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CORRELATING FACTORS BETWEEN STUDENT PARTICIPATION AND
STUDENT LEARNING VIA A SERVICE LEARNING PROJECT
IN SECONDARY EDUCATION: A CASE STUDY

by

Shawn V. Jensen

A thesis submitted to the faculty of

Brigham Young University

in partial fulfillment of the requirements for the degree of

Master of Science

School of Technology

Brigham Young University

April 2006

BRIGHAM YOUNG UNIVERSITY

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FINAL READING APPROVAL

I have read the thesis of Shawn V. Jensen in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials include figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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ABSTRACT

CORRELATING FACTORS BETWEEN STUDENT PARTICIPATION AND STUDENT LEARNING VIA A SERVICE LEARNING PROJECT IN SECONDARY EDUCATION: A CASE STUDY

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School of Technology

Master of Science

In this study a service-learning project was conducted with secondary students in a construction technology based course. Three research questions were considered; (1) does service learning projects help to engage student participation, (2) can students learn the course curriculum while participating in a service learning project, and (3) is there a correlation between student participation and student learning as it pertains to service learning projects? The data was collected through surveys, observations, interviews, and evaluations. The researcher concluded the following from the study; 92% of the students were actively participating in the two week service project, 76% of the students learned the curriculum for the unit in a satisfactory manner, and it was determined that there is a significant correlation between students participation or commitment to the service learning project with how well the students learned the curriculum for that unit.

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CHAPTER I

INTRODUCTION

A Classroom Scenario

Imagine the traditional classroom setting where students come into a classroom, find their seat, and wait for the teacher to explain to them what they will be doing on that particular day. This may include taking notes from the teacher's lecture, or it may possibly be a worksheet, or even the dreaded bookwork. Each of the before mentioned classroom activities are designed to help students learn the course content which in turn will help them achieve their desired grade. In most of these cases, grades are the primary motivation for students to learn the content and one of the major factors for them to participate in classroom activities and discussions.

Now imagine a classroom where students enter ready and motivated to learn. Students come to class wanting to learn the days content not because of a fear of poor grades, but because of an internal desire to help others by participating in a class service project. The students understand that they must learn the appropriate skills found in the course content in order to better complete their service objectives. Students begin to apply these newly learned skills towards completion of the class service-learning project. These students would participate in a class vote early on to determine what they wanted to accomplish, making sure that it would challenge their skills and would require them to

learn new information in order to accomplish their previously determined objective. Once all class members received a responsibility, ensuring participations from the entire class, the students would begin working towards completion of their service objectives. In using this method of teaching the course content, students could apply their newly found skills when it becomes relevant to them while benefiting others through their service.

This outlook of teaching has the potential to have an intrinsic motivational effect on students, where they are internally driven to learn new course content and where the relevance of what they will learn can be applied in practical ways. The students' desire to give of themselves is one of the key factors that will help them learn the appropriate skills, content, or curriculum necessary to complete the service project. In the example of the second classroom situation, the instructor uses service to facilitate student learning, or in other words, the instructor is using a service learning approach.

Background of the Problem

It is understood that students tend to learn the course content associated with a service-oriented activity when they can make a connection with the cause (Dewey, 1938). When students make this connection with a service project or activity, they will be able to perceive how the course information can be relevant in and applied to a real life situation. Literature on this subject suggests that the benefits of engaging students in a service learning project or activity can include greater retention of course material due to the fact that students begin to see the relevance of their learning as it pertains to real life experiences and issues (Dewey, 1938; Kinsley & McPherson, 1989; Verducci & Pope,

2001). The challenge for the instructor then becomes choosing a service project or activity that is relevant, useful, and important to the students, one that will engage students to participate in the service learning project, and one that can incorporate some of the learning objectives or some of the course content.

Engaging all students in learning and encouraging them to become active participants in a high school classroom setting can be a difficult challenge for the instructor. Cori Brewster and Jennifer Fager, researchers at the Northwest Regional Educational Laboratory, found that disengagement is more frequent and more pronounced in the upper grades. Some teachers might try to use token rewards, such as candy or parties if the students complete the required assignment in a timely manner. However, studies show that this type of extrinsic motivation actually diminishes students desire to learn in the long run (Brewster & Fager, 2000). Instead, teachers need to make their classrooms inviting, challenging, and compelling with opportunities for student choice. In this environment, students can develop a type of intrinsic motivation that can become their driving factor for active participation that leads to positive student learning. Intrinsic motivations comes from students' own desires to learn, achieve, and/or participate, as opposed to external motivations which rely on rewards, stimuli, and punishments. Students whose motivations are founded in intrinsic values are more likely to; earn higher grades and test scores, adjust better to school, apply more effort, feel more confident about their ability to learn, use more decision-making strategies, persist with and complete difficult assignments, retain information and concepts longer, avoid the need for remedial courses and review, work on more challenging tasks, and value lifelong learning (Brewster & Fager, 2000).

Service-learning projects can have this intrinsic motivational effect on students to participate and be actively engaged in learning while helping others to fulfill a need. Some recognize this intrinsic motivation of students as their level of commitment. If students feel internally compelled by a concept or a cause, they are likely to act on those feelings, thereby showing some level of commitment to that cause. Instructors can use this commitment to a service project to motivate students to learn the associated curriculum.

Much research has been compiled on service learning and the benefits thereof (Giles & Eyler, 1994; Batchelder & Root, 1994; Osborne, Weadick, & Penticuff, in press). For the most part, the following three areas have been the general concentration of service learning studies: (1) The impact of service learning on students and their perceptions of the experience (e.g., Giles & Eyler, 1994), (2) Assessing lasting affects of learning through service on many different populations of students (e.g., Batchelder & Root, 1994), (3) And students' achievements of course goals and learning course content in connections with service oriented activities (e.g., Osborne, Weadick, & Penticuff, in press). Studies incorporating one of the above-mentioned areas have been conducted in a variety of situations and with many different populations. Service learning has been used as a method of teaching content in the areas of: science education (Edwards, 2003), civic education and history (National Service Learning Clearinghouse, 2004), business and marketing education (Goins, 1996), and others. However, no studies were found on service learning in a high school construction technology classroom setting that focused on engagement or commitment of student involvement. Likewise, there is an absence of

research on how service learning projects and/or activities promote the course content for construction technology.

Statement of the Problem

A problem exists where there is insufficient research available to determine if, in a construction technology classroom environment, a service learning project could be used to engage student learning (commitment), teach the course content, and determine if a correlation exists between a students' commitment to a service learning project with his/her willingness to learn the related content.

Research Questions

This study will attempt to address and answer the following questions, in a construction technology course taught at the secondary level:

1. Can service-learning projects and/or activities engage student learning?
2. Can service-learning projects and/or activities be used to teach course content?
3. Is there a correlation between a students' commitment to a service-learning project with his/her willingness to learn the course content associated with that project?

Significance of Study

This study looks at the relationship between students' commitment to a service learning project with their commitment to learning the content associated with that

particular project. If this relationship in fact exists, project-based classes could benefit by applying a similar service component to teach similar course content. Thereby, reaching more students in their classroom that would otherwise be disengaged and unmotivated to learn the content.

Definition of Terms

1. Active learning- refers to techniques where students are participating in an action such as discovering, processing, and applying information (McKinney, 2005).
2. Commitment- is an attachment to an event, project, or activity that is both psychological and social and describes an intrinsic attachment to that endeavor (Kanter, 1974).
3. Extrinsic motivation- an extrinsically motivated student performs "in order to obtain some reward or avoid some punishment external to the activity itself," such as grades, stickers, or teacher approval (Lepper, 1988).
4. Intrinsic motivation- a student who is intrinsically motivated undertakes an activity "for its own sake, for the enjoyment it provides, the learning it permits, or the feelings of accomplishment it evokes" (Lepper, 1988).

5. Service-learning- the accomplishment of tasks that meet genuine human needs in combination with conscious educational growth (Southern Regional Educational Board, 1969).

Summary

In this study, the relationship between students' commitment to a service learning project and students' commitment to learning the course content of a construction technology class through the experience of a service learning project was the primary objective of this study. Available research and literature supports the fact that service learning has many benefits in education. Some of these benefits include: Students learning to serve the community while applying newly learned knowledge as it pertains to the project. The community benefits from the service rendered by others. The community benefits in the long run by the future citizens who participate in the service project as they become conscious of the needs of the community and others. Service-learning activities and projects have been used and can be used in secondary education as a motivation for students to learn the curriculum.

CHAPTER II

REVIEW OF LITERATURE

Introduction

In review of the literature, three main ideas of importance to this study became apparent: (1) using service-learning activities to engage students in the activity, (2) using service-learning activities as a motivational tool to inspire students to learn the related content, and (3) ways of measuring students level of commitment to a particular service-learning project/activity and students level of commitment to learning new content associated with the project/activity.

Commitment and Motivation

Commitment by definition is an attachment to an event, project, or activity that is both psychological and social and describes an intrinsic attachment to that endeavor (Kanter, 1968). Thus, it is more than just the process of completing an activity, it is an internal desire to succeed and excel in that act. Commitment is part of ones' moral character, founded on the principles of devotion and dedication (Etzioni, 1975). Commitment can manifest itself in giving more of ones' personal resources such as time, money, or effort (Becker, 1960).

Kanter (1968) and Etzioni (1975) wrote of commitment in these terms; personal identification with the goals of the endeavor (i.e., a strong intrinsic attachment), extra involvement in the endeavor (i.e., expenditure of non-required resources); and strong loyalty to the endeavor (i.e., a willingness to forego other opportunities that would conflict with the activity).

Engaging Student Learning

As stated by Charlotte Danielson (1998), of the Educational Testing Service, engaging all students in learning the content, not surprisingly starts with the instructor. This places an enormous challenge on the instructor to design lesson plans that will inspire every student to participate and motivate them to learn more. Danielson suggests that the best teachers are those who keep students highly engaged throughout the entire lesson as well as encourage students to contribute their ideas and insight as a way of enhancing their own and other students' learning. Service-learning projects and activities can have this effect on students when properly organized and thoroughly conducted by the teacher. In the document, *Creative Alternatives for Service Learning: A Project-Based Approach*, Turner and Grizzaffi (2003), state the importance of the teacher's role:

The role of the teacher in successfully combining the two pedagogies cannot be understated. The immersion of the teacher in the student endeavors makes her a stakeholder in the projects' outcomes. The teacher is the facilitator, but also a coach and a full participant. Together, they made a difference, within themselves and for others.

The teacher is responsible for facilitating and monitoring during the service-learning projects/activities, but ultimately the students are in control of their successes and failures. The teacher can set up the environment for learning through engaging activities and inspiring projects, but the learning happens in the individual minds of the students.

The main goal in engaging students in the learning process is to help them understand and apply the concepts and skills that are being taught. Teachers can take advantage of different motivational techniques to increase student engagement such as; just-in-time approach, service learning, active learning, and project-based learning.

Just-In-Time Approach

The just-in-time approach takes advantage of that moment when student motivation to learn is at its peak. It also results in overall higher retention rates because application of learned knowledge always closely follows transfer (Berglund, 2004). According to Berglund (2004), a just-in-time knowledge-transfer system should mirror the interaction with a tutor and must therefore provide three key capabilities:

- (1) Real-time assessments: One alternative to the “standard test” is to use a self-assessment format, which in and of itself provides significant knowledge transfer. If the self-assessment format mirrors a set of diagnostic questions, it will also have the added benefit of quickly putting the user on notice as to where the “knowledge bar” is placed for a particular class, task or project. Based on answers in this process, the system can then instantly select and deliver needed educational material.

- (2) **Dynamic Feedback:** A dynamic system cannot respond in earnest unless the user allows it to do so. To function properly, a dynamic knowledge-transfer system has to be allowed to do its job: It cannot double as an assessment tool for management. It is instead critical that learners feel comfortable working at their exact level of competence. Just as a tutor is most effective when trust is established—and he is allowed to base his feedback on honest answers—it’s the same ability to provide dynamic feedback that makes true just-in-time systems so powerful.
- (3) **Chunked and vetted knowledge:** Dynamic feedback also requires chunked and vetted knowledge, which has always been the building block of effective learning systems. Many learning content management systems (LCMSs) now on the market focus on inventory control of these knowledge chunks. However, these systems do not provide just-in-time delivery vehicles. Nor are they set up to chunk at the level necessary to move from just in case to just-in-time knowledge transfer. A good just-in-time system should have a standards-based authoring environment that allows for rapid development of new material by trained editors and subject-matter experts. (Berglund, 2004)

Service-Learning

Service learning has been around for many years, although it has not always been defined and labeled as such. Early on, in John Dewey’s educational decree (1898), and in his experiential education (1938), can be found elements of this idea of learning through

active service. Then in the late 70's and early 80's, experience-based career education with elements of service associated with it appeared as a teaching strategy (McClure 1979; Bucknam and Brand 1983; Kolb 1984). But, it wasn't until the mid 1980's when the term "service learning" established its' roots (Stanton, Giles, and Cruz 1999). This developed into an important educational movement that still exists today.

Along with this development of service learning, came a variety of definitions and interpretations of what service learning should look like (Stanton, Giles, and Cruz 1999; Shumer and Belbas 1996). Kendall (1990), suggest that there where 147 different definitions and interpretations of service learning in 1990, and surely more today. Some view service-learning as simply "the accomplishment of tasks that meet genuine human needs in combination with conscious educational growth" (Southern Regional Educational Board 1969), while others may describe service-learning as a two way, give and take relationship between those giving service and those being served (Jacoby 1990). Those who believe that service-learning works best when involved within a well structured, volunteer based service environment, would tend to adopt the definition given by The National and Community Service Act of 1990 (U.S. Code Title 42, Section 12511) that reads:

A method (A) under which students or participants learn and develop through active participation in thoughtfully organized service that (i.) is conducted in and meets the needs of a community; (ii.) is coordinated with an elementary school, secondary school, institution of higher education, or community service program, and with the community; and (iii.) helps foster civic responsibility; and (B) that (i.) is integrated into and enhances the academic curriculum of the students or the

educational components of the community service program in which the participants are enrolled; and (ii.) provides structured time for the students or participants to reflect on service-experience.

We may never agree on a universal definition of what service learning is, but there are some commonalities of service learning that most will agree with. Service learning is not the same as service. There must be a learning goal or objective as it pertains to the curriculum associated with the service to label it service learning (Chapin 1998). As defined by the National and Community Service Trust Act of 1993, service learning is a teaching strategy by which students learn and develop through active participation in a thoughtfully organized service. Service learning has been called “reciprocal learning” (Sigmon, 1979), as there needs to be a balance between learning goals and service outcomes. As stated in the preamble of the Wingspread Report, *Principles of Good Practice for Combining Service and Learning*:

We are a nation founded upon active citizenship and participation in community life. We have always believed that individuals can and should serve...Service, combined with learning, adds value to each and transforms both. Those who serve and those who are served are thus able to develop the informed judgment, imagination, and skills that lead to a greater capacity to contribute to the common good. (Mann & Patrick, 2000, p. 45)

Thus, service learning without the learning is simply community service. Students must explore new knowledge or apply existing knowledge that will contribute to the overall service to have it be recognized as a service-learning project.

Another common consent of a service-learning project would be the process of action and reflection. Action and reflection is a significant part of service learning, as well as in a life well lived (Tai-Seale, 2001). Action is the progression of the project or activity of a service-learning project. Reflection is defined as the intentional consideration of an experience in light of particular learning objectives (Hatcher & Bingle, 1997). For each action the student take there must be a reflection time for students to internalize what they have participated in. Educator Urban Whitaker (1989) insists that the difference between classroom and experiential learning is an “input” or activity difference only, not an “output” difference. Therefore, real learning does not take place n during the learning activities themselves, whether the activities be lectured based or a service experience, but through “self-directed” student reflection, which “maximizes the opportunity for effective formative evaluation” (Whitaker, 1989).

Another important factor for a successful service-learning project is to make the project relevant to the student. One where the student can see how to apply newly found knowledge. As Kolb (1984), established in his theory of experiential learning what students learn in the classroom as theory is better grasped when it is practiced in real-life situations. Thus, it is important for the instructor to select a service learning activity that is both relevant to the classroom curriculum and one that all students can participate in. Literature on service learning suggests that the benefits of engaging students in service learning include greater retention of course material due to the fact that students begin to see the relevance of their learning as it pertains to real life experiences and issues (Dewey, 1938; Kinsley and McPherson, 1989; Verducci and Pope, 2001).

Instructors have a powerful tool in service-learning activities to not only teach the required curriculum in a unique but practical way, but also in inspiring young minds and motivating them in helping the community (Eyler, 2002). It is important for these activities to be well organized and carefully planned out. Clear goals need to be established so both the student and the one receiving the service understand what is expected and what the project or activity entails.

Active Learning

Service learning is closely associated with experiential learning, hands-on learning, or active learning (Dewey, 1938; Kolb, 1984). Active learning refers to techniques where students are participating in an action such as discovering, processing, and applying information (McKinney, 2005). Listening to a lecture or a presentation is not necessarily active listening (Chickering & Gamson, 1987). Active learning stems from two basic concepts of learning styles: (1) that learning is by nature an active endeavor and (2) that different people learn in different ways (Meyers & Jones, 1993). Bonwell and Eison (1991), state that some characteristics of active learning are:

Students are involved in more than listening, less emphasis is placed on transmitting information and more on developing students' skills, students are involved in higher-order thinking (analysis, synthesis, evaluation), students are engaged in activities (e.g., reading discussing, writing), and greater emphasis is placed on students' exploration of their own attitudes and values. (p. 2)

Active learning principles in association with service-learning principles helps establish opportunities that benefit both the student (the one serving) and the one(s) being served.

It allows for the students to actively apply new knowledge learned in the classroom or even can inspire students to seek out new knowledge to further benefit the one being served. Through serving others in the community student can actively apply their newly acquired knowledge or skills in a real world situation outside of the classroom. This in turn helps the student to retain the newly found knowledge or skill by seeing how it can be applied in a practical way. As stated by John Dewey (1902, pp. 11-12):

Verbal memory can be trained in committing tasks, a certain discipline of the reasoning powers can be acquired through lessons in science and mathematics; but, after all, this is somewhat remote and shadowy compared with the training of attention and of judgment that is acquired in having to do things with a real motive behind a real outcome ahead.

Active learning in connection with service learning helps students see the reasoning of why they are learning the things they are and how they can apply this newly found knowledge to benefit themselves and others.

Project Based Learning

Project-based service learning emphasizes learning opportunities that are interdisciplinary, student-centered, collaborative, and integrated with real-world issues and practices (Bradford, 2005). Project-based learning is synonymous with hands-on learning and is closely related to active and service learning. Teachers tend to agree that when a student is placed in environments which foster academic achievement through hands-on, authentic learning can motivate students by engaging them in their own learning (Brophy 1986). This authentic learning comes at times when most useful in the

project production process and when the student needs to learn that particular piece of information. Thus, students can make connections to previous knowledge and see how this knowledge is relevant outside of the classroom setting.

Project-based service learning can also prepare students for industry as it helps develop those important skills that employers are looking for. These include teamwork and problem solving skills, as well as effective oral and written communications skills, which are highly desirable by business communities (U.S. Labor Department, 1991; Thoene, 2003). A variety of project-based service tasks can also foster motivation to learn. Ideally, these tasks should be challenging but attainable. Project relevance also promotes motivation, as does "contextualizing" learning, which is, helping students to see how skills can be applied in the real world (Lepper). Project-based service-learning tasks that involve "a moderate amount of discrepancy or incongruity" are advantageous, as they stir students' curiosity, an intrinsic motivator (Lepper).

Summary

Review of the previously mentioned literature has highlighted the importance of using service learning activities to engage student participation, as a motivational technique to help inspire students to learn the related content, and as a way of measuring students' level of commitment to learning new content associated with the activity or project.

CHAPTER III

RESEARCH METHODOLOGY

Introduction to the Research Methodology

This chapter explains the method of research and process of collecting the necessary data. The research was carried out as a case study and the methods are discussed in the beginning of this chapter. The first section of this chapter focuses on qualitative methods of research and looks at the demographics of those involved in this study. The second section deals with the design, method and procedures that are associated with this study. The third section explains how the data were collected. The fourth and last section of this chapter describes the analysis of the data that were collected. As a case study, the data were collected and analyzed in an attempt to find the relevant factors that apply to possible change in student behavior that would be directly related to; (1) student engagement, (2) student motivation to learn the content, and (3) the correlation between student participation with the students' commitment to learn the content.

Qualitative Research

Qualitative research as defined by Merriam (1998) is a method of interpreting data in a subjective way in order to assign an explanation for the outcome. She suggests

that through qualitative research six assumptions can be made: (1) Qualitative research focuses on the process and not solely the outcome or product. (2) This type of research is more focused on lived experiences and the meaning of those experiences. (3) The researcher is the primary instrument for data collection and analysis. (4) Qualitative research usually involves fieldwork. (5) It is descriptive in describing events, attitudes, and outcomes. (6) And it requires some deductive reasoning by the interpreter of the data.

Case Study

A case study is a type of study that focuses on a specified group or population of individuals. In a case study, the focus is on a bounded system, usually under natural conditions, so that the system can be understood in its own habitat (Stake, 1998). Usually, this type of study is not focused at the whole population, but at individual cases that are similar in make up. The researcher attempts to analyze the variable relevant to the subject under study (Key, 1996).

Engagement

In the study, engagement and/or commitment are defined as an attachment to an event, project, or activity that is psychological, social, and describes an intrinsic attachment to that endeavor (Kanter, 1968). Commitment can manifest itself in giving more of ones' personal resources such as time, money, or effort (Becker, 1960). The researcher looked for those students who displayed this commitment and inferred that they were engaged in the project. For example, those students who: worked on the

project out of class time, spent their own money on accessories for the project, and displayed extra effort on the project were considered committed to the project. The researcher also considered those students who participated throughout the entire two week time period as engaged and committed to the service-learning project. Admittedly, this method of collecting data is subjective in that it is based on what the researcher assumes the students' feelings are towards the project.

Content Objectives

For the construction technology class, the content objectives were based on students needs as perceived by the instructor. The course content for the beginning two weeks of the trimester (the same time as when the service learning project was conducted) dealt with learning how to safely operate the machinery in the shop. Traditionally, the instructor would demonstrate how to use the equipment and machinery. The instructor would then test the student's level of understanding by administering a safety test. This safety test would check for understand and comprehension of the students knowledge of how to safely use the machinery and/or equipment.

The instructor had chosen to use the just-in-time approach during the service-learning project. This meant that the students were to receive instruction on the equipment and machinery when they found it relevant as opposed to lectures, demonstrations, and tests. The instructor developed a rubric for measuring student knowledge of content objective in place of the safety test (see Appendix D). The rubric set up by the instructor was established for the 8 different machines. Students were categorized as unsatisfactory, satisfactory, or proficient in their ability to demonstrate

their knowledge of safe usage for the each associated machinery. Students that received an overall satisfactory rating by the instructor were required to demonstrate knowledge of safe procedures at the satisfactory level or higher for each piece of machinery.

The instructor used qualitative methods of determining at what level the students demonstrated safety knowledge for the machinery. These methods included observations, interviews, and surveys. The researcher found that observations proved to be a good method of determining how safe the students were when using the equipment.

Population

The population was characteristic of similar high schools within the same generalized demographics. Participants in this study consisted of high school students, ages 14-18, at Hermiston High School located in Hermiston, Oregon. Students were enrolled in the construction technology course offered by the high school the previous year, either by their choice or by their counselor's direction, meaning, some students chose to take this course while others were assigned it. This course was offered as an elective to students and could be taken as many times as desired.

The population of this study consisted of 22 males and 3 females. Of this sample, 7 students were on an individualized educational plan (I.E.P.), 6 of the students were considered English language learners (E.L.L.), 15 of the students were Caucasian, 9 were Hispanic, and one was Asian. This was reflective of the community's ethnic make up, the student population for the high school, and for those students who enroll in this type of class. This make up was also similar and consistent with previous construction technology classes taught by the instructor for the past few years.

The city of Hermiston is located in the eastern desert of Oregon. It is centrally located between Portland and Boise, Idaho. Population is around 14,000 with a steady increase in the past few years. Hermiston is a rural city with a rich tradition in agriculture. The socio-economic face of Hermiston would be classified as at the lower end of the middle-class scale of average earnings per year. The average yearly salary for an adult living and working in Hermiston is roughly \$19,000 per year.

Hermiston School District serves over 4,600 students Kindergarten through 12th grade. The district has five elementary schools, grades k-5 with 450 students at each school, two middle schools which serve about 500 students at each, and Hermiston High School which serves over 1,300 students. Hermiston School District is the largest in Eastern Oregon. The revenues from local, state, and federal funding total over 30 million dollars. The district has constructed a new high school and elementary school with this fund. The district employs over 260 teachers, 16 administrators, and over 200 support staff.

Hermiston High School's ethnic breakdown for 2004-2005 are as follows: 62% Caucasian, 34% Hispanic, 1% other racial background. Hermiston High School has about 310 English Language Learners (E.L.L.) almost exclusively from the Hispanic population. Hermiston's drop out rate is reasonably low at 2% compared with the states average of 5%. The high school's Mission Statement is: "*Hermiston High School, in partnership with the community, empowers staff and students to achieve their personal best.*" The community population is consistent with the populations of the study where 60% are Caucasian, 36% are Hispanic, and 4% of other racial background.

Facilitating a Learning Atmosphere

In this research project, there were many methods used for facilitating a learning atmosphere. The three main approaches used by the instructor were: the non-directive approach, just-in-time approach, and the interdisciplinary approach. The instructor commonly uses these three methods of instruction to teach the content in construction technology courses. The instructor's intentions in doing so are: (1) allow the students to be responsible for their learning experience. (2) Help students find the relevance of their learning and to apply their newly found skill. And (3) to give other students from other discipline areas a chance to participate.

Non-Directive Approach

The instructor used a non-directive approach when students were deciding on what type of service project they were to choose. As used in this case, a non-directive approach is defined as giving students the liberty to decide on how they would spend their time in class, what projects (if any) they would like to build, and when they were to complete the project. The instructor displayed his personal bias and feeling of what direction he thought the class should go, but ultimately the class made the decision.

The non-directive approach used by the instructor can be defined as a method of teaching where students govern what they will learn and what their learning experience will become. Students have the opportunity to determine what type of projects they would like to be involved in and at what capacity they would like to contribute. The instructor would give guidelines as to what students should be learning and then the students would then determine how they would like to learn the new content. For

example, the instructor may suggest that students should be familiar with the table saw, band saw, and router for a particular unit of the curriculum. The instructor could offer suggestions of projects that could be built with these machines. The students then would determine what they would like to build in order to learn the necessary skills associated with the previously mentioned machinery. The instructor used this approach for the service learning experience in hopes that the students would feel a sense of ownership for the project and feel more connected to the relevance of their learning.

Just-in-Time Approach

The instructor to teach the content used the just-in-time approach. In the service-learning project, the students would ask how to use a particular piece of machinery or equipment when they needed to learn how. In this way, students were able to receive relevant information, as they needed it, immediately apply the newly learned knowledge or skills into practice, and retain the information for future applications. The instructor allowed the students an opportunity to explore and practice their skills using the just-in-time approach.

Interdisciplinary Approach

The instructor also used an interdisciplinary approach during the service-learning project. The instructor invited the art class to help paint the toy blocks. The students of the art class painted numbers, letters, and symbols on the block. The art students were able to contribute to the service-learning project by sharing their time and talents.

The instructor of the construction technology class also found ways of implementing curriculum from other disciplines. Students used math concepts when learning to measure lengths and when adding and subtracting fractions. Students were given an opportunity to apply and reinforce skills learned from other discipline areas.

Procedure in Collecting Data

Many resources of collecting data were considered and used in order to keep the authenticity of this study and in an attempt of not compromising this study with personal bias. Desired data were collected through the following methods: (1) student surveys, (2) interviews between instructor and student, (3) peer evaluations, and (4) instructor observations. In using this triangulation method of collecting data, where different methods were used in gathering information, personal bias could be reduced and a more precise estimate of outcome could be examined. Although there were many methods of reducing personal bias, the researcher felt that there were times when the instructors' personal excitement and feeling about the project influenced students' decisions.

Surveys

Students were given a pre-survey as well as a post-survey on their experiences and knowledge dealing with the curriculum associated with this course and their level of confidence in operating the machinery. The researcher produced a survey that covered the basic concepts for the course, such as, machinery skills, knowledge of planning a project, and confidence in creating a project. Both pre and post-surveys were identical in

the questioning and the variances in their answers were analyzed (See Appendix A). This survey was based on a Likert scale, with responses being numbered from 1 through 5 on ability (5 representing the most skilled).

Interviews

Interviews can be very helpful in collecting data and discovering emotions of the participants. When conducting interviews, Stainback and Stainback (1988) suggest six concerns that the researcher needs to be aware of: (1) Control his/her reactions. (2) Ensure a safe, comfortable, and secure environment to conduct interviews. (3) Avoid too many yes or no questions that prohibit detail. (4) The researcher should be flexible to his/her approach to the informants. (5) Use group interviews when appropriate. (6) Avoid redundant questioning. Students were interviewed and evaluated at the end of the project to determine their commitment level to the service project. This was given to the students by the instructor in a formal interview questioning session and students were asked question about how motivated they were to finish the project and what factors determined if they were to finish or not (See Appendix B).

The instructor administered both structured personal interviews and informal group and personal interviews periodically throughout the service project. Structured interviews and informal interviews were conducted in groups and individually with the students. These interviews were conducted by the instructor in an attempt to understand students' commitment to the service project and as a way for students to express their trials and struggles as well as their successes and celebrations as they pertained to the service-learning project. In an attempt not to ask leading questions, the instructor asked

open-ended questions where students could express their feeling without the worry of reprisals.

Peer Evaluations

Students were asked to evaluate their personal commitment and progress on the project at the end of each stage of the project (i.e. design phase, manufacturing and construction phase, finishing phase, and delivery phase). This helped to keep the students in check with their responsibilities and goals. Students were also asked to evaluate their group periodically through the project process, once at midterm and again at the end of the service-learning project. This was done in an attempt to understand how students would perceive their peers commitment level and how they would view other students' learning growth as a result of the project experience.

Observations

The researcher collected his own data kept in a personal journal and observed the collective environment of the classroom as well as the progress of the individual students as the project evolved. The researcher observed how students reacted and behaved in different situations and noted which students participated and which did not. For example, when the students first met with the 1st grade class, how some of the high school students were very reticent to begin a conversation with the younger students and others had no reservations about the meeting. The researcher also observed which of the students seemed most committed to the project and how that affected their desires and commitments to learn the necessary curriculum in order to complete their project. This

was observed by the amount of extra effort, outside of classroom time, students spent on the project, as well as, the amount of knowledge students arrived with contrasted with that of what they acquired at the conclusion of the project.

As a result of using a variety of methods of collecting data, personal bias could be reduced and a more precise interpretation and analysis of the data could be achieved.

Research Plan

The researcher used interviews and observations as a method of collecting data. Interviews were done either as a formal interview or as an informal interview. Formal interviews were conducted at the end of the project (See Appendix B). Students were interviewed by the researcher and were asked questions regarding their perceptions of how comfortable they were in using the equipment, how committed they felt about the project, and questions about the work they had accomplished.

Informal interviews were conducted in a conversational format where the researcher would casually ask how the project was going, if they were having fun during the project, if they needed help operating the machinery, etc...

Observations were done on a daily basis and data was written down in a research journal. The researcher observed the students in how well they used the machinery, how they participated, and how they progressed in skill level. The researcher found observations to be an effective way of measuring if the students could safely operate the machinery and a good tool in determining if students were engaged in the project.

The instructor was charged with the duties of scheduling the times when the high school class could visit the elementary students. Also, the instructor facilitated the supplies and materials that would be needed in completing this project. The instructor acted as the supervisor over safety procedures and insured that students were taught the correct applications and skills for use on the equipments, tools, and machinery when relevant for their project completion. Thus, using the “just in time” approach for teaching the required curriculum, meaning that students would receive information incrementally, when they found the need for such information. The “just in time” approach is based on students desires to learn the information when it becomes relevant to them. This teaching method is designed to help students learn the pertinent information as they are applying it into immediate practical situations.

Analysis of Data

All data were collected at the end of the project to be analyzed and interpreted into findings. The data were analyzed through qualitative methods. Wilcott’s (1990) nine points for maintaining validity of qualitative research were considered throughout the study: Be a listener, Record Accurately, Initiate writing early, Include the primary data in the final report, Include all data in the final report, Be candid, Seek feedback, Attempt to achieve balance, and Write accurately. Through surveys, observations and interviews the researcher applied the following points of Wilcott’s nine previously mentioned; being a good listener to students’ comments and ideas, accurately recording the data found through these processes, allowing the student and researcher to be candid in his/her comments, encouraged student feedback, and attempted to achieve balance

between students' desires and the course objectives. The researcher also incorporated the point of beginning the writing early, write accurately, and including all information on final report.

In summary, this case study was conducted in an attempt to observe how commitment to a service project relates to motivation to learn the associated curriculum. The population for this study were primarily high school age student in rural Eastern Oregon, in a community with a generalized mid to low socio-economic status. This study was based on service-learning principles and data was collected from student surveys, interviews, peer evaluations, and instructor observations/evaluations and analyzed with qualitative methods.

CHAPTER IV

THE CASE

Introducing the Project

A new trimester of school was about to begin and I was excited to try a new approach to teaching the course content. I wanted the students to have an opportunity to feel responsible for their education and able to have a part in determining what they could learn. Yet, I also felt passionately about establishing a service-learning project that the students could participate in. I decided to introduce the idea of a service-learning project to the students in a way that would give them a choice between something that I knew they did not like doing (tests) with something I thought they would like to do. Therefore, I saw it as a win/win for the students and myself.

Day One

At the beginning of the 2nd trimester, students were welcomed and were presented with a choice of how to begin the first two weeks of the trimester. Typically, in the first two-week of school students are show how to safely operate the machinery in the shop. I talked to the students about the possibility of doing some kind of project for the community as a way of introducing the course content instead of the traditional method of demonstrating, memorizing, and then testing. This idea that the class would do a

project to start off the trimester instead of the expected test and quizzes was introduced on the first day of class and seemed to get the attention of the students.

I presented the students with two different choices. Students could choose to either; (1) begin class with the standard safety test, tool identification test, and demonstrations and lectures on how to run the equipment, or (2) students could choose to begin the course with a service project, which would provide the motivation for the students to learn the curriculum. I tried to present it in a manner that the students could not resist. I made comments like, “If we all decide as a class to begin with a service learning project, then we can start out in the shop tomorrow. But, if not everyone chooses the project, we will need to stay in the class to learned about shop safety.” The students mentioned that they were willing and eager to work on a project instead of the alternative. I noticed that the excitement level in the classroom was elevated at this proposal.

I decided to have the students write down their vote on a piece of paper and turn it in to be counted. Each student submitted his/her anonymous vote into the instructor of how they wanted to begin their experience in this construction technology class. The votes were then tallied and the decision was unanimous in favor of the service project. I was relieved that everyone voted in favor of the service-learning project. I believed that if I could persuade the students to begin the course with a service-learning project they could then begin to see that they would have a voice as to what they were going to do for the project and how they were going to accomplish that project. This is when I wanted the students to start thinking about what impacts they could make in participating in a

service-learning project. One student asked, “How soon can we start”. I told the class, “Let’s start right now”. I heard comments in the class such as, “I can’t believe we get to start on a project already” and “Hallelujah, no busy work”.

The next step was to choose an appropriate service-learning project that would meet the objectives of the course. I then had students get in groups of three to discuss some possible service projects to do. In the construction technology class, students are expected to learn how to safely operate machinery, such as the band saw, table saw, radial arm saw, drill press, planer, joiner, and hand tools. Class requirements also include, learning how to plan, construct, and finish a project while working in a cooperative group setting.

I wanted the students to decide on a service-learning project that would incorporate all of these skills and techniques and one that would qualify as a relevant learning experience. Subsequently, the groups of students were asked to come up with a list of ideas and/or options of how best they could meet the needs of others in their community while simultaneously accomplishing the class requirement. During this time of brainstorming the students came up with some very creative ideas. Some of the ideas included: tearing down an old hospital in town, building benches for the school, restoring parts of the rodeo grounds, and making gifts for Christmas.

The class was then presented with all of these different ideas. Some of the students felt overwhelmed with the possibility of doing one of the larger projects. One student commented, “We’ll never finish if we try to do something big, like tear down the old hospital”. The students discussed the pros and cons of each idea collectively. I gave my input as well on the pros and cons of each idea. The project ideas that did not meet

the class objectives we eliminated from the list. Next began the process of voting and narrowing the list down, followed by another set of votes and discussions of pros and cons in an effort to minimize the list to one idea. In the end, the students choose to do a service-project for the 1st graders of a local elementary school.

The class decided to serve the 1st graders instead of another class due to their age and their class schedule. The students felt that the younger children would appreciate the wooden toys more than the older students. The reason the class did not choose the Kindergarten class was because the high school students met during the Kindergarten transition time.

The elementary school chosen was located in the lower socio-economic district of Hermiston and was closest in proximity to the high school. This class of high school students felt that they could most benefit the 1st graders of this local elementary school by building a variety of small toys and have them ready to be delivered on the last day of school before the Christmas break. This allowed for two weeks of preparing, designing, manufacturing and assembling, finishing, and delivering the product.

Once the school and age of the students were decided on, I then assigned each group the task of coming up with some possible wooden toy ideas. I asked each group to start thinking about a practical toy design that we could make for the 1st graders. When the bell rang to go to lunch students were still talking in their groups about what they could make for the elementary students. I was impressed by the classes' willingness to serve. Two students stayed after the bell had rung to discuss some options of toy designs. After this first class, I felt that the students were excited and motivated to participate in this project. I myself was excited to get started on this project.

First Visit

The class agreed that a visit with the 1st grade classes would be appropriate in order for the students to get an idea of what that age of students would like for Christmas before the project planning began. I wanted to give the high school students a chance to learn what toys would be appropriate for that age and to give the students a chance of connecting with the 1st graders.

Day Two

The next day students came to class with pictures of wooden toys from the internet that they had looked up at home. Some students even had some hand-sketched drawings of the toy designs as shown (see Figures 1 & 2 below):

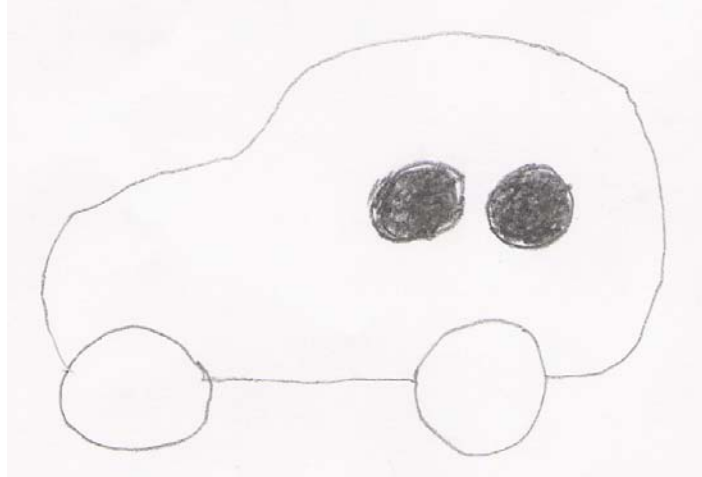


Figure 1. Sample of Hand-Sketched Toy Car Design

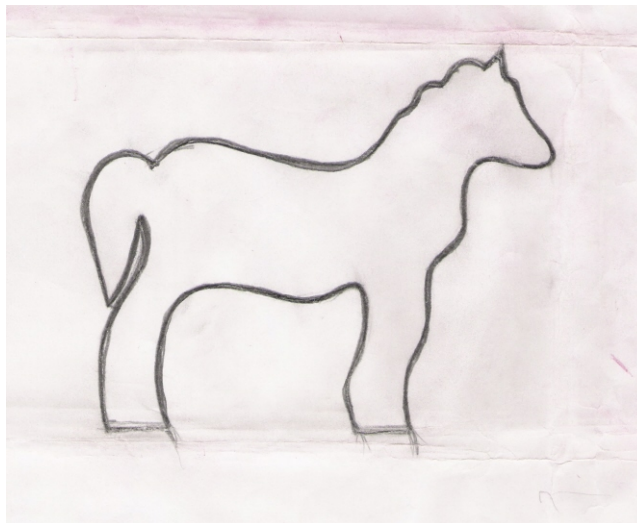


Figure 2. Sample of Hand-Sketched Toy Horse Design

This amount of time spent out of class, working on ideas for the project, showed that some of the students were already committed to the idea of the service-learning project. I was impressed with that the students were still thinking about what they wanted to build for the 1st graders.

I had set up a short visit with the elementary students for this second day. I collected the toy designs from the students, asked them to get back into their groups, and to come up with some survey question they could ask the elementary students on their visit. The questions they came up with were general in nature and were designed to allow the elementary students to feel comfortable talking with older students. Some of the questions that the students developed were:

1. What's your favorite color?
2. How many brothers and sisters do you have?
3. What do you want for Christmas?

These questions were two-fold in purpose. The first and most obvious reason was for the students to get an understanding of what children that age would like for Christmas. The second reason was so that the high school students could make an emotional connection with the first graders, which could help them see the relevance and importance of their service. I felt it important to have the students meet in order to inspire commitment. Kanter (1968) defined commitment as an attachment to an event, project, or activity that is both psychological and social and describes an intrinsic attachment to that endeavor. To inspire this intrinsic attachment was one of my intended motives for the survey and a necessary part of a service-learning project.

Once the students wrote down what questions they were going to ask, we left as a class to the elementary school. As the high school students were walking to the elementary school, one student said, "I wish we did this kind of stuff in every class". Spirits were high in excitement as the high school students entered the elementary school. The 1st grade teachers gathered all 90 of their children into one room where the high school students could meet and talk with them. This surprised me because I was under the impression that we were only going to meet with one class of 30 students. I felt a bit nervous at the thought of having 90 toys to make instead of 30. I noticed that the high school students were feeling some of my uneasiness as well. I heard one of the high school students say to his friend, "You go ahead and give them the interview, I'm just going to hang back here". I also caught some of the students glancing back and forth to one another as if they were saying "you go first". Perhaps by the total number of 1st graders who were there ready to be entertained in some way. Eventually, the high school students began their interviews and gradually both the high school students and the 1st graders were getting to know one another. At this visit, the high school students worked in groups of three to survey and interview the 1st graders on their likes and dislikes.

As I was observing the interview process, I noticed that three of the high school students were still at the door not participating. When I tried to encourage the students to get involved one student said, "no way, I'll just wait here until we're done." The other two students just shook their heads as a way of expressing their unwillingness to participate. These three students could have been uncomfortable with the new situation and surroundings, or may have not been interested in the project to begin with. I could

not identify the reasons these students chose not to participate in the interviewing process of the project. However, these three students did end up helping with the manufacturing of the toys and were present when the toys were delivered.

On the walk back from the elementary school the attitudes of the students were very much subdued and even reflective. Most of the students were discussing the answers that the students had given them. Some were talking about how many of the 1st graders wanted to get a simple toy doll or game. The socio-economic backgrounds of most of the 1st grade students were lower to mid-class. One high school student commented to me that he was surprised what one girl asked for. He said, “She asked for a coat for Christmas.” Even though he could not afford to buy her a coat, he seemed emotionally willing to help that student have a happy Christmas by surprising her with a toy. Another student also told me that the first grade student he was talking to wanted her “Dad to come back home for Christmas.” I noticed how the high school students wanted to help these 1st graders have a great Christmas even though they understood that they couldn’t give them all what they wanted.

Once we returned back to our classroom we discussed what we had learned. The students seemed to understand the significance of the project, as one student commented to the class, as a whole, “We have got to get these toys done on time or we will disappoint a lot of kids.” Even though the 1st graders were unaware of the reason for our visit, the high school students felt it necessary to give all of the 1st graders a toy. Initially, the high school students were going to select one class to make toys for, but after the visit they wanted to help all 90 students, tripling the anticipated number of toys to build.

From my point of view, this visit was successful in creating a true service-learning project. The students could now make a connection of how their service could be of benefit to others and how the course curriculum could be relevant to the project. This also allowed for some accountability with the students, as this was not just another project where if the student did not complete it on time the only one who would be concerned would be the teacher and maybe the student.

Toy Design

Once the class had a general idea of what the 1st graders would like to get for Christmas, the designing phase of the process began. Some students were very creative in coming up with a design for the toys. Most of the students wanted to do elaborate toy designs. I could tell that the students wanted to make really detailed projects for the younger students who they had now become familiar with. I felt that with the time constraints and with money being an issue we had to focus our energies on building the toys from a more simple design. I talked with the students and asked them how long they thought it would take them to complete a detailed toy like the ones they had chosen to do. One student said, "I could probably get three or four of these done in a week". A few of the students disagreed about the number of these detailed toys they could make in a week as one student mentioned, "I doubt if I could get one done by the time we need to have them delivered". I said, "Let's suppose that each group could get five of these toys done in one week, we would still be short of the 90 total". Once it was explained how impractical it was to try and build something elaborate (like a rocking chair) for each of the 90 students, they seemed to agree that it would be of their best interest to keep it

simple. “Let’s do 80 of the simple toys first and then we’ll see how much time we have remaining to work on the more detailed designs” was the suggestion of one student. Ultimately, students decided to design and manufacture toy blocks, trains, rabbits, unicorns, horses, and mini-catapults. Some of which are shown below in Figures 3, 4, and 5:



Figure 3. Wooden Animals

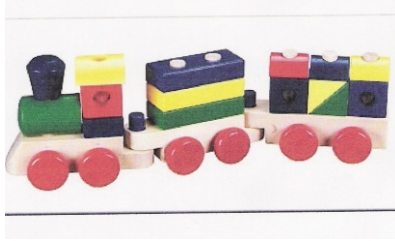


Figure 4. Wooden Train



Figure 5. Wooden Toys

Manufacturing Process

Next, the students manufactured the custom designed products. As the students began this process I was concerned that we would not get finished with all of the toys by the time they were to be delivered. But, as I heard the students encouraging their peer in words like; “make sure the bodies get cut out by tomorrow”, “give me a hand with sanding these blocks”, and “we’re going to make the deadline” I started to believe that we were going to get them finished on time.

In this process students needed to learn the required information to help them complete their objective. Students needed to learn how to safely operate the band saw, table saw, radial arm saw, sanders, drill press, planer, joiner, and hand tools. I was impressed by how many of the students asked me to supervise their first time using each piece of machinery. I wanted the students to do this so that I would be able to see if they were working with the equipment and machinery safely. In addition, students needed to learn how to correctly use a tape measure as well as, knowing how to add and subtract fractions. These skills would be necessary for the student’s to learn in order to successfully accomplishing their objectives for the service learning project and in fulfillment of what was expected of students to learn for that portion of the course curriculum for that given time period. Student would periodically ask me for help on how to add or subtract fraction. I was glad that the students came to me for advice and that I could give them the information when they needed it and when they found it applicable to them in a real situation.

In the finishing stages of the process, students would need to learn how to correctly prepare the surfaces of the toys that were to receive a non-toxic finish or paint. Students would also need to know how to apply the finish to the toys. Toys were to be finished in a variety of ways, including; polyurethane finish, Danish oil finish, acrylic paints, and water-lock finishes.

Students were assigned to different jobs as demand called for. For example, when all of the unicorns, horses, and rabbits were cut out and routed, students from other groups who were caught up on their jobs, joined in to help with the sanding of those toys. Given this two-week time constraint and the amount of toys that needed to be completed, students had many opportunities to contribute to the project.

I could see that this project was coming together very well, yet I still had my doubts of if we would finish on time. But as I talked with the students I could see that they really were committed to working on the projects and getting them completed. During a conversation I had with a student, she expressed this enthusiasm when she said, “the only reason why I came to school today is to work on this project.” Another student made the comment, “This is the best class in school, because we actually do stuff instead of just sitting around listening to boring teachers talk about themselves.” Listening to the students’ enthusiastic and optimistic responses about the project help me to feel like they were going to get it completed.

Second Visit

All of the above mentioned steps needed to be accomplished by the previously established deadline; otherwise the 1st graders would not be able to receive their Christmas gifts on time. With this deadline in place, students were motivated to

diligently work on this project and not to procrastinating any of their duties. The end reward for their effort on this project was in the last step; delivering the toys to the 1st graders on their last day of school before the Christmas break. Students chose to present the toys to the 1st graders as appropriate for that time of year. That is, students decided to present the gifts dressed up as elves and one student dressed up as Santa, as a way of making this project fun and exciting for all involved. The students were eager to get the toys delivered. I was impressed with the way the students worked on the projects and how they made their deadline that they had set for themselves. We piled up all the toys into one big cart and pushed them over to the school. What a sight we must have been! A group of students dressed as elves and one Santa walking down one of the busier streets of Hermiston pushing a cart of toys. As we approached the school the students were out at recess playing when they saw “Santa”. They began screaming and shouting out of excitement and surprise. It was fun to watch the faces of both the younger students who would be receiving the toys and the older students who built them. We gave the toys to the 1st graders as they came up to sit on “Santa” lap and tell him what they wanted for Christmas. After all of the effort to get the toys built and delivered to the younger students, it was a great reward to see their enthusiasm and hear their words of appreciations. I believe that this will be an experience that both the younger and older students will remember and reflect upon for a long time to come.

CHAPTER V

FINDINGS

Introduction

This study was conducted in an attempt to understand the relationship between students commitment to a service-learning project with their commitment to learn the associated content. In order to analyze the data in a thorough manner, the study looked at three research questions. One relate to students' commitment to a service project. This question asked if service projects could motivate students to get involved and become active in the project. The second question asked if service projects and/or activities could be used as a tool for teaching the course curriculum. And the third question is a combination of question one and two, where the researcher asked if there was a correlation between commitment to serve and commitment to learn. The findings were applicable to this individual case and not necessarily to the entire general population.

Research Question #1

Can service-learning projects and/or activities engage students and inspire commitment?

Engaging Student Participation

The service project that the students agreed upon was, not surprisingly, a hands-on structured task in which they (the students) were actively engaged in all aspects of the project. Most of the students expressed that they were excited to do something out of the ordinary and were enthused about the opportunity to apply what they would learn into practical applications for others

By the third day of class, students were introduced to the shop area and began the process of making the toys. Students' commitment to completing their task in the two week time period only seemed to intensify as the time went on. There were many days when students came before and after school to work on the toys. One student, noticing that time was running out, volunteered to take home 30 of the toys and paint them when she got home from work. Another student spent his own money to buy wheels and stickers for some of the toys he was working on. This extra effort, time, and money given by these students is reflective of the definition of intrinsic motivations and commitment as defined by Becker (1969), "Commitment can manifest itself in giving more of ones' personal resources such as time, money, or effort." It can be concluded that these students were committed to the accomplishment and success of the project.

Unfortunately, not every student felt this same excitement for participating on the project. One student, we'll call Mike would not participate in-group discussion or in lab work. From the first day of class he would try a find a way of slipping out of class when the instructor was not looking. When the instructor asked what he could do to help him stay in class and participate in the project, he said, "I just don't care about any of this stuff." The instructor assigned Mike in charge of cutting out and painting the toy bunnies

in an attempt to get Mike engaged in the project. But, unfortunately all efforts proved unsuccessful as Mike later dropped out of school all together.

In the end, the researcher, through observations of students' daily participation habits both during class and out of class time and through personal interviews with individual students as an attempt to determine a students commitment level to the project, found that 23 out of the 25 students were actively engage in the entire process of the toy service project. This calculates to 92% of the class that were on task during this two-week time frame. It was also observed that this percentage of participating students was significantly higher than in other similar classes at the same time period. The same instructor was teaching a similar class at the same time of the school year, but at a different period of the day and one where a service learning project was not used as a way to teach the curriculum. The researcher observed and felt that only 12 of the 22 students stayed on task through the same two-week period. This calculates to around 54% of the students consistently participating on the project, significantly lower than that of the service-learning project class. Thus, it can be suggested that service-learning projects can have an intrinsic motivational effect on students, which inspires commitment to that cause.

Research Question #2

Can service-learning projects and/or activities be used to teach course curriculum?

Service-Learning Survey

As students entered class on the third day, the instructor handed out a survey that was designed to evaluate the students' knowledge and familiarity of course content and to

determine their perceptions of how comfortable they were with the equipment. Two surveys were administered, a pre-instruction survey and a post-instruction project survey. The two surveys were collected at the conclusion of the service project and the variance between the two surveys was analyzed. The researcher then collected the data and compared it with the question; did the student learn the course curriculum expected of them for this two week time period using the service-learning project method? Inferences were then made from the surveys, interviews, and observation and it was concluded that students could learn the class content using a service-learning project to teach the course curriculum.

Construction Technology courses are taught at the high school to help students learn the basics of tool identification, proper equipment operations, and safe practices in construction. Per tradition, students would spend the first few weeks of each trimester learning the names of tools, learning how to operate the machinery safely, and learning measurement techniques and skills. The instructor observed this traditional teaching style for each trimester previously taught and the concept of using a service-learning project had not been used to teach the curriculum in past courses. Thus, this non-traditional way of introducing the curriculum to the students was not only new for the students, but was new for the instructor as well. The researcher used the surveys to measure the growth in knowledge in how well the students learned the course curriculum using a service-learning project as opposed to lecture and rote memorization method.

The survey asked the students to evaluate how confident they were in operating the following equipment; band saw, table saw, radial arm saw, planer, joiner, drill press,

stationary sander, and scroll saw. In addition, they were to evaluate student perceptions of their skill level on the following:

1. Drafting a working drawing for a project.
2. Calculating the cost of a project using board feet estimates.
3. Listing the planned procedures for completing a project.
4. Building a project from a working drawing.

The students were asked to place a number by each item. The numbers were between 0 and 5, 0 representing no experience and never been shown how and 5 representing very confident, no help needed and feel very safe in the process. Students then completed this task and the data was analyzed.

The purpose of the survey was to observe student perceived learning; i.e., did the students feel as if they learned how to use the tools and equipment in this two week time period? The researcher noted that not only did the students perceive and feel as if they had learned how to operate the equipment and tools, but they had an opportunity to use and practice this newly acquired knowledge as they made the toys for the service project. The following bar chart represents student perceived average learning growth of the class in the two-week time period during the service-learning project (see Table 1 below):

Table 1. Class Learning Survey

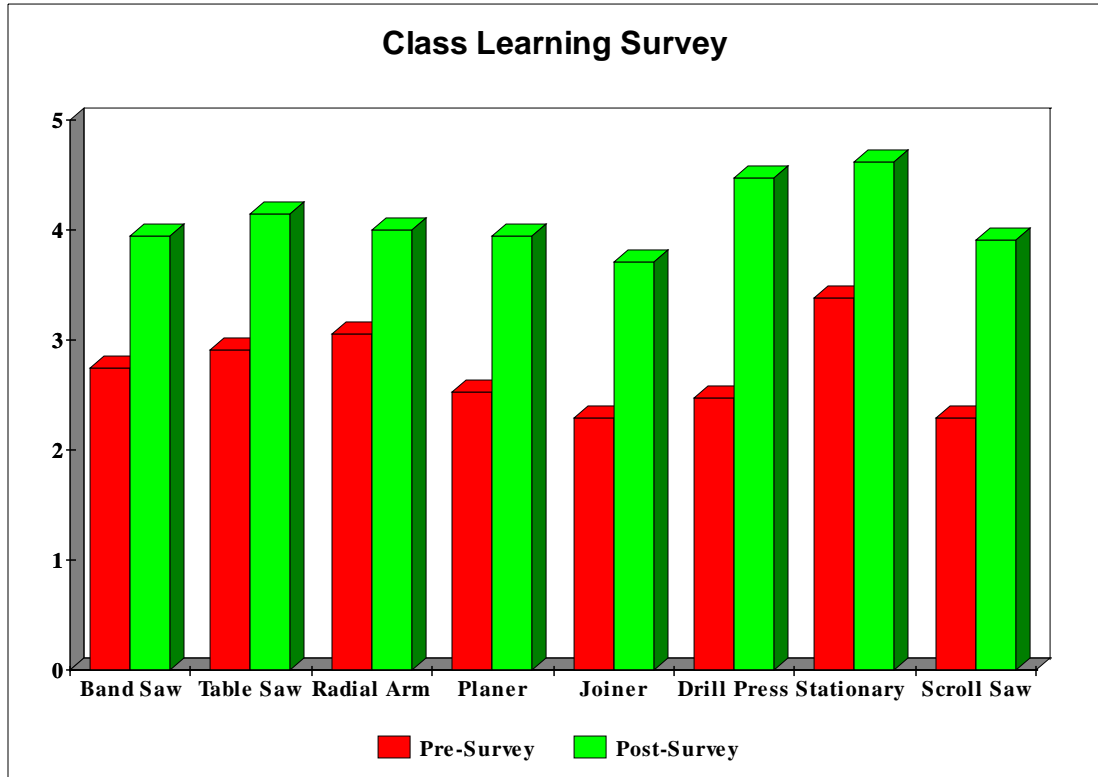


Table 1 visually shows how the students perceived their self-confidence before the service learning experience and after. It also shows that the classes' average confidence increased and that students increased in knowledge of the band saw, table saw, radial arm saw, planer, joiner, drill press, stationary sander, and the scroll saw as a whole. The researcher noticed an increase of student aptitude and skill level for each category listed representing eight different pieces of equipment or machinery.

Table 2 represents students' learning growth of activities which are part of the curriculum, such as: Drafting skill, calculating the cost of materials, the process of

writing out the plan of procedures, and reading and understanding a working drawing (see Table 2 below).

Table 2. Content Skills

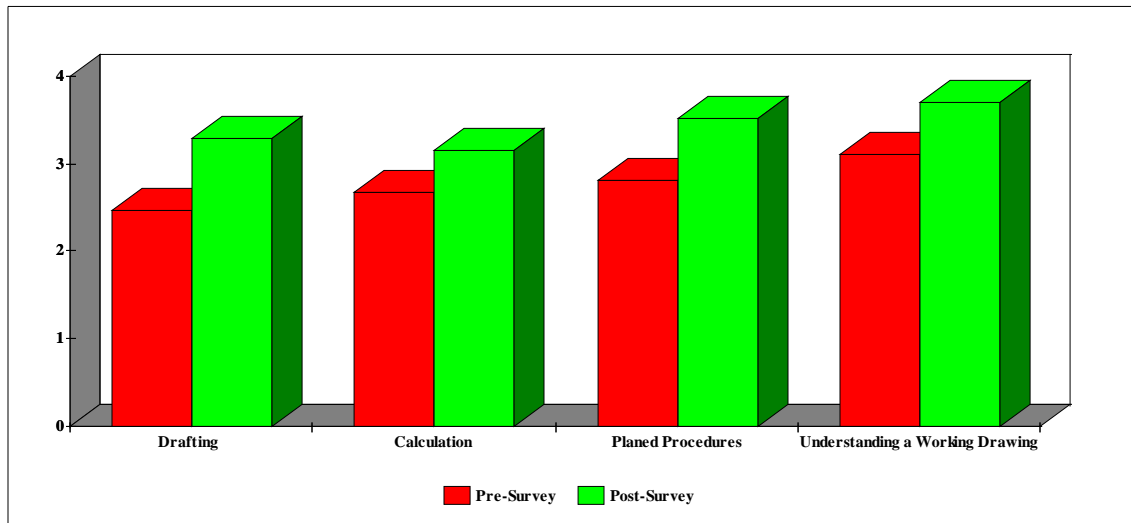


Table 2 shows an increase in students' perceptions of their knowledge, even though this increase is not as significant as in the specific equipment part of the survey. One reason for this lack of increased knowledge could be due to the amount of time students spent in active participation in these respective categories. The instructor briefly explained to the class as a whole the concept of drafting a project, calculation of materials, and understanding a working drawing. The researcher felt that not enough time was allowed to sufficiently practice and apply these concepts fully into the research project. More time was given to working on a plan of procedure. Students were taught

how a plan of procedure could guide them in the process of completing their objectives for this project. Students were asked to write down the step for completing their toy designs.

Observations and Evaluations

The researcher also used qualitative methods of gathers data to determine the growth of learning for this two week service learning project such as; observing the progress of students' ability to use the equipment safely and properly, observing the level of participation for each student, and evaluating the skill level for each individual at the beginning and at the end of the project. Throughout the service-learning project the researcher made observations and evaluations of how comfortable and confident the students were in using the equipment. The researcher noted that those students who were motivated to learn how to use the specific tools and equipment were also the ones who made the greatest increase in perceived confidence. This perceived confidence increase could be due to the fact that students had the opportunity to apply what they were learning as it became relevant to their situation (using the just-in-time approach). At the end of the service-learning project 19 out of the 25, or 76% of students in class had learned how to operate the equipment safely as determined by the course content. This number was determined from the observations and evaluations from the researcher. The researcher placed a check by each students name from the class role when he felt that the student had demonstrated how to operate a specific piece of equipment safely in a satisfactory manner. When a student had demonstrated that they could safely operate the machinery for all 8 of the surveyed pieces of equipment and had shown how to complete

2 of the 4 skills surveyed, it was then determined that the student was competent and proficient in this area of the course content. Thus, 19 students had demonstrated that they had learned this portion of the course content in at a satisfactory level or better.

This number of 76% of the students, or 19 out of 25, understanding how to operate the machinery and tools safely and effectively is comparable to other construction technology classes previously taught. However, the researcher noticed that with the service learning project approach, the students understood the concepts of using the machinery more thoroughly due to the fact that they were given an opportunity to use the machinery when they saw it relevant to the project as opposed to simply hearing a lecture or seeing a demonstration without understanding the purpose behind the explanation. The researcher observed that some of the students in other construction technology classes that did not use service learning project to help teach the content ended up needing to be shown how to properly and safely operate the machinery more than once through out this two week learning period. Usually, these students received this kind of instruction once at the beginning of the trimester and again when the time came for them to use it. Conversely, students involved in the service learning project needed only to be taught the proper usage of machinery once and then they immediately applied their newly found knowledge and skills into action. The researcher observed that as the students applied the new knowledge into action it helped the students to internalize the information and remember the techniques and skills longer. Many factors could be attributed to this increase in students' retention of new information. One possibility could be that students using a service-learning project received more attention from the instructor.

Formal evaluations were conducted twice during this two-week experience to each student and informal evaluations were observed daily. The researcher would formally evaluate the progress of the students in class by asking them direct questions about the process and procedures of operating the machinery properly and safely. Students would give their responses to the researcher and then the researcher would then determine how well they understood the correct procedures. Some of the formal evaluation questions (Q.) and responses (R.) included:

1. Q. "Which machine could you use to cut out the shapes of the toy horses?"
R. "I could use the band saw, or if I need to cut out the small areas of the horse, I could cut it out with the scroll saw."
2. Q. "How are you going to make that piece of wood thinner to cut out the bunnies?"
R. "I could sand it down, but that would take a lot of time. It would be faster if I used the planer to do it."
3. Q. "You now need to put the wheels on. What steps do you need to take to get this done?"
A. "I guess we need to drill the holes in the wheels on the drill press, then we can screw the screws in to hold the wheel in place."

The researcher could then determine whether or not the students understood the concepts of how the machinery was used and when to use it by; the answers the students gave and in how well they understood the usage of each machine, observing how well the

students used the machinery in a safe and responsible way, and by observing those students who participated in using the machinery. Understanding of how and when to use the tools and machinery is an important part of the construction technology class. To take this knowledge and apply it shows that the students not only understand the concepts of when and how to use the equipment, but also shows that they are comfortable, and sometimes even confident, in using the machinery. This was observed through informal evaluations of student usage of machinery and tools.

Informal evaluations were conducted as the researcher would observe and evaluate from a distance. The researcher would observe when a student was in the act of operating a piece of machinery and the researcher would then evaluate the techniques of the students, seeing if they had mastered the concept. If a student was misusing a piece of equipment or machinery, this told the researcher that the student had not yet comprehended the proper usage. In this case the student would be shown again how to properly and safely use the machinery and the researcher would then observe and informally evaluate the students' progress.

In summary, the researcher found that through surveys, evaluations, and observations that 19 of the 25 students in class learn the skills and techniques of using the machinery and tools safely and properly as it applies to the course curriculum. The variable in this study was that a service-learning project was used as a motivation for the students to learn the content.

Research Question #3

Is there an existing correlation between a students' commitment to a service-learning

project with their willingness to learn the course curriculum associated with that service project?

The Correlation

This third question of the survey looks at the correlation between students' motivation and commitment to a service project with students' determination and commitment to learning the skills, procedures, and processes of the course content that would allow the student to achieve their objective pertaining to the service project. In other words, this research question is asking if a correlation exists between research question #1 (engaging student learning) with research question #2 (student learning) as it applies to the previously determined service-learning project.

The researcher observed that there were approximately 23 out of a class of 25 that were actively participating or engaged in the service-learning project. This was determined by the researcher observing how students' participated in each stage of the project and by the extra out of class time that the students demonstrated. This participation and extra out of class time students spent on the class project was labeled commitment as defined by Kanter (1968). It was also noted that this high of a percentage (92%) of the class who showed the appropriate level of commitment to the project is at a much higher participation rate than with traditional classroom settings.

The researcher found through surveys, observations, evaluations, and interviews that at the end of the two-week service learning project 19 of the 25 students had sufficiently learned the scheduled course content as it pertains to learning how to operate the machinery correctly and safely. This estimate of 76% of the class knowing how to

use and operate all of the machinery safely and properly is comparable with previous construction technology classes that did not use the service learning approach.

Out of a classroom of 25 students, 23 showed some level of commitment to the service-learning project as previously explained and 19 demonstrated their competency for the course content at a satisfactory level. This could also be interpreted as, 19 of the 23 (82.6%) students, who showed some level of commitment to the service learning project, learned how to safely operate the machinery and learned other related course content. In other words, 82.6% of the students that were labeled “committed” to the service-learning project also achieved a satisfactory rating in use of machinery and application of skills in this two-week time frame.

The researcher placed all of the 25 students into four sub-categories according to the researchers’ perceived view of the students’ commitment to the service project. Observations, surveys, and interviews were used as a way of determining the placement of the students in each of the four categories. The four categories were labeled; highly committed, moderately committed, low commitment, and no commitment to the service-learning project. The determining factors of where students were to be placed in each of these categories were; (1) Classroom participation, (2) out of classroom time spent participating on the project, (3) students perceived attitudes and feelings towards the project, and (4) student comments about the project.

Those students who displayed good classroom participation, spent out of classroom time on the project, which seemed to be excited and pleased with the project, and those who made positive comments in formal and/or informal interviews about the

service learning project, were perceived to be highly committed to the project. Those students were subsequently, placed in the highly committed sub-category.

Those students who were occasionally engaged in the project during class time, who seemed to be enjoying the experience, and commented on how they were excited to be involved, but who never spend out of classroom time on the project, were perceived as moderately committed to the service learning project and were categorized accordingly.

Those Students who displayed very little participation in class, who complained about why they were doing this project, and who would not initiate themselves to working on the project, were perceived as having a low commitment to the service learning project and was placed in the same category.

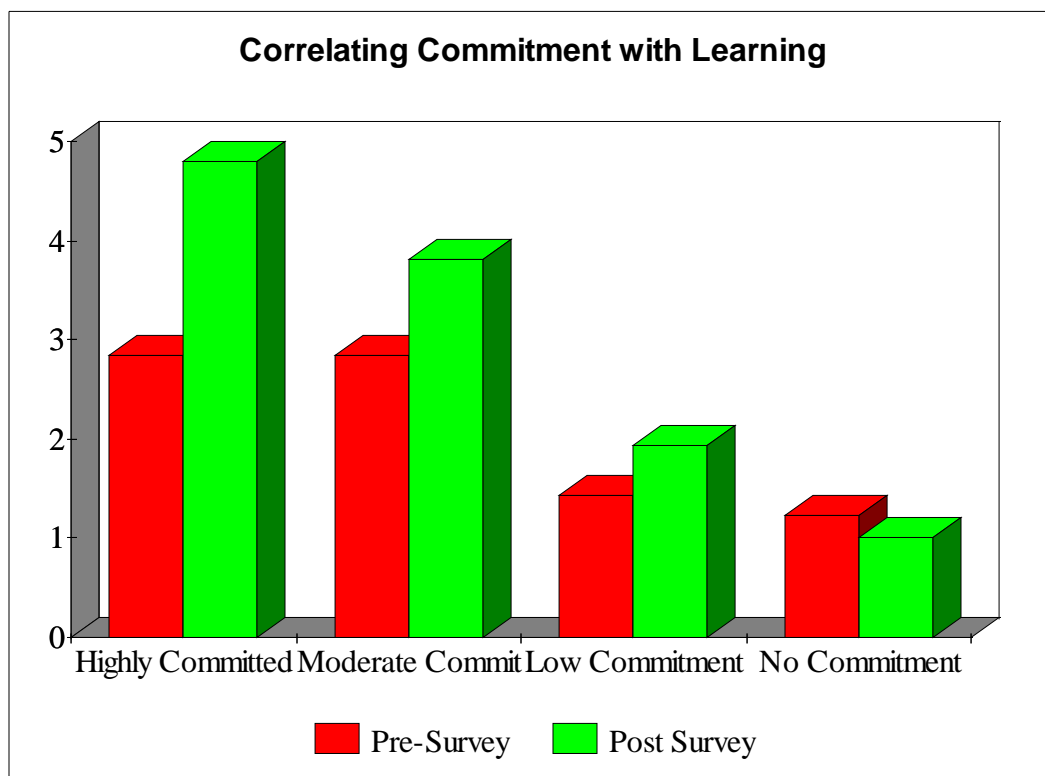
And the students that had no desire to participate and lacked a good attitude about the project were categorized and perceived by the researcher as having no commitment to the service-learning project.

In the end, the breakdown of students placed into these four sub-categories was as followed: (names are fictional and have been change to protect their identity and anonymity)

<u>Highly Committed</u>	<u>Moderately Committed</u>	<u>Low Commitment</u>	<u>No Commitment</u>
1. Lucy	1. Shawn	1. Eric	1. Jose
2. Frank	2. Rob	2. Steve	2. Mike
3. Adam	3. Andy	3. Rick	
4. Jerry	4. Tony	4. Tim	
5. Devin	5. Juan		
6. Jon	6. Diego		
7. Ericka			
8. Don			
9. Antonio			
10. Ryan			
11. Amy			
12. Junior			
13. Joshua			

Once the students were placed into one of the four different sub-categories, the researcher looked at the students' learning progress for each student in each sub-category, in order to determine the significance of the correlation between research question #1 compared with research question #2. The researcher compared the different sub-groups with the answers students gave on their survey from research question #2, that of student learning. The following bar graph (see Table 3 below) is a visual representation of the data collected from the students in each of the four sub-categories:

Table 3. Students Commitment and Participation



The data in Table 3 above shows a significant correlation between a students commitment to this service project with their commitment to learn the associated content.

For those students whom were perceived as highly committed to the service learning project, increased in knowledge from a sub-category average of 2.8 from the beginning of the project to a 4.76 at the end of the two weeks. This translates from the survey as going from “some experience, but need to be shown how with instructors assistance” to “confident, with little assistance needed” as it applied to the basic machinery in the shop. An increase is also noted in moderately committed and low commitment sub-categories, but the increase is not as significant as highly motivated sub-category. The researcher noticed that as the sub-categories move from high commitment level to no commitment, the amount of learning tends to decrease. In the case of the two students who were perceived as non-committed to the service project, actually scored lower on their own evaluation of what they learned from the pre to post survey. This could be due to students self perception of themselves pre and post project.

This can be suggested that ones’ commitment level to a service-learning project can affect their desire and commitment to learn the associated curriculum in order to more effectively complete the project. The researcher made correlations with the most highly motivated students with how well they learned how to operate the appropriate machinery in a safe and proper manner and noted a significant relationship. Through observations, surveys, evaluations, and interviews the researcher concluded that there is a definite correlation between students commitment to a service-learning project with students commitment to learn the associated content.

CHAPTER VI

SUMMARY

Conclusion

This study was conducted as a case study in an attempt to learn more of the relationship between students' commitment to a service-learning project with their commitment to learning the associated content for that service to be accomplished. Students enrolled in the construction technology class at Hermiston High School, in Hermiston, Oregon, chose to make toys for the 1st graders of West Park Elementary School. This project was scheduled into the course outline and was designed as another method of teaching the course content. The timing of the project was important as the students wanted to have the toys completed and delivered by Christmas holiday, this allowed for two weeks from start to finish. The students needed to plan, design, construct, paint or finish, and deliver the toys in this amount of time, not including that some students needed to learn how to operate the machinery. The students not only met the deadline, but they also thought of additional ways of helping the 1st graders of West Park Elementary. One example of students finding additional ways of improving on the service experience was that of when the students were to deliver the toys they decided to dress as elves and one student as Santa to further the spirit of Christmas for the 1st

graders. This is evidence of the students' commitment to this project and shows how their concern for those they were serving increased as the project developed.

After the project was completed and Christmas break was over, the 1st grade students of West Park Elementary (all 90 of them) wrote thank you notes to the high school students that were involved in the toy-making project. The instructor passed the thank you cards to the high school students to read. Most of the high school students expressed their gratitude to the instructor for the experience to serve the 1st graders of West Park.

Possible Researcher Bias

The researcher used observations and interviews as a way of gathering data. The instructor was the interviewer and the researcher in this study. This implies that the perceptions and bias of the researcher must be considered. The students participating in the service-learning project may have been biased by the instructors' enthusiasm for the project. The bias may have been reduced if an outside researcher had conducted the interviews and observations for this study.

Engaging Student Learning

This study suggested that service learning projects or activities could help motivate student participation and can be used as a tool for engaging those students whom would not normally respond to tradition methods of teaching the curriculum for a construction technology course. The researcher found through personal interviews with students and other teachers in the school, that the service learning project with the 1st graders helped

inspire student participation in a few of the students that would not normally participate in other group activities of a similar curriculum. For example, the welding teacher inquired, “How did you get Rob involved in your group project? I can’t seem to motivate him to do anything in class.” One student that was labeled lazy by some of his previous teachers was observed as being one of the most motivated students in the class. It was also noted that after the Christmas break when school resumed the students still seemed to be excited about their opportunity to serve. A few of the students asked if there was another service project in which they could contribute their time and skills.

Teaching the Course Content

This study also suggests that learning does occur in service learning projects or activities and those students learn as much, if not more information and skills pertaining to student operation of the machinery in a safe manner through participation in a service project compared to the traditional method of demonstrations and lectures. The contributing factor for students to apply themselves in learning the course content were that they wanted to complete the project for those they were serving, in this case the 1st graders of West Park Elementary School. This service-learning project was the vehicle that motivated students to want to learn how to use the machinery in order to give their gifts to those in need.

Participation and Learning Relationship

Through a complete analysis of the data, the researcher has come to the conclusion that there is a definite relationship, and even correlation, between students’ levels of

commitment to a service-learning project with how well they learn, understand, and apply the concepts of the course curriculum. When a student became “turned on” to the idea of serving the 1st graders of West Park Elementary, it seemed to directly affect the way they felt about learning the curriculum.

The researcher also noted that as a student’s level of commitment for the service learning project increased, their desire and motivation to learn the content also increased. For instance, consider this situation which occurred frequently over the two week time period: A student, being highly motivated to complete the class objective of delivering the toys to the students before the Christmas holiday, wanted to get started on the project right away. But, this student did not know how to use any of the equipment in the shop and was only somewhat familiar with how to use a tape measure. As he began to participate in the service-learning project he became very self motivated to learn the curriculum of the course in order to complete the class objectives. He would come up to the instructor and ask, “Can you show me how to use the jig saw now?” Or another question would be, “how do you use the band saw?” This scenario would repeat itself over where the student desired to learn how to use different machinery in order to accomplish the class objective. At the end of the two-week service learning project the student learned how to safely and properly operate the equipment in the shop. This situation occurred in a similar manner with many of the students in class.

The researcher found that when the students where categorized into four different sub-categories, a correlation between students’ commitment to a service project with students’ commitment to learn the associated curriculum became more apparent. The four sub-categories are; highly committed moderately committed, low commitment, and

no commitment. The pre and post survey scores were then averaged from these categories and compared to one another. The researcher noted a definite pattern and relationship between these two variables and concluded that there is a significant correlation.

Recommendations

Further Applications

This study was conducted around the Christmas holiday season, when most people are in the giving mood. The instructor will be incorporating this type of a service-learning project for each of his construction technology courses. Also, the instructor is interested in conducting a similar study at a different time of year to observe if students would be as equally committed to the service learning project or if their commitment level would be contributed solely to the spirit of Christmas.

Further Research

As this study was a case study, it would be recommended to adopt this study to different populations. Perhaps, this study could be developed further in areas of different socio-economic backgrounds and ethnic make-ups. Studies could be done in similar manners with the population being the only random variable.

It is recommended to conduct a similar study using a control group to compare and contrast the findings. Two classes could be set up in such a way that the variable of using a service-learning project to teach the course content could be highlighted.

It is also recommended that this study be duplicated in similar conditions, but with a

different survey. This study is not limited to construction technology courses. It is suggested to implement this study in a variety of courses with different curriculum expectation and observe if the outcome is similar.

Implications

This study implies that there is a correlation between students' commitment to a service learning activities and students' motivation in learning the associated curriculum. This suggests that service learning projects and activities can be used to teach course curriculum and can also be used to engage student participation. The study can be generalized to similar social-economic populations that similar results may be found. Long-term implications of this study in regard to the population of Hermiston, Oregon are yet to be determined, a future study to measure this significance is recommended.

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APPENDICES

Appendix A

Name: _____

*Please fill out this survey as accurately as possible.

- 5- Very Confident, no help needed and feel very safe in the process.**
- 4- somewhat confident, little assistance needed.**
- 3- somewhat experienced, but need some help doing it.**
- 2- some experience, but need to be shown how with instructors assistance.**
- 1- No experience, but have been shown how.**
- 0- No experience and have never been shown how.**

Print a number representing your skill level as it applies to using the following machines, equipment, and/or tools:

- _____ 1. Band Saw
- _____ 2. Table Saw
- _____ 3. Radial Arm Saw
- _____ 4. Planer
- _____ 5. Joiner
- _____ 6. Drill Press
- _____ 7. Stationary Sanders
- _____ 8. Scroll Saws

Print a number representing your skill level as it applies to the following activities:

- _____ 1. Drafting a working drawing for a project.
- _____ 2. Calculating the cost of a project using board feet estimates.
- _____ 3. Listing the planned procedures for completing a project.
- _____ 4. Building a project from a working drawing.

Appendix B

The following is a list of interview questions the researcher asked students in the final formal interview of the service learning project experience. These questions are design to be open-ended questions, where students have the opportunity to expound on their answers, and as a tool for gathering data on students' level of commitment towards the service project.

1. How do you feel about this activity?
2. Would this project be something you would like to participate in again?
3. What would you change in this project?
4. Do you feel like you are helping other by participating in this project, and if so, how are you helping?
5. How many hours out of the given class time did you spend on this project?
6. How does this class project compare with other non-service oriented class projects?
7. If you could do this project all over again, would you? Why?
8. What was your favorite part of this project?
9. What did you learn from participating in this service-learning project?
10. Would this activity have worked if it were done at a different time of year?

Appendix C

Dear Bull dogs E Lves,
Thank you for The Toy Horse!
I had Los of fun with The Toy Horse
Love Sydney Moore.7





Thank you
for the horse
That I play
I play rocks with the
Present every Day.

Appendix D

Demonstrating Knowledge

<u>Machine</u>	Unsatisfactory	Satisfactory	Proficient
Band Saw	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.
Table Saw	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.
Radial Arm Saw	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.
Planer	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.
Joiner	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.
Drill Press	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.
Stationary Sanders	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.
Scroll Saws	Did not attempt to use or did not follow safety guidelines during use.	Attempted to use the machinery and demonstrated safety procedures during the process.	Is consistent with using safety procedures each time using the machinery.