP contain Blumenfeld et al.'s (1991) essentials of a driving question (thesis statement) and a final product (presentation or research paper). The HIDOE SCP is also representative of Thomas' (2000) PjBL definition containing complex tasks that involve students in design,

problem-solving, decision making, or investigative activities over an extended period of time. PjBL is designed to provide lasting effects gained from experiential interdisciplinary learning. The HIDOE (2010) SCP requirements also mirror the design suggested by the following PjBL instructional models.

Instructional methods for project based learning. Krajcik, Blumenfeld, Marx, and Soloway (1994) provide direction for cross-curricular, hands-on learning experiences specifying that PjBL include a collaborative model for teacher implementation. After reviewing several case studies that implemented project based instruction methods in science classrooms, the authors introduced their Framework of Project-based Science that contained five fundamental features: (1) driving question or authentic problem used to organize concepts; (2) a main product or series of artifacts; (3) investigation around a driving question or essential problem; (4) collaboration with community members; and (5) the use of cognitive tools during the inquiry process or the development of artifacts. Each of the features was seen to follow aspects of constructivist learning. The five fundamental features Krajcik et al. (1994) detailed are included in SCP guidelines (HIDOE, 2010) and were intended to develop learning experiences with expected outcomes that prepare students for future learning.

Learning Transfer

Learning transfer was used as a conceptual lens for my study which examined college students' perspectives of their transference of previously acquired knowledge from their high school SCP for their current college academic experience. To study learning transfer, performance on a task can be examined for the degree to which it influences the performance on a subsequent task (Ellis, 1965); or how prior learning affects new learning or performance (Marini & Genereux, 1995). It is important to note the field's wide ranging and often divided

perspectives and contradictory viewpoints (Anderson, Redder, & Simon, 1996; Greeno, 1997; Lobato, 2006; Tuomi-Gröhn & Engeström, 2003) on this topic. In my literature review of the topic, I approached this spectrum of perspectives by first offering a brief overview of traditional transfer. Then, the focus shifted to alternative perspectives, primarily the actor-oriented perspective (Lobato, 2003), which sought understanding transfer from the learner's viewpoint; meanwhile, the preparation for future learning perspective (Bransford & Schwartz, 1999) emphasized that a student's ability to learn was due to their past experiences. These alternative perspectives are included in this section due to their broad description of learning transfer as the ability to apply past knowledge to a new problem or setting, mirroring Royer, Mestre, and Dufresne's (2005) multidisciplinary viewpoint that transfer takes place over multiple contexts. Explanations are also provided regarding my rationale for seeking alternative perspectives to traditional learning transfer; particularly in relation to the qualitative nature of my study and its investigation to determine if and how learning transferred from my participants' high school SCP experience to their current collegiate experiences.

Traditional learning transfer perspective. In his seminal book *Principles of Teaching, Based on Psychology* (1906), Thorndike explained his transfer theory as the application of knowledge from one situation to another. He described the use of quantitative transfer tests to examine perceived benefits of various learning experiences. Thorndike supposed that in order to study transfer, identical elements in each case needed to be present and the specific content of one situation directly applied to the next. Often participants received instruction on a sequence of learning tasks and were compared to a control group who did not receive the instruction, and then both groups performed a final task that was used as the basis of

measurement. Positive transfer was said to have occurred if the participants who received the learning tasks performed better than the control group.

Judd (1936) saw transfer differently; he thought Thorndike's (1906) identical elements methods only studied learning as a reflex, without effort or mindful thought. Judd (1936) defined learning as reflection, calling upon a higher mental process. He believed that teachers should actively teach for transfer and that learners should actively seek to learn for transfer. He found that the understanding of a task's central principles transferred to other similar tasks.

Disagreements and tension between cognitive constructivists like Thorndike and situated cognition theorists like Judd predicated over notions of measuring learning transfer (Tuomi-Gröhn & Engeström, 2003). Cognitivists viewed situated cognition theorists' work as inferior due to their use of unscientific measures. Situated cognition theorists viewed cognitive constructivists' work as invalid due to narrow and undebatable viewpoints (Tuomi-Gröhn & Engeström, 2003). For the purpose of my qualitative study, I followed the situated cognition theorists views and investigated following alternative learning transfer perspectives described in the next section.

Alternative learning transfer perspectives. In the 1990s, new considerations for transference became issues of discussion for scholars in the field (Anderson et al., 1996; Greeno, 1997; Lobato, 2006; Tuomi-Gröhn & Engeström, 2003). Debates based on differing viewpoints of what needed to be present to constitute transfer became common. The concept of *polycontextuality* emerged as a method to provide proper measurement of transfer of participants engaged in multiple simultaneous tasks over numerous communities of practice (Tuomi-Gröhn & Engeström, 2003). Barnett and Cici (2002) later explained another topic of much debate—far transfer. Near transfer was seen to occur when previous knowledge was applied to new but

similar situations, and far transfer referred to dissimilar situations. They supported far transfer was possible and focused on its degree of occurrence. Barnett and Cici (2002) proposed a framework of nine relevant dimensions to study far transfer across varied contextual and content dimensions.

Aspects such as motivation, engagement, and participation were seen to influence transfer. Perkins and Salomon (2012) described a motivational and dispositional view of transfer that included studying participants as they proceeded through a sequence of three steps: detecting a potential connection to prior learning, electing to pursue it, and connecting it to a model. The authors described that a combination of personal characteristics such as persistence and willingness to take risks dispose students to advance themselves through the steps and transfer knowledge. Perkins and Salomon suggested that educators would need to explicitly teach critical thinking and creativity in the classroom to build character as well as cognition. Other learning transfer studies found that engagement (Carraher & Schliemann, 2002), motivation, and achievement goals (Belenky & Nokes-Malach, 2012) also enhanced future learning. When individuals were engaged and motivated, they reconstructed their understanding of initial learning to improve their knowledge transference to a new setting (Belenky & Nokes-Malach, 2012; Carraher & Schliemann, 2002). Greeno (1998) described how situated transfer included patterns of participation—how understanding content knowledge and the level of participation influenced student learning in the current situation and ability to participate in the next situation. He recognized that patterns of participation, not just task knowledge, transferred across situations.

These represented scholars described varying alternative perspectives to traditional transfer study. Commonalities of their approaches included the concept of polycontextuality and

methods beyond a quantitative examination of identical elements. Royer et al. (2005) described alternative approaches as multidisciplinary, applying past knowledge to a new problem or setting. This approach was applied to my study, in part, because the like elements needed for traditional transfer study did not exist for my research due to the multiple contexts that were the subject of investigation. My study examined dissimilar situations of far transfer (Barnett & Cici, 2002) and followed the concept of polycontextuality (Tuomi-Gröhn & Engeström, 2003); participants' engagement over in multiple contexts (the high school SCP requirements and college work samples) over several communities of practice (from the high school SCP to college academic setting).

The remainder of this section on learning transfer will provide full descriptions of two broader perspectives that enabled study of learning transfer without the need for identical elements and quantitative measurement as Thorndike (1906) suggested. From the varying alternative approaches, I selected the actor-oriented perspective (Lobato, 2003) and the preparation for future learning (Bransford & Schwartz, 1999) amongst many available. The founders of these approaches sought enhanced descriptions of a phenomenon often excluded through traditional examinations of transfer. The actor-oriented perspective described studying transfer through the participants' viewpoint and the preparation for future learning described looking beyond identical elements in the same time-sensitive case. The broader qualitative methods of these alternative perspectives informed my study by providing approaches to gain the participants' viewpoints on how and what, if at all, they transferred learning from a previous setting (high school SCP experience) to a new setting (college academic experience).

Actor-oriented perspective. In her review of design features of alternative perspectives on the transfer of learning, Lobato (2003) included her own actor-oriented perspective. She defined

transfer as the personal construction of the generalization of learning, where the influence of the learners' prior activities impacted their activity in a new situation. She proposed studying transfer broadly through qualitative observations and eliciting the participants' perspective. The actor-oriented framework advocated for a shift from the observer's to the actor's viewpoint. The observer sought to understand the processes by which learners (actors) generate their own relations of similarity rather than by quantitative measures (Lobato, 2003). The actor-oriented perspective evolved from Lobato and Siebert's (2002) study, where they performed two methodologically different analyses on a single case study. After implementing a teaching experiment, they compared results from the traditional transfer perspective, using quantitative methods with the actor-oriented perspective, using ethnographic interview methods. They found failure of transfer with the traditional results; however with the alternative method, they documented several ways that the transfer situation was influenced by prior learning experiences. Lobato and Siebert (2002) concluded that the classical transfer perspective did not capture all the nuances of transfer, but recommended that learning be viewed more broadly through the actor's viewpoint to divulge multiple aspects of transfer.

The actor-oriented transfer perspective's foundation, to examine transfer of past knowledge broadly from the learner's viewpoint, is relevant to inform my research as it also sought to understand any transference of learning from participants' perspectives. The actor oriented perspective further suggested its usefulness to my study by its application of the qualitative interview method. Furthermore, the actor-oriented perspective was seen as a multidisciplinary approach (Royer et al., 2005) used to study the ability to apply past knowledge to a new problem or setting.

Preparation for future learning. Bransford and Schwartz (1999) reviewed existing research and proposed a novel approach to thinking about learning transfer for educational practice and research. The authors described a pessimistic view of transfer evidence due to the more traditional perspective of measuring a direct application of knowledge by what they described as sequestered problem solving—where the subject was unable to seek help, receive feedback, or have an opportunity to revise. Bransford and Schwartz (1999) broadened traditional transfer with an alternative perspective of its effects on new learning in varied settings. They proposed the Preparation for Future Learning (PFL) framework which emphasized that a student's ability to learn is heavily influenced by their past experiences. The PFL approach posited that it is not until a student has an opportunity to learn by applying new information, or utilizing new processes, was he/she able to realize the usefulness of prior knowledge (Bransford & Schwartz, 1999). Their framework was intended to be used to study a wide variety of learning experiences in environments that may be adapted to fit previously acquired knowledge. In opposition of the identical elements required by traditional transfer, the authors believed that active transfer could be examined when past understandings were adapted to new situations, settings, and goals (Bransford & Schwartz, 1999).

The PFL approach was selected to inform my research due to its importance for understanding that the usefulness of prior knowledge may only be fully realized at a later time when it was applied to new and different settings. Earlier in this chapter (see p. 20), Egelson et al.'s (2002) conclusions indicated the effects of the SCP may not be realized until students have graduated high school and are in a setting such as an institution of higher education where they are required to use their project related skills and knowledge. My study used the PFL approach to examine college students' perspectives about previous learning that was utilized in a new setting.

Application of alternative learning transfer perspectives. With a focus on extended learning, Bransford and Schwartz (1999) suggested applying the PFL framework to document how students demonstrated uses of prior knowledge in new situations. Measurements were made on the students' abilities to solve problems, and then students were followed to see how that learning was transferred to novel and varied situations. The authors also described how *knowledge-rich environments* enhanced learning and transfer. Knowledge-rich environments were defined as those providing students with "opportunities to demonstrate their abilities to learn to solve new problems by seeking help from other resources such as texts or colleagues or by trying things out, receiving feedback, and getting opportunities to revise" (Bransford & Schwartz, 1999, p. 84).

More recently, Nordine, Krajcik, and Fortus (2011) applied the PFL perspective to a PjBL case study and researched student transfer of knowledge from one grade level to the next. They studied students in a small Midwestern independent middle and high school. They taught an eight week project-based energy unit to an eighth-grade science class and then followed the students' progress in successive science courses. All of the students took pre and post tests for the energy unit and completed multiple questionnaires. Several of the students were interviewed. Nordine et al. (2011) found that students who participated in an eighth-grade energy unit seemed better prepared than nonparticipants in their ninth grade biology courses. Incorporating the qualitative interview method expanded their understanding of how learning was applied to a new situation. The PjBL method was seen to motivate and engage students as well as enhance current and future learning. Nordine et al. (2011) found that learning resulted when students developed integrated understandings, not disconnected ideas, and that the integrated knowledge was more readily applied to new situations. Nordine et al. concluded that project based pedagogy designed

with integrated learning opportunities promoted student PFL—a type of prior knowledge that could be used to learn productively in information rich environments in addition to simply gaining content knowledge.

Alternative qualitative learning transfer perspectives appeared to have been suited to study the SCP and any lasting effects that it may have for the participant who completed it in high school and advanced to post-secondary education. HIDOE (2010) guidelines for the SCP require student learning to take place in the knowledge-rich environments described as necessary for PFL (Bransford & Schwartz, 1999). SCPs require critical investigations of a driving question in order to demonstrate and communicate understanding through products while relying on knowledge-rich environments and therefore were well-matched for study and informed by the PFL framework (Bransford & Schwartz, 1999). Flexible transfer was seen as occurring more readily by knowledge that was acquired through multiple contexts versus knowledge taught in a single context (Bransford, Brown, & Cocking, 2000). The SCP applies cross-curricular content and requires a breadth of knowledge acquisition (HIDOE, 2010).

Both the actor-oriented (Lobato, 2006) and preparation for future learning (Bransford & Schwartz, 1999) perspectives entail what Bransford and Schwartz (1999) described as dynamic environments to gain an understanding of learning transference. My study also contained a dynamic environment that was in stark contrast to the static environment of traditional quantitative transfer research. The unit of analysis of my study was also of the dynamic perspective; the setting of this investigation examined far learning transfer that took place in college a few years after the initial learning occurred in high school. The environment was changed and college work was of different contexts than the previous high school SCP;

polycontextuality was based upon the current demands of each of my participants' unique college work.

Determining a link between the SCP and college learning may be difficult, as Carraher and Schliemann (2002) described a dilemma to studying transfer that included how former knowledge and experience contributed to new learning in subtle ways and that it was difficult to identify one particular prior situation as a basis for new learning. However, for my study, the intention is to gather participant perspectives (Lobato, 2003) in order to understand what they perceived prepared them for future learning (Bransford & Schwartz, 1999) and for completing their college work. Any transference of the SCP is expressed from the participants' viewpoints.

Through a review of the literature, I developed the following working definition of learning transference to frame my study—a theoretical approach to learning, to explain how new learning was influenced by prior knowledge, learning, and experience. My study was designed to capture evidence via broad qualitative methods and to elicit participants' perspectives of how their prior learning was adapted and applied to a far setting comprised of new context and content (Barnett & Cici, 2002; Bransford & Schwartz, 1999; Carraher & Schliemann, 2002; Greeno, 1998; Lave, 1988; Lobato, 2003; Royer, Mestre, & Dufresne, 2005; Tuomi-Gröhn & Engeström, 2003).

Learning transfer and project based learning/problem based learning. Furman and Sibthorp's (2013) described leveraging experiential learning techniques for transfer. They explained how experiential learning techniques such as problem based learning (PBL), PjBL, service learning, and cooperative learning can maximize learning transfer. Furman and Sibthorp (2013) looked at adult education programs and found several techniques helpful for transfer: reflection, discovery learning, active learning, content relevance, analogical thinking, and

instructor or mentor support, modeling, and feedback plus remediation. They concluded that experiential learning techniques fostered deep and conceptual learning important towards enhancing learning transfer for adult students.

Hung (2013) described how PjBL was designed as a learning environment that increased learning transfer. He defined learning transfer as "applying previously learned knowledge with various degrees of adaptation or modification of that knowledge in completing a task or solving problems" (p. 27). Depending on the degree of the need to adapt or modify the knowledge, Hung (2013) noted learning transfer to occur on three levels: knowledge application, knowledge near transfer, and knowledge far transfer. He also identified obstacles or factors that caused students' learning transfer to fail.

Upon determining the strengths of PBL, Hung (2013) further identified five characteristics of PBL that facilitated learning transfer. First, problem-driven instruction provided learning processes embedded in the problem-solving process. Students' acquired problem-solving skills or situational knowledge that could later be applied for near and far transfer. Second, ill-structured and authentic problems, which had the complexity to encourage students to learn to deal with uncertainty of real-world settings became useful for future problems. Third, PBL followed problem or case structured curriculum where the content knowledge was interdisciplinary and organized around the problem. This promoted various types of knowledge (theoretical and factual, contextual information, situational, problem solving and reason processing, solutions and how they are all tied together) stored as a unit in the students' knowledge base that was drawn upon in novel future settings. Fourth, self-directed learning was initiated by the students with the teacher available to offer support and guidance. Students assumed responsibility, developing the ability to self-direct reasoning and research which

enhanced far transfer. Five, reflective learning taught students to monitor and integrate their understanding, then adjust strategies for effective learning and problem solving. The metacognitive process included reflecting upon the problem-solving process, self-directed learning process, and knowledge gained. Hung (2013) suggested instructional design guidelines based upon the characteristics, and concluded that if the PBL technique was followed, it provides an effective learning environment to enhance learning transfer.

Indicators of college readiness. Although, the ability of the SCP to prepare students for college was not the focus of my study's investigation, information on college readiness indicators was useful to solidify a depth of knowledge on the processes participants' described. College readiness was also considered to be part of the learning transfer conceptual framework for my study because HIDOE's (2010) SCP's expected outcomes include providing students with the opportunity to utilize and develop skills needed for college and career.

Literature describes that a student's college readiness can be attributed to predictors of college success and retention (Bean, 1985; Byrd & MacDonald, 2005; Le, Casillas, Robbins, & Langley, 2005; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004; Roderick, Nagaoka, & Coco, 2009; Tinto, 1975). There is a significant corpus of research regarding non-academic skills, attitudes, dispositions, or traits deemed to be valuable predictors of college success. This information is used in my study to interpret participants' perspectives on the skills, abilities, and dispositions acquired during SCP completion and how they may have been applied during their college academic experience.

Robbins et al. (2004) conducted a meta-analysis of 109 studies on how psychological and study skill factors may predict college outcomes. They identified and studied nine broad constructs from educational persistence and motivational models or frameworks of college

success. Robbins et al. (2004) controlled for the traditional GPA, test scores, and socioeconomic status predictors to identify primary criteria for college success, academic performance, and persistence. Academic achievement motivation, self-efficacy and academic goals were found to predict academic performance. Persistence was attributed to academic self-efficacy, academic goals, academic related skills, institutional commitment, social involvement, and social support. Overall, the best predictors of both college success criteria were found to be academic goals and self-efficacy. Dispositional characteristics were also noted to be key indicators of college success, expressed as self-efficacy (Robbins et al., 2004) and emotional control (Le et al., 2005).

Le et al. (2005) constructed a *Student Readiness Inventory* by using a rational-empirical approach to a previous meta-analysis of how psychological and study skill factors may predict college outcomes. A total of 5,970 first-year college students and high school seniors were questioned to determine the psychological and academic related skills structure of their Student Readiness Inventory. They defined skills as proficiencies to perform well academically and found the academic related skills of problem solving, communication, and emotional control to be key indicators of college success.

Le et al. (2005) as well as Byrd and MacDonald's (2005) similarly found that problem solving and communication were excellent predictors of college success. Byrd and MacDonald's (2005) study looked at the perspectives of first-generation college students to develop a definition of college readiness. They used an in-depth phenomenological interview method to study eight participants from an undergraduate liberal arts program at a Southwestern urban university. After academic skills, participants indicated that ability to apply and advocate for oneself as a learner was essential for college readiness. Perspectives also included time-management, goal creation, and application. The authors concluded that participants' skills in

time management and the ability to focus on a goal emerged as even more important than academic skills in reading, writing, and math.

Byrd and MacDonald (2005) and Roderick et al. (2009) agreed on the importance of time management and self-direction. They saw these abilities to outweigh core academic skills when considering top indicators of college success. After reviewing literature and research for their article, Roderick et al. (2009) examined different ways to assess college readiness. They discovered the common indicators that colleges assessed applicants were achievement test scores, grade point averages, and coursework required for college admission. Roderick et al. went beyond these common indicators and identified four critical areas of skill development required for college readiness: core academic skills, content knowledge and basic skills, non-cognitive skills, and college knowledge. Core academic skills (non-subject specific reading, writing, and analytical thinking) and content knowledge were attained by students through high school instruction. Basic skills and content knowledge were needed to develop core academic skills. Non-cognitive skills determined educational achievement but were not measurable by standardized tests. Non-cognitive skills (such as behaviors and characteristics of self-monitoring, time management, help-seeking behavior, and coping skills) were seen as the most important critical area. Finally, college knowledge included understanding the college application process, norms, and cultures.

In earlier studies, Tinto (1975) and Bean (1985) based indicators for college readiness on certain traits (skills, attitudes, and dispositions) a student needed in order to persist to graduate college. Tinto's (1975) and Bean's (1985) findings exemplify, that in order to be successful with their college academic experience, students must enter college with certain traits that they would have developed previously in high school and then be able to apply those traits in college. Tinto

(1975), in his synthesis of research, presented his *interactionalist theory of student departure* that assumed persistence or withdrawal behavior from college was determined by the core concepts of academic and social integration. He used his seminal attrition research as the basis of his model for his investigation as to why students persisted or withdrew from college. Students were seen to have a set of traits when they entered college. Entry traits included family background comprised of socioeconomic status, high school achievement and experience, ethnicity, and parental encouragement. These traits were seen to influence students' goal commitment towards graduation and their institutional commitment to their college or university. These commitments, along with the entry traits, in turn influenced how they integrated academically and socially. The traits, commitments and interactions further influenced the students' goal and institutional commitments and whether or not they persisted with their goal to graduate.

Bean (1985) also studied interactionist effects on student attrition. He used quantitative methods to measure dropout syndrome. He analyzed data from a questionnaire returned from 1,781 undergraduate students in a Midwestern university. His conceptual model of student dropout was empirically estimated looking at theoretical relationships of the variables of college grades, institutional interaction, and institutional fit. He found support from students' peers was more important for socialization than support from faculty members. Academic integration was found to increase a student's sense of fit and learning experience and in turn, promote a sense of accomplishment rather than frustration; this sense of accomplishment was also seen to encourage retention. Bean's (1985) findings were consistent with those of Tinto (1975), academic engagement along with perceived social support, social involvement, and institutional commitment were predictive college retention criterion. Their findings exemplify participation in

collaborative work provides support and socialization that builds persistence needed for everyday assignments and ultimately, graduation.

Ample research on college readiness (Bean, 1985; Byrd & MacDonald, 2005; Le et al., 2005; Robbins et al., 2004, Roderick et al., 2009; Tinto, 1975) involve a host of factors related to academic performance, academic management, academic achievement, motivation, problem solving, goal focus, and emotional management. These commonalities helped frame how I understood my participants' perspectives of their SCP experience, especially since the HIDOE (2010) expects the SCP to help prepare students for college through activities that demand students to demonstrate critical thinking/problem solving, self-direction/project management, and communication through the completion of their PjBL experience.

Wagner (2008) and Conley (2007) present two additional viewpoints on college readiness, although they are not grounded in scholarly research, these are included due to their extensive and varied informal research and popular recognition by educators. Wagner (2008) and Conley (2007) describe similar knowledge for college success as the scholars (Bean, 1985; Byrd & MacDonald, 2005; Le et al., 2005; Robbins et al., 2004; Roderick et al., 2009; Tinto, 1975) in the preceding paragraphs.

Wagner (2008) described knowledge sets that students needed preparation in for their future. His recent interviews of over 80 industry leaders of Fortune 500 companies and over 100 classroom observations led to the publishing of *Seven Survival Skills* that high school students must possess for future success:

- critical thinking and problem solving
- collaboration across networks and leading by influence
- agility and adaptability

- initiative and entrepreneurialism
- effective oral and written communication
- accessing and analyzing information, and
- curiosity and imagination. (Wagner, 2008, p. 8)

Wagner (2008) explained, "In today's world, it's no longer how much you know that matters; it's what you can do with what you know" (p. 111).

Conley (2007) and The Education Policy and Improvement Center (EPIC, 2012), whose mission is to improve educational practices in order to promote student college and career readiness, in collaboration with the University of Oregon's Center for Education Policy and Research (CEPR) helped shift the paradigm of determining college readiness from course titles and grade point averages to skills sets. EPIC organized skill sets into *The Four Keys to College and Career Readiness*, which included Key Cognitive Strategies; Key Content Knowledge; Key Learning Skills and Techniques; and Key Transition Knowledge and Skills (EPIC, 2012, p. 2). The various "keys" provided details for college readiness skills such as problem formulation, research, interpretation, communication, progress monitoring, time management, technical knowledge, and self-efficacy as well as several other skill sets.

Both Conley's (2007) *Four Keys to College and Career Readiness* and Wagner's (2008) *Seven Survival Skills* mirrored the indicators of college readiness presented by the scholarly research in the previous paragraphs (Bean, 1985; Byrd & MacDonald, 2005; Le et al., 2005; Robbins et al., 2004; Roderick et al., 2009; Tinto, 1975) including the areas of critical thinking, self-direction, and communication. According to the HIDOE (2010) guidelines, students are to have demonstrated these skills and knowledge sets to complete their SCP. Students were expected to have developed the college success indicators prior to matriculating and transferred

their use in college (Byrd & MacDonald, 2005; Le et al., 2005; Robbins et al., 2004). These indicators of college readiness were useful to interpret my study's participants' reflections of the skills, attitudes, and dispositions they learned or used during their SCP experience and any continued use for their college academic experience.

Self-efficacy

Self-efficacy is the third body of literature in this conceptual framework that informed my research investigation. Understanding self-efficacious behavior helped me to interpret what my participants reported about how the confidence they developed from their SCP experience continued into their college academic experience. This section begins with viewpoints of prominent self-efficacy theorists before discussing studies that examine the connections between self-efficacy and either PjBL or SCP.

Self-efficacy theory. Bandura (1977), a social cognitive theorist, presented an integrative self-efficacy theoretical framework that detailed how four principal sources (psychological states, performance accomplishment, verbal persuasion, and vicarious experience) were predictors of self-efficacy. An individual's sense of personal mastery was described as self-efficacy. Bandura (1977) found that when the four sources were more dependent upon each other, they led to a greater perception of the individual's self-efficacy. He believed that a relationship existed between perceived self-efficacy and behavioral changes. After an increase or decrease in one's perception of self-efficacy, behavior patterns self-corrected to match the new perception (Bandura, 1977). Changes in efficacy expectations and changes in behavior were positively correlated. Bandura contrasted self-efficacy with expectancies of outcomes, describing that an individual's belief in their ability to perform actions would produce predicted or expected outcomes (self-efficacy expectancy), and if they had doubts of whether they could perform, those

doubts would influence their behavior to undertake or complete a task (outcome expectancy). Bandura described self-efficacy as influencing decisions of individuals to reach their personal goals.

In a later book, Bandura (1986) defined self-efficacy as a type of personal expectancy where "People's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391). Initial self-efficacy varied based on prior experiences, attitudes, skills, and abilities. He believed self-efficacy influenced a student's choice of activities, effort, and persistence and as a result, it was construed as a key predictor of academic achievement. Individuals who believed they were capable remained motivated to persist longer and work harder when difficulties arose when compared to others who did not believe they were capable (Bandura, 1986). Initial self-efficacy varied based on prior experiences, attitudes, skills, and abilities. Over time, successes increased self-efficacy and failures decreased it. Once an individual built self-efficacy over time, a single failure would not hinder their confidence or motivation. Later, Bandura (1997) reported self-efficacious students participated more readily, worked harder, persisted longer, and had fewer adverse emotional reactions when they encountered failures than those students who doubted their capabilities.

Maddux, Sherer, and Rodgers (1982) studied the relationship and effects on behavior regarding two components of Bandura's (1977) self-efficacy theory. Self-efficacy expectancy and outcome expectancy. Self-efficacy expectancy is the belief that one is capable or not capable of performing a certain task or behavior. Outcome expectancy is the belief in the likelihood that a behavior will have a specific outcome. Maddux, Sherer, and Rodgers' (1982) experiment included 95 college students who read essays and then completed questionnaires to assess their levels of efficacy. Maddux, Sherer, and Rodgers (1982) found that increments in outcome

expectancy caused increases in intentions to perform the behavior, increments in self-efficacy expectancy did not cause significant increases in intentions, and that outcome expectancy influenced perceptions of self-efficacy. Maddux, Sherer, and Rodgers realized that their verbal persuasion research differed from that of Bandura's (1977) and others; they attributed this to the influencing intentions of the essays that had not focused on risk avoidant behaviors. They concluded that the greater the risk, the greater the self-efficacy expectancy. Maddux, Sherer, and Rodgers' research supported Bandura's (1986) belief that self-efficacy influenced a student's choice to undertake and persistence toward future activities.

Like Bandura (1986/1997), Schunk (1991) realized there was a connection between self-efficacy and student motivation. In his research on self-efficacy and academic motivation, Schunk (1991) summarized the usefulness of self-efficacy theory to predict motivational outcomes. He defined self-efficacy as "an individual's judgments of his or her capabilities to perform given actions" (Schunk, 1991, p. 207). Self-efficacy was seen to be a precursor for academic motivation. Motivation was enhanced when students felt they were progressing with their learning. This motivation enhanced engagement, which was followed by knowledge acquisition and resulted in maintained or increased self-efficacy. Schunk found that self-efficacy was not the only influence on motivation and behavior; that prerequisite skills were also needed for academic achievement.

Zimmerman (2000) conducted a metacognitive analysis of existing research and theory with a focus of self-efficacy as a motivator for learning. He found when self-efficacy was used as a performance-based measure of perceived capability, it differed from motivational outcomes such as outcome expectancies because they were studied with close correspondence to performance tasks. He also found that when self-efficacy was used as a mediating variable in

training studies that self-efficacy was proven to improve students' methods of learning and predictive of achievement outcomes. Zimmerman's (2000) research expanded upon the works of Bandura (1977/1997) and Dweck (1975); he found that students with self-efficacious behavior were more likely to achieve because of their perceived capability to perform.

Dweck's (1975) study revealed expectations of success gauged persistence. Twelve children, aged eight-13, from two Connecticut elementary schools were identified for their learned helplessness. Learned helplessness referred to the perception of independence between one's behavior and effort. The helpless children were compared to a persistent child in their same classroom. Performance on mathematical problem-solving situations was measured before the introduction of two separate mini training interventions and post tests were conducted. She found that persistence was determined by one's view toward failure. A child's belief that failure was due either to her lack of ability or external factors, resulted in low persistence and low effort. A child's belief that failure resulted from lack of motivation produced increased persistence and effort. Dweck (2006) later used the term *mindset* to describe self-efficacious behavior. A mindset described one's view and how it impacted conscious and unconscious decisions. A person with a *fixed mindset* viewed basic qualities, such as intelligence, character, and personality, as determined and unchangeable. One with a *growth mindset* believed basic qualities were cultivated through efforts. Those with a growth mindset were likely to persist and achieve.

When Dweck (2006) renamed her original (1975) finding as a growth mindset, she explained to a greater audience what several scholars (Bandura, 1977, 1986/1997; Maddux, Sherer, & Rodgers, 1982; Schunk, 1991; Zimmerman, 2000) in the field had supported—that self-efficacious behavior helps a student to achieve. Belief in self was seen to enable a student to make the choice to undertake a task with the assumption they cannot complete it but ultimately,

complete the task successfully (Bandura 1977/1986/1997; Dweck 1975/2006; Maddux, Sherer & Rodgers, 1982; Schunk, 1991; Zimmerman, 2000). Students were seen to be motivated by their positive views of their capability; this motivation enhanced engagement and persistence.

Self-efficacy and project based learning or the Senior Capstone Project. The research on self-efficacy and PjBL or the SCP included several commonalities. Blumenfeld et al. (1991) and Skunk (1991) thought prerequisite knowledge and skills must accompany self-efficacy to remain motivated and accomplish the task. Dunlap's (2005) study supported Bandura's (1977) belief that performance accomplishments were the most influential source of self-efficacy.

Blumenfeld et al. (1991) agreed with Skunk (1991) that students must possess sufficient skills and content knowledge to effectively examine and understand information related to central questions of PjBL. Blumenfeld et al. found that without the prerequisite knowledge and skills, students' cognitive confidence and motivation may decline causing self-efficacy to wither. When achieved competence falls below perceived confidence, motivation may decline. This often occurs when errors are experienced (Blumenfeld et al., 1991). Errors can have a negative effect on student motivation if seen as a failure to learn. They should be perceived as positive attempts toward finding information and exploring essential questions. Errors were desirable in PjBL when viewed as part of the learning process, as attempts to find meaning or problem solve. For high levels of self-efficacy to remain throughout the duration of a project, a positive approach toward errors and failures is needed to help students avoid loss of motivation and confidence (Blumenfeld et al., 1991).

Dunlap (2005) examined how students' self-efficacy changed in a PBL environment. She followed 31 purposefully sampled undergraduate students in a software engineering capstone course. In a 16-week semester the students had to design a web-based project planning

application for a construction company. In this nonexperimental, single group research design to describe student experiences, participants completed a pre-reflection and completed the general perceived self-efficacy scale. Throughout Dunlap's (2005) study, participants kept guided reflective journals and completed a post general perceived self-efficacy scale. Results included dramatic increases in the participants' self-efficacy scale scores. Her results were aligned with Bandura's (1977) belief that performance accomplishments were the most influential source of self-efficacy. She found that instructional strategies used in PBL were the catalyst for students' improved self-efficacy, particularity in the techniques of authentic problems, collaboration, and reflection (Dunlap, 2005).

Bilgin, Karamustafaoglu, and Akpınar's (2015) results were similar to that of Dunlap's (2005); that the PBL technique enhanced a student's self-efficacy. Bilgin et al. (2015) found positive effects of PBL on achievement and self-efficacy. They studied beliefs about science teaching and opinions about PBL. Their sample was two randomly chosen undergraduate classrooms of a primary science teaching course; one was a treatment group instructed with a PBL method, and the other was the control group. They conducted a mixed methods study including qualitative interviews and pre- and post-quantitative measures of a science and technology teaching achievement test and a self-efficacy belief scale. Bilgin et al. (2015) found that students in the PBL group performed better on the post measures. Participants increased self-efficacy beliefs about science learning and teaching, and expressed mainly positive opinions of the PBL method.

A commonality in the research on self-efficacy and PjBL is the finding that the instructional strategies used in PBL or PjBL have a positive influence on improving students' self-efficacy. Blumenfeld et al. (1991) described that errors were a desirable part of the PjBL learning process. Dunlap (2005) found that instructional strategies used in PBL were the catalyst

for students' improved self-efficacy; particularity in the techniques of authentic problems, collaboration, and reflection. Furthermore, Bilgin et al. (2015) found that students who used the PBL method had higher increases of self-efficacy than those who were instructed with traditional methods.

In addition to the aforementioned scholarly articles, I include the following two dissertation projects in this review, since they considered self-efficacy as resulting from the SCP experience. Blanchard's (2012) research focused on student perceptions of senioritis, engagement, and efficacy during their SCP. She sought voluntary participation of subjects from a Southeastern Massachusetts high school that had just finished implementing its first SCP. Blanchard surveyed 3[illegible] students, six teachers, and two school administrators. Focus group interviews took place with 26 students and six teachers. The two administrators were interviewed. Results of Blanchard's (2012) study suggested that the engaging SCP learning experiences were effective for avoidance of early onset senioritis and contributed to perceptions of self-efficacy for pursuits after high school.

Blanchard's (2012) conclusions were supported by Pennacchia's (2010) findings that expected outcomes of the SCP influence college and career preparation. All six of her interview participants responded that their SCP helped them beyond academics, specifically that they had gained self-confidence or a sense of accomplishment. Pennacchia (2010) concluded that her participants had experienced gains in self-efficacy and recommended it as an area of future research. Both Blanchard (2012) and Pennacchia's (2010) found the SCP experience to be one where students developed perceptions of self-efficacy that could be drawn upon for their future endeavors.

Chapter Summary

Presented in this chapter was the conceptual framework of my study, as guided by three essential bodies of literature: the SCP, learning transfer, and self-efficacy. The field of SCP framed my study's investigation into transference of previously gained knowledge to future learning. PjBL was described within the SCP lens, as the teaching and learning method informing the SCP. The second essential framework, learning transfer, laid the foundation for my examination into how knowledge gained in one setting was later applied in another. Within the learning transfer lens, college readiness indicators were detailed as examples of the type of knowledge applicable to transfer under my study's examination. My review of the self-efficacy lens included prominent theory and studies that examined self-efficacy connections to either PjBL or the SCP. Understanding self-efficacious behavior helped me to interpret what my participants reported about how the confidence they developed from their SCP experience continued to have been drawn upon for their college academic experience. This review of literature described how my conceptual lenses of the SCP, learning transfer, and self-efficacy framed my dissertation.

Chapter 3

Methods

Context of Study

Based on my personal experience, I viewed SCP as a valuable learning experience, where my students were interested and engaged in PjBL. They seemed to readily apply self-direction, communication, and critical thinking to learn interdisciplinary content. Seeing the impact SCP had on my high school students' participatory practices in my classroom led me to conjure its potential long-term benefits. The purpose of this study was to determine to what extent can learning transfer from a high school SCP experience to a college academic experience. It examined college students' perceptions of lasting effects of their high school SCP experience towards collegiate assignments and projects.

Research question. My study explores the following research question:
How do students in a four year post-secondary institution perceive participation in their high school Senior Capstone Project has impacted their current college academic experience?

Research approach. As a constructivist researcher, I employed qualitative methods to seek understanding of multiple meanings or interpretations participants have constructed of a single event (Creswell, 2007; Creswell & Plano Clark, 2007; Merriam, 1998/2009). "The goal of [Social Constructivism] research, then, is to rely as much as possible on the participant's views of the situation" (Creswell, 2007, p. 20). I gained understanding of the research question by interpreting my participants' descriptive perspectives regarding their previous high school SCP experience and their perceptions of any continuing effects they experienced during their current college academic experience. Specifically, a case study approach was chosen as best fit for its thorough in-depth inquiry to describe an individual's experiences in order to understand the

study's research phenomena (Creswell, 2007; Merriam, 2009; Yin, 1993). My study was reflective of both descriptive and interpretive approaches to case study analysis.

The overall perspective of my study was influenced by Yin's (1993) work, who articulated how a descriptive case study offers a complete account of the phenomenon within its context. Merriam's (1998) six advantages of descriptive case studies supported my choice of method; case studies: 1) share differing opinions and contributing factors of a particular issue; 2) provide descriptions of the complexities; 3) show the influence of the passage of time; 4) include the influence of the individual participant personalities; 5) include vivid data; and 6) obtain information from a variety of participants adding depth and breadth to the data analysis. As the study's participants shared their perspectives, I saw the advantages of their narratives in their experiences. Vivid data surfaced from artifact and journal descriptions that included reflections from the past high school setting to the current college setting.

In addition to describing data, my case study also intended to interpret data to suggest relationships among the multiple participants' perspectives (Merriam, 1998). Components of interpretative case studies involve a guiding research question that provides structure to the investigation, a conceptual framework for data interpretation, and lens for data analysis to add credibility to descriptive data. The case study's line of inquiry followed the previously established research question and drew upon the conceptual framework (see Chapter 2) in the design of the research question, construction of data collection tools, and analysis of data.

Description of the Case

In the next four sections, I describe the case and its limitation to the boundaries of those in examination (participants were current undergraduate college students who completed a SCP while in high school), place (the State of Hawai'i) and time (data was collected in the Spring and

Summer of 2016) (Creswell, 2003; Yin, 1993). These boundaries of people in examination, place, and time determined the case's unit of analysis (Yin, 1993). Additionally, a description of the researcher is included, as my role also helped to define the case.

***Description of participants*.** An initial group of 12 participants were purposefully selected, targeted in a non-random manner, for their presumed ability to provide rich information on their high school SCP experience and any lasting effects they felt in their current college academic experience (Patton, 2002). I recognized that some natural attrition could occur and set a minimum target of six participants to remain throughout the entire data collection process. Two of the 12 participants elected to discontinue their participation in Phase 1 (see pp. 63-64 for a description of the study's phases) one after the online questionnaire and one after the focus group interview. One participant was not able to complete the final interview. Therefore, nine of the original 12 participants remained throughout all phases of the study, satisfying my goal of at least six.

Snowball sampling, a form of non-random selection where participants are referred to the study, was employed (Cohen, Manion & Morrison, 2007). Referrals of potential participants were either snowballed from an existing participant (one participant), a fellow student at the College of Education (one participant), teacher friends (four participants), or college counselors friends (three participants) from HIDOE high schools (see Table 2). Other participants were directly recruited by the researcher while on campus (two participants) or in the community (one participant).

Purposeful selection techniques involved only searching for participants whose perspectives provided information for the study's research questions (Teddlie & Tashakkori, 2009). Selection criteria required participants to be a current undergraduate college students at

Island University, who previously completed a SCP at a public high school in the state of Hawai‘i. To add depth to the study, participants were in their sophomore, junior, or senior year of their undergraduate studies so they had time to build their college academic experience. Participants needed to spend a length of time in the scene to thoroughly report their experience (Spradley, 1979). Therefore, freshmen students were not selected due to their limited time in post-secondary education, as they may have limited perspectives. I sought for a variety of participants who attended different high schools within the state of Hawai‘i, had varied SCP topics, were engaged in different college majors, and represented different genders and ethnicities. This maximum variation in the participant sample provided different viewpoints and promoted credibility of the study (Merriam, 2009).

Participants were asked to complete a pre-interview demographic questionnaire on a Google Form via Electronic-mail (E-mail) (refer to Appendix A). These questions initially were used to ensure varied participant selection and later were referenced in the analysis of interview data. Table 2, Participants' Demographics, provides the breakdown of each participant's demographic profile. Participants chose their own words to self-report demographic information on their pre-interview demographic questionnaire. To ensure confidentiality pseudonyms were used to refer to participants and schools.

Table 2

Participants' Demographics

Participant	How Sampled	Senior Project Topic	Type of Project	College Major	High School	Eth
Derek	Recommended by Counselor	Journalism	Product / Performance	Journalism	Neighbor Small Island	Fili Ger
Emily	College of Education	Technology with Music for Elementary School	Career	Elementary Education	Central	
Jackie	Recommended by Another Participant	How Oral Health Affects Other Body Health Systems	Career	Molecular and Cell Biology	Neighbor Big Island	
Jemma	Recommended by Counselor	Pediatrics	Career	Psychology	West	
Jesse	Recruited by Researcher	How Fishing Relates to the Pharmacy	Career	Kinesiology	East	
Kate	Recruited by Researcher	Building Awareness for Juvenile Rheumatoid Arthritis	Community Service	Psychology	West Suburb	
Mackenzie	Recommended by Teacher	Assisting at Retirement Center	Community Service	Biology	East Suburb	
Maddie	Recommended by Teacher	Decrease Negative Environmental Impact	Community Service	Electrical Engineering	North	
Mary	Recommended by Teacher	Religious Tolerance in High School	Product / Performance	Political Science & Religion	Central Suburb	
Matt	Recruited by Researcher	Civil Engineering	Career	Kinesiology	Leeward	Pac
Parker	Recommended by Counselor	Electrical Engineering	Career	Civil Engineering	West	
Shawn	Recommended by Teacher	Promoting Neighborhood Kindness through Humor	Product / Performance	Computer Engineering	Central Suburb	

Note: Demographic information was self-reported by participants and is presented in their words. Pseudonyms were used to refer t

Maximum variation was sought for each of the demographic characteristics and criteria for qualified participation. Participants self-selected to partake in the SCP and self-selected their SCP topics which varied from a Career Project in civil engineering to a Community Service Project to build awareness for Juvenile Rheumatoid Arthritis to a Product / Performance Project of a video promoting neighborhood kindness. Participants were engaged in 11 diverse college majors including: psychology; molecular and cell biology; political science; journalism; and electrical engineering. Ten different public Hawai‘i high schools were represented by the 12 participants. Two were from neighbor island schools; 10 were from schools on the highest populated Island of O‘ahu. The O‘ahu high schools represented were diverse in socio-economic status as well as their location on the island. Students self-reported identifying with 10 different ethnicities or races. Seven females and five males participated in the study. The undergraduate college student participants' ages ranged between 20-23 years old. There was one sophomore, seven juniors, and four seniors. This breakdown of participants satisfied the study's goal of maximum variation. However, even with this maximum variation, eight of the 12 participants were honors level students attaining the Board of Education recognition diploma (HIBOE, 2011). Since completion of the SCP was required for the BOE diploma, this may have influenced students' self-selection to participate in the SCP. Varied academic level was not a criterion for participant selection and this shared academic achievement level was uncovered throughout data collection. However, it may have led to participant bias due to this similarity producing homogenous viewpoints.

Description of place. Since participants were currently in attendance at Island University (IU) and were graduates of a Hawai‘i public high school, the bounded place for the study was the State of Hawai‘i. The following demographics of IU are provided as general information

regarding where participants attended college. Founded in 1907, the public research university is located in the State of Hawai‘i on the island of O‘ahu (IU, Catalog Office, n.d.). Both on campus as well as distance learning courses are available. IU offers 93 fields of study for bachelor's degrees, 84 for master's degrees and 51 for doctorate's degrees. With an enrollment just above 20,000 students, undergraduate students composed 71.7% of the student body. Undergraduate registered students for the Spring 2011 semester included: 1,761 Freshmen, 2,154 Sophomores, 3,465 Juniors, and 5,567 Seniors (IU, Institutional Research and Analysis Office, 2011). Seventy-three percent of students attended full-time and over 55% were women (IU, Catalog Office, n.d.). The student body is ethnically diverse and included the following student backgrounds: 44.4% Asian; 25.2% Caucasians; 16.3% Hawai‘ian or Pacific Islander; 12% Mixed-Race; 2% Hispanic; 1.4% Black; and 0.5% Native American or Alaskan Native (IU, Institutional Research and Analysis Office, 2011). This study's participants (see Table 2) included varied ethnic backgrounds representative of the student populations at both IU and high schools in the HIDOE.

The following demographics of the HIDOE are provided as a basic overview on the place this study's participants attended high school. The HIDOE, the only statewide school district in the United States, had about 52,000 secondary students enrolled in 41 high schools across seven islands (HIDOE, 2013, May). Tenth grade Hawai‘i State Assessment (HSA) data showed 71% students to be proficient in reading and 47% in mathematics for the 2011-2012 school year. 49% of Hawai‘i's schools met Adequate Yearly Progress (AYP). Statewide demographics hold a median family income of $77,385 (US Census Bureau, 2013) and 29.6% of adults have attained a four year college degree or higher (US Census Bureau, 2012). According to the HIDOE official enrollment count for the school year 2013-2014, Hawai‘i's student body was ethnically diverse

and includes the following backgrounds: 26.3% Hawai‘ian, 22.2% Filipino, 16.6% White, 9.2% Japanese, 4% Micronesian, 3.8% Spanish, 3.5% Samoan, 3.2% Chinese, 2.9% Black, 1.6% Portuguese, 1.2% Korean, 1.5% Multiple, 1.2% Indo-Chinese, and 2.8% other (T. Saka, personal communication, April 9, 2014).

The purposefully selected participants are similar to the diverse student body of both the school district and university that make up the context of my study. As seen in Table 2, Demographics of Participants, participants self-reported the race or ethnicity with which they identified, and were not limited to just one identifier. Participants reported identifying with the following: (5) Filipino, (4) Asian, (2) Japanese, (2) Chinese, (2) Caucasian/white, (1) Pacific Islander, (1) Korean, (1) German, (1) Okinawan, (1) Cherokee, and (1) other.

Study participants attended high school in the State of Hawai‘i; which is where their SCP experience was formed. The study took place on the campus of Island University; it was where the participants' college academic experience occurred. Artifact-based and individual interviews were conducted in-person and on campus, creating a conducive environment for sharing their perspectives.

Description of time. The data collection and data analysis for this study occurred sequentially; it took part over multiple phases (Creswell, 2003). Data was collected during the Spring and Summer of 2016. The specific details of data collection and data analysis are described in following sections of this chapter. For a visual overview, see Table 3, Timeline of Data Collection, on page 68 and Table 6, the Timeline of Data Analysis, on page 82.

Description of researcher. As a high school business teacher in the state of Hawai‘i between 2006 and 2011, I found PjBL to greatly benefit my students. In my classroom, I saw the SCP process firsthand, facilitating and mentoring students through project implementation. I

observed my students' interest and engagement levels surge as they readily applied self-direction, communication, critical thinking, and collaboration to learn interdisciplinary content. I wondered the value of PjBL, in the form of a SCP, beyond my classroom; I also wanted to know if what my students had experienced was unique. Furthermore, my interest to explore the SCP in depth included looking into how it may have transferability and retention from one learning situation to the next. This potential connection to future college learning was one I was never able to witness firsthand.

As a constructivist researcher, I employed qualitative methods to seek understanding of multiple meanings or interpretations participants have constructed of a single event; namely how participation in the SCP is perceived by participants to impact their college academic experience (Creswell, 2007; Creswell & Plano Clark, 2007; Merriam, 1998/2009). I hold an emic, or insider, viewpoint (Merriam, 2009) toward this study's SCP topic due to my previous experience as a secondary teacher advising students through the SCP process. I was also a member of my school's Senior Project Committee. Through these experiences, I developed strong personal beliefs regarding the value of a SCP. I held the perspective working theory that college students would describe their SCP as a worthy experience, one where they developed or fine-tuned skills, abilities, and dispositions that they currently use in college. My closeness to the topic could have provided an advantage to understand the SCP process. However, this emic closeness may have contributed to researcher bias and become disadvantageous during interview probes and follow up questions. In contradiction to the emic view that I held to the high school SCP experience, my views of the participants' perspectives on their current college experience was etic, or from the outside (Merriam, 2009). I was never offered nor completed a SCP in high school and therefore,

I was not able to take that experience to college. I also had no prior knowledge or connection to my participants' high school or college experiences.

As a researcher who was aware of my biases, I made the effort to control for them when conducting data collection and analysis. As the sole interviewer for this study's data collection, I made every effort to understand the research phenomenon from the participants' perspectives and not my own. Participants were asked to provide member checks of their transcripts to help ensure their accuracy. I also sought peer review of my transcription and interpretation.

Pilot Test

Pilot interviews were important to help ensure Phase 1's online questionnaire and Phase 2's artifact-based interview guided questions were formulated with clarity and so that each participant would understand the question in the same way (Silverman, 1993).

Pilot test data collection (February 2 - [illegible]016) Pilot tests were conducted in order to test the effectiveness of questions and determine which questions needed to be refined (Creswell, 2007). The pilot test of the online questionnaire and a separate test of the artifact-based interview were conducted in the Spring 2016 Semester. Since the Phase 1 focus group and Phase 3 final interviews' lines of questioning needed to be informed by earlier phases and were developed after analysis of previously collected data, these interviews were not piloted. Proper piloting of the interview led to the identification and elimination of any leading questions (Cohen et al., 2007). Bias was reduced when questions were re-worded without assumptions of how the participant would respond or influence the response. The pilot test improved the credibility and dependability of the data collection (Merriam, 2009).

Two current college students, who met the criteria of having completed a SCP while at a Hawai'i public high school, were selected to individually pilot the online questionnaire and

artifact-based interview guide. Pilot interviews were scheduled at a time and place of the pilot participants' choosing via E-mail and Short Message Service texts (SMS-texts). Pilot participants were not permitted to participate in the study. Data from the pilot test was not included with any data analysis of the study's 12 participants. For the pilot, the entire interview protocol was followed in order to determine the effectiveness of the questions to collect rich descriptive data. Pilot participants provided input of the feasibility of the online interview instrument, the length of time to complete the questionnaire, and the readability and comprehensible nature of the questions. They self-selected a college work sample to bring to their in-person pilot artifact-based interview. Pilot participants were asked to provide comments as to the extent they understood the questions, and the questions' wording and sequence. They also commented on the clarity of the consent form and artifact-based interview instruction sheet. Pilot participants received thank you notes via e-mail or SMS-texts and gift cards for their appreciation.

***Pilot test data analysis*.** The analysis of the pilot test data was conducted prior to starting Phase 1 of the study. I first conducted with-in case analyses of the online questionnaire data. The pilot gave provided practice opportunities of reviewing data from Google Forms and setting up Microsoft (MS) Excel matrices. After extrapolating data from Google Forms onto an MS Excel workbook, I read and reread each online questionnaire individually and derived a system to highlight potential codes and take notes. The pilot test experience provided me with knowledge to plan ahead for the future cross-case analysis of the study; I set up a preliminary MS Excel workbook for the study as a result.

After the pilot artifact based interviews, I began transcribing. The pilot permitted me to test out the transcription and voice recognition software. Unfortunately, the software was unable to recognize speech fast enough, so I learned that I would need to transcribe myself. I listened to

the audio files and typed the participants' responses as well as my words into MS Word. I tried using two headsets, but soon discovered I preferred to use a speaker. I also learned how time consuming transcription is and how additional time needed to be allocated for this process during the interview phases. From the pilot test, I discovered that I needed a more quiet space to conduct the interviews so that the audio file would be clear and free of background noise. As a result, I reserved rooms at the College of Education to conduct my group and individual interviews. I performed with-in case analysis on each of the interviews, listening again to the audio files while reading and highlighting on the transcripts. I also gained practice in handling and reviewing the artifacts and making notes about college work samples. For the pilot cross-case analysis of the artifact-based interviews, I created an MS Excel workbook to view the participants' responses simultaneously. I learned that I would need to create the workbook by emerging codes rather than by interview questions.

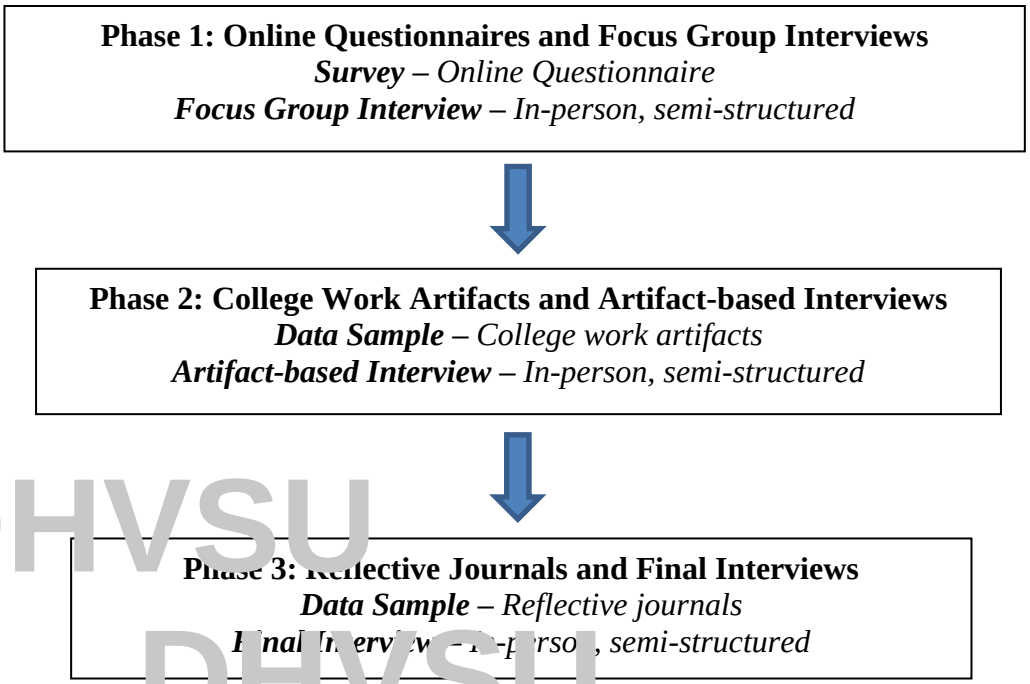
Data Collection

Data was gathered sequentially over three phases. Sequential collection and analysis allowed data from earlier phases of the study to determine the line of inquiry for remaining phases (Creswell, 2007). Multiple data collection sources provided triangulation of data (Merriam, 2009) due to the ability to compare rich description from multiple and varied sources (Patton, 2002; Yin, 1993). Each participant was asked to complete varied measures in order to tell their story and confirm information that they shared. Instruments for data collection included: an online questionnaire, an in-person focus group, two in-person interviews, two college work artifacts (see pp. 73-76), member checks of their three interview transcripts (see p. 83), a reflective journal (see pp. 76-79), and as needed, follow-up questions via E-mail.

Interviews of participants took place over three sequential phases (see Figure 1, Data Collection Sequence, for a visual representation). The first phase of data collection required participants to complete an online questionnaire and participate in a group interview. The online questionnaire was designed to gain details of their SCP and their current college experiences (see Appendix B for sample of the questionnaire). The focus group interview followed a semi-structured guide that was informed by emergent themes from the online questionnaire data. Participants later provided a member check of their focus group transcripts. For the second phase, participants were asked to bring two artifacts representative of their college work to an in-person interview. The artifact-based interview included a semi-structured line of questioning designed to obtain information on their processes of artifact creation and any connections it may or may not have had to the participants' prior SCP experience. Participants chose the date and time of their individual interview and later provided a member check of their transcript. In the third phase, participants kept a journal of their current college academic experiences and took part in a final in-person follow-up interview. They later provided a member check of their final interviews. A nominal gift (a $25 gift card) was used to thank participants for their time upon completion of each phase of the study.

Figure 1

Data Collection Sequence



Caption: Figure 1 is a graphic representation of the three data collection phases of this study.

Interview guides and interview questions. Patton's (2002) interview guide approach was followed, which "provides a framework within which the interviewer would develop questions, sequence those questions, and make decisions about which information to peruse in greater depth" (p. 344). The interview guide approach was selected based on several advantages: it allowed for continuity between interviews; aided with systematic data collection and comparability of data during analysis; and ensured that the basic line of inquiry was maintained while permitting spontaneously wording of questions (Patton, 2002). The interview guide approach was also referred to as a semi-structured interview method (Creswell, 2007; Merriam, 2009). For the first phase of data collection, the focus group interview guide (see Appendix C) was developed based on themes that emerged during analysis of participants' responses to the

online questionnaire. For Phase 2, the artifact-based interview guide (see Appendix D) was designed to elicit information about processes of creating college work sample artifacts and if there were any similarities to the processes of the SCP. The final interview guide (see Appendix E) for Phase 3 had five semi-structured questions and had an individualized section with any follow-up questions from any of the data collection stages.

The inductive approach of questioning was intended to provide rich description of the participant's SCP experience and any lasting effects they currently felt in college. The line of inquiry was designed as open-ended in an effort to gain a full and vivid description of the participants' perceptions (Creswell, 2007; Merriam, 2009; Patton 2002). For instance, the following is an example of an open-ended question used to gather a descriptive response on self-direction and was included for the focus group interviews: "Can you please describe any time-management, self-management, and project-management that you did for your senior project? If there was none, who directed you?" The question is open ended because it directs the participant to "describe" which is intended to provide rich description. It also gives them the opportunity to make a contrary response and provide a full description of it as well.

The interview guide approach permitted me to decide the exact sequence and wording of the questions during the interview (Patton, 2002). This freedom to select sequence and wording allowed my interviews to remain conversational. I was able to link guide topics to the participants' responses to maintain the flow of rich description. Well-placed questioning abetted with the consistency, dependability, and credibility of interview responses (Corbin et al., 2007). Background, experience, and knowledge questions developed context and brought what was learned (schema representations) back to the conscious mind (Patton, 2002). Sequencing background context first enabled participants to later respond better to opinion types of

questions. The sequence of inquiry I followed first gained insight on the participants' high school SCP experiences and opinions. For example a beginning question was, "What did you like best about working on your SCP? Why? and What did you like least about working on your SCP? Why?" Then, the questioning turned to the participants' college experiences and opinions. For instance, I asked "What process did you go through to create your college work sample." Finally, participants' were asked to explore any possible connections between the two. For example, "Do you feel that your SCP experience helped to prepare you for college? If yes, in what ways? If no, why not?" was a question aimed to explore lasting effects of the SCP.

As needed throughout the interviews, clarifying, detail, and explanation probes were used to gather more insight on a particular topic (Patton, 1990). Follow-up questions were a particular focus of the artifact-based interview. I referenced the interview guide and probed for further details on topics needing more information that were initially brought up in the participant's description of their college work artifact creation. Issue-oriented sub-questions examined the phenomenon of the research question and broke it down into subtopics (Creswell, 2007). Issue-oriented probing topics listed on the artifact-based interview guide included: self-direction, time management, planning, interdisciplinary content or specific course content, motivation, choice, critical thinking, communication, collaboration, and research. An example of my use of issue-oriented probing question to find out more specific information on complex thinking took place after a participant had explained their college work sample during an artifact-based interview, I followed up with the issue-oriented probing question, "How did you apply thinking or a thought process to creating the lab report?" Information gathering topical sub-questions specifically addressed the research question and were designed to collect descriptive data directly relating to lasting effects of the SCP. For example, a question used to find out more about collaboration

was, “You mentioned that you spoke with a professor to discuss your work sample, can you describe any similarities or differences that had with time you spent with your SCP community mentor?”

I remained attentive to weaknesses of the interview guide approach (Patton, 2002). First, I was careful not to omit certain topics due to the flexibility in sequencing of posing questions. For example, I used the interview guide as a checklist to verify all topics (self-direction, time management, planning, interdisciplinary content or specific course content, motivation, choice, critical thinking, communication, collaboration, and research) were covered before the artifact-based interview finished. Proper management of time and probing efforts were also needed to ensure all of the topics on the guide received responses. Second, varied sequencing and wording of questions elicited responses from different perspectives. Although Patton (2002) saw this as a weakness, gathering responses from different perspectives was an advantage for this descriptive and interpretive case study. It was the unique perspective of each participant that was sought in this study, and the purpose of qualitative interviewing was to capture “individual perceptions and experiences” (Patton, 2002, p. 348).

Interview phases. The methods for my data collection were framed around three sequential data collection phases: 1) Online questionnaires and focus group interviews; 2) college work artifacts and artifact-based interviews; and 3) reflective journals and final interviews. Refer to Table 3, Timeline of Data Collection for a visual detail of the timing of the interview phases.

Table 3 ***Timeline of Data Collection***	
Pilot Test	
Survey *- Online Questionnaire* ***Data Sample*** *– College work artifacts* ***Artifact-based Interview***	February 2-6, 2016
Phase 1: Online Questionnaires and Focus Group Interviews	
Survey *- Online Questionnaire* ⬇ ***Development of Interview Guide for Focus Group Interview*** ⬇ ***1st Interview: Focus Group*** *In-person, semi-structured, follow-up of online questionnaire*	March 19-29, 2016 April 7-14, 2016
Phase 2: College Work Artifacts and Artifact-based Interviews	
Data Sample *– College work artifacts* ***2nd Interview: Artifact-based Interview*** *In-person, semi-structured, artifact-based*	April 19-29, 2016 April 19-29, 2016
Phase 3: Reflective Journals and Final Interviews	
Data Sample *- Reflective journals* ⬇ ***Development of Interview Guide for Follow-up Interview*** ⬇ ***3rd Interview: Final Interview*** *In-person, semi-structured, follow-up of reflective journals*	May 2-31, 2016 May 3-10, 2016

Phase 1, online questionnaires and focus group interviews (March 19 - April 14, 2016).

An online questionnaire was the first component of Phase 1. This survey instrument was designed to gain basic details of the participants' SCP and perspectives of any lasting effects they may have experienced while in college. The questionnaire took approximately 60 minutes to complete and contained two to three sentences (short answer), and one paragraph responses (long

answer extended responses). For example, a short answer question was, "Did your SCP influence what you decided to study in college? If yes, how? If no, why not?" An example of an extended response question was, "Do you draw upon what you learned during your high school Senior Project experience for your current college work? If yes, in what ways? If no, why not?" Additional questions can be seen on the Online Questionnaire located in Appendix B. For the online survey instrument, Google Forms was used to create and administer the questionnaire as well as collect the data.

Participants were E-mailed the link to the online questionnaire and were requested to complete it within two weeks. As needed, follow-up E-mails or SMS-texts were used to remind participants to complete the questionnaire, thank them for their participation, and inform them of the next phases of the study. Analysis and interpretation of the first phase data was conducted immediately in order to keep the study's participants' interest and involvement in the duration of the study. The emergent themes from analyzing the online questionnaire informed the semi-structured guide for the focus group interview. Data collected from each phase was further analyzed during the final comprehensive analysis.

The second component of Phase 1, a focus group interview, took place after the analysis of the online questionnaire. A focus group allowed data to be socially constructed from different viewpoints during group interaction of individuals with shared knowledge on the topic (Patton, 2002). Participants responded based upon hearing other participants' comments, each having the ability to share their knowledge of a specific topic (Krueger & Casey, 2000; Merton, Fiske, & Kendall, 1956). Expanding upon the views of others tended to produce high quality descriptive data. The synergy and dynamism generated by the focus groups produced powerful interpretive insights (Kamerelis & Dimitriadis, 2005). The focus groups provided multiple meanings and

perspectives with social interactional dynamics, and went beyond the boundaries of any one individual to stimulate memories and positions. For instance, one participant mentioned that deadlines were one of the most challenging aspects of their SCP; this comment had all the participants in the room moaning in agreement. They each shared how deadlines were handled at their school; how they disliked the pressure; and had developed time management abilities and became self-directed through the process nonetheless.

The first interview, the focus group, was in-person and was approximately 45 minutes in length. The focus groups were conducted on campus, at a location and time agreed to by all participants and were audiotaped. Interviews were scheduled over E-mail or SMS-texts. To ensure attendance, participants were sent E-mails the day before and SMS-texts the day of their focus group interviews. Eleven of the initial 12 participants remained in the study to take part in the focus group interview. The breakdown of the groups was based upon their perceived value of their SCP experience in relation to their college academic experience. Participants were divided homogeneously to participate in one of the three focus groups, based upon their relative overall positive or negative SCP experience on their online questionnaire responses. Table 4, Focus Groups, represents visually how the participants were grouped.

Table 4

Focus Groups

Group 1 Positive Experiences	Group 2 Positive Experiences	Group 3 Negative Experiences
Emily, Jackie, and Kate	Derek, Matt, Maddie, and Jesse	Parker, Jemma, Mary, and Shawn

There were two positive experience groups (Group 1: Emily, Jackie, and Kate; Group 2: Derek, Matt, Maddie, and Jesse) and one negative experience group (Group 3: Parker, Jemma, Mary,

and Shawn). The focus group interview guide (See Appendix C) contained questions built from the themes that emerged from the cross-case analysis of the online questionnaire. Participants were asked to expand on common themes found when examining all cases, and questioned regarding responses gathered from a few participants that need input from all. For example, inquiry included questions to gain perspectives on how the work they completed for their SCP requirements was similar or different to research papers, fieldwork, portfolios, or presentations they completed in college. Seven of the 11 focus group participants returned their member check of their focus group interview transcript. At the end of the focus group, participants scheduled their next interviews and were given instructions for selecting their college work artifacts for the next data collection phase. They were also sent individual thank you notes via E-mail.

Phase 2, college work artifacts and artifact-based interviews (April 19 - 29, 2016).

Artifact-based interviews followed lines of inquiry to determine similarities and differences between current college work and previous SCP work. The individual artifact-based interviews were in-person (at a location and time of the participants' agreement) and were approximately 45 minutes in length. All interviews were conducted on campus and were audiotaped. Interviews were scheduled over E-mail or SMS-texts. To remind participants of their interview times, participants were sent E-mails the day before and SMS-texts the day of their artifact-based interviews. Ten of the study's initial 12 participants remained in the study and took part in the second interview.

At the end of the first interview, the focus group participants were provided an information sheet with the details for selecting their college work sample and what to expect during an artifact-based interview (see Appendix D). They were requested to self-select two long-term or project assignments (research papers, presentations, portfolios, or products),

representative of their college academic work and bring them to their artifact-based interview.

The types of college work sample artifacts differed greatly (see Table 5).

Table 5

Artifacts: Participants' Self-selected College Work Samples

Participant	Work Sample 1	Work Sample 2
Derek	Video piece: Journalism class, major related - Topic: Hula haulau	Video piece: for student online media, major related - Topic: Kumuhina and what it means to be mahu in the Hawaiian culture
Emily	Portfolio: Graduation requirement, major related - Topic: Assessment 5, lesson plan templet on economics, needs and wants	Portfolio: Graduation requirement, major related - Topic: Assessment 5 Unit Plan - Student work samples from lesson plan
Jackie	Lab report: Biology class, major related - Topic: Starfish and earthworm	Lab report: Cellular and molecular biology class, major related - Topic: Ecolyte bacteria
Jemma	Research paper and presentation: Psychology class, major related - Topic: College student stress and happiness levels	Paper: English class - Topic: Should SAT and ACT scores be necessary for college admission
Jesse	Paper: Linguistics class - Topic: Cherokee language, how to keep venerable languages from extinction	Paper: English class - Topic: How a literature character related to himself
Kate	Poster presentation, research paper and final presentation: Psychology class, major related - Topic: Background music and personality influence on cognitive performance	Final project: Ceramics class - Topic: Teapot
Mary	Final Paper: Honors seminar, major related - Topic: Transgender [illegible] violence	Paper: Religion class, major related - Topic: Islamic poetry
Matt	Excel project and presentation: Physics class - Topic: Wavelengths and spectrum shifts	PowerPoint presentation and pamphlet: KRS Disabilities class, major related - Topic: Asthma in children's sports
Parker	Lab report: Environmental class, major related - Topic: Suspended solids	Mini-project and paper: Engineering class, major related - Topic: Water-level logger
Shawn	Research paper and presentation: Computer architect class, major related - Topic: Microprocessor	Final paper: Computer science class, major related - Topic: Coding secure hash standard

Self-selection provided a variety of artifacts: 10 work samples of papers, four products (two videos, an MS Excel computer program, and an art piece), three lab reports, two examples of fieldwork in the form of a portfolio, and one MS PowerPoint presentation. Additionally, a pamphlet connected to a presentation and two additional presentations as part of assignments connected to papers were described in the artifact-based interview without artifacts provided. I kept and secured copies of the artifacts (i.e., pictures of products, photocopies, or electronic documents of research papers) as they were an additional form of data for the study.

The artifact-based interview followed an interview guide (See Appendix D), but was conversational in order to elicit details of the participant's artifact and how it was created. Personal documents (such as this study's college work artifacts) alone were not representative of actual occurrences but they were invaluable to qualitative research because they reflect participants' perspectives (Merriam, 2009). Having the artifact's creator available to interpret and reflect upon it, gave an emic interpretation which provided greater value and meaning to the artifact (Hodder, 1994). My study's artifact-based interview guide used probing questions to elicit details on artifact development and any connections the participant felt were similar or different to their previous SCP experience. For example, a probing question was, "You mentioned the peer review of your paper. Do you remember any collaboration with your Senior Project?" The artifact-based interviews provided the opportunity to gain thick, rich description from participants regarding the creation of their college work and their perceived relationship to previous SCP work. After analysis of the artifact-based interviews, clarification or additional information was requested as needed on an individual participant basis via E-mail or during the final interview. Seven of the 10 participants who took part in the second interview provided a member check of their artifact-based interview transcript. At the end of the second interview,

participants were provided instructions for keeping their reflective journal (see Appendix F) as part of the third data collection phase and scheduled their final interview. They also received a gift card of appreciation for completing the previous phase. Thank you notes and reminders of the next phase of the study were sent individually to each participant via E-mail.

Phase 3, reflective journals and final interviews (May 2 - 31, 2016). The third data collection phase centered on participants' reflective journals. Journals provided descriptions of the participants' experiences (Merriam, 2009). Documents like these "prove valuable not only because of what can be learned directly from them but also as stimulus for paths of inquiry" (Patton, 2002, p. 294). Participants were requested to keep a journal over a two week time period detailing their current college academic experience and any connections it may or may not have had to their previous SCP experience. The 10 participants who remained in the study kept and returned their reflective journals.

At the end of the second interview, students received printed and E-mailed copies of instructions for keeping their reflective journals and an E-mailed copy of the MS Word template (refer to Appendix F). The instruction sheet contained instructions for keeping the journal in MS Word, however participants were advised they could adapt the instructions and choose their own journaling method (via computer software, handwritten, or digitally recorded with voice or video); all participants chose to use the MS Word template that provided and returned the journal via E-mail. Three journal entries each week were requested for a minimum of six total journal entries from each participant. Each entry was to take approximately five minutes to complete. E-mail or SMS-text reminders (based upon the participant's preference) were sent to encourage journaling of their college experiences.

The journal template's front page also contained the instructions for participants to reference for making their entries. Journal pages were set up in a three column format in order to provide clarity at the time of entry and later during data analysis. Figure 2, Participants' Reflective Journal Format shows the heading of the journal pages.

Figure 2

Participants' Reflective Journal Format

Current College Work or Thought: Provide details	Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work	Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience

Caption Figure 2 is an example of the three column heading for the participants' journals.

The first, left, column was designed to gather details of the current college academic experience; the second and third columns were designed to elicit reflective thought regarding the past SCP experience. The left column contained the heading "Current College Work or Thought: Provide details." The middle column followed the heading "Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work?" And the right column had the heading "Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project? (If no connection, type "no connection" and explain why)." After the two week period, I reminded participants to return their journal via E-mail. A thank you E-mail was sent upon receipt of a participant's reflective journal. Reflective journal analysis informed individual participants interview guides for the final interviews.

Participants were offered to have their third interview either in-person (at a location and time of their agreement), over the phone, or online via Skype. The interviews were

approximately 20 minutes in length. Interviews were scheduled over E-mail or SMS-texts. All chose to meet in-person on campus. Nine of the original 12 participants took part in the final interview. To encourage attendance, participants were sent E-mails the day before and SMS-texts the day of their final interviews.

The final follow-up interview was informed by themes that emerged from preliminary with-in case and cross-case analyses of data from Phases 1 and 2, and a with-in case analysis of the participants' reflective journals. The final interview guide contained two sections (see Appendix E). First, a semi-structured interview guide was used for all participants; it contained five questions and was crafted from recurrent themes from all of the interview stages. Participants were asked to expand on recurrent emergent themes found from preliminary data analysis examining all participant cases. Second, the remainder of the final interview guide was customized to follow up with each participant, where they were questioned for clarification or more details regarding their individual comments or work for any of the previous data collection points (online questionnaires, focus groups, college work sample artifacts, artifact-based interviews, and participant reflective journal entries). Participants were sent thank you E-mails and received their final gift cards either via mail or in-person once their member checks were returned.

Research journal. I kept a research journal to record all data collection and analysis proceedings. MS Excel software was used to electronically record in a two-part journal—an audit trail and a reflective journal. With such purpose, it was not simply a manner to document and measure data accuracy but the reflective portion the research journal became one of this study's forms of data collection.

Audit trail. An audit trail provided comprehensive documentation of the details of how the study was conducted and how data were analyzed in order to ensure the study obtained

reliable and consistent findings (Merriam, 2009). The audit trail began with the pilot test and continued through data collection and analysis. It was documented in the form of a running log: how, when, and where interaction with participants or data took place. Dates, times, and places of any communication with participants (including E-mails, SMS-texts, interviews, or member checks) as well as results of member checks were recorded. My interactions with data during analysis were also logged. Communications with colleagues or advisors as well as results of peer reviewers were also logged as part of the audit trail.

Reflective journal. The second part of the research journal, the reflective journal helped to enhance the entire trustworthiness of the study, including credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). The reflective journal began with the pilot test in Phase 1 of the interview process and continued through data collection and analysis. My reflective journal contained new questions, ideas, tentative interpretations as well as dependability and confirmability audits. Observations made during interviews were reflected upon, including researcher's reflexivity, reflections regarding bias (Merriam, 2009). Emerging interpretations were journaled for future reference. Learnings from communication with colleagues or advisors as well as results of peer reviewers were also included. Journal entries recorded: participatory observation notes of the interviews, how categories were derived during the coding process, comments on peer examination, any rival explanations that surfaced, and how decisions were made throughout data collection and analysis. The reflective journal contained dependability audits, ongoing reviews of the audit trail, reflective journal, and a line of inquiry against the study's research protocol (Lincoln & Guba, 1985). Figure 3, Dependability Audit, contains an example of a dependability audit assessing the extent to which the interview guide was followed for the focus groups.

Figure 3

Dependability Audit

Date	Dependability Audit	Thoughts
Oct. 21, 2016	Re: Peer Review of Focus Group Interview Guide against Transcripts and Audio File I received comments back from WL, a doctoral student, regarding her review of my Focus Group 1 transcript against the audio file and the interview guide. She commented that the transcript was accurate and contained the entire dialog from the interview. She also determined that I had followed the interview guide (with minimal word or questioning order changes). She found follow-up questions were to be without noticeable bias.	I was very grateful for my peer reviewer to spend time to listen and comment on my work. It was nice to have confirmation that I had followed the guide and appeared to not be biased in my questioning.

Caption: Figure 3 is an example of a dependability audit. This audit assesses the extent the interview guide was followed for the focus groups.

Finally, the reflective journal contained confirmability audits to assess the product of inquiry. The appropriateness of interpretations of the transcripts was audited to see if they were in line with the data collected. Peer reviews, personal reviews of the reflexive journal, and reviews of substantive significance were included as part of the ongoing confirmability audit. Figure 4, Confirmability Audit, contains an example of a confirmability audit assessing the extent to which the findings were confirmable against the data collected.

Figure 4

Confirmability Audit

Date	Confirmability Audit	Thoughts
Feb. 16, 2017	Re: Chapter 4 Findings, Theme 3 During my meeting with my doctoral chair today we had a lengthy discussion regarding ensuring the findings statements were supported by the data. Data needs to support the argument, not the argument describes or restates the data.	I need to better explain what the data means. I need to deconstruct the data into meanings, interpret more, making points regarding the finding.

Caption: Figure 4 is an example of a confirmability audit. This audit assess the extent the findings were confirmable against the data.

Observations from each dependability and conformability audit helped to guide future data collection and analysis back to protocol or maintain its appropriate expectation while enhancing the study's dependability and confirmability (Lincoln & Guba, 1985).

Recording and transcribing. A digital audio recorder recorded the individual interviews in each interview phase. Narrative responses were transcribed in their entirety and recorded manually into computer files. Manual transcription and a manual review of electronically transcribed data helped to ensure the accuracy of the transcripts (Cohen et al., 2007). Within one week of each interview, I roughly transcribed each digital recording of each interview into an MS Word document. Timeliness was particularly important because for some of the study's phases, analysis informed the inquiry guide for the next phase. Later, I returned to the audio files repeatedly to ensure transcription of each word had taken place. The process was slow as I found it difficult to just type the dialogue without concentrating on the content the participant shared. The process was taxing for the focus groups because it was often difficult to determine from just the audio files which participant was speaking without video verification. I listened to the audio tapes additional times to verify accuracy and fill in blanks of participants who spoke during the focus groups. Neutral peer reviewers who were fellow doctoral students reviewed random interview transcripts to ensure the interview guide was followed.

Member Checks. Member checks obtained the participant's review and comments on data collected from the focus group and individual interviews. The member checks promoted the proposed study's credibility and minimized inherent bias (Merriam, 2009). Member checks were conducted during the Summer and Fall of 2016. The remaining 10 study participants were sent their three interview transcripts in a member check templet; seven participants returned them. Over individual E-mails, the participants were asked to conduct a separate member check of each

of their transcripts. Participants were asked to review the transcript and provide comments. Transcripts were provided on a templet in MS Word (see Appendix G). The templet contained their transcript, a column along each page for participants to comment as needed, and three questions to help guide their review and maintain consistency between respondents: (1) Does your response seem accurate? Please correct any inaccuracies; (2) Did you explain in enough detail? Please provide additional details as needed; and (3) In retrospect, would you explain anything differently? Please explain as needed. Participants received E-mails and SMS-texts to remind them to complete their member checks. As member checks were returned, thank you notes were sent via E-mail. Upon receipt of their last member check, participants received gift cards of appreciation (either in-person or through the mail) for the last phase of the study.

Peer reviews. Discussions with my advisor and fellow doctoral students helped to reduce bias and enhance overall credibility and dependability of the study (McNiff, Lomax, & Whitehead, 1996). A peer examiner and my dissertation chair provided input as to the strength of the support between final recommendations and findings, further enhancing the credibility of the study (Merriam, 2009). All processes of the data collection and analysis were proposed to my committee members. A group of fellow College of Education doctoral students agreed to be my neutral peer reviewers. Their role was to review interview transcripts to ensure interview and transcribing protocol was followed to control for potential bias. They also reviewed recommendations to ensure they were supported by the findings. My dissertation chair provided an additional examination to confirm interpretations were based on data collected. Reviews and advisement from peer examiners were recorded as part of the dependability and confirmability audits in the research journal.

Data Analysis

The qualitative analysis of this study transformed data into findings (Patton, 2002). Each individual participant case was examined as a separate smaller case within the main bounded case; this structure is referred to as "multiple bounded systems" (Creswell, 2007). Comparison of smaller cases provided triangulation (Merriam, 2009) due to the multiple perspectives gained from varied data sources. For each phase of the study, the participant cases were examined sequentially; first individually by within-case analyses and then compared by a cross-case analysis (Heck, 2006; Patton, 2002). Within-case data analyses examined each of the smaller cases independently (Creswell, 2007; Patton, 2002). The within-case analysis was conducted first since variations of participant experiences were a focus (Heck, 2006; Patton, 2002). After the within-case analyses, a cross-case comparison analysis offered a thorough comparison of the multiple cases examining any consistencies or differences between the cases. Since the within-case analyses were conducted first to establish the reliability and integrity of the individual cases, the comparisons across cases produced more compelling evidence (Heck, 2006). The comparison of smaller cases also provided triangulation (Merriam, 2009). A final comprehensive stage of analysis simultaneously examined data from the within-case analyses and the cross-case analysis. Table 6, Timeline of Data Analysis, provides a visual timeline and details of how data analysis was conducted for each of the three data collection phases.

Table 6

Timeline of Data Analysis

Pilot Test	
▪ Within-case analyses: *Online Questionnaire, College Work Artifact and Artifact-based Interview* ▪ Cross-case analysis: *Online Questionnaire, College Work Artifact and Artifact-based Interview*	February 2016
Phase 1: Online Questionnaires and Focus Group Interviews	
Survey *- Online Questionnaire* ▪ Data pull from Google Forms ▪ Within-case analyses ▪ Cross-case analysis ⬇ ***1st Interview: Focus Group*** *In-person, semi-structured, follow-up of online questionnaire* ▪ Transcription ▪ Within-case analyses ▪ Cross-case analysis	March - April 2016 April - September 2016
Phase 2: College Work Artifacts and Artifact-based Interviews	
Data Sample *– College Work Artifacts* ▪ Collected at 2nd interview ▪ Within-case analyses ▪ Cross-case analysis ***2nd Interview: Artifact-based*** *In-person, semi-structured* ▪ Transcription ▪ Within-case analyses ▪ Cross-case analysis	April - May 2016 April - September 2016
Phase 3: Reflective Journals and Final Interviews	
Data Sample *- Reflective Journals* ▪ Data Pull from reflective journals (prior to 3rd interview) ▪ Within-case analyses ⬇ ***3rd Interview: Final*** *In-person, semi-structured, follow-up of reflective journal* ▪ Transcription ▪ Within-case analyses ▪ Cross-case analysis	May 2016 May - September 2016
Comprehensive Analysis and Interpretation	
Data Merging and Interpretation ***Conclusions and Recommendations***	October 2016 - February 2017 March 2017

I recognized that the initial timeline had the potential to elongate due to participants' availability or time needed to analyze sequential data. The final data analysis timeline contained extensions from the initial proposal; particularly more time was required for transcription of the interviews, interpretation of the data, and writing of the findings chapter. This study's data was analyzed sequentially and was conducted after each of the proposed study's interview phases; details of the analysis are provided in the following sections.

Process of thematic coding. Content analysis was conducted to reduce the volume of qualitative data and attempt to identify core meanings (Patton, 2002). During the inductive thematic analysis, a process of thematic coding (interpretive coding) was applied to the qualitative data in a manner to interpret its meaning and address the research questions (Teddlie & Tashakkori, 2009). The goal of the mechanical thematic analysis of coding data was to recognize patterns and organize those patterns into themes (Patton, 2002). The term *pattern* (code) referred to a particular descriptive finding and the term *theme* referred to categorical representations of the patterns (collective codes) (Patton, 2002).

First a unitizing process divided the qualitative interview data into units (codes), and then a categorizing process brought together codes into categorical groupings (themes/collective codes) (Cohen et al., 2007; Creswell, 2007; Patton, 2002; Teddlie & Tashakkori, 2009). A coding classification schematic was developed to help with data organization (Patton, 2002). Coding records of with-in case and cross case analyses were kept in MS Excel workbooks. The first reading of the data started to identify codes and the classification schema. Multiple readings of the data or hearings of the audio recordings advanced pattern recognition. Patterns of occurrence led to convergence of recurring patterns and then divergence into themes.

After mechanical categorization, logical analysis was used to find new insights by further examining the classification scheme (Patton, 2002). Transcripts and audio files were repeatedly reexamined. Cross-classification matrices or other visual representations were developed in MS Excel to interpret and present the data's patterns. Interpretations went beyond the descriptive data and were discovered through examination of the analytical evidence (Patton, 2002). Qualitative meanings were labeled interpretations, particularly when searching for a relationship between the participants' perspectives of their past SCP and their current college experience. Coding of my study's data was conducted manually. Manual coding ensured themes were not overlooked, which often occurs when using software that simply relies upon commonly repeated words (Patton, 2002).

***Phase 1, online questionnaires and focus group interviews*.** In Phase 1, two data points were analyzed: online questionnaires and the focus group interviews. The with-in case and cross-case analyses of the online questionnaire informed the line of questioning for the focus group interviews on the participants' SCP and current college experiences. For focus group analysis, I created a matrix for the with-in case analysis of the online interview data. I pulled data from Google Forms into an MS Excel workbook and created a separate worksheet for each of the participant cases. On the second read I began the thematic coding process, highlighting any potential codes or interesting comments on the MS Excel worksheet. I created a color scheme for the codes, so that I would highlight the same code with the same color for each of the analyses. For example, first I noted the bigger picture; I used purple to highlight codes for skills, abilities, and dispositions and light blue for research papers, fieldwork, portfolios, and presentations. In subsequent readings of data, the highlighting was more detailed with more colors for specific

codes. After a third read of the participant's responses, I made an entry on their individual participant sheet. Figure 5 contains an example of a Participant Sheet Analysis Matrix.

The Participant Sheet Analysis Matrix was created as a separate MS Excel workbook that contained an individual worksheet assigned to each of the participant cases. These participant sheets were comprised of the participant's demographic profile and summaries of researcher thoughts and observations after reviewing each participant's responses and observational notes for each point in the data collection (online questionnaire, focus group, artifact-based interviews, artifacts, reflective journals, and final interviews). Key quotes of comments for each of the data collection points were also included in the columns below the summary.

Figure 5

Participant Sheet Analysis Matrix

Emily: Demographic Information	**SCP topic: Technology Integration with Music at the Elementary level.**	**College Major: Major: Elementary Education, Minor: Music Education**	**Year: Senior**	**Project type: career**
Online Questionnaire	**Focus Group**	**Artifact**	**Artifact-based Interview**	**Reflective Journ**
EB appeared to be very thorough in her OQ responses. She linked her education major directly to her SCP experience…	EB seemed to feel comfortable in the FG-1 and openly shared information. She recalled several links between her SCP and what she is doing now in college. EB described time management…	Work Sample 1: Assessment 5 unit plan. EB was very proud of her artifact; it was a culminating piece of the unit she had taught she had spent a lot of time working on. Upon examination: from the look of its scope and size appeared to have been a big project…	EB shared her Assessment 5 for the COE. Describing her lesson plan work sample, she clearly demonstrated an understanding of creating and evaluating a lesson plan. Her college work is directly tied to her SCP…	Ember seemed to use her journal as outlet to documer her feeling of her student teaching coming to an end was the end of the semester, her sadness of having separate from her students and her student teaching experience was clear…

Caption: Figure 5 is an example of an Excel worksheet depicting a participant sheet. It is representative of th created for this study.

Note: The entire participant sheet is not included in this example. There are several rows below of quotes for collection points, and the demographic information extends beyond the columns shown.

After completing within-case analyses for each of the participants' online questionnaires, I created a separate MS Excel workbook for the cross case analysis. An example of a Cross-case Analysis Matrix: Online Questionnaire can be seen in Figure 6. The cross case analysis workbook contained a separate spreadsheet for each of the main questions of the online questionnaire. The first column contained the participant's name, the second column I copied and pasted their response to the particular question, the third column contained codes from the participant's response, and the fourth column contained collective codes (emergent themes) aggregated from all of the study's participants. I cut and pasted quotes from each of the individual participant case transcriptions onto the corresponding worksheets. I read and reread each of the worksheets reviewing the compiled participant quotes for similarities, differences, or rival explanations. Additional codes or collective codes were assigned as needed. After completing the cross case analysis I used the data to help inform the focus group interview guide.

Figure 6

Cross-case Analysis Matrix: Online Questionnaire

Did you learn anything about yourself from completing your Senior Project? If yes, what?

Participant	Response	Codes	Collective Codes
Mackenzie	I learned that the more I am around people, the more happy I become. The months that I have helped at the retirement center made me realize that I truly love human interaction… and also made me realize that being in the health field is what I want to do.	Aided in career choice Likes being with people Wants to help others	
Maddie	I learned that I was capable of finishing high level work. At the same time, I also saw that I have a lot to learn, especially about time and project management. It really showed me that I prefer to work with ideas, strategies, and new things versus menial, every-day manual labor. Because of that, I also saw that I need to work on becoming a better teammate, as I tended to avoid daily work in favor of brainstorming.	Self-efficacy for college Need improvement in project & time management, Need improvement collaboration	
Jackie	I learned how to be self-directed, senior project was the first time that we were given an entire year to budget our own time… taught me that I was capable of talking to professionals in our community and asking them for advice.	Self-direction Time management Collaboration Confidence	Collaboration Time management Confidence / Self-efficacy
Shawn	I learned that I was very dedicated to completing this project…	Dedication	
Emily	I believe that the most important thing I learned about myself was that I could teach. I was extremely nervous about being in front of a classroom and having to instruct students, yet did well and this helped to build my confidence in my role as a teacher.	Self-efficacy for career Confidence in career skills & career choice	Aided in career choice
Derek	Working with my mentor allowed me to put my media skills to use and I discovered that media is where I belong.	Aided in career choice Career skills Collaboration	Career skills

Caption: Figure 6 is an example of an Excel worksheet for a particular response to the online questionnaire. It is representative of the cross-case analyses matrices of this study.

Note: Only six rows (not all participant responses) are included in this example.

The focus groups were second data collection point of Phase 1 to be analyzed. Analysis began with transcription; as ideas arose when I listened to the audio tapes, I added comments to my interview notes or research journal. For the with-in case analysis, I read and reread the interview transcripts (often listening simultaneously to the audio files). I followed the thematic coding and documentation process established for the online questionnaire. For the interviews, I highlighted directly on the transcriptions following the color scheme established during the online questionnaire analysis and adding colors for new codes. I summarized each individual participant's responses in an entry on their participant sheet's focus group column. Then, for the cross case analysis, I followed the process I developed for the online questionnaire analysis; creating a separate MS Excel workbook for the focus group interviews.

Phase 2, college work artifacts and artifact-based interviews. In Phase 2, analysis contained two data points: artifact-based interviews and the participants' work sample artifacts. Transcriptions of the second interview, the artifact-based interview, was analyzed by with-in case and cross-case examinations. I transcribed and conducted with-in case analyses and a cross-case analysis following the process established for the online questionnaire and focus group in Phase 1. I created a separate MS Excel workbook for the artifact-based interviews, and included worksheets for each of the artifact-based interview collective codes (i.e., time management, research, presentations, or collaboration).

I analyzed the artifacts that I had collected at the artifact-based interview. My with-in case analysis of the college work samples consisted of examining the artifact and entering summary on the individual participant case's participant sheet. For my cross case analysis of the artifacts, I created a table to document what types of college work samples each participant

submitted. I also noted similarities and differences among the artifact types (papers, portfolios, products, and presentations) in my researcher's reflective journal.

***Phase 3, reflective journals and final interviews*.** Phase 3 analysis contained two data points: participants' reflective journals and the final interviews. As the reflective journals were received from participants, I began analyzing the data for timeliness and to expedite the creation of each participant's individualized final interview guide. For each with-in case analysis, I followed the thematic coding process established for Theme 1. Initially a cross-case analysis of the journals was scheduled before creating the final interview guides. However, concerns of timing as the end of the semester loomed, and upon consulting with my doctoral chair, it was decided to move forward with the final interviews without a cross-case analysis of the participants' reflective journals. Also, the final interviews of some participants began prior to all participants' submission of their journals. This conducted with in case analyses of the final interviews and then completed a cross case analysis. The processes for the with-in case and cross case analyses of the final interviews were identical to that detailed for Phase 1.

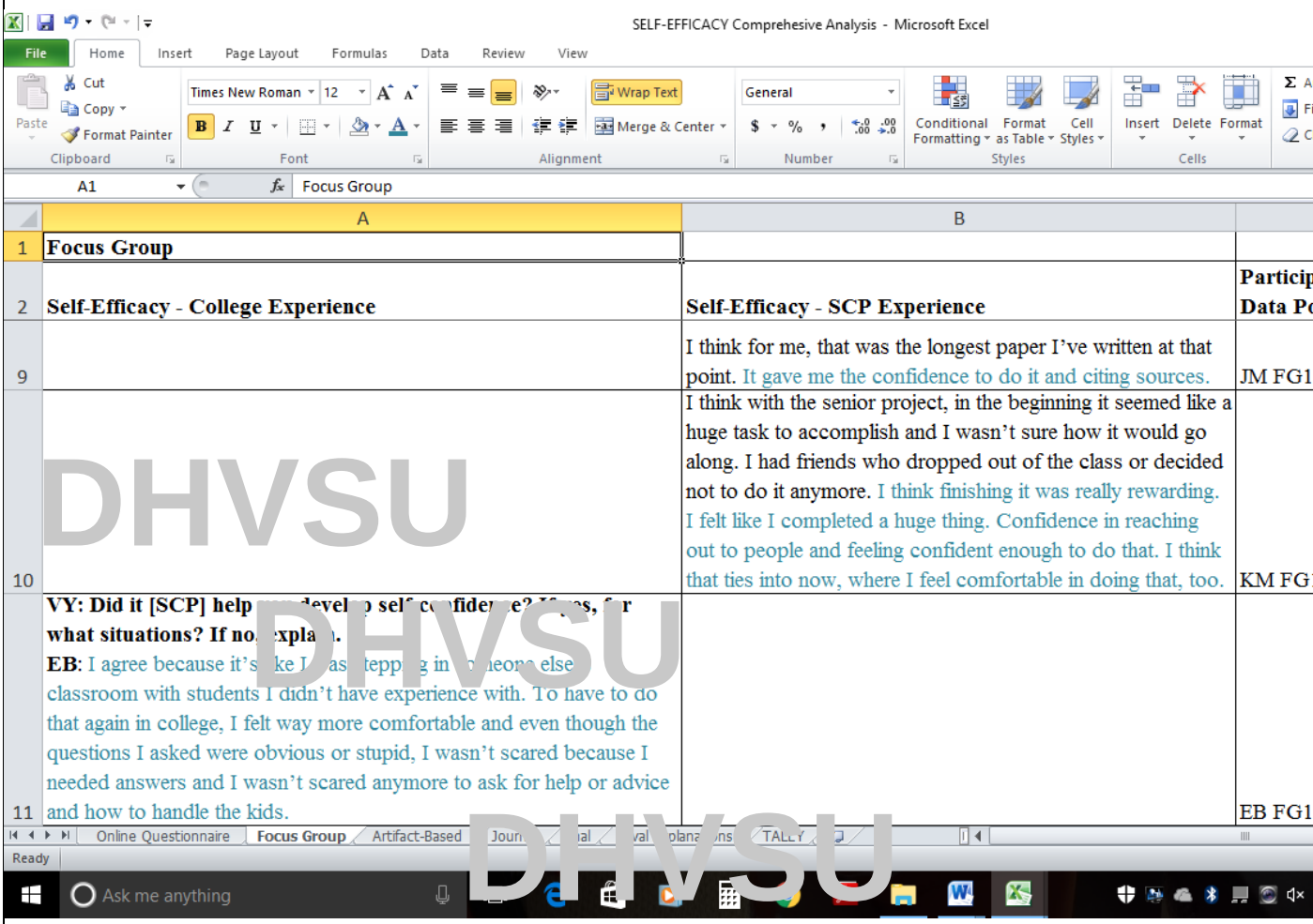
Comprehensive analysis and interpretation. A final comprehensive stage of analysis simultaneously examined data from the within-case analyses and the cross-case analyses from all phases of the study. This simultaneous reexamination of data and analyses from all three stages helped to determine the final interpretations and findings of the study. In order to examine information from every data collection point (online questionnaire, focus group, artifact-based interviews, artifacts, participants' reflective journals, and final interviews) simultaneously, I created a new MS Excel workbook to bring information contained on the workbooks from the individual data collection points into a comprehensive workbook for a collective code. Comprehensive analysis workbooks were organized with a separate worksheet for each data

collection point. Within the worksheet, columns were created for quotes to be entered as a college or SCP experience. Additional columns were allocated for the participant who provided the quote and for additional codes. An example of a Comprehensive Analysis Matrix for a collective code can be seen in Figure 7.

Merging of data permitted cross checks of the collective codes that had emerged in previous cross case analyses and to determine if any new codes emerged. These new matrices were for specific collective codes and were used to examine consistency in the previous cross-case analyses, or to further investigate a specific emergent collective code. For example, as the collective code of self-efficacy emerged, a new workbook was created for its analysis.

Figure 7

Comprehensive Analysis Matrix



	A	B	
1	**Focus Group**		
2	**Self-Efficacy - College Experience**	**Self-Efficacy - SCP Experience**	**Particip Data Po**
9		I think for me, that was the longest paper I've written at that point. It gave me the confidence to do it and citing sources.	JM FG1
10		I think with the senior project, in the beginning it seemed like a huge task to accomplish and I wasn't sure how it would go along. I had friends who dropped out of the class or decided not to do it anymore. I think finishing it was really rewarding. I felt like I completed a huge thing. Confidence in reaching out to people and feeling confident enough to do that. I think that ties into now, where I feel comfortable in doing that, too.	KM FG
11	**VY: Did it [SCP] help ... develop self-confidence? ... s, for what situations? If no, explain.** **EB**: I agree because it's like I was stepping in someone else classroom with students I didn't have experience with. To have to do that again in college, I felt way more comfortable and even though the questions I asked were obvious or stupid, I wasn't scared because I needed answers and I wasn't scared anymore to ask for help or advice and how to handle the kids.		EB FG1

Caption: Figure 7 is a screen shot of an Excel workbook of a Comprehensive Analysis Matrix. It is an example of the self-efficacy collective c group worksheet.

According to Patton (2002), a qualitative study does not have to end with the presentation of data and comparisons. The research also helps to explain the phenomenon with interpretations that attach significance to the findings. The final interpretation themes of this study addressed the research question and informed the study's conclusions and recommendations. Embedded case studies were selected to present one of the findings themes more richly. Conclusions and recommendations were written after interpretations and findings were completed. The holistic design and overall thoroughness of reporting, analyzing, and interpreting the study aimed to extend extant literature on SCPs.

Human Subjects

Approval for conducting human subjects' research was obtained for this study from Island University's Human Studies Program's Internal Review Board (IRB). Since the research is on educational practices and the data collection interviews were of participants who are not part of a vulnerable population, an exempt status for human subjects' research was obtained (Howe & Dougherty, 1993; IU Human Studies Program, 2012). I conducted a research protocol as submitted to the IU Human Studies Program and followed the information learned in required human subjects training courses while conducting my study.

Two pilot participants and 12 study participants provided voluntary and informed consent (Herr & Anderson, 2005). With informed consent participants were fully aware of the objectives of the study (McNiff et al., 1996). Participants declared their initial consent to participate in writing by signing consent forms (see Appendix H) prior to beginning the study and were reminded at every data collection point of their rights to withdraw from the study at any time (National Commission for the Protection of Human Subjects of Biomedical and Behavioral

Research, 1979; Patton, 2002). Participants were E-mailed copies of the consent form, which they signed and returned either via E-mail or SMS-text.

Data was secured and kept confidential (Collaborative Institutional Training Initiative, 2012; Patton, 2002). Multiple back-up copies of data (audio recordings, artifacts, transcripts, and member checks) was and is safeguarded in a Universal Serial Bus (USB) drive, Compact Discs (CDs), a computer hard drive, and an E-mail server under locked or password only access. Any paperwork not retained was or will be shredded. Furthermore, the identity of all participants was and will be kept confidential. Pseudonyms or initials were assigned and used for any written or verbal referrals to participants. Pseudonyms were also assigned to places to ensure confidentiality.

Credibility and Dependability

I use the following qualitative terminology for data quality or trustworthiness to describe my study: credibility, transferability, dependability, and confirmability (Creswell & Plano Clark, 2007; Lincoln & Guba, 1985). Measuring credibility, or the study's internal validity, ensured that I was capturing what I intended to (a representation of participants' multiple perspectives of their high school SCP experience and how it may or may not have a lasting impact on their current college academic experience) rather than something else. Transferability, or the study's external validity, assessed the extent to which specific inferences from this study can provide context to another setting. The measurement of dependability ensured my measurement (process of inquiry) was consistent and accurate. Confirmability assessed the extent to which the findings of the inquiry were confirmable against the data collected. Verifying positive answers to data quality provided a confirmation that the methods utilized for this study were conducted accurately for

their intended purposes. The following sections provide information on how this study's credibility, transferability, dependability, and confirmability were measured and examined.

***Credibility*.** Credibility considered the rigorous methods of the study's data collection and analysis (Patton, 2002). To ensure the integrity of the data, this study used several triangulation techniques including specifying the unit of analysis, member checks, inclusion of rival explanations, peer reviews, and researcher's reflexivity.

Triangulation of sources was provided by using multiple measures of different data sources. This study followed Yin's (1993) concept to develop construct validity through multiple measures. Each individual participant case enhanced credibility. The cases applied data to the research question by offering a different reality based upon their high school's SCP implementation process, their past SCP topic, the high school they attended, their college major, their current college coursework, and their unique perspective. The diverse criteria for purposefully selecting participants helped to provide maximum variation of the cases. Examination within the same method for consistency of different data sources provided triangulation (Patton, 2002). This study offered triangulation of sources in the form of three varied interview phases to investigate the multiple participant cases: an online questionnaire and focus group interview (Phase 1); an in-person artifact-based interview to discuss college work samples (Phase 2); and an in-person follow-up interview to discuss a reflective journal (Phase 3). The sequential interviews were designed to obtain a rich description of the participants' perspective of lasting effects of the SCP on a variety of levels including their artifacts of college work and journal of college experiences. The artifact-based interview in Phase 2 of data collection and the journal in Phase 3 helped to provide support and further document what the participants expressed during the online interview and focus group in Phase 1. Triangulation of

sources increased the accuracy of this study by attaining perspectives from differing participant cases through a variety of sources (individual and group interviews, artifacts, and journals).

Specific units of analysis defined the research setting and enhanced this study's credibility and transferability (Yin, 1993). The unit of analysis determined the boundaries of the case. This case was bounded by time, place, and participant perspectives (see pp. 52-58). Having a specified and unchanging unit of analysis provided direction for proper data collection, information gathering based on the study's intention, and consistent data analysis. The findings of this research study were based upon its boundaries. Other researchers would need to determine if the unit of analysis of their case is similar enough to consider the findings of this research transferable.

Member checks were a triangulation technique intended to enhance the study's credibility (Patton, 2002). Member checks obtained the participants' reviews and comments of the interview data in order to verify its integrity (Merriam, 2009). Member checks helped to control for bias and promote credibility of collected data. All of the participants of this study were requested to review and comment on their interview transcripts for all three phases of the study (see p. 79-80).

Credibility was achieved through preserving integrity during data analysis; this included examining rival explanations and their assessment in analysis (Creswell & Plano Clark, 2007). Any rival explanations that surfaced during the coding process of this study were documented in the research journal (see pp. 76-79). They were further investigated during multi-case comparisons and the Phase 3 follow-up interviews.

Using peer reviews to discuss and review all processes of the data collection and analysis minimized bias and enhanced the credibility and dependability of the study (McNiff et al., 1996). Peer review provided input to ensure interview transcripts were accurate, interview guides were

followed, biases were controlled during interviews and as a result, data supported the findings and final recommendations. A group of fellow College of Education doctoral students served as my neutral peer reviewers (see p. 80). I proposed the entire study, including plans for data collection and analysis, to my committee members for their approval before beginning data collection. My doctoral chair provided guidance in review findings and cross-checking them against data collected, thus ensuring that conclusions were based on findings.

My methodological competence and professional ethics were of highest importance (Patton, 2002). Researcher reflexivity to explain any biases and assumptions added to the study's integrity (Merriam, 2009). As the solitary researcher for this study, I completely disclosed any biases and assumptions, including my past experience as a high school teacher and exposure to SCPs. I also made every attempt to control for bias when conducting interviews as well as throughout analysis of the data and interpretation of the findings. Additionally, precautionary measures were taken to ensure the findings of this study were credible and consistent with preserving the integrity of the research. Researcher reflexivity, self-questioning, and seeking self-understanding (Patton, 2002) ensured throughout the study and were documented in the research journal.

As part of researcher reflexivity, I made a conscious effort to be aware of the interviewer effect, or unconsciously bringing background experiences into the research setting (Scheurich, 1995). I built structures in my research to attend to my biases (i.e., positive view of SCPs and PjBL due to being a past teacher who successfully implemented projects and advised students). To aid the data collection's credibility and dependability, I followed interview guides (see pp. 64-67) and kept a research journal (see pp. 76-79).

Transferability. Transferability considered the extent my study could extend specific inferences to other contexts (Creswell & Plano Clark, 2007; Lincoln & Guba, 1985). Thick detailed descriptions of participant responses were selected for maximum variation (Merriam, 2009), alongside a defined research setting will allow others to make their own judgements regarding the extent to which these findings can be applied to other contexts (Lincoln & Guba, 1985). To enhance transferability, a detailed description of my findings was presented by quoting participants' interviews and the details that emerge from college artifact and reflective journals. However, caution is advised toward transferability due to the study's limited number of participants and specific boundaries (Guba & Lincoln, 1989; Shadish, 1995).

Maximum variation of the participant sample was used to enhance both credibility and transferability (Merriam, 2009). Through purposeful sampling, I sought a variety of participants with different backgrounds in the following areas: high school of graduation, SCP topic, college major, gender, and ethnicity. Selecting participants with maximum variation from one another, led to different perspectives to surface in interviews, varied college artifacts, and distinct reflective journals.

Dependability. This study followed a systematic process to enhance dependability (Guba & Lincoln, 1989). To ensure the methodological integrity, trustworthiness, and rigor of the research process, this study used several dependability techniques: pilot test, interview guide, detailed transcriptions, interpretive thematic coding, procedural integrity, and a dependability audit.

Prior to starting data collection, a pilot test (see pp. 60-62) was conducted on the Phase 1 online questionnaire and the Phase 2 artifact-based interview guide's questions' effectiveness to attain descriptive responses. The pilot was used to test if participants had the

opportunity to express themselves and ensured that questions on the interview guide provided responses that were useful to answer my research question (Teddlie & Tashakkori, 2009).

Utilizing an interview guide for the semi-structured interview process enhanced dependability (Creswell, 2007; Patton, 2002). Following the interview guide (see pp. 67-76) ensured my process of inquiry was consistent and accurate between participant cases. Detailed transcriptions and interpretive thematic coding was used for this study. To dependably document the qualitative data, detailed interview transcripts were based on audiotaped recordings. Transcribing this study's individual and group interviews in their entirety helped to avoid transcriber selectivity and uphold dependability. Materials were safeguarded under lock or password (Patton, 2002). Confidentiality was protected with the use of pseudonyms. The interpretive, thematic coding process (see pp. 83-84) was utilized to enhance the dependability of the qualitative data analysis (Teddlie & Tashakkori, 2009). The study adhered to standards of thematic coding including unitizing and categorizing as described in the data analysis section.

Procedural integrity continued during data collection and interpretation. Case study protocols were developed and followed for reliability (Yin, 1993). I conducted this study's research protocol as submitted to the Island University's IRB. While conducting my research study, I followed federal regulations, institutional policies as well as any IRB guidelines. Dependability audits assessed the appropriateness of inquiry decisions throughout the study (Lincoln & Guba, 1985). This study's dependability audits were recorded as part of the electronic research journal (see pp. 76-79). Researcher's reflexivity, peer reviews and my review of the audit trail against the study's research protocol were part of the ongoing dependability audit.

Confirmability. Confirmability tested the extent to which the findings of the inquiry are meaningful (Creswell & Plano Clark, 2007; Lincoln & Guba, 1985). Substantive significance, whether observed effects were meaningful and relied on the researcher's judgment, was documented in confirmability audits in the research journal to help confirm the study's qualitative findings (Patton, 2002). To provide confirmability to the study, I kept a strong sense of the importance of researcher's judgment to rely on my abilities; I followed the thematic coding process, honored my participants' descriptive responses, recorded and reviewed details in my research journal, and sought wise counsel from peer examiners to review interpretations and findings. As a qualitative researcher, I was responsible to discover what was significant and meaningful in the data to deepen the understanding of the phenomenon (Patton, 2002), which for this study was the SCP experience and any lasting effects participants perceived it may have had on their college academic experience. Conscious attention was also made in an effort to not lose the richness of description during the coding and categorizing process (Cohen et al., 2007). These efforts enhanced my study's dependability as well (Patton, 2002). Peer reviews, a review of the reflexive portion of the audit trail and reviews of substantive significance were part of the ongoing confirmability audit.

Chapter Summary

This chapter included the specific features of my study's research question, description of the case (participants, place, time, and researcher), data collection, data analysis, consideration for human subjects, and credibility and dependability of the research and researcher. The qualitative methods of this descriptive and interpretive case study were described in detail. The methods outlined how my study was to achieve its purpose and add to the extant literature by

obtaining college students' perspectives of their previous high school SCP experience and to more closely understand how SCP impacts the college academic experience.

Chapter 4

Findings

Chapter Introduction

College students' perceptions of how lessons learned from their high school Senior Capstone Project (SCP) experience impacted their collegiate academic experience serve as the predominant focus of this chapter. Findings depict transference of learnings from the first setting, the participants' high school SCP experience, to the next setting of their college academic experience. Data analysis included consideration of the requirements of the HIDOE (2010) SCP (research paper, fieldwork, portfolio, and presentation) as the "SCP work." Skills, abilities, and dispositions used or learned during the SCP in addition to the SCP work constitute the "SCP experience." College work samples as part of participants' artifact-based interviews, other assignments, and fieldwork from multiple data points throughout the study are classified as "college work." I define the "college academic experience" as the skills, abilities, and dispositions needed to complete the college work along with the college work itself. In an effort to fully realize the extent of transference, connections between the participants' previous high school SCP experience are made to their current college academic experience.

Participants' words and voices, from the study's data collection points (online questionnaires, focus groups, artifact-based interviews, participants' reflective journals and final interviews), are interwoven together and triangulated to address my research question: How do students in a four year post-secondary institution perceive participation in their high school Senior Capstone Project has impacted their current college academic experience? Four major themes emerged from exhaustive data analysis: (1) the SCP experience—what participants perceived they acquired from participation in the SCP, (2) the college experience—general

connections of transference of the SCP experience to the college academic experience, (3) direct connections of transference to a college major, and (4) gains in self-efficacy applicable to college and career success.

Theme 1: Participation in the Senior Capstone Project Experience Led to the Acquisition of Skills, Abilities, and Dispositions

For this theme, I draw upon the viewpoints of all 12 of my study's participants to describe what they learned from participation in their SCP experience. Their profiles can be found in Chapter 3 (see page 57). I have divided Theme 1 into two sections: (1) Takeaways from the Senior Capstone Project experience; (2) discussion of findings across the three tables, which includes arguments for two dynamic relationships (the interdisciplinary aspect of the SCP to concurrently learn skills, abilities, and dispositions with content from multiple academic subjects; and simultaneous learning and learning skills throughout the SCP experience) and interpretations evidenced by participants' descriptions of the skills, abilities and dispositions they used or learned for during their SCP experience. In later themes this background will help with interpretation of transference.

Takeaways from the Senior Capstone Project experience. To understand extent of transference of the SCP experience to the college academic experience, it was imperative to determine first what participants learned or used during participation in their SCP. To identify participant perceptions, I create a scale from the online questionnaire (see Appendix B), coding responses into three categories: skills, attitudes, and dispositions. Notwithstanding, these terms cannot be absolutely defined and may have overlapping meanings and connotations in some contexts. Still, for the purpose of this study, the following operational definitions were applied: skills—related to the production of tasks (i.e., computer, writing); abilities—work ethics (i.e.,

collaboration, time management); and dispositions—attitudes or personal characteristics (i.e., persistence, self-direction). In many cases verbatim statements from the participants are reflected in the tables, and in other cases, I used generalized terms to represent their perspectives. For example, a participant wrote "disciplined about all of your deadlines" was coded as "time management." The following three tables serve to illustrate the skills, abilities, and dispositions participants recalled using during their SCP experience (see Table 7); their claims of what they learned during their SCP experience (see Table 8); and participants' perspectives on what they learned about themselves (see Table 9).

Participants' revealed what the SCP required of them, in response to the online closed-ended question: 'Please list any skills and abilities you feel you *used* during your Senior Project." Table 7, Skills, Abilities, and Dispositions Used during the Senior Capstone Project, is a compilation of what participants included on their individual lists.

Table 7

Skills, Abilities, and Dispositions Used during the Senior Capstone Project

Skills	Abilities	Dispositions
Computer or Technology	Collaboration	Confidence
Event Planning	Communication	Creativity
Public Speaking	Conflict Resolution	Fast-paced Learning
Research	Organization	Patience
Writing	Networking	Persistence
	Problem Solving	Punctuality
	Producing Quality Work	Responsibility
	Time Management	Self-direction

Note: Organized in alphabetical order.

The online questionnaire was also used to gather data on what participants claimed they had *learned* through the SCP experience. Two questions were posed related to what they learned in general from completing the SCP, and what they learned about themselves from the

experience. Table 8, Skills, Abilities, and Dispositions Learned during the Senior Capstone Project, presents participants' answers to the question: "Describe three main things you learned while completing your Senior Project?"

Table 8

Skills, Abilities, and Dispositions Learned during the Senior Capstone Project

Skills	Abilities	Dispositions
Computer or Technology Content Specific Documentation Portfolio Production Presentation Production Public Speaking Reflection Research Writing	Collaboration Communication Project Management Time Management	Attention to Detail Handle Life Situations Interest in a Career Patience Persistence Professionalism Self Confidence Self-direction

Note: Organized in alphabetical order.

To attain information on what participants claimed they *learned about themselves*, the following open-ended question was posed: "Did you learn anything about yourself from completing your Senior Project? If yes, what?" Participants' responses are presented in Table 9, Learned about Self during Senior Capstone Project.

Table 9

Learned about Self during Senior Capstone Project

Likes and Dislikes	Areas Needing Improvement	Self-efficacy	Dispositions
Disliked Public Speaking Interest in a Career Interest in Helping Others Liked Collaboration Liked Research	Collaboration Project Management Time Management	Confidence in Career Skills Confidence to Collaborate Confidence for Public Speaking Self-efficacy for College Work Self-efficacy for Future Career	Persistence Self-direction

Note: Organized in alphabetical order.

Interpretation of findings: Two dynamic relationships. Participants' responses were interpreted in the aforementioned tables. What follows is a discussion of two dynamic relationships: (1) learning skills, attitudes, and dispositions concurrently while completing interdisciplinary project work, and (2) using and learning skills, attitudes, and dispositions simultaneously. Then, interpretations of the skills, abilities, and dispositions are featured from those most frequently reported, along with corresponding descriptions of how they were used or learned during the SCP experience.

When participants were asked to list skills, abilities, and dispositions they used for their SCP (see Table 7), the most common responses were linked to the four project requirements. They described learning research and writing skills for their research paper; communication, and collaboration skills for their fieldwork; organizational abilities for their portfolio; and public speaking skills for their presentation. When asked to limit their responses to only three learnings, participants described many of the skills, abilities, and dispositions that they had previously listed for their SCP (see Table 7). The recurrence of responses provides the connections that

exemplify the first dynamic relationship—a constant interplay of using and learning multiple skills, abilities, and dispositions concurrently exists with content area knowledge during interdisciplinary project work.

In fact, learning skills, abilities, and dispositions alongside content knowledge during project work is expected in PjBL (Egelson et al., 2002; Thomas, 2000), as its broad interdisciplinary focus is well documented (Blumenfeld et al., 1991; Harada et al., 2008; Newell, 2002). These outcomes stemmed from learning opportunities that were not defined by synthetic lines of academic discipline; instead, focus remained on knowledge acquisition in multiple facets with the same learning activity. Egelson et al.'s (2002) research described that the SCP provided students an interdisciplinary opportunity to develop planning, research, time management, interpersonal, presentation, and writing skills needed for college and career success. The PjBL interdisciplinary technique allows students to acquire content knowledge as well as a wide range of skills, abilities, and dispositions though real-world applications of completing project requirements.

SCP study participants repeatedly reported having learned not only the explicitly defined constructs of how to write a research paper, but also benefitted indirectly by enhancing their proficiencies (skills, abilities, and dispositions) through the entire project experience. This is attributed to the dynamic relationship between interdisciplinary practice and skill acquisition. For instance, while working on their research papers, participants described learning topical content, applying previously acquired knowledge from earlier classes about writing techniques or concepts to understand their research, while gleaning organizational and time management skills.

Moreover, the simultaneous development of various skills, abilities, and dispositions was recognized. When asked to narrow down to only three learnings (see Table 8), participants

described many of the skills, abilities, and dispositions that they had previously listed as having used for their SCP, attributing the SCP as the origin of their development. Many of their responses regarding what they learned mirrored their responses in Table 7 about what skills and abilities they used, similar responses included: computer, public speaking and research skills; collaboration, communication and time management abilities; and persistence and self-directed dispositions.

This connection between using and learning skills, attitudes, and dispositions simultaneously while completing inquiry or work tasks is expected in PjBL, as students learn through their actions and experiences (CTGV, 1990; Dewey, 1938; Kilpatrick, 1918; Markham, 2011). With the expectation of the PjBL experience, it would be anticipated that participants in my SCP study would report having used and learned the same skills, abilities, and dispositions throughout their project process. For example, at the start of the project a student may have started using a schedule to track deadlines for the project requirements, and throughout the progression of the long-term project, the student would have learned the importance and the ability manage one's time.

Perhaps more illuminating were participant descriptions about their personal growth from having embarked on the long-term SCP experience; the perspectives revealed that each experience was unique and memorable. When responding to what they learned about themselves (see Table 9), rather than what they learned in general, the participants became reflective of the importance of dispositions required to complete their SCP. Once again, participants' responses were linked to the interdisciplinary project requirements, yet this time they were phrased in likes, dislikes, or described as developing self-confidence or needing improvement in the specific skills, abilities, or dispositions. The variation in responses exemplified that the SCP was a

personal and unique experience for participants; each applied different combinations of skills, abilities, and dispositions in distinct but simultaneous paths of content knowledge acquisition.

In the following three sections: skills, abilities, and dispositions, I continue to interpret what participants reported they acquired from participation in their SCP. I present participants' perspectives of how they used or learned skills, abilities, and dispositions during their SCP experience and offer auxiliary elucidation as to how those descriptions indicate two dynamic relationships.

Skills. Content learning is the first area I will explore to build a background of what skills participants' experienced from their SCP. As expected with PjBL, participants expressed learning content specific to their topics, for example, Kate wrote on her online questionnaire, "Since my topic was juvenile rheumatoid arthritis, I learned much about the disease and certain causes and symptoms of it." In another example, Maddie demonstrated the dynamic relationship of learning multiple content areas and acquiring skills while conducting project work. Maddie's content learning encompassed her entire community service project. During her online interview, she detailed:

> I learned more than I can describe about environmentalism, fundraising, working with the community, and working with the government…I was often planning something that involved all four…senior project was the first time I was expected to be in charge of everything, from research to planning to execution.

For Maddie to complete her SCP, she had to learn beyond more than simply the topic of environmentalism, she also had to develop skills in fundraising, community outreach, and governmental partnerships. She had to combine public speaking skills with content knowledge to successfully contribute to community outreach events. Similarly, when working with the

government, Maddie learned the ability of conveying her environmental knowledge in collaborative settings.

The SCP required participants to use or learn computer skills such as Microsoft Word and PowerPoint as well as topic or career specific technology in order to complete their SCP. This interdisciplinary application of computer skills was described by all 12 participants; they incorporated computer and other technology use for their SCP. The extent technology was used varied by participant. For some technology was a focus of their project, for others the computer was a tool used to access informational resources and report their findings. On his online questionnaire, Matt explained he used the computer for his project requirements, "My computer, I used it for almost everything such as typing my research paper, putting together my PowerPoint, and communicating through E-mail." Matt incorporated communication with technology when he emailed his mentor. He also described using his computer to write papers and create presentations used for public speaking engagements.

On her online questionnaire, Maddie also provided details on using technology as a tool, "I used laptops and computers constantly for research and word processing. We also managed a website for our events and projects. I also used cameras and a green screen for a small portion of the project." Maddie explained how she integrated topical content while updating a website as part of her SCP to promote community awareness and education gained impacts on the environment. For Maddie and Matt using the computer was an interdisciplinary skill used to complete the different project requirements for their SCP.

For other participants, technology use was a planned and necessary component for their performance project. For example, Derek had incorporated technology for his SCP. On his online questionnaire, he briefly explained his methods of journalistic inquiry:

> Since it was a project on media, I used my schools digital cameras to record and film. I utilized editing software, premier pro, to finalize my video that I used for my presentation, and PowerPoint to put it all together. Also, Microsoft Word to type my paperwork.

Derek's SCP also exemplified the interdisciplinary use of technology while working on English content (research paper) as well as media content (video product).

For the portfolio requirement of the SCP, participants had to compile and document all of their SCP work into a single collection they could share with community members, teachers, and fellow students. Participants provided background on what it was like to develop their portfolios. Part of the SCP portfolio included project documentation, such as mentor communication and work logs. For some participants, like Maddie, this documentation process was new, as she stated, "I learned a lot about project documentation…I remember having the worst time documenting what I did because it often did not occur to me until afterwards to do so." Derek denoted how he selected information: "What it's like is to reflect on a near nine month long process. Looking back for the presentation and the binder, you pull what is the most important through the months you've been working with your mentor." Derek learned the process of reviewing and reflecting upon his multiple project requirements. Derek appreciated the reflection process he completed for his journalism SCP explaining, "The process that it takes to get to the final product and being able to reflect on it and present it and say, 'this is my work and this is what I learned' was a very valuable and educational experience." For Derek, reflecting on his project and process was a memorable PjBL experience, in part because he took the time to review the skills, attitudes, and dispositions he learned to complete the interdisciplinary SCP requirements.

Another component to help understand the participants' SCP background is the way they simultaneously learned public speaking and presentation development skills through the construction process of their required SCP presentation. In his reflective journal, Parker described the final step of his SCP experience, "The biggest part of the senior project was the presentation. We were to present in front of a panel of judges to show them what we learned and how we can apply what we learned to the real world." Parker had learned to communicate to a judging panel comprised of unknown community members and for the first time, experienced what is was like to receive feedback about his work from public constituents.

Other participants described their own preparation for their SCP presentation. Jackie wrote in her reflective journal entry, "[For] my presentation for senior project, I had to have a PowerPoint…I wrote out a script word for word." Matt explained how he developed presentation skills to more clearly articulate his ideas, "[SCP] prepared me on how to make a presentation (PowerPoint & speaking in front of a panel), and the importance of communication." Both Jackie and Matt incorporated technology to create a visual aid to help express their content and other knowledge for their presentations.

For several participants, learning presentation skills included in class practice sessions, on her online questionnaire Kate described, "We would also practice our presentations in front of the class so that we could receive feedback on what to improve. The presentations contributed to the development of collaborative abilities as well by giving and receiving feedback on one another's presentations. Students were simultaneously drawing upon multiple skills while discussing content and using their public speaking skills.

Parker also described the basic research requirement, a key component of the SCP, in his reflective journal. "I recall that our senior project required us to do a research paper on the topic

of our interest. We were to do research and read articles about our field of study." Shawn explained in his reflective journal how he learned to find research from the extant literature to support his theory: "My senior project involved me researching on the net and library for sources supporting my theory if media and humor is correlated to a community's consideration towards each other." Shawn further described the research process he learned during his SCP on his online questionnaire:

> How the whole research process goes . . . you have a proposal, you execute that plan, gather data for analysis in a research paper, then present your findings. If the evidence was not valid proof or uncorrelated, then that's why the paper would be constantly rejected.

As with others, the SCP was Shawn's first time he had to conduct research for a thesis project. Another participant, Mary, stated on her online questionnaire, "I learned how to conduct empirical research." The SCP provided an opportunity for Mary to learn how to further develop, refine, and conduct applied research:

> The one new thing I learned was how to design a survey and how to create workshops for students. Both were critical parts of my project and learning how to do them as well as make them interesting/challenging for my peers was important.

For Shawn and Mary, learning the research process involved focusing on supporting their thesis, which included an initial goal of designing a research study and the end goal of determining how they would present their findings to the community.

Descriptions of applying prior learning to complete the SCP research requirements were provided. Emily stated on her online questionnaire, "I feel that I was able to apply the research and writing skills gained from previous AP courses to the work I needed to complete for my

project." Maddie had a similar experience. She described how she drew upon what she had learned in multiple courses to complete her SCP:

> I had previously learned how to write a research paper in my U.S. history class, and I heavily relied upon that experience to form my senior project paper. I also learned a few applicable ideas from my biology classes. I ended up citing some of those ideas in my project.

Maddie explained the interdisciplinary nature of her research, as she used prior content knowledge to write her SCP paper and cite sources.

Writing skills are another component to consider regarding what participants perceived to learn from their SCP. Participants described their revision process. In her online questionnaire, Kate recalled editing the reflective and final research papers: "In class, I think we either peer edited or had our teacher edit our papers." Collaborative writing in class served as a window to the iterative nature of writing, allowing her to more fully understand the necessity of revising drafts towards the final product.

Participants learned to organize their materials and thoughts simultaneously in order to write. For example, Jackie explained how organization was crucial for her writing; at her artifact-based interview she provided the following details:

> Senior project had an outline...had a lot information and there were a lot of parts that where it could be broken up into. So just to organize it and to have main points rather than writing whatever came to mind, I think that was really important.

Jackie learned how to create an outline to organize her emergent content knowledge and prevailing ideas.

How participants applied critical thinking abilities to draw conclusions and present their conclusions was another aspect of the simultaneous skill development within the SCP writing requirement. For example, Kate wrote in her reflective journal, "[It] required me to think critically about very different topics in different ways." Parker furthered, "[The SCP] paper required students to present their understanding." Kate and Parker expressed how the SCP required them to concurrently apply critical thinking toward content knowledge to produce their written papers.

Abilities. Participants' collaboration with off-campus community members was another component of the SCP experience. Developing the ability to collaborate was viewed as a valuable experience for Jackie. She wrote on her online questionnaire, "The most useful thing that I learned is how to schedule time to work on a project with my mentors and how to ask for their input." The mentorship experience provided Jackie with the opportunity to learn how to collaborate and merge her time management, topic content, and communicative abilities.

Jackie continued to describe her relationship with her community mentor and her on-campus mentor at focus group interview:

> For collaboration with mentors, we had a mentor who was at our high school. Mine was my AP English teacher and they were supposed to help us with the research paper, the writing of it. I had my mentor from out of school from the community. That was the dentist that I shadowed and he was supposed to give me ideas about [my SCP topic].

Jackie valued working with her mentors. That particular mentor scaffolded her content learning that she needed to complete her research paper. Jackie further explained the positive results of her collaboration, "[My SCP] also made me get out of my comfort zone and taught me that I was capable of talking to professionals in our community and asking them for advice."

Collaboration with teachers or other students is another background component of the SCP experience. Shawn received similar guidance from collaborating with his school librarian, explaining:

> I remember my research paper being tedious to the point I didn't think they were going to pass me. I did get through [SCP research paper] after consulting with the librarians because they knew exactly what was required and how to achieve it.

Shawn sought support as needed to complete his project requirements. At her focus group, Kate described how fellow students provided her support during her SCP:

> I was in the senior project class, so seeing where other people were in regards to their projects presented me in a way that made me want to stay more on top of things and keeping track of things that were due…We had a lot of support from our teacher for that class and peers in that class, too.

Kate's SCP experience included building a support group of peers who collaborated on project requirements and time-management while working on the same project.

Developing communication abilities is another element of what participants described they learned from their SCP. For example, Matt explained on his online questionnaire:

> I learned that I was not great with being an effective communicator. I noticed that I was really shy and did not ask much questions while I have somewhat arise…The senior project mainly helped us with our skills like communication…Being in the engineering field, it benefits with the idea of training me to be a better communicator.

Matt had believed his SCP helped him become aware of the communicative abilities he would need for his future career. Another participant, Mackenzie, described on her online questionnaire how community service provided an opportunity to "learn skills in how to communicate better

with all different group ages." Mackenzie's fieldwork at a retirement center provided a venue to develop communication skills with senior citizens. In her reflective journal, Jackie explained how she used E-mail to "make plans with my mentors to meet…I had to constantly Email my mentors and other people helping me with my senior project about questions that I had and finding the best time to meet." Matt, Mackenzie, and Jackie learned how to effectively communicate with a bevy of stakeholders through face to face and online avenues. These proficiencies afforded opportunities to engage in fieldwork, communicating with patients, gaining information, and scheduling.

Mary utilized communicative skills to teach others about her SCP topic; she created and conducted workshops to teach her classmates about religious tolerance:

> My favorite part of working on my project were the workshops I held. I was able to encourage my classmates of different grades to participate in my workshops after school and then give them surveys at the end of the series about how much they learned and what I did well and what could be improved.

She described her newfound ability to merge her methods of communication with topic content knowledge.

Parker indicated on his online questionnaire how "the project required the student to understand time management." Jesse, on the other hand, who completed a career SCP on pharmacy, explained how he had to "make all of the time to handle the senior project as well as understanding what we needed to do." Jesse iterated that SCP required students to apply self-direction to determine what was needed to complete the project requirements while simultaneously managing their time. Kate implemented a planning process in her reflective journal: "Throughout senior project it was necessary to follow some type of schedule so that I

could finish everything that was required by the deadline." Through the process of identifying what work needed to be completed and scheduling the time to do so, Jesse and Kate learned how to handle the demands of time management.

Another participant, Jackie, described on her online questionnaire how she learned to handle a long-term project:

> I learned how to be self-directed, senior project was the first time that we were given an entire year to budget our own time and had to have a paper, video, project, and presentation done at the end. Before that I was a procrastinator but this forced me to start early because I had no idea how long future steps would take.

Jackie further described in her reflective journal how she handled the long-term project process: "I was creating a time plan to complete all parts of my senior project before the end of the year and before the presentation." Jackie demonstrated the SCP served as a vehicle for learning about what was needed for completion of a long-term project.

Dispositions. The SCP also reinforced the notion that participants had to be persistent in order to be successful in a long-term project. For example, in a reflective journal entry Mary explained, "I remember many late nights working on all of the drafts of my project…My weekends were spent working on this project and I sacrificed a lot of time with my family in order to work on it." For Mary, it was not just a question of managing her time; she had to remain dedicated to the long-term project process.

The disposition of persistence was one that Jackie also learned:

> To stay motivated I reminded myself that it had to get done one way or another…I think the skill that I use the most that I learned from senior project is to be able to keep working on a project even though I don't feel like it.

Jackie expressed gaining an understanding of the necessity of this distinct disposition for long-term project work.

Self-direction is another part of what participants learned from their SCP. Participants described how they also felt they were in control of their project and had to take initiative. One said, "I learned how to be self-directed. Senior project was the first time that we were given an entire year to budget our own time and had to have a paper, video, project, and presentation done at the end." Jackie described that for her to be self-directed she had to use the abilities of time and project management simultaneously to complete the interdisciplinary project requirements. The freedom of self-direction Jackie described was similar to what Maddie experienced. Maddie wrote:

> I did feel a lot more in control of managing almost all aspects of my project. I was free to research how and what I wanted to plan it how I wanted, and execute what I wanted. I was limited only by the direction of my adviser, who often had her own ideas of what to plan and how to execute it. However, those ideas weren't bad and did guide me to success.

What Maddie described is typical in PjBL, where the learning is student-directed and the process is teacher-assisted. Perhaps, Mackenzie summed up the self-directed SCP best: "The senior project allowed me to go beyond my spectrum of knowledge and the skills I had as a high school student. It allowed me to learn to take care of my responsibilities."

Summary: Theme 1. In the first section of Theme 1, I presented the SCP experience, participants' perceptions of what they did during their SCP experience. I selected three categories to organize students' questionnaire responses: skills, attitudes, and dispositions. From their participation in their SCP, participants used and learned: skills built in research and writing; abilities to collaborate and manage their time; and dispositions of persistence and self-direction.

Perhaps more illuminating was what students described they had learned about themselves from having embarked on the long-term SCP experience, revealing that each experience was unique and memorable. In the second section of Theme 1, I described two dynamic relationships which explained the means by which participants learned through participation in the SCP experience: (1) skills, attitudes, and dispositions were learned concurrently with content knowledge while completing interdisciplinary project work; and (2) using and learning of skills, attitudes, and dispositions took place simultaneously. In the next themes, I will apply these findings to better understand the participants' SCP experience and explore its transference to their college academic experience.

Theme 2: Transference of the Senior Capstone Experience to the College Academic Experience

Theme 2 draws upon student participants' viewpoints about how, if at all, the SCP experience has transferred to their college academic experience. Specific examples of connections participants made between what they learned when completing their SCP requirements and how it was applicable to their college academic experience are provided. In Theme 2, evidence from all 12 participants is provided from all data collection points of my study.

I have organized this theme into two sections that depict the transfer from the past high school SCP experience to the current college academic experience: (1) transference regarding participants' most frequently described abilities and dispositions needed for college (collaboration, creative or critical thinking, persistence, planning and organization, and time management); and (2) transference participants made regarding production skills related to completing the SCP requirements (research paper, fieldwork, portfolio and presentation).

Transference of abilities and dispositions. In order to determine which abilities and dispositions for which to focus my analysis, I directed myself to participants' responses regarding what they deemed as important for their college academic experience. I inquired about the skills, attitudes, and dispositions needed for college in two different data collection phases during focus group and final interviews. Participants were asked, "What skills, attributes, or dispositions do you think someone needs most for college?" Table 10. Skills, Abilities, and Dispositions Needed for College Success presents a compilation of participants' responses from their focus group and final interviews.

Table 10

Skills, Abilities, and Dispositions Needed for College Success

Adaptability
Collaboration
Creative or Critical Thinking
Persistence
Planning and Organization
Reflection
Responsibility
Self-direction
Strong Work Ethic
Time Management

Note: Organized in alphabetical order.

Of the skills, abilities, and dispositions compiled in Table 10, participants most frequently responded that collaboration, creative or critical thinking, persistence, planning and organization, and time management were needed for college success. Also, throughout multiple data collection phases, I found participants described a similar transference between their SCP and college academic experience for these particular abilities and dispositions. Therefore, I decided to focus on these abilities and dispositions for this theme's findings regarding participants' viewpoints of transference. In the following paragraphs of this section, I explore the

perspectives of my study's participants' regarding how collaboration, creative or critical thinking, persistence, planning and organization, and time management transferred from their SCP experience to their college academic experience.

Participants expressed having the ability to collaborate was necessary for college success. For example, Kate, is a psychology major, explained in her final interview:

> The senior project required me to reach out to people in the community for my mentorship. That's where it started because prior to that, I don't think I had to reach out like that…I had to be responsible to find my own mentor and schedule the time I would spend with her.

In college, Kate also had to locate and initiate research and healthcare volunteer work opportunities alongside other graduate students in her psychology department or community members. She attributed her high school SCP experience as where she learned to collaborate. On her online questionnaire, Kate also explained how she continued the same collaboration process from her SCP in college:

> I do draw upon my [SCP] experience in finding a mentor and completing mentorship hours in my current college work. A lot of what I think college is about is making connections and reaching out to people for opportunities and just general information.

She continued to describe her SCP mentorship as a benchmark for the one she pursued college. In her words, "Since my [SCP] mentorship experience was so great, I am always hopeful that the opportunities I seek (i.e., research projects, volunteer opportunities) will have the same reward, so that helps me want to reach out to others."

As part of the SCP fieldwork requirement, students had to locate, initiate contact and enlist the help of a community mentor. In his reflective journal, Derek compared the process of recruiting help for his SCP to what he did when writing a story for his college journalism class:

Current College Work or Thought: Provide details	Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work	Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience
Searched for sources for my final Journalism 320 story. This required references and searching online for credible and relevant sources to the story.	This is something I had to do during my senior project to find helpful, knowledgeable mentors and guides throughout the process.	It was important to be able to evaluate a source for relevancy to the topic. This was required while finding sources and mentors in the senior project process.

Derek likened the challenge of finding relevant sources for his news story to finding a knowledgeable mentor for his SCP. His high school collaboration process transferred to college, but it was put to use for a slightly different purpose.

When asked during his final interview, Parker, a civil engineering major in his junior year, considered what it took to be successful in college, "Thinking creatively because a solution is not always going to be in front of you." He described how he applied creativity for his SCP: "Creativity [for my SCP] was…with the research paper because you're presenting information, but being able to write it out and put it on paper so that the peers and different audience can understand it. That's the creative aspect." Parker's artifact-based interview contained many technical descriptions of how he critically deliberated and creatively thought to complete his college work. For example, this explanation of his college work artifact how many similarities to the self-directed critically thinking required for his SCP:

So, you would design your own project and you would design it how you would want it to calculate all these certain parameters in order to determine something and you would

compare the cost, you would compare the efficiency, and everything…You had to critically think about, when you're doing the research like, 'Okay, they're using this. Let me figure out how it works on my own.' You kind of have to research everything on your own and understand it on your own.

Parker later applied the same critical and creative thinking that he described using for his SCP research paper for his college engineering coursework.

Kate also provided critical thinking connections between her SCP and college academic experiences Her journal included the following:

Current College Work or Thought: Provide details	**Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work**	**Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience**
I am currently working on my last paper for my American Studies Asian America class, which is a paper that relates a major theme of the course to the latest memoir we were required to read.	Writing my final paper for my senior project is similar to this one just because it's the same task of writing a paper. They both require me to think critically about very different topics in different ways. My current work is about ethical social issues, whereas my senior project was health based, therefore I need to utilize a different type of critical thinking.	My current work is similar to my past senior project experience because there were multiple steps to getting to being able to write the paper (i.e., learning material in class, reading the book, drawing conclusions, writing the paper). The difference between the two was that my senior project was more self-directed whereas my professor assigned my current project and provided us with the material we needed throughout the semester.

Kate described having transferred critical thinking, writing, and organizational skills from her SCP research paper to the one she was writing in college. She described the necessity to use these skills simultaneously to complete both her SCP and college paper. For both her SCP and college papers, she had to critically think. The difference lied in how she had to apply thinking in different ways to complete the various types of assignments.

Persistence was yet another disposition participants described as crucial for college success. For example, Shawn explained, in his final interview, what he believed was needed to be successful in college: "Persistence because there has to be a reason why you decided to do something, so you have to keep reminding yourself of that end goal and persevering." On his online questionnaire, Shawn described why persisting to complete his SCP experience was important:

> I learned that I was very dedicated to completing [my SCP]. A lot of people gave up half way and after the first quarter. When I realized I wouldn't be Valedictorian anymore, [I decided] that I would finish this project regardless of what honor I might receive. It was something that I wanted to prove to myself.

For Shawn, he persisted to prove to himself that by completing his SCP he would be capable of college level research. In his final interview, Shawn spoke about how the "[SCP] prepared me for the kind of research I would be doing [in college]."

Descriptions on a holistic level of the entire long-term project experience helped reveal how participants perceived their SCP work was connected to their college work. For example, in a focus group, Mary expressed that from her SCP she learned to "sustain a project for that amount of time. I'm working on my [college] senior thesis and it's been the same timeline, just more difficult. I think having the [high school] senior project prepared me for this." Jackie had a similar experience to Mary, exclaiming:

> I think the skill that I use the most [in college] that I learned from senior project is to be able to keep working on a project even though I do not feel like it and I think that this is an important trait that helps me complete my school work and tedious assignments.

Jackie provided some humor as she detailed transference of the unpleasantness of persisting with project work even when it is no longer enjoyable. Maddie also described the disposition of persistence in her online interview: "If there's anything I use [from my SCP] in college now, it's the realization that...determination will carry you through basically anything." It appeared that understandings gained from the completion of the SCP helped participants face similar long-term project challenges in college.

Planning and organization were other abilities that participants described were needed for collegiate success. In the following dialog from a final interview, Derek described transferring the planning process he used for his journalism SCP to his college projects:

Y: You mentioned needing self-drive, planning, and knowing what you need to do [for college]; did you do that for your senior project?

Derek: [The SCP] planning stage, from initial: 'Alright, it's senior project time. What are you going to do?' You have to think about what interests you, what are the relevancies…'What direction do I want this project to go? How am I going to achieve it?' It was a lot of pre-planning before actually doing it…You have to adapt to those [to college], it's kind of how I used those in my senior project; from pre-planning to executing, adjusting, and then reflection, overall.

Derek went on to express that he thought that the planning process he acquired from his SCP experience had "definitely" transferred to his college projects. He indicated that he adapted and transferred what he learned during his high school SCP to his college work.

Mary detailed organization skills were a crucial ability for college when responding to a final interview question regarding if what she learned during her SCP carried over to college:

> Staying organized, because there's so many forms you have to fill out for senior project. It's ridiculous how many little acknowledgements and agreements and little summaries you have to turn in…In terms of dealing with Island University administration and turning in little forms, I would say it ties into that. Holding yourself accountable so things can get done in a timely manner for other people, no matter how frustrating they are, is something you have to learn.

Mary described how this attention to detail transferred not simply to completing assignments in a timely manner but specifically to submitting forms for purposes regarding university life.

Time management was another ability described as necessary for college success. During a final interview, Jackie described how she drew upon her SCP experience for her college writing assignments:

> We had the whole quarter to do the [SCP] paper. It wasn't that bad, work on it a little every day. In college, the first paper I had it was like, 'I can do it.' But, in a week before I'd rush to finish it. After a while, I would think about senior project because it was the last big paper I had to do. I realized that I learned…I'll have time to review…I think that senior project helped me after I realized the skills that I had learned in senior project.

After a transition period of not allotting enough time to work college papers, Jackie began to apply the time management processes she had learned previously for her SCP. She demonstrated transferal of the time management ability that she had acquired during SCP research paper to the papers she writes now in college. Jackie provided a holistic statement in her final interview: "[from my SCP] time management helped me [in college]...It was helpful to have an idea of how long it takes me to do a paper. How long it takes me to create a presentation and practice." Just

gaining the basic ability to know how much time to allot for a certain task while working on her SCP was of value to Jackie in college.

Jemma learned about deadlines and organization while completing her SCP, describing how she used her time management skills in college:

> I think it [SCP] did help because of the organization and time management. That's a big part to being successful in college…[SCP] was the first experience I had with having a hard deadline for everything, it made the transition to college a lot easier, in a way because I had that experience, now [in college], I'm able to get the feel of having to meet certain deadlines and that there are no excuses for reasons why I can't make something or if I can't finish it. It just made the transition easier.

Jemma not only transferred the time management and organization skills she acquired from her SCP experience to college but similarly claimed that SCP experience helped her handle the requirements of college academic experience much easier.

Transference of production skills needed to complete research papers, fieldwork, portfolios, and presentations. In this section, I present examples of how participants' production skills for creating their SCP work transferred to their college work. As noted in the previous theme, I defined skills related to the production of tasks. As detailed by the HIDOE (2010) guidelines, the SCP required tasks included writing a research paper, participating in fieldwork, creating a portfolio, and conducting a presentation. The HIDOE (2010) SCP's required experiential tasks provided the venue for participants to use cognitive tools for inquiry or artifact creation that Krajcik et al. (1994) found as fundamental for PjBL. Krajcik et al.'s (1994) PjBL framework required students to complete five fundamental features: (1) a driving question or authentic problem; (2) a main product or series of artifacts; (3) an investigation

around the problem; (4) collaboration with community members; and (5) the use of cognitive tools during the inquiry process or the development of artifacts.

In the following paragraphs, I explore participants' perceptions of how the production skills they learned during their SCP transferred to collegiate requirements. To provide a structure to examine the transference of production skills, I used the same categories (research paper, fieldwork, portfolio, and presentation) to view college work as those that were previously required for their SCP.

According to the HIDOE (2010), SCP research papers were to be written at a college level and address the student's essential question and thesis. Participants provided recollections of their SCP research paper and comparisons to their college research and papers. For example, Maddie commented on the relationship between the writing processes used for her SCP to that of college: "The research paper was similar because expectations for both were not that different. The projects were similar because I had to use resource managing for both." Maddie described the actual assignments she completed in college to be the same level as what she had experienced for her SCP, providing evidence of transference in brainstorming, finding informational resources, and completing the overall writing process.

Parker also provided a description of transferring writing skills; he wrote the following in a reflective journal entry:

Current College Work or Thought: Provide details	Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work	Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience
For today, I am working on a research essay that I am doing for my linguistics class. This essay requires me to do research on an endangered language in order to state facts on how it is endangered and what can be done.	Like a previous entry, our senior project required a paper during submission. This paper required students to present their understanding onto an essay.	I feel as these two assignments relate because it trains the student to be a good writer. Not only that, but it helps the student present their understanding in a way so that the reader of the essay can also see their understanding. Being able to present important information is a good skill for both.

At a focus group interview, Parker further described how his high school SCP research and writing experiences were foundational to his college writing requirements:

> My freshmen year [at college] was about presenting information, being able to write multiple pages, being able to gather research data from different resources. A lot of it was not something I wasn't going to learn [without completing the SCP] and I'm glad I learned it in high school.

Parker expressed how his SCP research paper had prepared him for college; what he learned from writing his SCP research paper had indeed transferred to the research he conducted and papers he wrote in college.

Mary was required to complete many writing intensive courses for her majors; during a focus group interview, the following dialog took place:

VY: How was your senior project paper similar or different from papers you write in college?

Mary: Very similar. It's just that I think I have better writing skills. I have a very specific format of the way I approach a paper and doing my senior project paper helped

> me build that. Now, I can do a four-page paper in four hours and I've grown better at doing papers under pressure because of senior project.

Mary expressed that the approach she used for her college papers had been already developed through writing her SCP paper. She also explained having that foundation equipped her to write more efficiently. The SCP experience also helped her manage the pressures associated with writing papers. At Mary's final interview, she provided another consideration of how what she learned during her SCP has been useful in college: "I think overall, [the SCP research paper] was helpful in terms of time management, organization, being able to write a 10-page paper…I think already having done that helped a lot…Overall, the [SCP] is helpful." Mary described not only transferring the writing techniques that she had learned creating her SCP paper, but also that she needed to simultaneously use the abilities of time management and organization to successfully write her papers.

The HIDOE (2010) SCP requirements for fieldwork included 15-25 hours with a community mentor to provide the student hands-on experience and learning in their topic. Participants provided many connections between their SCP and college fieldwork experiences. For example, Matt described his SCP fieldwork on his online questionnaire: "I liked the experience of having the chance to go out and interact with people in my field of interest." He believed the "[SCP] would help prepare me for college because I knew that [SCP] was going to be difficult and was looking forward to the challenge…I was motivated because I wanted to complete the project." He had the goal for his SCP to prepare him for college; successfully completing his SCP fieldwork transferred to fieldwork he would later undertake in college.

Emily compared her current field work as an elementary school student teacher with what she did previously for her SCP on integrating music with technology at the elementary level. At a focus group interview, she shared:

> I work with [my college mentor] and I take responsibility for the class…and I take control of certain subjects or for the whole day. It's fun. It's more than I did for senior project, because for senior project, I was working with the technology coordinator and it was a resource class. Now, I'm in the classroom and I do every subject every day. I like it.

Emily described her current fieldwork in college to be more extensive than what she did in her SCP during high school. Her student teaching required more hours and greater independence than she experienced for her SCP. Parker also explained how his college work was of a higher caliber. In the focus group he compared his SCP job shadow in electrical engineering with his college internship in civil engineering:

> The job I work with now, it's a lot different [from my SCP fieldwork]. When you shadow somebody, you don't have a lot of responsibilities and you don't have a say in what's going on. But, when you're in the [college] field work, you're involved in a lot of aspects. Like making deadlines and communicating with others instead of watching other people doing it in front of you.

For Parker, in college he was completing more work himself compared to his prior SCP fieldwork where he mainly shadowed an engineer. Derek expressed the same connection as Emily and Peter that his college work required more from him than what he did for his SCP. He provided the following details at a focus group:

> Senior project fieldwork is more sheltered and structured. You have to log your hours and your mentor is there. Fieldwork in [college] journalism . . . I find that it's very independent and you have to do it on your own. It's more job-like [college] compared to mentor-like [SCP].

Emily, Parker, and Derek's SCP fieldwork experiences served as a foundation upon which they built for their college fieldwork. They expressed their college academic experience to be more independent than the high school SCP experience, which seemed appropriate since college is considered to be higher education and advanced study. Moreover, college often requires internships for longer durations of time. Emily, Parker, and Derek expressed that aspects of collaborating with mentors, scheduling time, and learning content had also transferred from their SCP to their college fieldwork experience.

The SCP portfolio component is a compilation of the requirements and provides evidence of the student's learning breadth in communication and project development (HIDOE, 2010). Participants commented upon completing various required paperwork (consent forms, work hour logs, reflection logs) for their SCP portfolio. For example, Jackie made a connection between documenting work hours for her SCP job shadow and her current college volunteer work. She made the following entry in her reflective journal:

Current College Work or Thought: Provide details	**Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work**	**Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience**
For my scholarship I have to log the hours I volunteered	This is similar to the logs I had to track time spent with my mentors	In both of these I had to keep track of time spent on a project and make sure that I was keeping up with my logs

Derek was the only participant who brought his SCP portfolio to his artifact-based interview. He thoughtfully paged through it, explaining the documentation of his project work and describing how the SCP was the commencement for a career in journalism. Derek wrote on his online questionnaire that he learned to reflect on a long-term SCP: "Looking back for the presentation and final binder, you pull what is the most important through the months you've been working." He kept a portfolio for his college major. At a focus group interview, he explained portfolios were "common in journalism. We're always building our portfolios, which are called clips. Our instructors tell us that our clips will help us get jobs." He believed the quality of his SCP video product was high enough to be included in his professional portfolio.

At his focus group, Parker also spoke about creating his SCP portfolio: "a lot of our portfolio was…figuring things out yourself. It was a little challenging because of that." Parker appreciated developing his SCP portfolio for the self-directed aspect of gathering his work and reflecting on his progress through a long-term project. He continued and described his college engineering portfolio, expressing that "a lot of what we do is resumes saying which projects we were on." Parker echoed similar thoughts regarding a similar portfolio development process used in his SCP to those required in college.

Another aspect of the SCP portfolio was reflection on practice or progress on one's project. When describing her college student teaching assignment, Emily, an elementary education major, shared:

> When I did reflect for my senior project, it was more reflection on the students' work versus now, I'm reflecting more on what can I do or what did I do that the students needed and how do I make sure to keep doing that. It's more conscientious of what I'm doing.

Emily explained how her reflections evolved from the time of her SCP. She took it to the next level for her college fieldwork, critiquing her abilities as a teacher rather just her students' work.

The required SCP presentation is formal and assessed by a three member judging panel comprised of volunteer community members selected by the school (HIDOE, 2010). Students were required to present their SCP experience and subsequent research findings. Participants made connections between the skills, processes, and dispositions needed to develop their SCP presentation with those in college. For example, Matt chose two projects with presentation components as his college work samples. At an artifact-based interview, Matt recalled his first work sample which had a Microsoft Excel component: "I did it kind of like [SCP] where the planning process was just do the research, [and] compile everything I need." He also described another connection, saying "the similar parts where it was open questions at the end…[were] kind of like the senior project—they asked a lot of questions since they were community members." His second work sample was a Microsoft PowerPoint and a pamphlet he developed for a presentation. Matt explained that creating his PowerPoint in college was comparable to the one he had done for his SCP: **"**[I was focused on] just putting the pictures and making the PowerPoint nice with all the transitions." Matt's comments about a connection between his SCP and college presentations led to a follow-up question requesting more details, resulting in the following dialog:

VY: Interesting. Do you think your senior project presentation, developing the presentation skills helped you at all for the [college] presentation?

Matt: Oh yeah, it did! You can see how…[spoke with confidence and pride] My [SCP] advisor taught us to not put a lot of wording on it. That's [SCP's] where I learned it. This [college] one was just was statistics, so that's why it's a lot. But other than

that, it was just bullet points. To explain these, it kind of explained through our fact sheet [pamphlet].

The details Matt provided were more about the aesthetics of his PowerPoint, but it was with much enthusiasm that he exclaimed how his SCP learning had transferred to his college presentation.

During his final interview, Parker expressed that the experience of creating and conducting a formal presentation to convey his research and ideas to community members was the one high school speaking assignment that he "took the most into college because at least it wasn't the first time I spoke in front of a crowd." In his reflective journal, Parker provided a comparison of specific college presentation he completed in college with his previous SCP one:

Current College Work or Thought: Provide details	**Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work**	**Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience**
I am currently working on a mini project for my environmental class. This mini project is a presentation on a project that is assigned to us…	The biggest part of the senior project was the presentation. We were to present in front of a panel of judges in order to show them what we learned and how we can apply what we learned to the real world.	These two assignments are very related. First, in both scenarios, we had to present... Not only will we be graded on content, but we will be graded on presentation on our performance when speaking.

Parker's journal entry contained basic connections of being graded on content and presentation skills. He described transference of his SCP presentation experience as creating and conducting a presentation to depict what he learned to the intended audience.

Shawn also described how in college he had built upon the knowledge he had acquired from his previous SCP presentation. He wrote on his online questionnaire:

In my [college] class, I did a descriptive presentation on how one can have better sleep. This was a bit different from my senior project presentation because it was more formal;

when I had to present in front of various faculty members in HS I could recall just telling them the issue, how I addressed it, and the results; my [college] class required us to have supporting evidence and credibility.

Shawn described how he advanced his presentation skills since the days of his SCP to meet the more rigorous and increasingly complex demands of college. In a reflective journal entry regarding a different college presentation, he wrote:

Current College Work or Thought: Provide details	Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work	Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience
My final presentation for my micro robotics project. We had to go over what we planned to do this semester, what we actually did, the results and things that have changed over the course.	This brings me back to the stresses of practicing nonstop then presenting in front of an audience… But during my senior project presentation I was really prepared and had my PowerPoint to remind me of what to say.	The presentation aspects for both are very similar because they ask you what you did, how you came about it, as in why this path instead of another, and your results and analysis. For my senior project, I was asked what I would have done differently and the same mindset occurred for my final project presentation.

Shawn's SCP presentation experience was applicable to his college presentation assignments; he described how both presentations required him to explain his methods of data analysis and results. Shawn recalled he overcame his nervousness for SCP by being thoroughly prepared; in turn, he used similar thorough preparatory methods for his college presentations. Reflecting on what he might have done differently for his projects was another aspect of how his SCP presentation experience laid a foundation for a process he repeated in college.

Summary: Theme 2. In Theme 2, I explored how participants perceived the skills, abilities, and dispositions they developed from participation in their SCP experience transferred to their college academic experience. The theme was organized into two sections to depict

transfer between the high school SCP experience and the current college academic experience: (1) connections regarding participants' most frequently described abilities and dispositions needed for college (collaboration, creative or critical thinking, persistence, planning and organization, and time management); and (2) connections participants made regarding production skills related to completing the SCP requirements (research paper, fieldwork, portfolio and presentation). Participants described using abilities and dispositions similarly for their SCP and college academic experiences. They transferred collaboration, creative or critical thinking, persistence, planning and organization, and time management they had learned during their SCP to college. Participants' perceived transference of production skills related to completing the SCP requirements. The skills they acquired for their SCP research paper, fieldwork, portfolio, and presentation skills became a foundation for similar work they completed in college.

Theme 3: The Senior Capstone Project Experience Directly Prepared the Case Studies through Experiential Learning that Transferred to their College Academic Experience

Theme 3 focuses on three embedded case studies to illustrate direct connections between the SCP and college academic experiences. In this theme, I will first describe each of the three case studies' individual experiences and then offer commonalities across the case studies. The previous theme detailed general connections regarding skills, abilities, dispositions, and the SCP required research paper, fieldwork, portfolio and presentation) participants made between their SCP experience and their college academic experience. When I considered general connections, I looked for any evidence of transference between the SCP experience and the college academic experience. For the explicit connections in this theme, I focused on connections the case studies

made to confirm interest in a career or their ability to develop skills, abilities, and dispositions that transferred to the specific needs of their college major.

For the case studies, I selected three of the study's 12 participants (Parker, Emily, and Derek) who described substantial direct connections between their SCP and college major. The first case study participant, Parker, was selected for his perceptions of studying engineering. His SCP directed him to his college major and provided experience from which he drew for his coursework and internship. The second case study, Emily, was selected for the direct connections she provided between her career type SCP and her college student teaching. During her SCP she gained confidence in her ability to teach and practice in resourcing mentors that was applicable to her college student teaching. Finally, Derek, the third case study, was selected for his rich description of transference of media and production skills from his SCP experience to his college academic experience. Participation in the SCP reconfirmed his interest to major in journalism. The other nine participants expressed general connections in various academic areas, but their connections were not as direct or consistent to their college majors.

Parker, Emily, and Derek described in detail that experiential learning had taken place during their SCP experiences. Building upon Dewey's (1938) theory of experience and constructivist learning theories, Kolb (1984) defined experiential learning as "the process whereby knowledge is created though the transformation of experience. Knowledge results from the combination of grasping and transforming experience" (p. 41). Experiential learning techniques were seen to enhance learning transfer (Furman & Sibthorp, 2013). Techniques such as PjBL were described to be well suited to provide authentic learning experiences. Hung (2013) believed that PBL provided a learning environment that offered "authentic, complex, ill-

structured problems to help students make connections between theory and real-world application" (p. 32).

In this theme, I provide descriptions from Parker, Emily, and Derek about their experiential learning through participation in the SCP and examples of how that learning transferred to their college academic experiences. Below, the case studies will be presented individually in three sub-sections, one for each of the case studies. After the individual accounts, I offer emergent trends and commonalities across the three case studies.

Parker's Senior Capstone Project led him to discover his love for engineering. During his interviews, Parker sat confidently and replied with a steady voice; he held a positive attitude as he talked about his current college work and prospects of his future career. He was a 23-year-old Filipino American in his junior year majoring in civil engineering. At the time of the study, Parker explained, "I work for a construction management company as a junior project engineer." His job also fulfilled his college internship requirement. Parker was enthusiastic that he was gaining more experience in his engineering career interest. After one of his interviews, Parker expressed his excitement and overall sense of pride that he was on pace with his coursework in a manner to graduate in four or five years. He recognized his SCP for the experience he needed to attain his current part-time job in engineering and for paving the way to begin his career.

Parker initially set out to complete his SCP in order to meet requirements for the BOE diploma and his Achievement Via Individual Determination (AVID) college preparation class. Upon reflection, he realized that participation in the SCP experience provided him the opportunity to learn about a potential career. Parker explained, "I was able to use the senior project to shadow engineers at the electric company…Looking back now, I am glad I did it

because of the knowledge I gained from the professionals." He began the SCP under the impression it was just another graduation requirement but soon better understood its purpose and in turn, valued the knowledge he gained by participating in the fieldwork experience.

During his senior year at an island high school focused on college preparation, Parker self-selected a career type SCP with electrical engineering as the topic. When asked to explain his SCP at a focus group, Parker stated, "My senior project topic was on electrical substations with shadowing at the electric company." Parker provided more details of SCP fieldwork on his online questionnaire, writing, "I liked being able to see different things that engineers do. Because shadowing a professional (engineer), I was able to see the different tasks an engineer did on the job."

For his SCP fieldwork requirement he had to obtain a professional mentor with whom he could learn about a career of interest. Parker valued the time he spent with his four SCP mentors: 1) his official on-campus mentor was the high school teacher who handled his implementation course; 2) he enlisted the help of another high school teacher who was familiar with engineering and provided a classroom for his workshops; 3) the job he shadowed an electrical engineer at the local electric company; and 4) for his thesis topic on electrical substations he mentored with a professor at Island University.

He fondly reminisced about his SCP job shadowing experience in a focus group discussion. Parker recollected, "When you do senior project and when I shadowed engineer, it was a lot different than the things you do in class than when you're out in the field. It was a lot more hands-on than the other [high school] classes I took." For Parker, the SCP was the first authentic experience that he had outside the classroom. Taking part in the long-term PjBL opportunity provided him real-world learning that he would later transfer to his college engineering projects

and his college internship. Parker further described this hands-on learning on his online questionnaire:

> I learned what it was like to work in an engineering office. When it came to the senior project, it gave me a chance to step into the working field, rather than just learn off a whiteboard. I was able to gain knowledge from the experiences of those who have gone through it. Not only has it [SCP] helped me with my current occupation/internship, it has given me a fighting chance against other engineering students trying to get into a company; I have insight on what it is like to work in the field.

Due to his SCP experience, Parker was able to see firsthand what it was like to be an engineer. Parker believed that the experiential aspect of his SCP fieldwork was much more valuable to his college major than the teacher-centered whiteboard lectures he had previously experienced in high school. He believed that the professionals in the field evaluating college interns found value in his SCP experience.

Parker described in a focus group how his college internship differed from his SCP fieldwork:

> When you shadow somebody [like I did for the SCP], you don't have a lot of responsibilities and you don't have a say in what's going on. But, when you're in the [college internship] fieldwork, you're involved in a lot of aspects. Like making deadlines and communicating with others instead of watching other people doing it in front of you.

In college, Parker experienced additional independence and needed to apply more self-direction, as he no longer just watched others but he actively partook in the engineering process. For example, during his high school SCP fieldwork, Parker mainly shadowed or observed an engineer. His college internship experience was at a higher level. He described how he was

required to take responsibility to draw upon his time management and collaboration abilities to meet deadlines and communicate with others; skills that he had previously initially developed during his SCP experience. Parker expressed again, this time in his artifact-based interview, how more self-direction was needed in college than during his SCP. He explained, "Being able to do it on your own and using your own knowledge to design it rather than a [SCP] project that you get information [from others]." For his college internship, Parker contributed to the actual engineering projects; he provided input, particularity in design.

The collaboration Parker described with engineers for his college internship built upon the knowledge he gained from his previous SCP mentors. For example, Parker attributed his SCP as providing a platform to develop the ability to collaboratively work with others. He resourced his SCP mentors frequently, as they were crucial for him to understand engineering concepts. During his artifact-based interview, he provided details on how his mentors aided him with his SCP research process, "[For my SCP] I would research on my own, but in a general sense, and then when I went to my mentor, he explained it more, which helped me research it more because I understood it more." In high school, the information he was learning about engineering was new to him, so Parker relied heavily on his SCP engineering mentors to explain the research materials. He learned the importance of obtaining the expert assistance from those in the field. Parker described that during his SCP, he built a foundation for collaboration and sourcing information from others.

The collaboration abilities Parker developed from his SCP carried over to the relationships he established with his college mentors. For example, while explaining the self-created design concept of his college work sample at his artifact-based interview, Parker described how he recently collaborated in an environmental lab class, "I had to work with

different groups of people. I had to work with a professional engineer. I also had to talk to a construction project team that the engineer I worked with was a part of."

Parker's choice of an engineering career topic and working with mentors in the field provided him some of the greatest benefits of his SCP experience. His SCP helped him to determine what he did not want to study in college:

> [SCP] was a chance for me to get a taste of what it was like to work in that field when I shadowed the engineers…I was able to understand I do love engineering. I just found a more specific field I like…I used it [SCP] to determine that I no longer wanted to become an electrical engineer.

Parker thought his SCP experience had been beneficial to gaining an understanding of the engineering industry. The SCP fieldwork that he completed in electrical engineering helped him decide that he was no longer interested in pursuing it as a career. Through his SCP research and after speaking with his mentors, he discovered that civil engineering better suited him for a college major and career. He liked the aspect of working on or designing projects that would solve problems or impact a community.

Parker provided more details about his current college academic experience and his work for the engineering firm, "I have completed many tasks in college. I have completed research papers, speeches, project proposals, concrete mix designs, lab reports, class presentations, as well as other field and office work for the company I work for now." From this quote it is clear that in his college career, Parker has had access to numerous rich experiences that prepared him for his professional life. What is particularly interesting is that several of the tasks Parker named as experiences in college were similar to those required for his SCP—writing research papers, giving presentations, and engaging in fieldwork most notably.

Parker explained that he felt his SCP preparation had both strengths and weaknesses:

> The senior project mainly helped us with our skills like communication, and writing. [My SCP] did not really emphasize technical skills like computers…it did not really help me become a better technical thinking and applying my skills in math and science. . .what I needed to do [in college].

Parker has had access to many SCP experiences that prepared him for college, but he also wished that he would have preferred to gain more skills related to his college major. For example, the college work sample he presented at his artifact-based interviews required him to design a product applying engineering related math and science skills. On his online questionnaire, he explained the difference between the two experiences, "Senior project was tough but it seems like a scratch compared to what real college classes do to you."

Parker recalled and had vivid acknowledgement of how his SCP equipped him for college academics and his engineering major during a focus group discussion:

> When you do senior project and when I shadowed engineer, it was a lot different than the things you do in class than when you're out in the field. It was a lot of hands-on than the other classes I took [in high school].

He felt participation in the SCP had been a unique experience, as it was the only hands-on, career-based opportunity that he had during high school. SCP was an experience that aided in his college fieldwork, which was an important component of his major. On his online questionnaire, Parker detailed that he believed his SCP experience was [illegible] in high school:

> [My SCP] gave me a sense of what I would have to do many times in college. I feel as though if I, or any other student, could not do senior project, there would be no way I, or that student, could handle what college throws at you.

Parker respected his SCP experience for learning what was necessary and expected for college level work and more specifically, built a foundational understanding related to his major.

Participation in the SCP helped him transition into the college academic experience. Parker described a positive holistic aspect of his SCP opportunity:

> I learned, at the time, what it was like to go through a project…being able to do the project itself [was helpful for college] because a lot of what we did in high school was from the textbook. [SCP] was more of picking a topic, doing what you want to do, and presenting it.

Having experienced the uniqueness of the PjBL process, or what Parker described as 'going through a project,' he felt that the holistic nature of the SCP was beneficial prior to college.

From Parker's collective comments (including those contained in Theme 2), he expressed that through his SCP experience, he learned how to research, write, reflect, and present. Further, he credited it for helping him become increasingly versed in communication, self-direction, and time management skills—all abilities he depicted as transferring to his college needs. The SCP job shadowing experience gave him an authentic in the field observation of a career that directly transferred to his college major. One final comment from Parker seemed to not only sum up his thoughts on his SCP but also expressed a sentiment of gratitude: "For me, [SCP] was a worthwhile experience. It is because I am able to apply what I learned for college."

Emily's Senior Capstone Project allowed her to discover that she really could teach. Emily had a bubbly personality; she was energetic and exhibited a matter of fact sense of agency. She was a 22-year-old female of Okinawan and Cherokee decent in her senior year at Island University. Emily had excelled at a suburban high school, completing several Advanced Placement courses and explaining at her final interview that, "I technically could have graduated

as a junior. I just stayed because I wanted the honors diploma and I wanted to stay in marching band." On her online questionnaire, Emily explained that she had completed her SCP in order to graduate with honors, earn the BOE recognition diploma, and she "wanted to get the cord at graduation."

Regardless of being compelled to complete the SCP for a diploma requirement, Emily later valued the SCP experience as an opportunity to learn about her prospective career. She wrote on her online questionnaire, "[I learned] everything about my topic. There were no courses offered at my school which provided any professional experiences or knowledge." For Emily, her SCP was the only time she took what she learned beyond the confines of the classroom; participation enabled her to gain an authentic hands-on experience.

Emily chose to complete a career type SCP and topic that combined her interests of teaching and music: technology integration with music at the elementary level. She spoke fondly of her SCP experience. Emily job shadowed grade-level elementary teachers, created a unit plan, and taught her lessons over a two week period, "with the technology coordinator [for] a resource class." In her focus group Emily said with a glimmer of excitement in her voice that "I never had a mentor before," and later at her final interview, she reflected, "I got really lucky, in the sense, I had teachers at the elementary school that I went to who were willing to take me on for the senior project."

At the time of the study, Emily was a college senior set to graduate right after her final interview took place, with a major in elementary education. In the College of Education, Emily successfully completed her teacher credential requirements. She took pride that she accomplished goals beyond just completing the minimum requirements of her major; Emily minored in music and was part of the university marching band. Emily recognized her SCP

experience as the precedent for being a self-advocate and persisting to attain her goals and degrees. In her final interview she stated with conviction, "If you want something, go after that because if you're passionate about it and you can do something about it and if you find a way, then that's great."

Emily expressed that she had loved teaching the music and technology unit for her SCP, as it prepared her for a future college major and career. At her focus group Emily detailed, "When I designed my [SCP] project, it was specifically preparation for getting into the college. I did the videotaping, the presentations, the PowerPoints because I knew I was going to do it [in college]." Emily had planned her high school SCP to meet her future needs and after consulting with her mentor she designed it to include what would prepare her for Island University's College of Education. In her online questionnaire, Emily described participation in her SCP experience:

> I was intrinsically motivated throughout the project. I have always wanted to be a teacher, since I can remember. Since this was the focus experience of my project, I wanted to work hard and succeed. I wanted to be sure that this is what I could do as a career and show those who did not support my choice that this was a good choice for me.

Emily pointed out that her aspiration for a teaching career was what motivated her throughout her SCP. She knew that she wanted to become a teacher and used her career type SCP to gain experience and confirm that becoming an educator was the right path for her.

In her online questionnaire, Emily described the main connections between her SCP and college work: "the similarities are the general expectations of fieldwork, lesson plans, and a portfolio." She continued to describe these connections further during a focus group interview:

> For [my SCP], it's very similar to what student-teaching is. I have to turn in a sign in sheet every week, I have to give my evaluations every now and then. I have to give lesson plans and evidence and student examples. That's everything I did for my senior project and everything I'm doing now. College is harder though.

Emily's participation in her SCP prepared her for similar work in college. She had transferred what she learned from her SCP to college work at a more advanced level. Emily expressed this further in a reflective journal entry, as she wrote, "Senior Project was short, and not as detailed an experience as the [college] Assessment 5…[which was] similar to but much harder than a Senior Project." It would be expected that the breadth of teaching methods and the specific requirements of her college assessment portfolio would be at a higher level than what she had completed in high school.

Beyond the transference of the general expectations of her fieldwork, lesson planning, and portfolio creation abilities, Emily also described having connected working with mentors and becoming self-directed when discussing her SCP and college academic experiences. Emily provided examples of how communication and collaboration with her mentors were important for her SCP experience and essential for college as well. In her online questionnaire, Emily explained how during her SCP:

> I was in constant contact with my two community [SCP] mentors. I really only had an idea of what I wanted to do, and they helped to structure and plan the details of my project. They helped out with every question I had and supported me in the classroom.

In high school, Emily relied heavily on guidance from her mentors to design her project and to complete her SCP fieldwork. She further explained, "My greatest challenge with my project was lesson planning. I had no prior experience with this and also had no idea how it should be done. I

overcame this with help from my mentors and their resources." At an artifact-based interview, Emily described her lesson planning process for her college work sample, "It was similar [to my SCP] in the sense that I went to my mentor and was like 'This is my idea! What do you think?' and they gave feedback and I had to do a lesson plan." Emily described how her SCP and college project were connected—for both experiences she collaborated with her mentors, communicated her ideas, and gained their input for her projects.

Emily smiled and spoke with an air of contentment as she went on to explain how in college she began to resource her mentor less and took the lead:

> For my senior project, it was more of 'I don't know what I'm doing' and the mentor sat with me and we filled it out together and she broke it down. Whereas now, it's I have to do it by myself and then I send it in and they approve or disapprove of it. So it's just like a step up. Less dependent [on mentor].

Emily described a transition; she explained how in college she became less dependent on her mentor and more self-directed in her teaching responsibilities. The time and task management processes Emily learned from her SCP mentor transferred to college. In college Emily took on more responsibility toward lesson planning and during her student teaching, she was solely in control of her mentor's classroom. At a focus group, she stated, "I take responsibility for the class on the days I'm there and I take control of certain subjects or for the whole day." In college, Emily had progressed to where she was fully self-directed.

Through her confident description of her work samples and rapid speaking smile at an artifact-based interview, Emily expressed a sense of pride toward her accomplishment of becoming independent with her teaching responsibilities:

> Creative thinking is the whole thing, I make [lesson plans] by myself. Critical thinking is knowing the students' needs; their accommodations; knowing how to differentiate for the whole class at one time; who works well together; who has social needs; who has learning needs and putting it in a way that I can present to the kids in 45 minutes.

This statement describes how Emily believed that she had become more independent in critical and creative thinking for her student teaching role; she was quite pleased with her progress. Due to guidance from the mentors she had in high school, Emily began to understand lesson planning during her SCP fieldwork and continued to apply what she had learned for her college fieldwork where she became independent with the process.

At a final interview, Emily made another connection about what she had learned during her SCP and continued for her college fieldwork:

> That ability to connect with the students and to develop a rapport with the students, I got to practice that as a [high school] senior in a teacher role versus a volunteer role. I got to take on all the responsibilities and I do that now…It's one of the strengths that my [college] professors write about that I have a good rapport with students.

Emily detailed how the skill of building rapport with her students transferred from her SCP fieldwork experience to her current college experience.

Perhaps one of the most reflective statements in the participants' journals came from Emily. She considered the following regarding the breadth of her learning from the time of her SCP to her college student teaching fieldwork:

> My [high school] senior project, while very musical, expressive, and creative for the students, was not as strong as it could have been with [college] training…I wonder what I could've done if I had had [my college] experiences before or during my senior project?

Emily reflected about how she continued to consider her SCP fieldwork while in college. In her interesting reflection, she believed that what she had learned during her current college fieldwork could have benefited her prior high school fieldwork. Perhaps her required SCP reflections for her portfolio, or those she completed for her SCP lesson plans, provided her with a foundation of introspective examination that has had a lasting effect for her teaching practice.

Through her collective statements, Emily expressed how in college she built upon the skills, abilities, and dispositions that she initially developed during her SCP fieldwork experience transferring them to what she described as the general fieldwork and lesson planning expectations of her college student teaching. In her reflective journal, Emily looked back fondly on her SCP as her first teaching experience, stating: "I was excited to leave behind my Senior Project, grateful for the memories and experience, but I didn't realize how lucky I had been to try out something I loved." Emily advised high school students to follow her example and use the SCP to explore a career. In her focus group she recommended the SCP to others, stating, "I would say it's a great experience and it let me test out being a teacher before I committed to being a teacher." In her online questionnaire she offered a statement regarding how her SCP had helped to form her future, "I believe that the most important thing I learned about myself [through completing my SCP] was that I could teach…[My SCP] solidified the idea of pursuing Elementary Education as my major." Through Emily's dedicated participation on her SCP, she learned that becoming an educator was indeed the right career path for her.

Derek's Senior Capstone Project fieldwork provided testing experiences for his dream career, journalism. Extremely outgoing, Derek was both jovial and confident in his persona. He was a 21-year-old college sophomore of Filipino and German descent. Derek graduated from a neighbor island high school where he claimed to have been a lazy but above-

average high school student. Participating in his high school's Arts and Communication Pathway was where he was first introduced to journalism and media production. In college, he majored in journalism and was on staff at Island University's student newspaper. He was passionate about telling cultural stories and the media production process. Derek's strong interest in his major motivated him to perform well in his college classes. As the study was closing, Derek had attained a part-time job at a local news station after having a successful summer internship experience. He credited his SCP experience for the foundational knowledge needed to attain his internship and employment.

Derek chose to complete a performance based SCP, which was described as "the importance of broadcast journalism; exploring how the media has developed and the importance of it in modern day society…I chose this because this is what I wanted to study in college and go into as a long-term career." In his online questionnaire, Derek wrote why he wanted to complete a SCP:

> Initially I had intended on achieving the BOE recognition diploma. Although I didn't have enough math credits to get the Board of Education diploma, I stuck with senior project as a way to expand on my career interest and gain special insights and further my learning.

Like others in the study, the motivational reward of the BOE recognition initially inspired Derek to participate in the SCP experience. At his final interview, he provided additional details as to why he continued with his SCP even when he found out he would not attain the more prominent diploma: "I did it because I thought it was a great way to get my work out there [by] getting a community mentor. It's good to network and be exposed." The authentic learning experience motivated Derek to persist and eventually complete his SCP. "I was self-motivated. I knew this

was for a bigger meaning than just a grade. This was my first real-world experience in the media community, and so I was just naturally inspired to get work done." He also included that his SCP was an opportunity for him to learn "real world work experience. What it's like to be responsible for community media production."

Derek answered an online questionnaire inquiry regarding what he had learned during his SCP with an extensive list, "media skills which include camera operations, reporting, on camera stand ups, story presentation, and audio monitoring. Interviewing/communication skills." He also stated that he used basic media production and camera operations for his SCP that he had learned in previous courses taken in his high school's Arts and Communication Pathway such as, "digital storytelling…proper framing of shots and camera lighting." Derek's descriptions depicted having learned a career-specific skill set.

Derek illustrated how the planning and media production processes he acquired from his high school SCP transferred to his college academic experience:

> Through the journalism major, I have completed video projects and news stories very similar to that of my senior project. These projects require similar scripting, writing, filming and editing techniques that I used prior [for my SCP]. The evolution and quality of my work since senior project has greatly improved.

Derek felt that he transferred processes learned from his SCP and noticeably had improved upon his abilities and quality of work in college. Derek expressed that he enjoyed the media process, and how it enabled him to tell stories that people wanted to hear.

For Derek, self-direction and project management were extremely important for his journalism work. At his final interview, he described what he viewed was necessary for the self-directed planning process for the SCP:

> Independent drive to get work done; learning how to be responsible about your own work; and knowing what you're doing. [SCP is] the time to learn, but at the same time, you need to know where you're going with things. You have to have a good sense of what the finished product will be…You gotta know how to take the steps to achieve a finished product and know where to go with it.

Derek expressed needing self-direction to accomplish his SCP. He had to design what his final product would be and then plan what it would take to achieve his goal.

At his final interview, he expanded upon what he had learned during his SCP experience, "I think, skill-wise…it was great to work with a community mentor and produce a community project." Derek viewed participation in his SCP provided him with the opportunity to collaborate with mentors and learn media skills first hand. Communication and collaboration were important for both Derek's SCP and college academic experiences. When asked what aspects of his SCP transferred to college, Derek replied: "Being comfortable with working with outside organizations." During his SCP, he had practiced approaching community members as sources for help and information; this was an ability he continued for his college media projects. He understood his mentors and community members were resources to contact as needed to complete his work.

During an artifact-based interview, I posed a follow-up question to Derek, asking him to further describe how he collaborated with mentors and community members. He explained that for both SCP and college, he had to work with his mentors to approve [my news story] with my teacher and my instructor. Then, go ahead and contact your sources." Connections between his high school and college process for communication on his projects "also required contacting local sources, local public community figures…[to] say 'Hey, I'm doing a story. I would like to

feature you. Would you guys be willing? Can we set up a meeting time?'" Derek's SCP provided the opportunity to develop abilities in communication by practicing contacting sources—a practice he continues to this day in college. The conversation turned to the relationship he had with his SCP mentor:

> Definitely a collaboration with my [SCP] mentor. That was very similar [to college]… well, actually it was similar in the sense of collaboration, but responsibility wise…it was on a lesser level because I had just one task to do at a time [SCP] compared to multiple [college]. [SCP] was a lot of learning, but at the same time [my mentor] knew that I knew how to produce and knew how to deliver what I had to. He trusted me with that a lot, my mentor.

The gratifying experience of having his SCP mentor recognize his capacity to complete independent work transferred to college.

The collaborative aspect of Derek's SCP fieldwork experience was the foundation for his college fieldwork. He provided details as to how his SCP and college fieldwork differed:

> Senior project fieldwork is more sheltered and structured. You have to log your hours and your mentor is there. Fieldwork in journalism here, I find that it's very independent and you have to do it on your own. It's more job-like [college] compared to mentor-like [SCP], here in college.

It is understandable that his high school work was more novel compared to what he accomplished in college, after having more experience and specialized coursework in his major. During an artifact-based interview, he explained that his SCP had been a starting point for what he did for his college projects. For example, he expressed that his college work was more self-

directed, “Here’s your assignment, figure out how to do it. With the senior project, it was very guided…It’s just more in depth here in college.”

He went on to describe how his previous SCP experience helped him with creating quality work in college, “The skills that I learned from senior project…[such as] learning how to reflect on the process and learning how to put together a final, polished piece.” Reflection was something Derek did with ease at his artifact-based interview. His SCP requirement to reflect gave him the ability to understand what was needed to produce quality new stories that others wanted to read or view. In his online questionnaire, he fondly summed up his SCP:

> The lessons learned and practical skills applied made the [SCP] experience very worthwhile. In the process that it takes to get to the final product and being able to reflect on it and present it and say, ‘this is my work and this is what I learned’ was a very valuable and educational experience.

Derek’s participation in his SCP provided a treasured product; he had created his first professional level media pieces, resulting in memories and abilities that would last a lifetime.

During a focus group, Derek declared that having had an authentic journalism career SCP experience provided, “a reaffirmation of what I wanted to do. I’m in the right place and on the right track. It was a confirmation that I was doing the right thing.” Derek placed value in his SCP for it permitted him to explore his chosen career path as well as gain industry knowledge and confidence in abilities which he transferred to his college academic experience. At a final interview, he exclaimed that he would “absolutely” recommend the project to students in their junior year of high school. Derek’s SCP experience made a positive impact on his future; he wanted others to experience the same.

Connections across the case studies. Parker, Emily, and Derek provided rich descriptions of how they had transferred what they had learned from participation in their SCP experience to their current college experience. I found many similarities between Parker, Emily, and Derek's SCP and college academic experiences. I believe these connections were due to how all of their high school projects were structured around a career experience that resulted in learning transfer to assignments or fieldwork for their college majors. I have chosen two main commonalities to describe what Parker, Emily, and Derek's perspectives: (1) the SCP was influential in determining a career path, and (2) the SCP helped to prepare them for their college major.

The career connection. Parker, Emily, and Derek shared one strong connection between their SCP and their current college work—a career connection. Their SCP had helped them determine or confirm their college major and career interest. What I found most to be inextricably linked between Parker, Emily, and Derek was that they all valued their SCP and designing their project to explore a potential career. They described that the SCP experience provided the opportunity to get out of the classroom to investigate and gain knowledge about a career that they later transferred to their college academic experience. Parker, Emily, and Derek credited their SCP experience as confirming their interest in a career and for helping decide which college major to pursue. For example, Parker established his interest to become a civil engineer. Parker found his SCP fieldwork to be valuable to compare a large engineering company to a smaller local firm, acknowledging how his SCP confirmed his "love of engineering." In his online questionnaire, Parker wrote, "[SCP] was a chance for me to get a taste of what it was like to work in that field…I was able to understand I do love engineering, I just found a more specific field I like." Through his SCP experience, Parker discovered electrical

engineering was not his exact match and that civil engineering better suited him. Due to his authentic high school SCP experience, Parker knew exactly which engineering major he wanted to pursue in college.

Both Derek and Emily decided to follow the exact career path they had researched as their SCP topic. Emily explained in her online questionnaire how she benefited from her SCP experience:

> One of the main things I learned while doing my senior project was that I really enjoyed teaching and working with kids. It was what I wanted to do for a career, so I was pleased to find that I enjoyed it in practice.

She expressed gratitude for her real-world high school SCP opportunity to investigate her career interest. Derek also was grateful for his SCP to experience his prospective career. When asked at his final interview if he would recommend the SCP to a high school junior, Derek explained:

> Absolutely. It's an opportunity for them to get a small taste of the career that they're interested in. It's a great opportunity for them to test the waters while they can before they start paying tuition at college or you find out they want to change your major halfway through.

Derek appreciated his SCP because he felt it allowed him to confirm his college major in high school. Derek was grateful to have started college knowing he was on the correct learning path and would not accrue added time or cost to decide upon a major.

Parker, Emily, and Derek shared a career connection in that the SCP had directly shaped what they wanted to pursue in college as well as their career ambitions. They accredited their real-world, authentic SCP experience for giving them confidence in their abilities and described that helped them to determine their college major. It is important to note that this career

connection finding is not unique to the embedded case studies. In response to the particular question about what they learned about themselves (see Table 9), five of the 12 participants included that the SCP experience helped them to determine what career path they wanted. Furthermore, throughout all data collection points of the study, all but one participant shared how their SCP experience helped to determine a career or college major interest. It was the strength of the connections for which Parker, Emily, and Derek were selected as the embedded case studies, though not that their perspectives were unique. Perhaps, Parker, Emily, and Derek's connections were more vivid than other participants because they were at a point in their collegiate education that they had just participated in their fieldwork requirements.

The college preparation connection. Parker, Emily, and Derek also shared a preparation connection; participation in their high school SCP project helped to prepare them for their college major. They saw the skills, abilities, and dispositions they developed or used during their SCP transfer and continue to improve during their college practice. For Parker, Emily, and Derek the preparation gained from their SCP experience went well beyond learning to write, research and present at the collegiate level. The SCP enhanced their understanding of what was needed for their college major; they felt able to approach their college fieldwork, equipped with information and skills they had previously gleaned from their high school experiences.

Parker, Emily, and Derek had college projects or internships that paralleled their SCP fieldwork requirement. What they learned during their SCP experience became a foundation for their college major. For example, when participating in their SCP, Parker built awareness in the field of engineering; Emily acquired the abilities to lesson plan and build student rapport; and Derek developed media production and planning skills. The content specific knowledge they gained from their SCP experience was repeatedly used for courses in their major and their

required fieldwork. Parker, Emily, and Derek also shared that their SCP provided an opportunity for them to gain skills, abilities, and dispositions (as detailed in Theme 2) that they would need to complete their college major.

For example, Emily had described that her college professors favorably remarked about her comfort level in the classroom and the rapport she established quickly with her students. She attributed gaining these abilities during her SCP experience. In her previous statements, Emily explained how planning the unit she conducted for her SCP provided her with knowledge she then used to complete the lesson plans in her College of Education courses. Parker perceived that during his SCP he gained a basic understanding of what it was like to work in an engineering office. In a previous statement, Parker described that he felt his professors and the engineers for whom he interned believed his SCP experience to have provided him with necessary background knowledge for his courses and internship.

Derek felt his SCP had provided him with skills, abilities and dispositions that permitted him to complete quality projects in college. He explained in his online questionnaire:

> [SCP] helped in getting me familiar with what is expected at the 'next level.' It improved my work ethic as well as my ability to produce quality work to be able to present to community members. I practiced meeting strict deadlines and going out into the community to gather all the materials needed for this large project. Something regular high school classes don't teach.

In his statement, Derek uncovered he had learned skills, abilities and dispositions while participating in his SCP that prepared him for what he would encounter at the "next level" in college. Parker, Emily and Derek had all expressed the same perspective; they believed their college fieldwork and projects were similar to but at a more advanced level than what they

experienced during their SCP. They described their SCP as a foundational learning experience for what they would later encounter in college.

Parker, Emily, and Derek's collaboration with their SCP mentors was of importance to their future college major. Parker researched his thesis topic on electrical substations while following up with his university SCP mentor for clarification and observing his electric company SCP mentor to experience the knowledge first hand. Emily learned the process of creating lesson plans and to develop a unit on music and technology from her SCP mentors. She had the opportunity to implement the unit herself to a second grade class. Derek was able to apply media and productions skills that he had learned from his community SCP mentor and consecutive high school courses to create his media project.

Parker, Emily, and Derek place value in the experience of working with their SCP mentors. For one, Derek recalled, "Working with my mentor allowed me to put my media skills to use and I discovered that media is where I belong." The SCP had been the first time they partnered with anyone in the community regarding their career interest or for an authentic, real-world school project. They relied on their mentors for more than just job shadowing, specifically in the cases of the Emily and the Derek, their SCP included a product portion that they had to complete specific work beyond their SCP required research papers and portfolios. Their SCP mentor relationships guided them through their first teaching and repetitive experiences, where they created unit plans and media stories.

The connections to working closely with mentors continued when Parker, Emily, and Derek arrived in college. Their SCP mentor experience was a foundation drawn upon for their college mentor relationships. In college, Parker (the engineer) contributed to projects alongside civil engineers; Emily (the teacher) completed her student teaching requirements with the

guidance of licensed teachers; and Derek (the journalist) continued relying on his professors to learn media processes and approve news stories. Parker, Emily, and Derek transferred the processes they had started in high school; they built relationships with mentors in the community or at the university to source information or to validate their ideas. Parker, Emily, and Derek also expressed the same perspective of becoming more independent with their college work—that as they became more prepared, they transitioned away from their mentors and became more self-directed. Their SCP mentor experience was a foundational learning experience that had transferred to their college setting.

Summary: Theme 3. In this third findings theme, descriptions provided by Parker, Emily, and Derek detailed explicit connections between their SCP and college major. In this theme, I first described their individual experiences and then I offered comparisons of commonalities across the cases studies. Parker, Emily, and Derek exemplified that experiential learning had taken place during their SCP experiences, preparing them for future collegiate fieldwork. I organized their perspectives into two main direct connections: the career connection and the college preparation connection. Unlike some of the other participants in the study, Parker, Emily, and Derek investigated a career interest for their SCP and developed specific content knowledge and related skills, abilities, and dispositions that transferred to career-based assignments and fieldwork for their college major. They acquired skills, abilities, and dispositions related to their career interest that they continued to draw upon for assignments in their college major. Parker, Emily, and Derek's experience with their SCP mentors provided a foundation for the collaboration they took part in for their college fieldwork.

Theme 4: The Emergence of Self-efficacy

My fourth findings theme includes perspectives of how participation in the SCP brought participants a sense of confidence to repeat the work or skills, abilities, and dispositions. Nine of

the 12 participants used terminology such as built confidence or became comfortable when describing the completion of at least one of their project components. The remaining three participants described confidence toward certain SCP components; however, they never used terminology such as built confidence or became comfortable. Having a sense of confidence attributed to their SCP experience encouraged participants to believe that transference of skills, abilities, or dispositions would occur; participants perceived themselves as being successful for similar college academic experiences.

This sense of personal ability is known as self-efficacy, or an individual's judgment of his or her capabilities to perform given actions (Schunk, 1991). Self-efficacy theory proposes that behavioral change occurs through changing one's expectations of personal mastery and success (Bandura, 1977). More specifically, self-efficacy includes expectancy, or the belief that one can successfully perform a certain task or behavior (Maddux, Sherer, & Rodgers, 1982). Self-efficacy expectancy is what emerged during the analysis of participants' descriptions of outcomes from their SCP experience. Study participants expressed belief in their ability to achieve or perform certain college academic tasks due to the self-efficacy they developed from their previous SCP experience.

For this theme, I use descriptions from all 12 of the study's participants to explore how they developed self-efficacy from their SCP experience and expected transference to their college academic or other future experiences. I developed the following three main categories to present participants' accounts of how self-efficacy attributed to their SCP was perceived to impact their future: (1) increased comfort level to complete work similar to SCP in college, including the requirements of the SCP (research paper, fieldwork, portfolio, and presentation); (2) increased comfort level toward certain skills, abilities, and dispositions (time-management,

production of quality work, communication and collaboration); and (3) general beliefs in self transferrable to life situations.

Increased comfort level to complete work similar to Senior Capstone Project in college. The first category of the self-efficacy theme contains participants' views as to how the achievement of their past SCP requirements provided self-efficacy for completing their college work. Each participant's experience was unique, as were the areas some expressed to have developed self-efficacy. In this category, I have selected participants' comments to demonstrate how self-confidence was built or levels of comfort were increased from completing the following SCP requirements: research paper, fieldwork, portfolio, and presentation. That confidence produced a belief in participants that they could begin and successfully complete college academic work.

The SCP requirement of writing a college level research paper provided an outcome of self-efficacy. For example, through her SCP writing process, Jemma developed a sense of accomplishment that carried over into a belief that she could achieve the same in college. At her artifact-based interview, she expressed

> With my [college] research paper and in correlation with the senior project, knowing that I did it [for my SCP]…knowing that I did and I passed. It just made me feel a lot better; encouraged me that I can do it [again]…I guess, done the writing my [college] research paper was a lot easier than the senior project paper because I'm used to doing it already. The senior project was hard because it was new to me.

Having had the experience to write a research paper for the SCP provided Jemma a sense of belief in her ability to complete her college writing assignments. At her final interview, she

reiterated, “It’s not as difficult anymore because I know what to expect.” Self-efficacy toward writing papers was also described by Mary at a final interview:

> In high school, over 10 pages it's like ‘Wow. How do I do that?’ I'm writing my [college] honor thesis paper and the minimum is 25 pages, but I know I can do it…I think completing that hurdle early [during SCP] helped a lot.

In this statement, Mary expressed how her SCP writing requirement provided a foundation for her college writing success. Through her SCP experience, Mary developed a self-efficacious attitude toward higher level writing that transferred to college.

Participants shared a similar sense of how the SCP experience increased their comfort level to accomplish fieldwork. Increased self-confidence attributed to the SCP fieldwork experience latter supported the participants’ college fieldwork. For example, Emily, who was pursuing an education degree recalled in her online questionnaire:

> I believe that the most important thing I learned about myself [from the SCP] was that I could teach. I was extremely nervous about being in front of a classroom and having to instruct students, yet I did well and this helped to build my confidence in my role as a teacher.

The confidence Emily developed from her SCP experience renewed her interest in a future teaching career.

Throughout the interview stages, Derek, a sophomore majoring in journalism, described connections between his past SCP and current college fieldwork. In responding to a question regarding what aspects of his SCP experience transferred to college, Derek said “[My SCP] gave me confidence behind and in front of the camera…and, being comfortable with working with outside organizations.” Derek developed confidence in camera skills and collaboration. Derek

expressed at his artifact-based interview that communicating was initially a challenge during his SCP, "I used to hate calling people on the phone but it's easier now." He also described how the comfort gained during his SCP for communicating transferred to self-assuredness to complete his college fieldwork, as he was constantly contacting community sources for news stories. For Emily and Derek their SCP fieldwork experiences had been the venue where they developed the expectancy for successfully performing college fieldwork.

Kate accredited her SCP for increasing her comfort level to collaborate with mentors and graduate students during the fieldwork and research as part of her psychology major, writing:

> I do draw upon my [SCP] experience in finding a mentor and completing mentorship hours in my current college work. A lot of what I think college is about is making connections and reaching out to people for opportunities and just general information. I think I got more comfortable with reaching out to people because of my senior project.

Kate recalled the way her SCP experience built a comfort level in reaching out to people that she currently transfers to her college setting. The importance of the confidence she gained during her SCP experience is helpful for her college capstone required research. Kate described how the self-efficacious attitude she developed during her SCP had transferred to college:

> I think it [SCP] ties over my schooling to my [college] research class or capstone requirement. We have to work a lot with the graduate students in that department. Feeling confident enough to ask to be a part of it. It's still having my [SCP] mentor as a person I can reach out to if I wanted to. I'd be comfortable enough to do that too. In collaborating with her, it made me see all of the resources that are in the community, too, that I could possibly reach out to if I wanted to.

Kate described how her SCP allowed her to feel capable, as an undergraduate student, to work with graduate students. Communicating with her SCP mentor made her comfortable to communicate with others. These depictions of self-confidence, shaped by her SCP, provided a background for Kate to enter college instilled with the belief that she could communicate and handle academic projects.

Due to participation in the SCP, participants described having gained a sense of comfort in their ability to create a portfolio. For example, Jemma seemed to understand the process and purpose of creating a portfolio, and at her final interview she stated:

> It's good to experience that by yourself and it's all of your work and the experience of making [SCP] portfolio. I haven't made a portfolio in college yet, but knowing that I've done it before [for SCP] I have an idea of how to do it.

Jemma's comments show strong sense of self-efficacy that she could repeat the same portfolio process in college as she had learned in high school.

The SCP component participants credited the strongest increases in confidence to the presentation requirement. Ten of the 12 participants believed their SCP presentation helped them with their public speaking skills. They gained a sense of self-efficacy for public speaking and described its transference to college. Participants also explained an increased level of comfort for developing a presentation.

For example, during a focus group interview, Parker explained how he developed confidence during his SCP presentation experience that he later transferred to college.

> Emotion-wise, I feel like I was more nervous in high school because of [lack of] experience. Being able to experience that nervousness when you roll into college is not as bad because you've done it before [for SCP]. You'll still feel nervous, [but] I never feel

as nervous as I did back then because that was the first time I was presenting [for community members]. Now, you can put anybody in front of me and I won't feel too scared.

Parker expressed how he gained a strong belief in his capability to present to others, and how his SCP experience taught him to deal with the nervousness associated with public speaking. He stated, "When you roll into college is not as bad because you've done it before." This quote depicts how he built upon his confidence in public speaking skills first established during the SCP experience, allowing him to develop a self-efficacious belief in his ability to successfully conduct his college presentations.

Participants expressed overcoming the fear of public speaking in their online questionnaire was one of their biggest SCP challenges. For example, Jemma conveyed how gaining confidence in presentation skills was the most important aspect of her SCP. During her focus group, the following dialog took place:

VY: Do you find that it [SCP] help you develop self-confidence and for what situations?

Jemma: For me, it's speaking in front of an audience that is one of my biggest fears. It gives me anxiety knowing that I have to speak in front of a whole bunch of people. I'm not the best speaker and I acknowledged that when I started to practice for my senior project. I actually cried before having to give my presentation because I was so afraid of sounding stupid. When I did practice and when I actually did the presentation, I thought to myself about why I was so afraid. It was a lot easier that I thought it was going to be. What I was afraid of was just in my head. I try to take that back with me whenever I'm presenting for

college. I think that's what helped.

Jemma provided an in-depth answer with great sincerity. Her advancement in her public speaking ability exemplifies how the SCP experience provided an opportunity for her to overcome a fear and develop a confidence that helped prepare her for subsequent collegiate presentations. From participation in her SCP, she developed a self-efficacious viewpoint toward her college presentations. She elaborated on how self-efficacy gained from her SCP presentation experience carried over into her college experience during her artifact-based interview: "Because I did [the SCP presentation] once already, it was a long time ago, but knowing that I'd done it before, I think I can do it again."

As SCP as a whole and not simply certain required components seemed to have fostered participants' self-efficacy. Participants expressed a sense of pride, originating from the conclusion of their SCP. In turn, this established a self-efficacious disposition, promoting transference to their future college academic settings. For example, in the focus group exchange below, Parker explained how the entirety of the SCP experience increased his confidence for project work:

VY: Do you find that it [SCP] helped you develop self-confidence and for what situations? Why or why not?

Parker: I think being able to do the project itself because a lot of what we did in high school was from the textbook. That was more of picking a topic, doing what you want to do, and presenting it.

Parker acknowledged gaining self-confidence from his SCP experience. Kate similarly expressed the uniqueness of her SCP experience when compared to her high school classes:

> The feeling after completing senior project was so satisfying too. I was able to see my hard work progress towards a final product and that felt great. Senior project was different than any other class I took because I was in total control of what I learned and what direction I would go, so it was worthwhile to learn the skills needed to make decisions like that.

Due to her self-directed SCP experience, Kate gained a sense of accomplishment that she would carry forward into her future. Both Parker and Kate explained gaining self-confidence from their SCP accomplishment, which in turn became self-efficacy that proved quintessential for more rigorous and long-term collegiate assignments.

Mary gave what might be the strongest statement of self-efficacy expectancy. She explained how gaining a boost in self-confidence from her SCP was later applicable to her college senior thesis, saying, "If I didn't do senior project, I don't think I would be as willing to go the extra step in college; to do my senior thesis or even keep my GPA." A statement such as this demonstrates that through her high school SCP experience, Mary developed a belief in self to successfully achieve her college academic endeavors; her self-efficacious expectations contributed to earning a high GPA and successfully complete an honors thesis.

Increased comfort level toward applying skills, abilities, and dispositions. The second category to describe participants' accounts of self-efficacy development is an increased comfort level toward utilizing skills, abilities, or dispositions. Participants expressed developing self-efficacy for the skills, abilities, and dispositions they learned while participating in their SCP and self-efficacy (including expectancy) to transfer them to their college academic experience. Participants recognized their SCP experience as where they gained confidence in their capability

to manage their time, produce quality work, communicate effectively with others, and collaborate with peers and experts in the community.

During a focus group interview, Mary spoke about organization and time-management: "Your confidence in your own abilities is really important…Being organized is also very important. Without organization, you can't be disciplined or have good time management skills." She continued to explain, connecting her SCP and college academic experiences:

> I think what I do is the same [for SCP and college]. I still have the same system of doing things [in college as I did for my SCP]. But, there's greater stakes now because this is leading into my career. I think having that [SCP] experience helped me develop a system to keep myself organized.

Mary's statement described how she practiced time management skills during her SCP experience and how they transferred to college. She explained that she continued to adhere to the same time management system in college that she developed for her SCP. Later in the study, during her final interview, she mentioned how time management and organization were necessities to be successful in college: "I think overall, it [SCP] was helpful in terms of time management, organization…I think already having done that [for my SCP] helped a lot." Mary's self-development of a time management and organization system for her SCP provided positive judgments of her capabilities to perform similar actions in college.

Another participant explained how he had gained confidence in the ability to organize and manage his time. Matt, a civil engineering major, expressed this artifact-based interview:

> It was from my senior project where I learned to organize better. I always go plan. I came into college with that plan. Instead of finishing it all in one night, I do half this day, half that day. That's how I've been doing my [college] work and my projects.

The confidence in time management Matt developed during his SCP transferred to college; he implemented the same process he had learned in high school later for his college projects.

At his final interview, Derek expressed the ability to identify and produce quality work as some of the most important characteristics needed for college. As part of his online questionnaire, Derek wrote about the need to produce quality for his college journalism projects, "[My SCP] helped me in the overall learning experience. It's just like adding experience to a resume. It helped me get more comfortable in producing quality work." Derek expressed gaining self-efficacy for identifying and creating quality work, explaining:

> I think the biggest thing I walked away from senior project with was a boost in self-confidence. I was one of the few people to get a perfect score on both my binder and presentation, and that was a reminder that I am able to produce high quality work. I felt great after completing it and being recognized for the hard work I put in was a major confidence booster.

The acknowledgement he received confirming the quality of his SCP work helped to develop Derek's self-efficacious attitude. He had gained confidence and experience from participation in the SCP. He concluded, "[My SCP] helped in getting me familiar with what is expected at the 'next level.' It improved my work ethic as well as my ability to produce quality work." His motivation for his college assignments carried over from his successful SCP experience; he also wrote, "My [college professors] are telling me that I am operating and producing quality work at the next level." He transferred the same quality work to his college assignments and received the same positive feedback, which helped him to sustain and grow his self-efficacious attitude.

Participants credited their SCP experience for comfort gained in communication and collaboration. For example, Emily believed the art of communication was necessary for her

college major in elementary education and her future career. During her focus group interview, Emily and I engaged in the following dialog:

VY: Do you think your senior project helped with collaboration or communication? Why or why not?

Emily: I would say yes…[for my SCP there was] constant communication and collaboration. [Now in college,] I feel comfortable in asking them [cohort or mentor] questions, even if it's a stupid question.

The collaboration experience during Emily's SCP enabled her to later become comfortable sourcing information from professionals in college. She continued to explain:

> In college, I feel way more comfortable, [speaking with my mentors]. Even though the questions I asked were obvious or stupid, I wasn't scared because I needed answers and I wasn't scared anymore to ask for help or advice and how to handle the kids.

In order for Emily to grow as a teacher, it was imperative for her to work closely with her mentors. The SCP provided the opportunity for her to become confident in communication and collaboration. Emily gained self-efficacy in resourcing her mentors for information or questions as needed to expand her teaching skills.

Perhaps the most interesting description of gaining confidence in the ability to collaborate was from a shy participant. Shawn described how he continuously approached his college professors for help. His shy and quiet behavior led me to pose a follow-up question at his artifact-based interview that helped explain how he developed the ability to collaborate with others in college:

VY: With your senior project, were you comfortable going to approach people? When did you develop that ability? You seem comfortable in college…

Shawn: Yes, I think senior project definitely helped me with that. I would usually rely on myself. That didn't get me very far.

Shawn built confidence to communicate and collaborate during his SCP. For his SCP, Shawn completed his fieldwork by enlisting his apartment manager as a mentor, which was the first time he worked with anyone in the community. His collaboration with his SCP mentor permitted him to become more comfortable to conduct his SCP research. "I would go to the manager first, for clearances...to ask if there's any mean neighbors I don't have to talk to…I would ask my neighbors, who are friends to me first and tell them to watch my video or project and to also take my survey." Shawn's SCP research experience gave him practice in approaching people. The trust and interaction Shawn developed with his SCP manager increased his comfort level to communicate with professors in college. "I found out I could [approach] and depend a lot on my professors." Shawn's SCP helped him develop self-efficacy for approaching others in his community, which later transferred to collaboration with his college professors.

Jackie may have shown perhaps the most visible transference of self-efficacy. She came to Island University from a neighbor island. After her final interview she credited her SCP for confidence in communication:

> Even though I'm from [a neighbor island], not a lot of people from my high school came to school with me. [My SCP] made me comfortable branching out and meeting new people because before that I'd known the same people from kindergarten.

Jackie applied what she had learned during her SCP to her overall communication needs for college. In her online questionnaire Jackie wrote, "[My SCP] also made me get out of my comfort zone and taught me that I was capable of talking to professionals in our community and

asking them for advice." Jackie's past SCP experience developed self-efficacy in her ability to communicate with new people that she later applied to her college setting.

General beliefs in self attributed to the Senior Capstone Project experience described as transferable to life situations. The third category that I use to describe my findings of participants' accounts of self-efficacy is general beliefs in self generating from the completion of the SCP that were transferable to life situations. For example, in her online questionnaire, Maddie described, "I'd say that the most lasting effect [of the SCP] was giving me the confidence to face similar challenges…I learned that I was capable of finishing high level work." Maddie explained how the SCP experience provided an occasion to cultivate self-efficacy to accomplish future challenges. Her SCP experience resulted in a behavioral change; she gained the belief that she could expect to have similar successes in her future when faced with similar challenges.

Another participant, Kate, depicted how her SCP led to a self-efficacious attitude toward knowing she could make a difference in the lives of others. Kate stated on her online questionnaire that her SCP taught her the "importance of stepping out of my comfort zone in order to reach my goals." As part of her community service SCP, she conducted information sessions on her topic:

> For a portion of mine [SCP], we had to present in front of the community on what we learned while doing our research…They were trying to find out more information so I gained confidence that I could make a difference in their lives.

Kate described confidence that originated from her SCP and self-efficacy toward the continuance of making a difference in others' lives.

Mackenzie may have expressed the most evident example of how self-efficacy attributed to SCP was believed to be applicable to life situations, on her online questionnaire she detailed how her fieldwork allowed her to grow in many areas:

> Everything I learned [from SCP] is what I apply in my daily life. I am able to better communicate with my peers, professors, and other faculty members. I am also more confident in myself when it comes to speaking in public…Human interaction has still followed me until this day. Allowing me to be confident in what I am doing.

Mackenzie explained how her self-confidence expanded throughout her SCP experience in that she became better prepared for college and daily life in general. She further credited her SCP for developing a better understanding of how to handle situations in life…This [SCP] project allowed me to be more comfortable and more confident in myself and the things that I do."

Summary: Theme 4 In this fourth theme of the findings chapter, I organized participants' descriptions of self-efficacy into three main categories. First, participants explained how completion of the SCP led them to believe that they could take on collegiate work similar to that of the SCP requirements. Overall, participants described increased comfort in their skills to write research papers, complete fieldwork, create portfolios, and conduct presentations. Second, participants expressed an increased comfort level in skills, abilities, and dispositions (such as time-management, production of quality work, communication, and collaboration), which built self-efficacy and led to a belief that transference to future college work was attainable. Third, they credited having developed self-efficacy to their SCP experience which in turn was applicable to general areas of their lives. It was seen, that once instilled, self-efficacy transferred from high school to college and career success.

Chapter Summary

In Chapter 4, I explored college students' perceptions of how what they learned during their high school SCP experience impacted their college academic experience. Findings suggested learning transferred from the first setting of the participants' high school SCP experience to the far setting of their college academic experience. In the chapter, four major themes were explained and supported.

First, in Theme 1, perspectives of all 12 of the study's participants' illustrated what they perceived they learned from their SCP experience. From participation in their SCP, participants used and learned: skills built in research and writing; abilities developed in collaboration and time management; and dispositions of persistence and self-direction. Two dynamic relationships regarding using and learning skills, attitudes, and dispositions during SCP work were explored: (1) skills, attitudes, and dispositions were learned concurrently with content knowledge while completing interdisciplinary project work; and (2) using and learning of skills, attitudes, and dispositions took place simultaneously. Then in Theme 2, perspectives from all 12 participants were used to describe transference of the SCP experience to the college academic experience. I illustrated transference between the high school SCP experience and the current college academic experience as: (1) connections regarding participants' most frequently described abilities and dispositions needed for college (collaboration, creative and critical thinking, persistence, planning and organization, and time management); and (2) connections participants made regarding production skills related to completing the SCP requirements (research paper, fieldwork, portfolio, and presentation). In Theme 3, three participants were selected as embedded case studies to explore transference of the SCP experience to a college major. A smaller number of case studies were used to represent a more intimate look at the individuals' experiences. Case

studies shared two main direct connections related to career and college preparatory. Finally, in Theme 4, I investigated perspectives of gains in self-efficacy from all 12 of my study's participants. Self-efficacy attributed to the SCP experience was found to impact the participants' belief in their abilities to complete college work. They gained confidence in the skills, abilities, and dispositions developed during their SCP experience which built self-efficacy for their future undertakings. The four themes depicted that participants transferred what they had acquired during their SCP to their college academic experience.

Chapter 5

Discussion and Conclusions

Chapter Introduction

My interest to study the SCP developed when I was a high school teacher advising my students through their project process. I was surprised to learn how they expressed that the SCP had been their first high school learning experience where they wrote a rigorous research paper, created or conducted a formal presentation, and consistently drew upon self-direction. My students perceived their SCP experience to have been valuable college preparation and expected they would draw upon what they learned in the SCP for college success. My students' perception spurred my initial interest in investigating the long-term impacts of the SCP—whether the skills, abilities, and dispositions learned from participation in the SCP were actually retained and transferred to future college learning experiences. This interest led me to the purpose of my study—to discover how the SCP may have transferability from one learning situation to the next. I studied college students' perceptions of what they learned during their high school SCP PjBL experience and uncovered its lasting impact on collegiate study. I drew upon two main conceptual frames, PjBL and learning transfer, to inform my research. To guide my investigation, I pursued the following research question: How do students in a four year post-secondary institution perceive participation in the high school Senior Capstone Project has impacted their current college academic experience?

In this chapter, conclusions and recommendations are provided that materialized out of my research. First, I summarize my four findings themes, providing discussion as to how they relate to existing research and answer my research question. Then, I suggest several aspects of

the SCP in need of future research. Finally, I offer potential implications of my work and conclusions as to how my study should be viewed.

Review and Discussion of Findings

Four main themes surfaced upon analysis of my study's data from its triangulated collection points (online questionnaire, focus groups, artifact-based interviews, artifact, participant reflective journals, and final interviews). Themes that emerged from this investigation include: (1) participation in the SCP experience provided the venue for this study's participants to acquire skills, abilities, and dispositions; (2) the skills, abilities, and dispositions acquired from the SCP experience were transferred to the college academic experience; (3) the SCP experience was seen to directly prepare three embedded case studies for their college major; and (4) a sense of self-efficacy was gained from participation in the SCP experience. In the following paragraphs these findings will be explored, signifying how my participants perceived that participation in their SCP impacted their college academic experience.

Theme 1. In Theme 1, it was noted that participation in the SCP experience provided an academic opportunity for my study's participants to acquire skills, abilities, and dispositions. I found two dynamic relationships existed regarding their acquisition. First, the interdisciplinary design of the SCP was foundational to students' acquisition of skills, abilities, and dispositions concurrently with learning content from multiple academic disciplines. Second, acquisition took place by simultaneously applying skills, abilities, and dispositions while they were being both used and learned throughout the SCP experience.

These two dynamic relationships contributed to the acquisition of skills, abilities, and dispositions and closely resemble elements expressed by scholars in the field of experiential learning such as interdisciplinary design, authentic activities, and experiential techniques

(Blumenfeld et al., 1991; Dewey, 1938; Harada et al., 2008; Kilpatrick, 1918; Kolb, 1984; Krajcik et al., 1994; Markham, 2011; Newell, 2002). I believe the interdisciplinary nature of the PjBL technique (Blumenfeld et al., 1991; Harada et al., 2008; Newell, 2002), which informed the design of the SCP, provided authentic learning opportunities related to the concurrent learning of skills, abilities, and dispositions with content. I think that learning was enhanced through the participation in authentic activities required for PjBL such as the investigation of an essential problem, cognitive creation of a series of products, and collaboration with community members (Krajcik et al., 1994). Participants' learning and transfer benefited from the overall project design structured so participants could use previous knowledge and learn new multiple skills, abilities, and dispositions simultaneously, where they learned as they experienced (Dewey, 1938; Kilpatrick, 1918; Kolb, 1984; Markham, 2011). Participation in their high school SCP impacted participants with both skill building and content knowledge acquisition upon which they could draw for their future college academic experience.

The Theme 1 findings support those of Egelson et al. (2002) that SCP helped high school students prepare for college. They found that "about 75% graduates reported developing specific skills through their senior projects. These skills include public speaking, research, writing, presentation, interviewing, time management, planning, organization, interpersonal, and other work-related skills, the skills that embodied the Senior Project" (p. 22). Although my study utilized qualitative methods, it supported Egelson et al.'s findings, as my participants' also described having used or learned "public speaking, interviewing, interpersonal, writing, research, planning, organization, and other work-related skills" (Egelson et al., 2002) during their SCP experience.

Theme 2. As described in Theme 2 of the findings chapter, sufficient evidence was found that the skills, abilities, and dispositions acquired from the SCP experience were transferred to the college academic experience. By examining transference following the actor-oriented perspective (Lobato, 2003), I interpreted my participant's perspectives of how their prior activities impacted them in a new situation, finding that transfer took place in two areas. First, I discovered transference occurred in participants' abilities and dispositions (collaboration, creative or critical thinking, planning and organization, persistence, and time management) they acquired during their SCP experience. Second, production skills related to completing the SCP requirements (research paper, fieldwork, portfolio, and presentation) were perceived to transfer to the collegiate setting. This finding suggests that the SCP high school learning experience prepared the study's participants for success in their college academic work.

The literature on college readiness (Beal, 1985; Byrd & MacDonald, 2005; Le, Casillas, Robbins & Langley, 2005; Robbins, Lauver, Le, Davis, Langley, & Carlstrom, 2004; Roderick, Nagaoka & Coco, 2009; Tinto, 1975) included the following predictive indicators that were also found in my participants' responses of what they believed was integral to college success: collaboration, creative or critical thinking, planning and organization, persistence, and time management. These scholars indicated college success could be predicted, and that students possessing certain non-academic attitudes and dispositions were expected to be more successful in college than those who did not. My participants described learning these abilities and dispositions (collaboration, creative or critical thinking, planning and organization, persistence, and time management) during their SCP experience and transferring them to their college academic experience.

My study also reinforced the findings of Pennacchia (2010) who found that students applied the skills, abilities, and dispositions they had previously acquired from participation in their SCP experience to their college academic experience. Pennacchia found that 89% of the graduates who participated in her study:

> …viewed the senior project components in written communication, oral communication, research skills, and time management/study skills as valid indicators for college and work readiness. They believed they exhibited these skills during senior project and that they are confident that they use these skills in a college or work environment. (p. 106)

Consistent with Pennacchia's (2010) study, my participants' perspectives also detailed having used or learned written communication, oral communication, research skills, and time management/study skills" during participation in their SCP which later transferred to college.

Theme 3. In Theme 3 the SCP was seen as well suited to provide authentic learning experiences that were transferable to the far setting of college. The three embedded case studies examined in this theme, Parker, Emily, and Derek (see pp. 140-157), strengthened my beliefs that the SCP is an essential curricular component of high school. These three transitioned into their major related projects and fieldwork in college with ease due to their SCP experience. Their experiences echo Hung's (2013) findings that experiential PBL techniques enhance both near and far learning transfer.

Experiential learning, defined as knowledge resulting from the combination of learning and transforming experience (Kolb, 1984), appeared to enhance far transference (Furman & Sibthorp, 2013). Parker, Emily, and Derek's transference was inextricably linked to the SCP implementation of following the PjBL technique. Hung (2013) proposed that problem based learning (PBL) could result in both near (across more similar and less numerous variables) and

far transfer (knowledge would be modified across less familiar and increased numbers of variables). Just as Parker, Emily, and Derek transferred what they learned in the SCP, Hung believed knowledge acquisition could be reapplied simultaneously for near and far transfer in authentic learning environments.

To further discuss the similarities Parker, Emily, and Derek had in transference of their SCP experience to their college academic experience, my interpretation is framed by Hung's (2013) PBL principles that enhance learning transfer: (1) learning environments designed to acquire and store knowledge for application for near and far transfer; (2) real-life or authentic problems; (3) learning experiences structured for students to store information for the future; (4) student-directed problems with the ability to ask effective questions; and (5) an importance placed on reflection.

First, Hung (2013) saw the learning environment as a crucial component for acquiring knowledge. Parker, Emily, and Derek all expressed learning as they were simultaneously working on their SCP in near transfer setting. The SCP provided a learning environment where in the same acquisition stage knowledge learned from their research or time spent with mentors was immediately applied to the near transfer setting of their SCP fieldwork. In turn, the near transfer SCP fieldwork set a foundation for novel application to occur in the far transfer setting of college.

Parker, Emily, and Derek particularly described similarities of their SCP fieldwork as an environment conducive for learning. They described that the SCP experience provided the opportunity to get out of the classroom to investigate and gain knowledge. Parker, Emily, and Derek had college projects or internships that paralleled their SCP fieldwork requirement. The SCP enhanced the understanding of their college work; they attributed increased levels of

success in college fieldwork, and the relative ease of applying their content knowledge and skill sets to the high school SCP experience. Parker, Emily, and Derek also described feeling that they were more prepared than their classmates who were enrolled in their major areas of study. They attributed their preparation to having experienced learning outside the walls of the classroom for their SCP fieldwork. Learning in the natural environment of a place-based setting for the SCP enhanced future transfer to the far setting of college.

Second, Parker, Emily, and Derek's self-selected topics and theses as part of the SCP were authentic in scope. Parker researched his thesis topic on electrical substations while following up with his university mentor for clarification and observing his mentor in action to appreciate the applied science. Emily learned the process of creating lesson plans and developing an instructional unit on music and technology from her mentors before teaching the unit to a second grade class. Derek applied media and production skills that he had learned from his community mentor and consecutive courses to create his media project. Parker, Emily, and Derek self-selected a career to investigate for their SCP and a thesis to share their findings. For Parker, his work stopped there as it was a career project. However, Emily and Derek chose a product type project and went on to engage in authentic work for their prospective career. Emily created and implemented a unit plan and Derek developed and produced a news story.

The third principle of experiential PBL technique that Young (2010) believed to facilitate learning transfer was that students must gain and store information for the future as part of the overall project design. Parker, Emily, and Derek readily described the application of their previously stored SCP knowledge to novel college projects. They transferred stored content knowledge, skills, abilities, and dispositions they developed or used during their SCP to their

college practice. They further anticipated that this transference would continue in their future, as they planned to follow the same career path.

Fourth, Parker, Emily, and Derek's SCP experience was student-directed with the ability to ask impactful questions throughout the process. Parker and Emily described their SCP experience as having more autonomy than Derek noted. However, all developed a self-direction disposition that transferred to their future college academic experience. Hung (2013) stated self-direction develops students' capacity of far transfer due to gains of analytic reasoning abilities. Parker, Emily, and Derek exemplified applying past knowledge to new settings.

Much of the self-direction Parker, Emily, and Derek developed from their SCP was due to scaffolding of learning and responsibilities achieved through mentor collaboration. Their SCP was filled with near transfer activities, where in college they applied greater independence for far transfer to occur. They expressed how what they were presently doing in college was much more sophisticated than their SCP experience, and how they understood the responsibility rests squarely on their shoulders. Parker, Emily, and Derek described how their encounters with mentors became less frequent as their personal autonomy and agency developed over time. Increasingly, they required less collaboration with their mentors and drew from previously learned self-direction acquired during their SCP experience and earlier college academic experiences. They became even more self-directed in the fast setting of college and began to work on their college projects independently.

Hung's (2013) fifth principle of experiential PBL technique is reflection as a main process of a student's current and past work. The SCP portfolio included at least four reflective papers on the process and outcome of the project. Perhaps the reflective portion of Parker, Emily, and Derek's SCP provided an avenue to cement learning to the actual environment and activity

where the knowledge acquisition occurred. Hung (2013) stated that reflection was a crucial component, providing an outlet for students to refine their learning and knowledge base.

Parker, Emily, and Derek repeated reflective activities in college similar to what they had done for their prior SCP. Parker had described reflecting on project process or for applying engineering concepts to create his designs. He recalled reflecting to learn from mistakes to redesign projects. Emily engaged in reflection to refine her teaching abilities, critiquing her practice and results towards in enhanced future lessons. Emily's described how her SCP portfolio provided a foundation for the reflections she later wrote for her college major graduation requirement. Derek evaluated his planning, execution, and quality of final media stories to learn from mistakes and create better products in the future. In college Derek kept a portfolio of his news for ongoing review and reflection in an effort to learn from and improve his story craft. The metacognitive process of reflecting (Hung, 2013) for the SCP enhanced learning transfer not just for the repeated use of the reflection process but also for solidifying knowledge for subsequent use in college.

The SCP experiential learning techniques were found to impact Parker, Emily, and Derek through enhanced learning transfer. The PjBL technique, in the form of a high school SCP, was seen to be well suited to provide authentic learning experiences that were transferable to the far setting of college. What they acquired during their SCP experience was stored and retrieved more readily due to the authentic and self-directed learning technique. For Parker, Emily, and Derek, their SCP was their first real-world learning activity where they had the opportunity to experience a career or to collaborate with the community. Their realistic SCP fieldwork had a tremendous impact on their future learning. Parker, Emily, and Derek exemplified how stored knowledge gained from SCP learning environments could be reused in other settings and

subsequent times. They described how their college academic work was impacted by the transfer of previously stored SCP knowledge, leading them to believe they could outperform their college peers as a result of their SCP experience. Learning in a real-world SCP environment and collaborating with mentors provided Parker, Emily, and clarity towards a career path after high school. The SCP PjBL techniques of student-directed problems and reflection on process and learning equipped Parker, Emily, and Derek with self-direction to manage the demands of long-term projects and time commitments that they later transferred to their college projects. The content knowledge, skills, abilities, and dispositions they developed from the SCP experience impacted their college academic experience, as they had described being prepared to take on their college academic projects and fieldwork.

Theme 4. Theme 4 described a sense of self-efficacy that emerged during the data analysis of my study. Participants expressed how participation in the SCP brought them a sense of confidence to repeat the work they accomplished or apply the abilities they had acquired in the future. I expected that participants would have gained content knowledge, skills, abilities, and dispositions, as it is the intention of the CHID Model (2010) SCP. The emergence of self-efficacy was not entirely unexpected as Pennacchia (2010) also found that participation in the SCP enhanced perceptions of non-academic dispositions including confidence and sense of accomplishment. What was revealing were the number of participants who stated that developed self-efficacy; all 12 had described gains in self-confidence and ease in applying skills, abilities, and dispositions to fulfill the SCP requirements.

Participants developed self-efficacy in three categories. First, they experienced increased confidence to repeat work comparable to the SCP requirements (research paper, fieldwork, portfolio, and presentation). SCP completion impacted participants' beliefs in their capability to

accomplish similar work in college. Second, participants gained increased comfort levels in skills, abilities, and dispositions (particularly time management, production of quality work, communication, and collaboration). Having already partook in a similar project, albeit less sophisticated, the students felt confident in their abilities to be successful in similar tasks. Finally, I found participants had perceived general beliefs in self that were transferrable to life situations. The self-efficacy gained from participation in their SCP was seen to have potential to impact not only the participants' college academic experience but also other general areas of their life. Participants described possessing self-efficacious beliefs to repeat similar work and practices they had completed for the SCP in their college or other situations in their future.

My findings on self-efficacy emanating from SCP participation support those of Blanchard (2012). Her dissertation research focused on student perceptions of senioritis, engagement, and efficacy in connection to their SCPs. Results of her study suggested that engaging learning experiences such as the SCP were found to have increased perceptions of self-efficacy for pursuits after high school. My study's participants also perceived that participation in their SCP had provided them a sense of self-efficacy.

My study also aligned with Blumenfeld et al.'s (1991) research on self-efficacy and PjBL that the instructional strategies used in PBL or PjBL had a positive influence on improving students' self-efficacy. Dunlap (2005) found that instructional strategies used in PBL were the catalyst for students' improved self-efficacy; particularity the techniques of authentic problems, collaboration, and reflection. My study also found that participants perceived increases in self-efficacious beliefs due to their participation in PjBL in the form of the SCP.

Summary of review and discussion of findings. In this review, I addressed the research question across four themes. Participants were impacted by their SCP experience in the

following ways: (1) participation in the SCP experience provided the venue for this study's participants to acquire skills, abilities, and dispositions; (2) the skills, abilities, and dispositions acquired from the SCP experience were transferred to the college academic experience; (3) the SCP experience was seen to directly prepare three embedded case studies through experiential learning techniques that transferred to projects and fieldwork for their college major; and (4) a sense of self-efficacy was gained from participation in the SCP experience. In response to my research question, findings suggest that participants were positively impacted by their SCP experience. Many descriptions of perceived transference between the participants SCP and college academic experiences were documented. Participants retained and applied what they learned from their SCP experience and later transferred that knowledge to novel experiences in their college academic setting.

Recommendations for Future Study

As I move forward beyond my dissertation work, I will continue to contemplate future directions to expand upon this important line of research. As with any study, the time, place, and people of my study were limited. Also, somewhat new participant reported throughout the course of this research proved enlightening, but was not further investigated due to the explicit focus and design of this study. These revelations led me to contemplate what future examinations of the SCP could look like. In this section, I suggest several future research opportunities.

Through the course of study I discovered that participants had a commonality that may have influenced the variation in perspectives. Although an equity lens was not the focus of the study, I would have preferred more academic diversity amongst my participants in order to have reduced the risk of participant bias. I discovered that all but one participant were high achievers. While in high school, most had taken Advanced Placement (AP) courses, and eight of the 12 had

earned the more rigorous Board of Education Recognition Diploma (HIBOE, 2011), requiring a high grade point average. Many continued charting this rigorous path in college. Perhaps if the study's participants were not exemplary in high school, they would have had a different SCP experience and their views on its transference to their college experience could have had greater variance. It would also be interesting to select a less competitive university for the place of study for future research. A different university could provide more academically diverse participants in comparison to this study's context, which was the most competitive public university in the state. Participant selection could also focus on mid-level achievers versus the high achievers in this study. Comparisons could be also made between participants based upon their level of achievement in high school. It would be interesting to see if or how results would differ for students at a different high school achievement level. For instance, would they perceive higher levels of college preparation from participation in the SCP, or perhaps would they experience greater transference to the college setting?

Follow participants longitudinally over a few years might also prove invaluable to examining the transfer of learning from SCP to college and career contexts. The initial design of this research project included examining senior level high school students who were participating in their SCP; unfortunately attaining access to study in the state's school district at the time was impermissible. A longitudinal study, beginning in the participants' senior year of high school, could provide rich data of what skills, attitudes, and dispositions they use or develop through participation in the SCP. Pre- and post-test measures could be used to determine the extent of mastery students perceived of certain skills, attitudes, and dispositions both prior to and after completing the SCP. The study could then continue into the participants' years at college to see if or how near and far transfer take place. Students could be interviewed every semester over two

school years to see what SCP acquired skills, attitudes, and dispositions transferred to college work sample artifacts. I believe a longitudinal study such as this would advance what is known about lasting effects of SCP and its importance to college and career readiness.

Another study option could be examining the effect the Advanced Placement (AP) Capstone or the International Baccalaureate (IB) capstone has on a student's college major of study. Upon examination of the embedded case studies, I learned that transference was high when participants pursued the same college major as their SCP topic. Parker, Emily, and Derek made a great transition into work for their college major as they continued to draw upon their previously acquired SCP content knowledge, skills, abilities, and dispositions. The AP Capstone or the IB capstone, which are gaining popularity in high schools across the nation, are designed with much attention placed upon students self-designing and self-directing their projects. In this suggested research, participants would be high achieving high school students. The study could investigate the students as they went to multiple private and public post-secondary institutions to add depth to the place of study. Comparisons could be made between students following a major similar to their SCP topic and those who were not, perhaps measuring the extent of transference of particular learnings of the participants' capstone experience.

Future research into how topic choice impacts SCP learning could also prove valuable. My study's participants overwhelmingly felt responsibility for the choices they were afforded by their SCP. They self-selected their topic, thesis, and designed their project. If chosen wisely, it appeared that they were motivated by their topic; descriptions of learning seemed higher as were those regarding transference. Most participants in my study expressed how having chosen a topic they were interested in kept their motivation and quality of work high for their SCP. One participant of this study described the opposite that he felt he just went through the motions of

the PjBL process because he had selected a topic in which he had no interest. However, since topic choice was not the focus of my study, this data was not investigated further. So for future SCP study on topic choice and how it affects engagement, learning, and future transference could prove beneficial. Participants could be surveyed while in high school regarding their interest in their SCP topic and the skills, attitudes, and dispositions they had acquired during participation. Then, they could be divided into two groups based upon reporting a high or low interest in their topic, and later interviewed in college to compare the extent of transference. It would be intriguing to see if or how topic choice impacts learning and transference.

Perhaps future studies on the SCP could be designed with attention to equity, possibly to suggest PjBL assessment using a rubric or quantitative construct. Inequity of SCP implementation processes concerned the participants in my study. Even though this was not the focus of my study, participants reported inequities while participating in their SCP: the varied degree of dedication of teachers at their school to guide the process; how the deadlines and requirements were handled within their school; and how they felt other schools' deadlines and requirements were more lenient. Since most participants were working toward earning honors recognition at the time, they were displeased with this perceived inequity. Future study into successful and unsuccessful implementation of SCP would be noteworthy and could provide direction for more equity. An investigation into ways to implement a PjBL assessment in a more quantitative manner could prove useful. A quantitative assessment could be designed to meet accountability measurements and provide a more equitable platform for evaluation and, in turn, permit decision or policy makers to bring more PjBL or SCP opportunities back into the schools.

The prospective studies suggested in this section would be beneficial to further the conversation regarding the SCP's role to impact students beyond high school. Perhaps future

findings of these recommended studies would provide additional answers to how participation in the high school SCP experience would transfer to the college academic experience. Furthermore, other future studies could help determine what high school academic opportunities facilitate the most transference of learning. It was found that the PjBL experiential learning design of the SCP was seen to enhance learning transfer in this study. Academic activities should be designed for effective transfer to students' future societal roles of post-secondary education or the workplace. Other studies to determine which high school academic activities and which designs or processes (beyond the SCP and PjBL) help facilitate transfer would be useful to teachers and decision makers regarding how to best use classroom time.

Overarching Implications

Having found that participation in the SCP positively impacted my participants' college academic experience, subsequent studies will reveal how the PjBL technique, in the form of the SCP, provides valuable learning experiences. The participants of my study acquired skills, abilities, and dispositions during their SCP experience that were seen to transfer to the far setting of college. Their SCP had a lasting effect in that participants were able to draw upon their previously acquired knowledge in novel learning experiences comprised of varied settings and contexts.

One of the intentions of my study was to add conceptual lens of learning transfer and PjBL to the corpus of literature. My findings support the approach of studying learning transfer with alternative perspectives. This qualitative investigation sought to understand far transfer (Barnett & Cici, 2002), examining transference across varied contextual and content dimensions. The study also supported the concept of polycontextuality (Royer, Mestre & Dufresne, 2005), finding that transfer occurred as participants, engaged in multiple simultaneous tasks over

multiple communities of practice, apply past knowledge to a new problem or setting. Also, my research supported the alternative transfer actor-oriented perspective (Lobato, 2003), as I examined transference through the eyes of the participant, eliciting their perspective during qualitative interviews. Earlier in this chapter, I reviewed how my Theme 3 findings demonstrated Hung's (2013) five characteristics of PBL that facilitated learning transfer. Experiential PjBL techniques in conjunction with the SCP were found to promote learning and encourage transference from one setting to another.

My study also exemplified Bransford and Schwartz's (1999) Preparation for Future Learning (PFL) alternative learning transfer perspective. The PFL approach had been selected to inform my research due to its importance for understanding that the usefulness of prior knowledge may only be fully realized at a later time when it was applied to new and different settings. The participants of my study demonstrated that it was not until they had a novel opportunity to learn were they able to fully realize the usefulness of prior knowledge. Participants' ability to learn in their current college academic setting was in part due to the skills, abilities, and dispositions they had acquired from participation in their past SCP experience.

One of my study's goals was to add to the available literature on the SCP. Two studies in this body of literature directly guided my research, Egelson et al. (2002) and Pennacchia (2010), due to their focus on what happened to SCP completers once they had graduated from high school. Earlier in this chapter, I explained how my research supported Egelson et al. (2002) and Pennacchia's (2010) findings of the SCP to prepare students for college; similarly, participants in my study reported acquiring skills, abilities, and dispositions that they deemed were necessary for college success and described how they applied them for their college work. However, my research also reinforces some of Egelson et al. (2002) and Pennacchia's (2010) other findings.

Pennacchia (2010) found that half of her participants believed that their SCP had led them to their college major. With my embedded case studies, Parker, Emily, and Derek, as well as with other participants in my study, I also found that their SCP confirmed an interest in their future career path and college major.

Egelson et al.'s (2002) conclusions shared a viewpoint that the SCP was PFL (Bransford & Schwartz, 1999); they expressed that what was learned during the SCP would not be fully comprehended until it was applied at later date and for a novel setting. They concluded that the effects of the SCP may not be realized until college where they were required to use their project related skills and knowledge. My research study supports Egelson et al.'s (2002) PFL claim that students can apply content knowledge, skills, abilities and dispositions gained during the high school SCP experience to their college academic experience.

The results from this study add to the existing literature, informing scholars, educators, and policy makers regarding students' opinions of their SCP experience and the lasting effects they perceived transferred to their current college experience. It is anticipated that this academic discussion will continue to move forward uncovering how PjBL experiences, such as the SCP, are of value to a student's current and future learning.

But more importantly, it is my hope that this research will be considered by policy makers, administrators, and teachers as they make decisions whether or not they should allocate classroom time to prepare for testing due to looming accountability measures in lieu of providing PjBL opportunities. Although the SCP may not be designed to help students attain high standardized test scores for accountability purposes, the findings of my study show that it is instrumental to equip students towards college and career preparation. As a researcher it was interesting to hear the perceptions of my participants' SCP experiences, I feel their voices should

be heard by decision makers as well. Their voices were loud and clear that the SCP experience positively impacted them with fundamentals needed for their college academic experience. Their perspectives were interpreted in my research study to understand there is inherent value in the SCP's of rigor and authenticity, and that SCP learning does transfer to both near and far settings.

In closing, I found that the SCP had a positive impact on the college students under study. My participants drew upon their SCP related skills, abilities, and dispositions for their college academic experience. Additional research is recommended to propagate this conversation even further, so that the value of participation in a SCP experience is understood. The full impact of the SCPs have not yet been realized; SCP experiences have far reaching benefits towards a student's future. From dispositions to content learning, SCPs are the essence of holistic and authentic learning experiences.

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Appendix A

Pre-Interview Demographic Questionnaire

1. What is your first and last name?
2. What high school did you graduate from?
3. What year did you graduate?
4. What was your Senior Project topic? Why did you choose it? (short answer)
5. What type of Senior Project did you complete?
    a. Career
    b. Community Service
    c. Product / Performance
6. Did you complete your Senior Project as part of a class you were registered for?
7. If you completed the Senior Project as part of a course: What was the course name?
8. What year in college are you?
    a. Sophomore
    b. Junior
    c. Senior
9. What is your major?
10. What is your minor?
11. What is your age?
12. What ethnicity and/or race do you identify with? (may choose multiple)
13. What gender do you identify with? (may choose multiple)

Appendix B

Online Questionnaire

Short answer responses: 2-3 sentences (or more as needed)
Long answer responses: 1 paragraph (more or less as needed)

Questions about Past High School Experiences

1. What is your first and last name?
2. Why did you complete the Senior Project? *(short answer)*
3. What did you like best about working on your Senior Project? Why? *(short answer)*
4. What did you like least about working on your Senior Project? Why? *(short answer)*
5. Did you face any challenges while working on your Senior Project? If yes, what were your biggest challenges and how did you overcome them? *(short answer)*
6. Describe three main things you learned while completing your project? *(short answer)*
7. Did you learn anything about yourself from completing your Senior Project? If yes, what? *(short answer)*
8. Please *list* any skills and abilities you feel you used during your Senior Project. *(short answer)*
9. Did you apply knowledge you learned from previous high school classes when completing your Senior Project? If yes, please describe what knowledge and how you applied it. If no, please describe why not. *(long answer)*
10. Did you learn anything new while working on your Senior Project that you hadn't already learned in your required high school classes? If yes, please describe what you learned. If no, please describe why not. *(long answer)*
11. Do you feel you were in control of your Senior Project experience? If yes, tell me about how you self-managed and planned your project? If no, why not? *(short answer)*
12. Did you ask anyone for help or advice? If yes, who (community mentor, on campus advisor, and/or someone else) and how did they help you? If no, why not? *(short answer)*
13. Did you use technology for your Senior Project? If yes, how did you select it? How and when did you use it? *(short answer)*
14. Were you motivated throughout your Senior Project experience? What did you do to stay motivated? Who or what motivated you? *(short answer)*

Questions about Current College Experiences

15. Did your Senior Project experience influence what you decided to study in college? If yes, how? If no, why not? *(short answer)*
16. In general, did you find the Senior Project to be a worthwhile experience? Why or why not? *(short answer)*
17. Do you plan to complete a college capstone project? If yes, for what program, course or major (what is the topic)? If no, why not? *(short answer)*
18. Do you draw upon what you learned during your high school Senior Project experience for your current college work? If yes, in what ways? If no, why not? *(long answer)*
19. Please describe work you have completed in college (research papers, presentations, portfolios/projects, field work). Are there ways this work is similar to your high school Senior Project experience? Please describe any similarities and differences. *(long answer)*
20. Do you feel that your Senior Project experience helped to prepare you for college? If yes, in what ways? If no, why not? *(long answer)*
21. In general, currently in your daily college life, do you experience any lasting effects from your previous high school Senior Project experience? Describe any lasting effects.

Appendix C

Focus Group Interview Guide

1. What skills, attributes, and dispositions do you think someone needs most for college? Where did you learn these?
2. Was working on the Senior Project different than what you did for your other high school classes? In what ways?
3. Did aspects of your Senior Project experience transfer to college? If yes, please describe. If no, why not?
   If yes, probe: Had you learned/developed these solely through your Senior Project experience? Where else had you used/developed these prior?
4. *(Responses to the questionnaire mentioned the Senior Project helped to develop self-confidence.)* Did you find that your SCP helped you develop self-confidence? If yes, for what situations? If no, why not?
   If yes, probe: Please describe any ways that the self-confidence you developed for your high school Senior Project carried over to college?
5. *(Senior project deadlines were mentioned by participants on their questionnaire.)* Did you use any self-management, time-management, project-management that you did for your Senior Project? If yes, for what situations? If no, why not?
   If yes, probe: Describe/compare that self-direction with what you do in college?
6. *(Responses to the questionnaire touched on collaboration (asking questions, finding people to help, and sourcing information) with teachers, mentors, advisors, peers, parents.)* Did you collaborate for you senior project? If yes, in what ways? If no, why not?
   If yes, probe: With whom and how do you currently collaborate in college? Do you think your Senior Project helped you with collaborating in college?

For Probing/Follow-Up/Conversation Lulls:

Presentation / Paper / Field Work / Portfolio

- How was your Senior Project _____ different from those for your other high school classes?
- How is your Senior Project _____ similar or different to presentation you've done in college

If time permits:

Would you recommend a current high school junior complete a Senior Project? For what reasons?

What, if anything, did the Senior Project teach you about persistence? How is that similar or different to persisting in college?

Appendix D

Information Sheet and Interview Guide for Artifact-based Interview

Instructions for Selection of College Work Artifact

Your 2nd interview of the Senior Project research study is scheduled for _____.

What to bring to the interview:

You are required to bring **2** samples of your current college work to the interview. Please select longer term or project assignments (i.e., research papers, presentations, portfolios or products). The grade you received for your work is not under investigation; so, pick something representative of your college work. Your selection can be something you are proud of (or not), but it should be a one that you spent a considerable amount of time, thought and work to complete.

Work samples can be in written format (printed or displayed by your electronic device), a portfolio, or a product (i.e., artwork, video).

At the end of the interview you will be asked to provide a copy of your work for the researcher to keep. Printed copies, electronic/digital copies or photographs are acceptable.

What to expect during the artifact-based interview:

We will meet in-person, at a location of your agreement, to discuss your college work sample. The interview will take approximately 45 minutes. We'll discuss each work sample separately; first we'll talk about one work sample and after repeat the same questioning for your second work sample. You will have the opportunity to show and tell me about your work. Then, I will ask you questions regarding your work, the steps that you took to create it and overall connections it may or may not have to your Senior Project experience.

The guide for the interview follows. It is provided so you know what kind of questions to expect about your college work sample. If you see no connection between the work you are doing in college and your high school Senior Project experience, then the interview will focus on that.

If you have any questions prior to the interview, please do not hesitate to contact the researcher:
Vanessa Yasuda – call or text: 375-6086, or E-mail: applbaum@hawaii.edu

Artifact-based Interview Guide

Line of questioning will be conducted 2 times, one for each of the college work artifacts.

Semi-structured questions:
Tell me about your college work sample?
What process did you go through to create your college work sample?
What did you learn from creating your college work sample?

Follow-up questions:
You mentioned _____. Can you recall doing anything similar for your Senior Project? Please explain? (repeat question as needed based upon participant's responses to the first three questions).

Probing topics may include but are not limited to:

▪ Self-Direction/Time Management/Planning	▪ Critical Thinking
▪ Interdisciplinary content or specific course content	▪ Communication
▪ Motivation	▪ Collaboration
▪ Choice	▪ Research

Appendix E

Final Interview Guide

Individual Questions needing clarity:
(Questions vary by participant: refer to notes on each participant's excel sheet, transcripts, and journal)

Online Questionnaire

Artifact-Based Interview

Reflective Journal

Demographic Follow-Up:

In High School:
Did you earn the BOE Diploma?
Did you take AP/IB classes? Which ones?

In College:
What is your current college GPA? (approx. ok)

Final Interview Questions:
(Guide for all participants)

1. Can you describe any aspects of your high school Senior Project that you currently put to use in college? If yes, please provide details. If no, why not?

2. What **3** skills, dispositions, or characteristics do you find are needed to be successful in college? Why?
   Where did you learn or develop these skills?
   Did you use these skills during your Senior Project? Describe how.

3. Do you think that your Senior Project helped prepare you for college? If yes, in what ways? If no, why not?

4. Would you recommend the Senior Project to a current high school Junior? Why or why not?

5. Is there anything else you could share? Share about your high school Senior Project experience and how it may or may not have transferred to your current college experience?

Appendix F

Information Sheet for Reflective Journal

Your 3rd interview of the research study is scheduled for _____.

Journal entries are to be made for the next two weeks:
Starting on _____ and, ending on _____.

The following instructions are based upon journaling in Microsoft Word, however you may adapt them for a different method of your choosing (ex.: handwritten, digital voice or video).

What you will receive in your email:
An attachment of a Microsoft Word document, set up in a three column journal format, for you to make your daily journal entries. Save this document to your computer or electronic device so that you are able to access it, type into it and save it for continued use over the 2 week time period.

How and when to make your journal entries:
A minimum of 3 journal entries a week are requested, however additional entries are welcomed. Basically, working on an assignment, studying or planning could provide information for a journal entry. The entry should take approximately 5 minutes to complete and contain 2-3 sentences for each column. For some entries it will be easy to reflect on connections to your high school Senior Project experience, however, if you see no connection you may enter "no connection".

Remember to save the document after each journal entry.

Example of the 3 column journal format:

Current College Work or Thought: Provide details	Past High School Senior Project: What do you recall doing or happening during your Senior Project that was similar to your current work	Connection to Senior Project: How or why do you find your current work or thought similar to your past Senior Project experience
Type what work, thought or process you just completed here	Type your Senior Project memory here	Type your reflection here

How and when to return my journal:

Return your journal by _____ .

Please send your reflective journal as an E-mail attachment to the researcher at applbaum@hawaii.edu

What to expect during the reflective journal follow-up interview:
We will meet in-person, at a location of your agreement, or via skype or have a phone conversation. Interview questions will focus on experiences described in the journal entries. During the final interview, general questions may be asked regarding overall connections between your current college work and your high school Senior Project experience. The interview will take approximately 30 minutes.

If you have any questions regarding keeping your journal or anything else prior to the interview, please do not hesitate to contact the researcher:
Vanessa Yasuda – call or text: 375-6086, or E-mail: applbaum@hawaii.edu

Appendix G

Member Check Templet

Member Check: the participant's opportunity to read through the interview transcription and provide comments to validate accuracy of the typed document of the verbal interview.

Please read through your interview located in the left column. Three questions are provided in the right column to help guide your review. Highlight any inaccuracies in the left column and provide any typed comments in the right column.

Save the Microsoft Word document to your computer prior to beginning, and make sure to save any comments before sending the document back as a new attachment in your return Email.

Please do not hesitate to call, text or Email your researcher, Vanessa Yasuda (apalbaum@hawaii.edu or 375-6086), with any questions on the process.

Interview:

Participant:

Interview Date:

Member Check completed by: _____ Date: _____

	(1) Does your response seem accurate? Please correct any inaccuracies. **(2) Did you explain in enough detail? Please provide additional details as needed.** **(3) In retrospect, would you explain anything differently? Please explain as needed.**

Appendix H

Island University

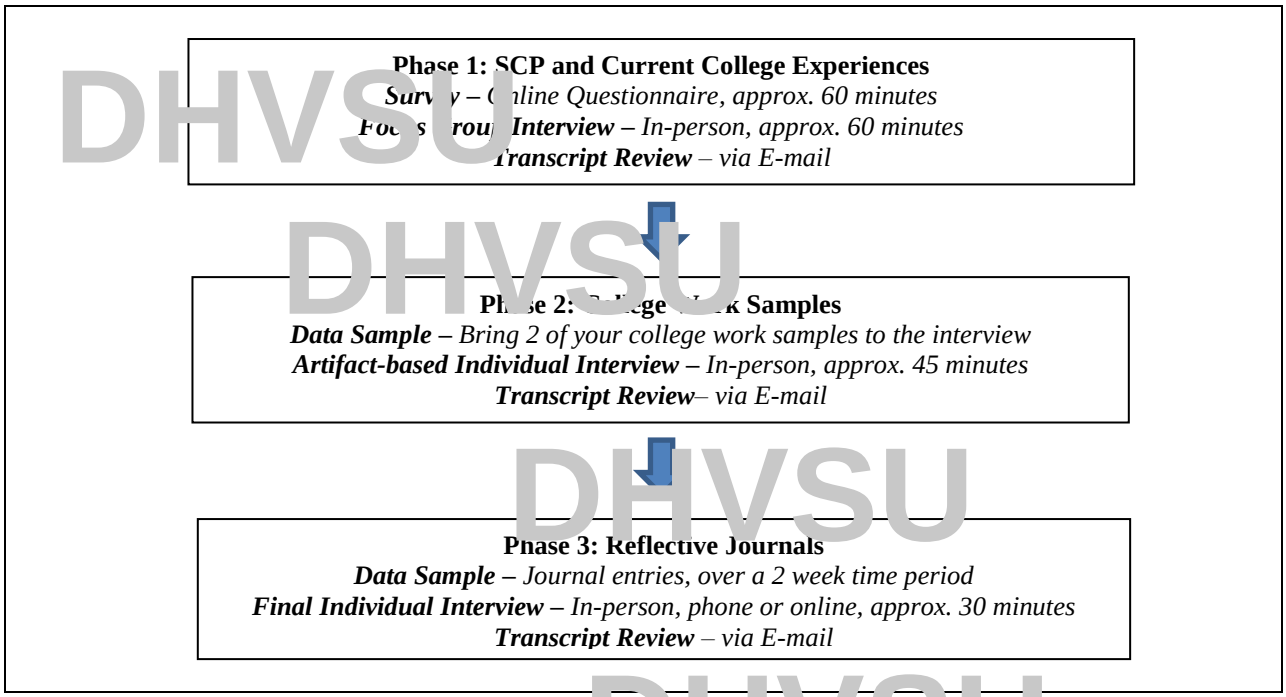
Consent to Participate in Research Project

Secondary Senior Capstone Projects a Descriptive Case Study on Post-secondary Perspectives' of Learning Transfer

My name is Vanessa A. Yasuda. I am a graduate student at the Island University (IU), in the College of Education. I can be reached by phone at (808) 375-6086 or email at applbaum@hawaii.edu. One requirement for earning my Doctoral degree (PhD) is to do a research project for my dissertation. *The purpose of my research project is to evaluate current college students' perspectives on any lasting effects of their high school Senior Project.* I am asking you to participate in this project because you are a current IU student and completed a Senior Project while you were in a Hawai'i public high school. If you participate, you will be one of a total of six to twelve college students.

Project Description - Activities and Time Commitment:

Your participation in this project will take a total of 8-10 hours and include the following activities:



Individual interviews will take place at a location and time convenient for you. The date and time of the focus group interview will be determined by consensus of all participants. The individual and focus group interviews will last for approximately 60 minutes each and will consist of semi-structured, open ended questions. Transcript review of your interviews will include reading the transcript and providing comments, as needed, to clarify any previously recorded responses.

With your consent, I will record the interviews using a digital audio-recorder. I am recording the interviews so I can later create a transcription (a written record of what we talked about during the interview) and analyze the information from the interview.

One example of the type of question I will ask is, "Do you feel that your SCP helped to prepare you for college? If yes, in what ways? If no, why not?" If you would like to preview a copy of all of the questions that I will ask you, please contact me via the phone number or email address listed on this consent form.

Benefits and Risks: Besides receiving gift cards after each phase of the study in appreciation of your participation, I believe there is no direct benefit to you for participating in my research project. However, the results of this project might help me and others learn more about perspectives on the Senior Project as well as college preparation.

I believe there is no direct risk to you for participating in this project. If, however, you are uncomfortable or stressed by answering any of the interview questions, we will skip the question, take a break, stop the interview, or you may choose to withdraw from the project altogether.

Confidentiality and Privacy: During and after this research project, I will keep all data from the interviews in a secure location. Only my Island University advisor and I will have access to the data, although legally authorized agencies, including the Island University's Human Studies Program, have the right to review research records. After I transcribe the interviews, I will erase/destroy the audio-recordings.

Your participation in this research will be kept confidential. When I report the results of my research project, and in my typed transcripts, I will not use your name or any other personally identifying information. Instead, I will use a pseudonym (fake name) for your name. If you would like a summary of the findings from my final report, please contact me via the phone number or e-mail address listed near the end of this consent form.

Voluntary Participation: Participation in this research project is voluntary. You can choose freely to participate or not to participate. In addition, at any point during this project, you can withdraw your permission without any penalty of loss of benefits.

Questions: *If you have any questions about this project, please contact the researcher, Vanessa A. Yasuda, via phone at (808) 375-6080 or E-mail at ayasuda@hawaii.edu* or my College of Education advisor, Dr. Tara O'Neill, via phone at (808) 956-0415 or E-mail at toneill@hawaii.edu

If you have any questions about your rights as a research participant, in this project, you can contact the Island University, Human Studies Program, by phone at (808) 956-7007 or by E-mail at uhirb@hawaii.edu.

If you agree to participate in this project, please sign the following signature portion of this consent form and return it to the researcher, Vanessa A. Yasuda.

Please keep the prior portion of this consent form for your records.

Signature for Consent: I agree to participate in Vanessa A. Yasuda's research project entitled, *Secondary Senior Capstone Projects a Descriptive Case Study of Post-secondary Perspectives of Learning Transfer*. I understand that I can change my mind about participating in this project, at any time, by notifying the researcher.

I have read the consent form and give consent to participate _____ Yes (initial) _____ No (initial)

I voluntarily and am willing to participate in the study _____ Yes (initial) _____ No (initial)
(2 individual interviews, 1 focus group interview, 3 transcript checks, 1 reflective journal and 2 work samples)

I give my consent to be audio taped _____ Yes (initial) _____ No (initial)

Your Name (Print): _____

Your Signature: _____

Date: _____

Contact phone number: _____ E-mail address: _____