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# The Effects of Distance Education and Student Involvement on Incidental Learning

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THE EFFECTS OF DISTANCE EDUCATION  
AND STUDENT INVOLVEMENT ON INCIDENTAL LEARNING

A Dissertation

Submitted to the School of Graduate Studies and Research

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Philosophy

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December 2011

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Incidental learning is an occurrence that is not generally accounted for using the traditional methods of instructional objectives and outcomes assessment. This type of learning occurs in part as a product of social interaction and active involvement in both online and onsite courses. This study examines various incidental learning outcomes and the degrees to which they occur in traditional and distance education applications through the lens of situated learning theory and learner involvement theory. This phenomenon is explored through a post test-only control group experimental design involving online and onsite course pairings where twelve undergraduate instructors concurrently taught both an online and onsite section of the same course. Sixteen incidental learning outcomes exhibited statistically significant differences where twelve occurred to higher degrees onsite and four occurred to higher degrees online.

Additionally, increases in the effort students put into the academic and social aspects of university life produced greater statistically significant effects on the incidental learning experienced than increases in the time spent on the same activities in both online and on-campus students. The results of this study imply that there are un-assessed aspects of onsite and online learning which challenge the equivalency of education between the two modalities. Both onsite and online learning have distinct advantages with traditional on-campus students experiencing higher degrees of incidental learning in three times as many areas as online students. Additional research is called for to investigate the implications of these findings both conceptually and pedagogically.

## ACKNOWLEDGEMENTS

“If anyone speaks, they should do so as one who speaks the very words of God. If anyone serves, they should do so with the strength God provides, so that in all things God may be praised through Jesus Christ. To him be the glory and the power for ever and ever. Amen” 1 Peter 4:11.

I want to dedicate this work to the Lord Jesus Christ. Whatever I have, is because it was given to me. Whatever I know, is because it was taught to me. Whatever I have accomplished, is because His grace has worked in me.

I also want to acknowledge my wife Jennifer Konetes who has stood by me through every long course weekend, through every paper, through every meeting, and through every written page of dissertation. She has diligently proofed, encouraged, helped, listened and even kept silent when there was good reason to complain. You’ve been a light to me.

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## TABLE OF CONTENTS

Chapter		Page
1	PROBLEM STATEMENT.....	1
	Need for the Study.....	1
	Purpose of the Study.....	2
	Explanation of Variables and Theoretical Context.....	4
	Explanation of Terms.....	6
	Terms Defined.....	6
	Research Questions.....	9
	Research question 1.....	9
	Research question 2.....	9
	Research question 3.....	10
	Research question 4.....	10
	Assumptions.....	10
	Limitations of the Study.....	11
	Population.....	11
	Materials.....	12
	Procedures.....	12
	Delimitations.....	13
	Scope of the study.....	13
	Incidental learning outcomes.....	13
2	REVIEW OF THE LITERATURE.....	15
	Introduction.....	14
	Incidental Learning Qualities.....	16
	Learning Contexts.....	16
	Learning Intentions.....	17
	Difference in Formal & Informal Applications.....	17
	Commonalities to Formal & Informal Applications.....	18
	Degrees of Learning Consciousness.....	18
	Realization of Learning.....	19
	Ways Incidental Learning Takes Place.....	20
	Social Interactions.....	20
	Workplace Learning.....	21
	Response to Challenges.....	21
	Familiarity of Context.....	22
	Tangential Learning.....	22
	Observational Learning.....	23
	Peripheral Learning.....	23
	Incidental Learning Outcomes.....	24
	Functional Outcomes.....	26
	Socially Generated Outcomes.....	27

	Observational Outcomes.....	28
	Theoretical Framework.....	29
	Situated Learning Theory.....	29
	Involvement Theory.....	33
	Incidental Learning and Theoretical Context.....	38
3	METHODOLOGY.....	44
	Selection of Subjects.....	44
	Procedures.....	46
	Power Analysis.....	50
	Instrumentation.....	51
	Pilot.....	53
	Reliability.....	54
	Pilot Study Sample.....	54
4	DATA ANALYSIS.....	55
	Distinction Between Learner Types.....	55
	Characteristics of the Sample.....	55
	Characteristics of Course Modality.....	57
	Reliability.....	58
	Research Question 1.....	59
	Research Question 2.....	63
	Research Question 3.....	65
	Research Question 4.....	67
	Follow-up Questions for Course Instructors.....	68
5	DISCUSSION.....	72
	Introduction.....	72
	Sampling.....	73
	Sampling Procedures.....	73
	Sample Characteristics.....	73
	Onsite to Online Proportions.....	74
	Instructor Sampling.....	74
	General Discussion.....	75
	Occurrence of Socially Generated Outcomes.....	75
	Situated Learning Occurrence.....	75
	Involvement Time and Course Modality.....	76
	Involvement Effort and Course Modality.....	76
	Involvement and Incidental Learning.....	77
	Significant Onsite Incidental Learning Outcomes.....	78
	Significant Online Incidental Learning Outcomes.....	79

Effects of Modality and Involvement.....	79
Trends in Onsite, Online, and Hybrid Learning.....	80
Overall Implications.....	81
Future Research.....	82
Synchronous Formats in Future Research.....	82
Recommendations for Future Research.....	82
Changes for Study Reproduction.....	83
Questions for Future Research.....	84
Conclusions.....	85
REFERENCES.....	87
APPENDICES.....	97
Appendix A – Demographics.....	97
Appendix B – Involvement Time.....	99
Appendix C – Involvement Effort.....	101
Appendix D – Outcomes Select.....	102
Appendix E – Outcomes Rank Order.....	104
Appendix F – Outcomes Degree.....	106

## LIST OF TABLES

Table		Page
1	Incidental Learning Outcomes.....	25
2	Student Involvement & Affected Learning Outcomes.....	42
3	Courses to be Studied.....	45
4	Courses Specifications.....	47
5	Follow-up Questions for Course Instructors.....	49
6	Power Analysis Overview.....	50
7	Class Standing.....	55
8	Subject Age.....	56
9	Subject GPA.....	57
10	Online Course Experience.....	58
11	Comparative Reliability.....	58
12	Occurrence of Incidental Learning Outcomes in Hybrid Online and Onsite Learners.....	60
13	Occurrence of Incidental Learning Outcomes in Exclusively Onsite Learners.....	62
14	Learner Involvement Correlations.....	63
15	Learner Involvement Group Means.....	64
16	Learner Involvement and Incidental Learning Correlations.....	65
17	Incidental Learning Outcomes.....	66
18	Linear Regression Summary.....	67
19	Follow-up Question One for Course Instructors.....	69
20	Follow-up Question Two for Course Instructors.....	70
21	Follow-up Question Four for Course Instructors.....	71

## CHAPTER 1: PROBLEM STATEMENT

### **Need for the Study**

The popular educational paradigm embraces the use of learning objectives in outcomes-based assessment in order to structure learning environments and conceptualize the purpose and methods of instruction (Lee, Srinivasan, Trail, Lewis, & Lopez, 2011; Malan, 2000). Other types of learning that may occur which do not directly promote the outcomes of the objectives are being overlooked and sometimes discouraged. However, according to Pratt (1997) incidental learning that occurs in the classroom may at times be more valuable than what is learned concerning the planned course content and achieving the stated learning outcomes.

The current body of literature reveals that though research has been done concerning incidental learning as it is relevant to meeting course objectives, there is a deficiency in the research base regarding the existence and importance of incidental learning that is tangential or unrelated to learning objectives. The study of incidental learning outcomes in relationship to higher education most often occurs as a derivative of research which aims to examine other phenomenon. Though there is a substantial literature base surrounding this topic; there are few studies which are focused upon examining incidental learning that is not directly supportive of learning objectives. Of this research, no work has been found which identifies specific incidental learning outcomes and examines their occurrence in face-to-face and online courses.

The differing effects of distance education on incidental learning, when compared to face-to-face courses, remain largely unquestioned and uninvestigated. Student engagement, both socially and academically, is a primary indicator of success in distance learning. However the social and communal levels of learner engagement are often not assessed or developed (Schaeffer & Konetes, 2010). Astin (1984) also states that social involvement is a critical

element needed for academic success, learning, and personal development. It is this social involvement which in part creates an environment for incidental learning to occur (Holzinger, Pichler, Almer, & Maurer, 2001). These social differences between online and onsite classes have been investigated from a formal learning perspective, however their function in the occurrence of incidental learning which is unrelated to learning objectives has not been explored.

Learning more about the occurrence of incidental learning outcomes and the differences in their manifestation between traditional and distance education courses could serve as grounds to reexamine current learning paradigms for online instruction. Distance education that is facilitated through online channels is rapidly increasing in pervasiveness in higher education (Konetes, 2010). This type of technologically mediated instruction is primarily established upon a framework of developing teaching geared to focus on and assess learning objectives (Orellana, Hudgins, & Simonson, 2009; Schlosser & Simonson, 2009). As distance education is a rapidly growing objectives-based learning system, incidental learning outcomes which are not related to the course outcomes have been rarely investigated with specific intent. Significant results in the types and intensity of incidental learning outcomes between online and onsite courses call for a new dimension of course and learning assessment. Adding this additional theoretical construct to the current body of knowledge serves to challenge and improve the effectiveness of distance education.

### **Purpose of the Study**

This study seeks to further the line of purposeful research into incidental learning within formal education and to explore the incidental learning outcomes that are being experienced in onsite and online courses. This study has two goals: First, it seeks to develop an instrument that is able to quantify incidental learning outcomes and certain characteristics surrounding their

occurrence; second, it looks to investigate the similarities and differences between these outcomes in onsite and online courses. The results of this research endeavor will provide additional insight into what is being learned incidentally in courses, the extent and magnitude of those learning outcomes, the importance and value of this learning, and how all of these aspects differ between traditional and distance education courses.

This study will also examine areas of higher education and student development which result from courses that modern assessment techniques struggle to measure. Results from previous studies which have been mainly qualitative in nature have identified various incidental learning outcomes but have not applied them in a quantitative or comparative approach. This research will build upon previous work by seeking out learning outcomes which have been observed and studied and develop a quantitative instrument that will permit comparisons to be made between onsite, hybrid and online students' incidental learning. This will provide benchmark data, comparison information and an instrument and methodology which may act as the next step for future investigation into this body of research.

In a general sense, this study aims to examine aspects of learning that are not often addressed in distance education. The current body of literature generally states that online courses are able to meet learning objectives with comparable effectiveness when measured against onsite courses (Angiello, 2010). However the occurrence, magnitude and value of incidental learning which may occur apart from the learning objectives in online courses, when compared with face-to-face courses, may not be clearly represented or acknowledged. Study into these concepts may provide a new avenue to assess online courses and their effectiveness with regard to onsite courses. In addition to examining innovative methods to assess learning, this study may also serve to challenge or refine both classroom and online learning strategies.

### **Explanation of Variables and Theoretical Context**

The following section serves to collect and synthesize the major conceptual contributions of the literature and how they provide the theoretical and procedural scaffolding for this research query. This study will examine incidental learning as the dependant variable and the effects of the independent variable of learning type be it online learning, onsite learning, or hybrid online learning; and the independent variable of learner involvement which refers to social and academic effort a student puts into higher education. Incidental learning has been shown to occur throughout all types of learning situations: formal, informal and beyond defined educational environments (Marsick & Watkins, 1990). However, based upon the precepts of situated learning theory and involvement theory, it is expected that incidental learning may occur differently in online courses compared to onsite courses. Learner involvement, which is based upon involvement theory and supported also by situated learning theory, provides reason to believe that highly involved students, academically and socially, will be engaged in more situations which may lead to incidental learning.

Incidental learning is selected as the dependant variable for this study and is expected to be examined throughout a range of educationally and non-educationally centered circumstances. As incidental learning takes place in both formal and informal contexts, it is expected that it may occur both in the classroom, which is a formal environment, and online, which is a formal type of education but an informal learning environment. Involvement theory describes out-of-class activities, which include university related on-campus functions and peer social activities, which are informal learning environments that provide grounds to foster success and incidental learning. These situations also provide localized social learning situations that may provide incidental learning opportunities as also described by situated learning theory. Thus, it is

anticipated that incidental learning will occur in both the formal learning environment of the classroom as well as in the formal and informal learning context of online courses. It is also anticipated that incidental learning will transpire in the informal learning situations of campus and university social happening between students, peers and faculty.

Learning type, which is a product of learning context involving course modality as expressed in terms of exclusively online, onsite, and hybrid online learning, learning in online and onsite environments at the same time, is selected as an independent variable. This is because both situated learning theory and involvement theory provide arguments that social and physical context affect the occurrence of incidental learning. Situated learning theory provides the theoretical justification to expect that incidental learning occurs both in onsite and online courses, albeit in different forms and degrees of intensity. This is coupled with the position that involvement theory states on-campus interpersonal interactions are critical for student success, involvement and incidental learning. There are grounds to expect that onsite students will experience incidental learning to a greater degree in terms of specific outcomes and intensity of certain outcomes when compared to exclusively online students due to increased avenues of potential learning involvement. It is uncertain whether hybrid online students would experience differing degrees of incidental learning when compared to online and onsite students.

Student involvement is selected as an independent variable which affects incidental learning outcomes. This is due to research stating numerous incidental learning outcomes which are directly affected by student involvement. Situated learning theory also provides support for this position, as more student involvement equates to more social environments through which additional incidental learning may take place be it formally, informally or through a combination of both (Jaasma & Koper, 1999). Thus it is hypothesized that onsite students, who have high

levels of involvement, will experience greater degrees and types of incidental learning than hybrid online and exclusively online students with lower levels of involvement. This variable exists as one theoretical variable but is functionally expressed as two numerical variables; involvement time and involvement effort. This is done because no established framework exists to combine time and effort into a single unit of measure for statistical analysis.

### **Explanation of Terms**

#### **Terms defined**

The following terms are defined to provide continuity and unify the concepts and research presented hereafter.

**Communities of practice.** Learning communities through which individuals share, construct and transmit knowledge and experience through involvement and social interactions. These communities may be professional, formal, informal or unrealized. (Abma, 2007; Kimble, Hildreth, & Bourdon, 2008; Li, et al., 2009). Examples may include; topic specific online forums, professional organizations and societies, study groups, and various athletic organizations.

**Distance education.** Formal education which occurs with the student physically or geographically isolated from the instructor where some sort of technology acts to mediate communication and the learning process (Konetes, 2009, 2010; Valentine, 2002).

**Distance learning.** Used synonymously with distance education (Konetes, 2009, 2010; Valentine, 2002).

**Formal learning.** Classroom and curriculum-based learning that is arranged and configured within a defined institutional framework to purposefully deliver instruction and meet

distinct and measurable predetermined learning objectives (Marsick & Watkins, 1990; Younes & Asay, 2003).

**Hybrid learning.** In a given semester, the learning that occurs as a result of taking a blend of both online and onsite courses.

**Hybrid online learners.** In this study this term refers to students that are taking a combination of online and onsite courses in a given semester.

**Incidental learning.** Learning that is not planned by either the instructor or the student but occurs as a byproduct of another activity, which may be an experience, observation, self-reflection, interaction, unique event or common routine task. Learning which happens in addition to or apart from the instructor's plans and the student's expectations (Silva, 2007).

**Incidental learning outcomes.** The description of the change or changes that occur in the learner as a result of unplanned or unexpected learning (Hussey & Smith, 2008). The ability, skill, knowledge, cognitive capacity or aspect of development that the learner has acquired via incidental learning (McFerrin, 1999; Sherman & Beaty, 2007). A result which may be related to a purposeful learning experience but is not among the predetermined intended outcomes (Storksdieck, Ellenbogen, & Heimlich, 2005).

**Informal learning.** Learning that is intentional but not structured or quantified in terms of instructor delivery and involvement but occurs when control over the learning situation is given to the students either socially, experientially, or constructively. Learning objectives are defined or modified with student input and adapt to the learning situation unlike the rigid objectives which may drive formal learning situations (Chen, Millard, & Wills, 2008; Marsick & Watkins, 1990)

**Involvement effort.** The amount of psychological and physical effort exerted by the student in the combined academic and social aspects of college life (Astin, 1984; Berger & Milem, 1999; Braxton, Milem, & Sullivan, 2000; Foubert & Grainger, 2006; Rovai, Wighting, & Lucking, 2004).

**Involvement time.** The amount of time exerted by the student in the combined academic and social aspects of college life (Astin, 1984; Berger & Milem, 1999; Braxton, Milem, & Sullivan, 2000; Foubert & Grainger, 2006; Rovai, Wighting, & Lucking, 2004).

**Learner involvement.** The amount of psychological and physical energy exerted by the student in the combined academic and social aspects of college life (Astin, 1984; Berger & Milem, 1999; Braxton, Milem, & Sullivan, 2000; Foubert & Grainger, 2006; Rovai, Wighting, & Lucking, 2004).

**Occurrence.** The instance of something that is found to be present or to happen (Collins english dictionary, 2009).

**Online course.** A course that is taught online with no on-campus component.

**Online learning.** Distance education that occurs using the internet as the sole medium and means of communication, interaction and facilitating of learning. Usually refers to a formal type of exclusively online distance education, but may also be used in a general sense to reference informal or non-institutional learning situations, as long as the major components of student, instructor and internet are present (Schneider, 2010).

**Online students.** Students only taking online courses in a given semester.

**Onsite course.** A course that is designated as an on-campus course which has a regular assigned meeting location.

**Onsite learning.** Learning that occurs within a formal space or classroom where the learner and the instructor are physically present in the same location at the same time and able to interact verbally and non-verbally (Sáiz, 2008).

**Onsite students.** Students who are taking only onsite courses during a given semester.

**Prominence.** This refers to the degree that one incidental learning outcome stands out from the others (Collins English dictionary, 2009).

### **Research Questions**

The following questions will serve to guide research by providing direction and focus for this study. The hypotheses are functional anticipated outcomes which stem from the research questions and are framed and positioned in accordance with context provided by the literature and previous research.

#### **Research Question 1**

What are the percentages of incidental learning outcomes that occur in onsite and online courses in terms of frequency and prominence?

**Hypothesis 1.** The occurrence of socially generated incidental learning outcomes will be higher in face-to-face courses than distance learning courses.

#### **Research Question 2**

Is there a significant correlation between the learner involvement and the incidental learning that occurs in onsite and online courses?

**Hypothesis 2.** Student involvement will be significantly higher in face-to-face courses than distance education courses.

**Hypothesis 2.1.** Higher levels of student involvement in term of time and effort will correlate with higher levels of incidental learning.

### **Research Question 3**

Is there a difference between the degree that incidental learning occurs in onsite and online courses?

**Hypothesis 3.** Incidental learning will occur significantly more in face-to-face courses than in distance learning courses in regards to the incidental learning outcomes.

### **Research Question 4**

What effect does learner involvement have on the degree that incidental learning occurs in onsite and online courses?

**Hypothesis 4.** Higher levels of learner involvement in terms of time and effort will produce comparable effects on incidental learning.

### **Assumptions**

It is primarily assumed that the subjects were able to access and navigate the online assessment instrument which will be delivered via email. In addition, it is assumed that the list of incidental learning outcomes and their elaborations and definitions given to the student will be sufficient for enabling the student to interpret the learning outcomes in similitude to the manner in which they are interpreted in the literature. It is also assumed that subjects will have experienced some degree of incidental learning through the courses which will enable them to rank order the learning outcomes which they have experienced. It should be noted, that if such learning outcomes were faintly or ineffectively experienced the student is able to mark the amplitude of each outcome experienced. Thus students will be able to rank outcomes in order, even if they mark all of the outcomes as marginally experienced in the following section.

### **Limitations of the Study**

The following aspects serve to describe and define the general confines and restrictions of this research endeavor in terms of transferability, resources and methods in order to clarify the scope and significance of its findings.

#### **Population**

The population chosen for this research is limited to a single institution which limits generalizability and transferability. The results will be generalizable to institutions with similar student populations in terms of education and technological background which employ similar instructional methods. Measures have been taken to select a sample that is generalizable from courses taken by a variety of student majors and types at an institution that serves a range of demographics. However both the population of students and instructors serve to hinder the application of the results to larger audiences. True randomization is also not possible in this study due to limitations in the number of available courses for study and the inability to randomly assign students into courses. It should be noted that despite these population limitations, through the selection of courses which are mostly liberal studies electives or requirements that each course will be comprised of a diverse group of students with diverse majors from across campus which serves to better represent the university student population. Hybrid courses, which are courses that contain both onsite and online components, are not examined within the scope of this study. This study was also limited in its ability to precisely separate and examine all of the prospective student groups and there is potential of some contamination with exclusively online students being included in the analysis of hybrid online learners for certain calculations. However these calculations are intended to use hybrid online learners and onsite learners to compare the effects of online learning and onsite learning on the

dependant variable. Thus the impact of the relatively small number of exclusively online students being included with hybrid online learners when compared to onsite students is not expected to greatly impact the results.

### **Materials**

The major limitations in terms of resources for this study are instructor and course organization. Logistically speaking there are limited course offerings where the same instructor teaches both an onsite and online version of the same course. Each instructor is permitted a maximum course load of 12 credits per semester thus none of the available full time faculty are able to teach more than four sections of any single course. The number of online and onsite courses offered by one faculty member are limited due to the technological expertise of the instructor. Numerous instructors who are able to teach online course do so exclusively. Because of this, the number of variables and potential research designs were limited to twelve courses where there is one online and one onsite offering of each course by the same faculty member.

### **Procedures**

This study required the development of a new methodology and instrument in order to quantitatively investigate a topic area that has predominantly been an aspect of secondary qualitative research. The exploratory nature of this study hinders it in terms of reliability and validity which may often be obtainable through application of previously tested methods and instruments from past research as referenced through established literature. Steps have been taken to overcome this limitation which includes the developing of a literature based instrument to improve validity and pilot testing the instrument to determine reliability. This research endeavor is also methodology-limited by available time and academic resources as disruption to courses and students must be kept to a minimal level. Also, it is academically logistically

unfeasible to have the same students take both the online and onsite version of the same course. This limits the experimental nature of the study and the ability to more objectively determine the precise impact of the variables on the subjects, as each student can only be tested in one of the four groups. However, in terms of replication, this study is conducted realistically using courses, students, and groups which are common in other institutions. Though the lack of exhaustive controls and absence of a laboratory experimental setting weakens the study, the fact that it is conducted on genuine and uncontaminated courses and students means that it can be easily repeated at other institutions. This may serve to better enable this study to act as a stepping stone for the advance of research in this field.

### **Delimitations**

The following aspects serve to describe and define the factors chosen to limit the scope of this research endeavor and to clarify the direction and intentions of its methods.

#### **Scope of the study**

The primary delimitation of this study is the scope and direction of the study itself. The field of incidental learning is broad and examined primarily through qualitative means. This study narrows the scope of traditional incidental learning research to that of a closed ended quantitative approach. This is done in part because this is a unique and exploratory method of inquiry into this research area. The narrowing of the scope of this study also serves to limit what could become an enormous, unmanageable, and un-reproducible qualitative undertaking as what could be defined as incidental learning is broad.

#### **Incidental learning outcomes**

An additional delimitation for this study is that of the incidental learning outcomes criterion. The incidental learning outcomes, their elaborations, and applications have been

chosen exclusively from the literature. This has been done in order to maximize validity as well as limit the scope of what constitutes an incidental learning outcome. The outcomes which were chosen have been strategically selected because they form a foundation to build upon and display promise through their relevance to online and onsite learning. It is not within the scope of study or within the available resources to debate, synthesize or redefine what constitutes an incidental learning outcome.

## CHAPTER 2: REVIEW OF THE LITERATURE

### **Introduction**

Incidental learning is a dynamic and often unpredictable occurrence that is made manifest throughout recognized learning domains & channels. The primary qualities of incidental learning include its unplanned nature in both the formal and informal learning domains where it often unconsciously occurs and is often realized only after the fact. This type of learning takes place through a variety of channels, where certain factors such as social interaction, collaboration and environmental context can be manipulated to some degree while other occurrences of this type of learning happen as unforeseen byproducts of other activities. Incidental learning outcomes are the learning effects that students unintentionally acquire in addition to content that is directly related to course objectives and may include: functional outcomes, which result from the navigation of course curriculum and structure; social outcomes which are produced by active environmental and interpersonal interactions; and observational outcomes which occur passively through watching, listening and reading. Situated learning theory reveals that the occurrence of incidental learning is shaped by the social circumstances of the learning environment. Proper social context necessary for this type of learning may be developed in online courses through the apt selection and implementation of technologies and learning strategies. However if the formation of social community is shallow or hindered, the opportunities available for incidental learning to occur are reduced in quantity and quality. Likewise involvement theory links student success and incidental learning with the amount of time and energy a student invests in both the social and academic aspects of college life. Online students may then be hindered from participating in the on-campus components of college socialization which potentially removes them for certain opportunities for incidental learning to take place.

### **Incidental Learning Qualities**

The traits and functionality of incidental learning include being unplanned in nature, taking place in both formal and informal learning domains and potentially being unconsciously acquired with awareness and realization transpiring at a later time. Incidental learning is not purposeful or premeditated but rather occurs when the individual is unaware and not expecting the learning to occur, although situations may be purposefully designed which may foster incidental learning. This type of learning also takes place in both the formal and informal learning domains where intentional, unintentional and semi-intentional learning is transpiring. Despite the learners being unconscious that learning is taking place, awareness can be manifested later through the information being reflexively required of them or through self-reflective contemplation.

### **Learning Contexts**

Incidental learning occurs in a variety of contexts and is unique in that though it is not purposeful in nature, it can be purposefully fostered by creating environments that facilitate its happening. Incidental learning is frequently occurring throughout defined and undefined learning environments such as the classroom, the workplace, communities of practice, and throughout common daily routines (Marsick, et al., 2006). The concept of learning only being of significant merit if it occurs at an official institution or classroom is a stigma that exists, however incidental learning increases individuals' knowledge, skills and understanding across a broad variety of contexts including classrooms (Holzinger, Pichler, Almer, & Maurer, 2001). In some cases what students receive by way of incidental learning may be of greater importance than what was learned in relation to the course objectives. This information is not customarily

measured by student or course evaluations and its significance is likely to be underappreciated (Pratt, 1997).

### **Learning Intentions**

Learning expectations act in part to classify certain types of learning as incidental that could be considered purposeful in some contexts. Incidental learning takes place when the learner does not intend to learn, or more specifically when the learner does not intend to acquire specific information within anticipated content (Silva, 2007). According to Casey (2005), incidental learning is more substantially effected by internal structures, guidelines, and procedures than by purposeful and direct efforts to achieve desired learning outcomes. It happens when the student does not plan or expect to learn what is learned, thus they are not looking for the knowledge and are not actively working to develop the skills (Mealman, 1991). Certain skills and knowledge that are usually obtained through intentional and purposeful learning may also be intentionally taught by creating opportunities for incidental learning to take place and providing environments that facilitate and foster its occurrence (Guo, et al., 2011).

### **Differences in Formal & Informal Applications**

Incidental learning is a type of informal learning; still it occurs in both the formal and informal learning domains. According to Marsick and Watkins (1990), it is a type of informal learning which occurs apart from formal learning which is comprised of a structured environment with specific educational outcomes. In contrast to formal learning, informal learning may be based within a classroom or institutionalized setting, although control over learning is taken out of the hands of the instructor and placed within the hands of the students (Chen, Millard, & Wills, 2008; Marsick & Watkins, 1990). This creates a learning environment that is not curriculum driven but situation and experience driven (Marsick & Watkins, 1990). To

further distinguish between formal and informal learning, the party who defines the learning objectives may be examined. Formal learning objectives are set by an instructor or institution while informal learning objectives are often set or modified by the students (Chen, et al., 2008). Informal learning is often intentional but not defined, while incidental learning exists as an aspect of informal learning which is unintentional (Park, Heo, & Lee, 2008).

### **Commonalities to Formal & Informal Applications**

Incidental learning occurs as a byproduct or side effect of some experience, event or activity, be it formally or informally. Though incidental learning is a type of informal learning, it may result from both informal learning situations and formal learning situations. Even environments which are not supportive of formal or informal learning may produce incidental learning (Marsick & Watkins, 1990). Formal learning environments may however serve to stimulate incidental learning thus purposeful configuration of formal curriculum can be structured in order to foster incidental learning outcomes (Marsick, et al., 2006). Potentially overlooked aspects of incidental learning include learning from past situations and errors, learning through experience and learning through experiments (Holzinger, et al., 2001). Informal and incidental learning may also be assessed to determine equivalents to formal learning outcomes and coursework by analyzing the sources of informal learning as well as the skills and competencies which can be demonstrated (Joosten-Ten Brinke, Sluijsmans, & Jochems, 2009).

### **Degrees of Learning Consciousness**

Incidental learning happens unintentionally and often unconsciously where the realization that learning has taken place often comes reflexively or reflectively at a later time. According to Barth (2007) experiential incidental learning involves learning through an experience without

any intention of learning; however after the learning has taken place the individual becomes conscious of it. Thus experiential incidental learning is “unintentional but conscious” (Barth, et al., 2007, p.421). Marsick and Watkins (1990) add that incidental learning may be constantly occurring through various circumstances and experiences, although the individual may only rarely be aware that the process of learning is taking place. When incidental learning takes place specifically without the learner’s conscious awareness it is also referred to as tacit learning (Marsick, et al., 2006).

### **Realization of Learning**

The realization of incidental learning often occurs through a reflexive or reflective moment. A reflexive response occurs where an outside stimulus such as an instructor, directly requests something from an individual that they do not recall learning and a response is impulsively rendered which leads to a moment of realization as the individual becomes aware that they know something which they do not remember learning. By contrast a reflective realization comes when the individual becomes aware on their own that they have learned something and were previously unconscious of the learning process (Younes & Asay, 2003). In addition to specific realizations, outcomes or tangible effects of incidental learning may also function to create a level of shared understanding within a group, which enables individuals to be receptive to other group members and avenues of learning (Casey, 2005). Tacit aspects of incidental learning may also include effects that the learner may not come to the realization of such as values, attitudes, behaviors and skills. This learning is often overlooked because the learner may never come to awareness that it has happened which may complicate attempts to assess it (Park, et al., 2008).

### **Ways Incidental Learning Takes Place**

There are various avenues through which incidental learning may occur and be manifest including; social interaction and collaboration, environmental context, and as an unforeseen byproduct to another activity. Collaboration and social interactions produce interpersonal communication based learning opportunities through which individuals may unintentionally or informally learn both from others and from the nature of the interactions. Unfamiliar learning environments, be they traditional in nature or nonacademic, present learners with challenges, unexpected variables and unusual contexts that enable incidental learning to take place as the individuals interact with the situations presented to them. In addition to somewhat definable learning venues, incidental learning also takes place as a side effect to both unique and common experiences.

#### **Social Interactions**

Social interaction and collaboration are primary avenues through which incidental learning transpires where the medium of instruction is interpersonal communication. According to Warhurst (2008), incidental learning has been demonstrated to occur socially via interaction and through established communities. Through participation in a social community or network of established relationships, incidental learning increases as participation in the social interactions increase (Warhurst, 2008). The depth and detail of the social environment and interaction effect the degree of incidental learning which may occur (Warhurst, 2006). Full immersion in an unfamiliar culture with high level of unfamiliar interaction may facilitate increased quantity and intensity of incidental learning (Younes & Asay, 2003). Warhurst (2006) states that incidental learning is an inevitable outcome resulting from a unique practice or

participation within a specific social community as compared to less memorable or less involved interactions which result in learning that is less intensive or meaningful.

### **Workplace Learning**

The workplace affords the social and collaborative structure which fosters incidental learning while presenting challenges such as operating within a formal system of shared values. According to Marsick, Watkins, Callahan, & Volpe (2006) the modern workplace offers one of the richest environments for incidental learning because it is increasingly socially situated and structured. In order to excel in this social-based incidental learning environment, the tools that the learner requires are social skills more so than learning skills. The ability to communicate and operate within a system of shared values and organizational culture is important for the development of social relationships and situations through which incidental learning may take place (Marsick, et al., 2006). Amelung, Laffey, & Turner (2007) go on to clearly state that collaboration and working together are primary situations that incidental learning happens through.

### **Response to Challenges**

Environmental context shapes the way that incidental learning takes place as individuals experience learning through the process of adapting to, dealing with and overcoming the obstacles and situations that surround them. Traditional incidental learning research is foundationally constructed upon the concepts of environmental interaction and the experiences that the learners have (Marsick, Watkins, Callahan, & Volpe, 2006). When a potential learner encounters a situation that they are not familiar with, a process of improvisation, adaptation and problem solving begins as they attempt to overcome obstacles. This process both triggers and facilitates incidental learning as the individual's behavior is modified by the environment and

new experiences (Barth, Godemann, Rieckmann, & Stoltenberg, 2007). McFerrin (1999) mentions that the learning situation may have greater significance than the learning objectives and students will to some degree adapt to their conditions and their incidental learning will be shaped both by their environment and what is available to them. Hunter, Spence, McKenna, & Iedema (2008) state that substantial unplanned for and unexpected events provide situations that facilitate incidental learning.

### **Familiarity of Context**

Familiarity with the learning context or style and situational convenience may also facilitate incidental learning. Adults benefit more through incidental learning based situations and curriculum because they have become accustomed to learning through life experience (Williams & Sher, 2008). Therefore approaches and environments focused on incidental learning are more familiar and thus more favorable (Spencer, 2008). Williams & Sher (2008) further develop this concept by stating that convenience is a factor that effects how incidental learning happens. If a learner desires to learn and a learning opportunity occurs at a time and location that is favorable then more incidental learning takes place (Williams & Sher, 2008). Other aspects of environmental context such as the instructionally purposed inclusion of certain types of media such as animation have been shown to be effective in facilitating incidental learning in certain situations (Rieber, 1990).

### **Tangential Learning**

Incidental learning may occur as an unintended and unrealized function that is tangential to a purposeful task. According to Webb (2008) incidental learning may occur as a direct byproduct of focused intentional learning, specifically vocabulary acquisition through reading. In this situation an individual is reading for the purpose of obtaining knowledge about the

content of the written work; however through the reading process they also incidentally develop their vocabulary and obtain knowledge of new words and their context which is unintentionally and often unconsciously stored (Webb, 2008).

### **Observational Learning**

Observation and modeling provide conscious and unconscious opportunities for learners to incidentally acquire knowledge, behaviors and attitudes. The process of modeling and imitation provides a situation through which incidental learning may unconsciously operate (Kickmeier-Rust, et al., 2006). In this context the learner may be incidentally learning and incorporating into their own knowledge and behavior what was modeled by the instructor both in words and actions. This process requires some type of identifiable action on the part of the instructor within an observable environment for the learner to have something to perceive and model (Kickmeier-Rust, et al., 2006). Bandura & Huston's (1961) study of child imitation of aggressive behavior demonstrates an inherent tendency beginning at childhood to observe and unconsciously model both attitudes and actions. This practice was described by Bandura & Huston as a process of incidental learning involving various social cues and observations.

### **Peripheral Learning**

Human memory has been shown to incidentally store peripheral information related to imagery and operated in an unhindered capacity in individuals with decreased learning aptitude. Research done by Doeller & Burgess (2008) showed that special memory concerning object positioning and location were incidentally and reflexively obtained during a compound learning exercise. Van Asselen, Fritschy, & Postma (2006) conducted a study which examined judging distances, remembering landmarks and learning routes. There were two groups involved; one of which was focused on an unrelated learning activity and the other that was instructed to estimate

the distance, remember the landmarks and learn the routes. The incidental learning group demonstrated similar levels of proficiency concerning the geographic learning (Van Asselen, et al., 2006). Additional research done by Sassoon, et al., (2007) suggests that patients with decreased cognitive and motor functions resulting from alcoholism and human immunodeficiency virus may demonstrate lower overall learning ability, however they remain unimpaired concerning incidental learning on digit symbol tests.

### **Incidental Learning Outcomes**

Incidental learning that is manifesting in college courses apart from defined course learning objectives can be classified under three primary areas: functional outcomes, which happen as a result of the course structure itself; social outcomes, which are products of active interaction and collaboration; and observational outcomes, which are derived from passive activities such as watching, listening and reading. Functional outcomes which include time management, self-directive behavior, problem solving, self-confidence, self-efficacy, self-discipline, informational awakening, inspirational awakening, self-discovery, clarification of personal ambitions, and changes in world view involve incidental learning that is a byproduct of the framework of the course including how students must adapt to complete it and how students are changed through the process. Social outcomes which include social networking, developing interpersonal relationships, a sense of professional community, professional identity, team-working skills, student motivation to learn, cultural awareness and appreciation of cultural diversity stem from both students' tendencies toward interpersonal interaction and the results of active environmental interactions. Observational outcomes which include second language acquisition, vocabulary advancement and improved interpersonal communication skills result from passive learning situations such as watching, listening and reading. Table 1 on page 25

provides a list of the three primary incidental learning areas as well as a complete listing of each of the individual incidental learning outcomes which are most often identified with each of the three major learning areas.

Table 1

*Incidental Learning Outcomes*

Functional Outcomes

time management

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self-directive behavior,

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problem solving

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self-confidence

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self-efficacy

---

self-discipline

---

informational awakening

---

inspirational awakening

---

self-discovery

---

clarification of personal ambitions

---

changes in world view

Socially Generated Outcomes

social networking

---

developing interpersonal relationships

---

sense of professional community

---

professional identity

---

team-working skills

---

motivation to learn

---

cultural awareness

---

appreciation of cultural diversity

---

Observational Outcomes

second language acquisition

---

vocabulary advancement

---

interpersonal communication skills

---

## **Functional Outcomes**

Functional incidental learning outcomes are areas which are cultivated through the logistical process of successfully operating within a course framework and meeting course objectives, which include: time management, self-directive behavior, problem solving, self-confidence, self-efficacy, self-discipline, informational awakening, inspirational awakening, self-discovery, clarification of personal ambitions, and changes in world view. Two related incidental learning areas that students have been found to experience include time management and self-directive behavior. Successful students may improve in their ability to plan and organize course work to fit within their schedule in order to grow in effectiveness and efficiency (McFerrin, 1999). The ability to transfer problem solving skills to varying real world applications is an additional skill which may be incidentally acquired by learners (Crawford & Machemer, 2008). Students may also develop in the area of self-confidence and self-efficacy as an incidental byproduct of meeting course objectives (McFerrin, 1999; Pratt, 1997). As specific tasks are effectively concluded, culminating with completion of the course, a student may become more confident in their ability to accomplish course work and be successful when faced with challenges. Self-discipline is an aspect of incidental learning that may be manifested through students being required to meet deadlines and accomplish tasks within certain specifications (McFerrin, 1999). According to McFerrin this incidental learning outcome, though not part of the course objectives is in some regards a prerequisite that students must learn and develop in order to accomplish the course goals to the appropriate specifications. Through the process of meeting course objectives or even through stimulation from the instructor, students may also come to an informational or inspirational awakening where they become open to new levels and modes of thinking or develop a greater appreciation and fervor for the

discipline (Pratt, 1997). Learners may also experience self-discovery through which they examine and develop in their own beliefs, ideals and aspirations. Clarification of personal ambitions is an additional incidental learning outcome which involves the learner coming to a greater realization and validation of their place in the field or realizing that their place is not within the field. Some learners may also experience changes in world view regarding their perspective of the world in terms of size, diversity, societal order and their role within it (Younes & Asay, 2003).

### **Socially Generated Outcomes**

Socially generated outcomes are dynamic incidental learning areas which result from active environmental interactions as well as collaboration or cooperation with students, instructors and individuals which are not part of a formal learning context. These outcomes include: social networking, developing interpersonal relationships, a sense of professional community, professional identity, teamwork skills, student motivation to learn, cultural awareness and appreciation of cultural diversity. According to Kabilan, Ahmad and Abidin (2010), social networking and interpersonal relationships are forms and areas that incidental learning may occur as and through. Developing social networks and interpersonal relationships may be incidental byproducts of university courses and they may double as channels through which additional forms of incidental learning may occur. This effect may be further illustrated as students develop a sense of professional community and identity within their field or institution (Pratt, 1997). Crawford and Machemer (2008) state that teamwork skills are an important incidental outcome that students acquire through courses. Amelung, Laffey and Turner (2007) go on to discuss that incidental learning occurs through collaborative efforts and social interactions. Through active social experiences learners may also come to deeper levels of

cultural understanding and appreciation of cultural diversity (Younes & Asay, 2003). Shared social experiences may also produce an increase in student motivation to continue the learning process (Amelung, Laffey, & Turner, 2007). In addition, incidental learning may lead to intentional learning; that is, students may be stimulated by what they learn incidentally and become motivated to seek out and acquire additional knowledge and information intentionally (Akin, 2008).

### **Observational Outcomes**

Observational outcomes are additional incidental learning areas which are passively acquired through watching, listening and reading which produces individual effects such as second language acquisition, vocabulary advancement and improved interpersonal communication skills. Incidental learning is often facilitated through modeling or imitating the actions, cues and personality of the instructor (Kickmeier-Rust, et al., 2006). Acquisition of language and vocabulary skills are an observation incidental learning outcome which may be demonstrated through a modeling and imitation approach as described by Kickmeier-Rust, et al. (2006) or through a more passive and self-directed learner approach involving external media and collaboration such as that discussed by Kabilan, et al. (2010). Dupuy & Krashen (1993) specifically mention incidental learning occurring in second language vocabulary acquisition through reading and watching a film. A study done by Swanborn & De Gloppe (1999) indicated that while reading, students learn approximately fifteen percent of words that they encounter with which they are not familiar. Paribakht & Wesche (1999) go on to state that incidental vocabulary acquisition happens both through reading and through processing oral input. Further research in the medical field has indicated that students are able to incidentally acquire nearly the same level of vocabulary proficiency throughout their undergraduate

curriculum as students who took a specialized medical vocabulary course (Ainsworth, Hardin, & Robertson, 2007). Incidental learning has also been found to be an agent in the acquisition of language skills and vocabulary in individuals learning a second language (Kabilan, et al., 2010). The development of interpersonal communication skills in general is also noted as an important incidental learning outcome of students in college courses (Crawford & Macheimer, 2008)

### **Theoretical Framework**

Ideal situated learning environments coupled with high levels of student social involvement create a favorable context for incidental learning to take place. Situated learning theory is based upon a constructivist paradigm where knowledge and learning are socially constructed in specific contexts, which may occur in both face-to-face and online courses as mediated by technology. Situated learning environments are defined by criteria that provide the ideal context for incidental learning to occur and several of these outcomes are fostered by increased student involvement in the classroom and on campus. In terms of social influence, involvement theory states that student success and learning correlate with the time and energy a student exerts in cultivating strong social relationships with peers and instructors as well as devotion to academic pursuits. However both situated learning environments and student involvement may be hindered through distance education applications.

### **Situated Learning Theory**

Situated learning theory involves socially constructing knowledge, a process which may occur face-to-face or through technologically mediated interaction. Situated learning is a conceptual framework that involves the development of knowledge and incidental learning opportunities through social interactions and specific settings, which may be formal or informal. Formalized classroom applications of this type of learning involve the development of positive

and highly interactive social climates where the instructor serves to facilitate and guide learning, making certain that the knowledge gained is transferable to external applications. Situated learning is also seen in online distance education applications where technologically mediated communication is able to simulate real world social interactions albeit with numerous variables which may also act as inhibitors.

**Theoretical Structure.** Situated learning or situated cognition is the process of constructing knowledge through social interactions both formally and informally where what is learned is specific to the learning context in formulation and application. Situated learning theory examines learning context and states that learning is socially constructed and dependent upon situation specific cues. This learning theory rests upon the grander philosophical and psychological basis of constructivism (Anderson, Reder, & Simon, 1996; Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Korthagen, 2010). Constructivism, which may be broadly defined, generally states that meaning and learning are created through experience. Instruction is more so a process of facilitating that construction of knowledge than directly communicating it (Anderson, et al., 1996; Duffy & Cunningham, 1996; Jonassen, et al., 1995; Kirschner, Sweller, & Clark, 2006; Korthagen, 2010; Savery & Duffy, 1996). Situated learning, which has also been referred to as situated cognition, asserts that the majority of what is learned is specific to the learning situation, which may range from the classroom to the job site (Anderson, et al., 1996). Reasoning that knowledge is local, Brown, Collins, & Duguid (1989) advocate that it is shaped by the context and culture that it is obtained and used in.

**Context.** Social interactions are the primary vehicle that situated learning occurs through and these interactions often take place within communities of practice which may be either structured or casual. These communities develop around locations, issues or needs that are of

value to individuals, be they in the workplace, the classroom or in purely social local. Situated learning may encompass formal and informal learning contexts and events (Arnseth, 2008; Lave & Wenger, 1991). Lave & Wenger (1991) also go on to mention that situated learning goes beyond the concept of situated activity in which a defined event or interaction constitute the learning situation. This primarily occurs as a result of social interactions that transpire within communities of practice where certain types of knowledge are under constant development, refinement, transition and application (Contu & Willmott, 2003). Here knowledge is not only conveyed by instructors or those who play the role of an instructor, but it is also constructed and practiced by the members and becomes specific to the community and context (Wenger, 1999).

**Elements of Formal Application.** The elements necessary for the successful application of situated learning into a formal learning context include: transferability of learning, an emphasis on fostering positive social climate, interactive group dynamics and instructor guidance and facilitation. A concern of situated learning is adapting it to classroom-based contexts into external, real-life applications. Care must be taken to ensure that knowledge, which is developed in a purely hypothetical situation or community is transferable and applicable to external situations and communities (Anderson, et al., 1996). According to Lervik, Fahy, & Easterby-Smith (2010) temporal dynamics play a central role in situated learning, as timely access to the learning community and social relationships is often necessary for ideas and experiences to be properly developed into knowledge and transferable skills. Despite situated learning being a learner-centered interactive paradigm, instructor interaction is still considered important in order to guide and facilitate learning. The role of the instructor in guiding the student through content is important to learner satisfaction and learner involvement, else the student may become distracted, confused or discouraged (Jestice & Kahai, 2010). For situated learning to occur

properly, even in group activities facilitation and coordination of activities is focal (Andres & Akan, 2009).

**Social Dynamics.** Group dynamics and social atmosphere are important aspects in the formation of situation learning environments. In order to apply situated learning concepts in the classroom through group work, a change in the conceptualization of group interaction must occur. Traditional group dynamics emphasize outcomes and collaboration, however situated learning group dynamics hinge upon the social climate of the group. Thus an effective group must contain both objective-oriented and socially-oriented individuals in order for a social culture to develop, through which situated learning may occur (Liccardi, et al., 2007). Research done by Andres & Akan (2009), states that developing positive social climate is invaluable to group learning and interaction quality.

**Online Factors.** Situated learning may actively and effectively transpire in online contexts, although there are numerous variables which may inhibit its success. Lack of instructor interaction and guidance, insufficient social interactions, ineffective technology applications, and a disconnect in time or distance may result from unfavorable course scheduling and therefore isolates learners. Distance learning may create situated learning contexts through a variety of means such as immersive games and simulations and virtual worlds. These types of media may create virtual communities and interactions which produce community dynamics that have comparable outcomes with onsite social interactions (Clarke & Dede, 2007; Jestice & Kahai, 2010). These situations may be successful because they model real life environments and interactive contexts (Annetta, Folta, & Klesath, 2010). Timely and comfortable access to the social resources and relationships is also critical for situated learning to occur. A disconnect

from that learning context spatially, temporally or in terms of rhythm and timing may impede learning (Lervik, et al., 2010).

**Impact of Technology.** Technology may be used to facilitate the occurrence of situated learning with altered group dynamics but it may also act as a hindrance if improperly applied or managed. Participation of the learner also arises as a concern, because situational learning defines participation as not just interaction but active and meaningful social involvement, through which self and group identity construction occurs (Handley, Sturdy, Fincham, & Clark, 2006). Distance education, specifically online applications rely upon technology to mediate communication and socialization. Technology may also impact and alter the dynamics of social interaction and identity development. Various advances in online technology have enabled situated cognition to occur in a growing range of applications, although poor technology choices and unfamiliar communication channels may hinder the formation of group culture and situated learning (Beldarrain, 2006). However online learning conducted through a variety of media including virtual worlds may cause students to become overwhelmed with content and hinder the learning process due to lack of instructor interaction and structured social activities (Jestice & Kahai, 2010).

### **Involvement Theory**

Involvement theory connects student success to the value and depth of student social interactions and relationships that occur throughout the myriad of events of which student life is comprised of. Involvement theory is based upon the concept that higher levels of student involvement in the academic, social, and tangential aspects of the college experience equate to increased student satisfaction, success and learning. Social interactions comprise the majority of student involvement where formal and informal communications and relationships strengthen

network ties and intensify the experiences, learning, and personal development that occurs at an institution of higher education. However involvement in many facets is regulated to onsite activities which occur informally, thereby limiting the ability of distance learning to attain the same levels of student involvement that occurs in the numerous social and incidental happenings on campus.

**Theoretical Configuration.** Astin's theory of involvement describes a relationship wherein greater investments of student time and energy into the academic, social and tangential aspects of college life correlates with higher degrees of student satisfaction, success and learning. According to Astin (1984), the general tenants of involvement theory state that a student will be more successful in their academic career if they have high levels of involvement in the whole of their academic experience. Involvement is then simply defined by the amount of time and energy, both physically and psychologically that a student invests in their college endeavors. Involvement is also measured across all realms of university life, such as studying, class participation, interactions with others, interactions with instructors, out of class and extracurricular activities (Astin, 1984; Berger & Milem, 1999; Braxton, Milem, & Sullivan, 2000; Foubert & Grainger, 2006; Rovai, Wighting, & Lucking, 2004). This leads to students that are more involved in these sorts of actions to be more likely to have success in their educational endeavors than students who are less involved (Astin, 1984). According to Berger & Milem (1999) involvement theory has been developed and refined specifically by Alexander Astin using long term longitudinal data studying thousands of students over a period of time, which spans more than twenty years.

**Impact of Involvement on Learning.** In addition to overall academic success, scholastic and social involvement specifically impacts student learning. Vermeulen & Schmidt

(2008) go on to state that student involvement, as defined by Astin, in the social and academic facets of the college experience, demonstrates an increase in learning. Rovai, et al., (2004) equates Astin's theory of involvement to the development of college community which occurs through the pursuits of social relationships, academic experiences and activities related to campus. Consequentially this development of community and strong student involvement facilitates learning and student development (Rovai, et al., 2004).

**Institutional Community.** Involvement theory sets forth a socially-based perspective categorized by interactions with peers, faculty and campus life that facilitates learning and success. Subsequently, learning has an important social dimension that is maximized when colleges and universities provide a positive social atmosphere (Rovai, et al., 2004). Students who experience a positive connection and identification with their institution lead more rewarding social lives and become more socially involved (Heiberger & Harper, 2008). Higher levels of involvement and community result in active learning through which students become integrated in the learning situation and context and take a proactive initiative in their learning. This results in higher levels of student satisfaction and success and enables students to invest the necessary levels of time and energy in their academic experience to develop meaningful social relationships, which are necessary for increased levels of involvement (Braxton, Jones, Hirschy, & Hartley III, 2008). According to Sidelinger (2010) students who develop a sense of ownership over their learning situation, context, and environment cultivate higher degrees of involvement.

**Social Interactions.** Interpersonal social interactions are the essence of student involvement and the deeper and more meaningful those relations are, be they with faculty, administration, peers, or students, the more academic and personal value will be derived by the student. Classroom learning environments have also been shown to foster higher levels of

student motivation both within and beyond the classroom which coupled with extracurricular activities positively impacts student learning outcomes (Vermeulen & Schmidt, 2008). The most constructive contributions to learning outcomes result from social interactions and activity between students, peers and faculty centered on intellectually significant topics (Astin, 1993; Vermeulen & Schmidt, 2008). Meaningful interactions and communications with instructors within and beyond the classroom create a social dynamic that enhances student involvement, motivation, trust, aspirations and success (Jaasma & Koper, 1999).

**Student Peer Groups.** Informal participation in student groups and clubs provides students with opportunities to develop social skills and to form stronger interpersonal ties which lead to elevated levels of involvement. The dominant manifestations of involvement are academic transactions, faculty interaction, and participation in student peer groups (Astin, 1993; Berger & Milem, 1999; Foubert & Grainger, 2006). Research by Astin (1993) has shown that there are statistically significant correlations between the amount of time students spend participating in student organizations and clubs and their development in the areas of public speaking ability, leadership abilities, and interpersonal skills. Interaction with other students is the most significant type of involvement and these student-to-student relationships provide for deeper levels of involvement by creating more intense experiences and social connections. Peer interaction correlates with students' personal development and learning in various areas (Astin, 1993; Foubert & Grainger, 2006) while student volunteer service correlates with additional cognitive and affective outcomes (Astin, Sax, & Avalos, 1999).

**Impact of Distance Learning.** Distance learning hinders student involvement in many of the social aspects of the college experience and limits the opportunities for certain types of interpersonal involvement to occur, as social avenues are restricted both in number and in depth.

According to Braxton, et al., (2000) student involvement happens in areas which are related to the environment of the institution. There are various contextual opportunities for student involvement which are specific to being present at a physical institution, and include on-campus student employment, residential living, as well as joining or leading campus organizations and clubs (Foubert & Grainger, 2006). Conversely, lack of student involvement in campus life negatively impacts students' academic success (Berger & Milem, 1999). Distance education often serves to limit student participation on campus and in campus functions, which hinders student face-to-face interactions with other students, faculty and administrators impeding involvement.

**Student Community.** In order for meaningful student community to develop, there must be shared context and culture that usually develops as a result of mutual onsite experiences. There is concern that the level of community needed for Astin's definition of student involvement cannot or does not regularly develop through distance learning. On-campus interactions are necessary for the acquisition of language, customs, and artifacts through which strong online communities may be constructed that can facilitate proper involvement (Rovai, et al., 2004). Types of involvement which isolate students and which physically remove students from campus negatively impact student outcomes (Astin, 1996; Rovai, et al., 2004). Distance education then often leads to student noninvolvement, as meaningful social relationships do not develop due to the shallow level of community which forms slowly and through limited channels (Rovai, et al., 2004).

**Physical Immediacy.** Classroom-based verbal immediacy and nonverbal cues provide students with additional contextual information but also gives students shared experiences and culture through which they can build stronger interpersonal relationships with instructors outside

of the classroom. Levels of involvement may also differ between distance learning and face-to-face applications due to the medium of communication, as verbal and nonverbal messages have different functions in the instructional process. Instructor nonverbal immediacy is most highly correlated with student involvement in the classroom while instructor message clarity is more highly correlated beyond classroom involvement. Thus there are aspects of learner involvement which may be specific to classroom involvement (Sidelinger, 2010). Jaasma & Koper (1999) go on to discuss that verbal immediacy is an important factor in communications with faculty both within and beyond the classroom. Also verbal and nonverbal cues obtained in the classroom go on to create a base of shared context that facilitates communication, interaction, trust and involvement with the instructor outside of the classroom (Jaasma & Koper, 1999).

### **Incidental Learning and Theoretical Context**

Incidental learning is impacted by the implications of situated learning theory and involvement theory in both face-to-face and distance education application in the capacity that incidental learning is tied to social and experiential environments of situated learning and occurs as a result of learning involvement. Face-to-face situated learning centers around specific social and experiential conditions which are identical to the circumstances which facilitate incidental learning. These conditions may also be met in online learning environments however technological, temporal and relational obstacles may hinder the occurrence of situated and incidental learning alike. Involvement theory goes on to state that students participating in traditional face-to-face courses and campus life experience the opportunity to cultivate the incidental learning outcomes of higher student learning motivations, interpersonal relationships and communication skills, inspiration, personal aspirations, and personal development. When students leave the classroom and campus the opportunity to foster the incidental learning

outcomes of inspiration, motivation, interpersonal social skills, and personal development, social involvement is hindered.

**Situated Learning in the Classroom.** The major tenants of situational learning theory which state that learning is constructed as a result of experiences and shared social relationships create a context that fosters the occurrence of incidental learning. This results from the same necessary criteria as situational cognition and situational learning and incidental learning both occur as a result of experiential learning (Lankard, 1995). Classroom experiences and activities may create learning situations where the culture of the situation results in unexpected incidental learning that is of more value to the students than the primary content that was intended to be taught (Brown, et al., 1989). This is also consistent with Marsick & Watkins' (1990) work stating that incidental learning may result in informal learning situations, which may occur apart from learning objectives. Reffat & Gero (1998) go on to state that the nature of situated learning itself is incidental rather than intentional. Situational learning is experience-driven and involves the construction of knowledge and understanding through social experiences (Contu & Willmott, 2003). This creates a complementary environment for incidental learning which also happens as a result of experiences (Holzinger, et al., 2001), and through social interactions and shared learning communities (Warhurst, 2008).

**Situated Learning Online.** Through the proper selection of technologies and strategies, situated learning may occur in online courses, but if community development is shallow or hindered, the opportunities for incidental learning to take place diminish. Situated learning may occur in online courses mediated through various forms of communications technology (Clarke & Dede, 2007; Jestice & Kahai, 2010). However the choice and application of technologies may create a social environment that facilitates or hinders situational learning (Beldarrain, 2006).

Clear communication and group collaboration are factors that facilitate both situated learning and incidental learning (Lankard, 1995). Deep and meaningful social relations must take place so that there is group and individual identity development in order for a community of practice to form (Handley, et al., 2006) which function as a primary source through which incidental learning occurs (Warhurst, 2008). If these learning communities cannot develop then interaction decreases and the opportunities for incidental learning decrease as well (Warhurst, 2008).

**Online Dynamics.** The dynamics of online learning environments are influenced by the role of the instructor, the temporal dynamics of the learning situation, and convenient access to the educational environment. The lack of instructor presence in an online learning environment may hinder the development of a learning situation, as even in online learning the role of the instructor to guide and facilitate is still necessary for situated learning to take place (Jestice & Kahai, 2010). A disruption in the temporal dynamics of a learning situation may result in obstructed situational learning. If the learner is cut off from the learning community in terms of access or a change in timing, which disrupts the rhythm of involvement, then their ability to engage in situational learning is hindered (Lervik, et al., 2010). Strong involvement is important in the learning community and must be maintained to foster opportunities for incidental learning to take place (Warhurst, 2006).

**Involvement in the Classroom.** According to involvement theory, students who become involved on campus with their peers and instructors are able to cultivate the incidental learning outcomes of higher student learning motivations, interpersonal relationships and communication skills, inspiration, personal aspirations, and personal development. According to Vermeulen & Schmidt (2008) higher levels of student involvement in the classroom result in an increase of student motivation, which is an incidental learning outcome discussed by Amelung, et al.,

(2007). Higher levels of student involvement also result in and from richer interpersonal relationships (Heiberger & Harper, 2008), which is consistent with interpersonal incidental learning outcomes as discussed by Crawford & Machemer, (2008). Jaasma & Koper (1999) mention the value of informal interpersonal interaction between student and instructor which can result in increased student aspirations and vision to succeed, which is also in step with inspirational incidental learning outcomes as discussed by Pratt (1997).

**Development Through Interaction.** Personal interactions with fellow peers and instructors help to cultivate greater amounts of student involvement through interpersonal relationships. Higher student involvement resulting from peer interactions and relationships also correlates with higher student personal development (Astin, 1993; Foubert & Grainger, 2006), which is again reflected as an incidental learning outcome (McFerrin, 1999; Pratt, 1997; Younes & Asay, 2003). The informal face-to-face social interactions between students and instructors are also among the most significant factors in increasing student learning resulting from social measures (Astin, 1993; Vermeulen & Schmidt, 2008).

**Involvement Online.** Under the framework of involvement theory, removing students from the classroom and the campus may hinder their ability to develop and obtain the incidental learning outcomes of inspiration, motivation, interpersonal social skills, and personal development unless they are able to establish a close-knit online social community based upon shared experiences resulting from face-to-face interactions. There is concern that distance education practices which remove the learner from the classroom and from campus hinder the development of deep social relationships which are necessary to foster student involvement in the university experience (Rovai, et al., 2004). Being removed from the classroom also separates the student from the verbal immediacy and nonverbal cues of the instructor that effect learner

involvement and reduce the effects of inspiration and motivation (Jaasma & Koper, 1999; Sidelinger, 2010), which are also incidental learning outcomes (Amelung, et al., 2007; Pratt, 1997). Table 2 provides a complete list of types of student involvement and affected incidental learning outcomes. These students may also be hindered in their ability to become involved in the campus community, which encumbers them from forming the deeper relationships necessary to foster higher levels of student involvement (Braxton, et al., 2008). This would not result in higher levels of student involvement and thus students may be hampered from experiencing the incidental learning outcome of personal development (McFerrin, 1999; Pratt, 1997; Younes & Asay, 2003) that would be afforded to them on campus under the framework of involvement theory (Astin, 1993; Foubert & Grainger, 2006).

Table 2

*Student Involvement & Affected Learning Outcomes*

<u>Types of Student Involvement</u>	<u>Affected Incidental Learning Outcomes</u>
Studying	Student Learning Motivations
Class Participation	Interpersonal Relationships
Course Instructor Interactions	Interpersonal Communication Skills
Out of Class Faculty Interactions & Relationships	Inspiration
Classmate Interactions & Relationships	Personal Aspirations
Peer Interactions & Relationships	Personal Development
College Clubs & Groups	
Campus Events & Activities	
Volunteer Service	

**Peer Organizations.** Being separated from campus and the campus community also separates the student from the opportunity to participate in peer organizations. This may then impede a student's ability to develop their public speaking aptitude, leadership abilities, and interpersonal skills. The development of these skills could result from involvement through

informal social situations which may be the product of participation in campus clubs and groups (Astin, 1993; Berger & Milem, 1999; Foubert & Grainger, 2006). However Rovai, et al., (2004) go on to mention that student involvement may occur through online communities if those communities have been rooted in shared face-to-face experiences that occur prior to or concurrent with the online instruction.

## CHAPTER 3: METHODOLOGY

### **Selection of Subjects**

To examine online and onsite course experiences, in the spring semester of 2011, twelve courses were examined. An online and an onsite section of each of the twelve courses were studied which totaled twenty-four individual class sections. The online and the onsite section of each course studied were taught by the same instructor resulting in twelve courses with twelve total instructors, each instructor teaching a paired onsite and online section. The courses chosen primarily represent liberal studies curriculum which all students are required or have the option of taking.

The Indiana University of Pennsylvania (IUP) has been chosen because being a moderately sized university it offers a wide span of programs to sample from, various student types in terms of minorities and international students, and variable opportunities for out-of-class student involvement through campus organizations. The university is able to meet these necessary criteria as well as offer high technology capacity courses to varieties of student majors where the online and onsite sections of each course are simultaneously taught by the same instructor ("Schedule of Classes Listing," 2010). IUP main campus is situated in western Pennsylvania within the city and county of Indiana. At the time when the study began there were 15,126 students enrolled with 12,827 of them being undergraduates (*Factsheet\_1010\_FRFW[1]*, 2010). Of these, 2,013 are minority students and 649 are international students. The student population is 57% female, 13 percent minority, and 4.3% international. The campus itself has 59 major buildings located on 374 acres adjacent to downtown Indiana. The university has 750 faculty members and 853 administration and staff members with a faculty to student ratio of 18 to 1. IUP offers 133 undergraduate programs primarily offered by six main colleges. There are

more than 220 recognized formal student organizations and clubs as well as 19 varsity sport and additional intramural and club sports ("Schedule of Classes Listing," 2010).

Table 3

*Courses to be Studied*

<u>Course</u>	<u>Course Title</u>
ACCT 201	Accounting Principles I
BLAW 235	Legal Environment of Business
COMM 101	Communications Media in American Society
COMM 374	Documentary Photography
COSC 110	Problem Solving and Struct Prog
ENGL 101	College Writing
HPED 143	Health and Wellness
IFMG 101	Computer Literacy
MATH 100	Intermediate Algebra
MATH 105	College Algebra
MGMT 275	Introduction to Entrepreneurship
PSYC 321	Abnormal Psychology

The courses chosen for this study, which are shown in Table 3, represent students from all undergraduate levels. There are numerous 100 level introductory courses, and intermediate courses that extend upward. These courses were chosen in order to represent as diverse a student population as possible in terms of class standing and diversity of major, field and academic background. Table 4 on page 46 depicts the specifications of each course in terms of placement within the university curriculum. Three of the curriculum areas chosen are required for all students. Three of the courses are required by multiple majors from varying backgrounds and specializations. This sample has been chosen in order to maximize generalizability while incorporating as many courses which meet the criteria of having the same instructor of both online and onsite variants as possible.

Table 4

*Courses Specifications*

<u>Course</u>	<u>LS Requirement</u>	<u>LS Elective</u>	<u>Required for Multiple Majors</u>	<u>Major Specific</u>
ACCT 201			X	
BLAW 235			X	
COMM 101		X		X
COMM 374				X
COSC 110				X
ENGL 101	X			
HPED 143*	X			
IFMG 101***		X		
MATH 100**		X		
MATH 105*		X		
MGMT 275			X	
PSYC 321		X		

*Note.* LS stands for Liberal Studies.

\*These courses are options which meet specific liberal studies requirements.

\*\* MATH 100 meets no liberal studies requirements nor is an approved liberal studies elective.

\*\*\*IFMG 101 meets some programs' liberal study requirements but not all programs require it.

This method of paired courses per instructor has been selected in order to minimize effects of instructor differences and ensure that the online and onsite variant of each course has the same potential of instructor facilitated incidental learning. It should be noted that true randomization for this study is not possible to achieve, as there are a limited number of eligible online and onsite course pairs and it is not possible to randomize students into each course. Subject responses and backgrounds will be examined to determine sample diversity and reveal any anomalies in the sample population.

### **Procedures**

The primary structural format for this study is a multiple post test-only control group experimental design (Campbell & Stanley, 1973). Here the controlled independent variable of learning type is manipulated through the selection of course modality in one of each of the

twelve course pairs select for study. The event to which the groups were exposed to or not exposed to is that of online-based distance education. One section of each course studied was delivered traditionally onsite while the other was delivered online. In this research design, the face-to-face section of each course functions as the control group when studying the effects of distance education on incidental learning outcomes. This method is a direct variant of that discussed by Campbell & Stanley (1973).

The post test for this research method was in the form of an online interactive survey instrument. The instrument was delivered near the end of the semester so that the entire event, which was the semester long course, was able to fully transpire. As per the defined experimental research design, no pretest, mid-test or other direct collection procedure occurred. Campbell & Stanley (1973), state that among the strengths of this research design is that there is no contamination of subjects by exposure to previous measures. Additionally, they mention that this type of design is of particular note in the social sciences within educational environments where a pretest would be inappropriate, inconclusive or awkward. In this particular situation a pretest would fall within those boundaries as the treatment is the course and the incidental learning being studied is that which occurs during the course. Students should not have had any awareness that this study was being undertaken until they received the instrument near the end of the semester so that there could be no risk of contamination.

The variable of learner involvement has been examined retroactively through the survey instrument; this data has also been examined to determine correlations between learner involvement and incidental learning, as well as potential interaction effects between the variables. It should be noted, that since student involvement is described by Astin (1984) as energy and effort exerted by the student in academic and social affairs, that it may serve to skew

the results if this variable is controlled. If improperly controlled, the data may describe the energy and effort required of students instead of exerted by students and thus not be a true measure of how involved the student is but rather how they respond to the treatment. Thus it is beyond the scope of this study to develop and refine a method of controlling for student involvement in an experimental research design.

The instrument was delivered via IUP's Qualtrics service which is an online data appropriation tool. This service anonymously records the data from each student in order to secure confidentiality. The data and the student identity cannot be linked and is not tracked by the system. A link to the instrument which began with an informed consent form was then emailed to each student by their instructor. The students enrolled in online courses received the email at approximately the same time as the students enrolled in onsite courses and were given the last two to three weeks of the semester to complete the instrument. The onsite students were prompted during class time to complete the survey in order to maximize response rates while the online students were sent multiple digital reminders via the primary communication medium of the course. Some students enrolled in online and onsite courses were offered bonus points at their instructor's discretion as an incentive to completing the survey. In order to maintain confidentiality, once the instrument had been completed anonymously the student were given the option to enter their email address as identification which was then returned to their instructor for verification. The email addresses were only entered after the data had been submitted and there is no way to tie the students' identity to their responses.

Once the data collection instrument had been delivered, a brief follow up interview was conducted with the course instructors' in order to gain further clarity concerning their procedures and reflections from the two courses which they taught.

Table 5

*Follow-up Questions for Course Instructors*Questions

#1 As the course progressed did current events adjust or alter your lesson plans or course discussions? (Such as the Tucson shootings, riots in Egypt, injury/death of an IUP student, etc...) If so, did both the online and onsite sections both experience comparable adjustments?

#2 Did you find yourself telling any stories or recounting any experiences (e.g., that help illustrate a course topic, provide an applicable learning experience, or perhaps things that were tangential to the lesson prompted by discussion or student questions, etc...) in either the online or onsite section of the course that the other section might not have heard? Elaborate.

#3 Outside of the course content/objectives, how much of your personal or professional background and experiences did students get? Did this differ for your online/in-class sections?

#4 Did you notice more impromptu discussions developing in either the online or onsite section of the course, be them verbally or through some type of forum postings or other medium of communication? If so, explain.

#5 Did your students collaborate more in either the online or onsite section of the course (e.g., group projects, study groups, peer mentoring, brain storming, chat sessions etc...)? If so, was this by design? Explain.

#6 Where there any aspects of the course that required involvement of the onsite section with campus resources or events (e.g., library workshops, scholarly presentations, out of class meetings, exhibitions etc...)? If so, how was this activity supplemented for the online section?

#7 As the course progressed where there any other unanticipated factors that caused variation in the instruction or discussion between the online and onsite sections? If so, what kinds of factors and how did the instruction or discussion between the sections vary?

Table 5 lists the different follow-up questions that were asked to each of participating course instructors. This was not a survey questionnaire but rather an informal interview. The purpose of these questions was to provide some added context for the data and identify any anomalies that occurred throughout the course of the semester that could skew the results. These questions also provide an additional validity check by obtaining insight into the classrooms and the instructors' perspective of the situated learning environments that occurred in each course studied.

## Power Analysis

The statistical methods necessary to answer the stated research questions include descriptive and inferential measures. Research question one which deals with the percentages of incidental learning outcomes was answered by descriptive methods and has no minimum  $N$  value required. Research question one however provides the data necessary to frame and answer research question two which required the use of a two sample t-test. Research question two which deals with the correlations between incidental learning and learner involvement uses bivariate correlations optimally requiring an  $N$  of 63 in order to measure medium effects  $r = .40$ . See Table 6 for the power analysis overview.

Table 6

### *Power Analysis Overview*

<u>Research Question</u>	<u>Statistical Method</u>	<u>Effects</u>	<u>Power</u>	<u>Alpha</u>	<u>Desired Minimum N</u>
One	Descriptive*	–	–	–	–
Two	Correlations	$r = .40$	0.95	0.05	63
Three	T-test	$r = .30$	0.80	0.05	64/64
Four	Linear Regression	$r = .35$	0.80	0.05	79

\*The descriptive statistics use required no minimum sample and have no effects, power or alpha

Research question three which deals with the differences of incidental learning outcomes in online and onsite courses uses a t-test and requires an  $N$  of 64 for the hybrid online group and an  $N$  of 64 for the onsite group in order to measure medium effects. Research question four which deals with the effect of learner involve on the degree that incidental learning occurs entails the use of linear regression which optimally requires a minimum total  $N$  of 79 in order to measure medium effects. Thus a total sample of at least 128 students where 64 are onsite students and 64 are exclusively online students was required in order to achieve the level of

statistical power noted above. There was expected to be a total response of approximately 500 subjects of which 250 are onsite students and 250 are exclusively online students, however since IUP's exclusively online degree offerings are minimal, the number of subjects taking exclusively online courses during the semester of study was expected to be lower than the total number of students involved in the online courses. Due to the number of exclusively online students being below the optimal N of 64, the same statistical methods examining for major effects at  $r = .5$  have been used at the relevant junctures where analysis of the exclusively online group is required.

### **Instrumentation**

The survey instrument was divided into two major sections, one measuring learner involvement and the other measuring incidental learning outcomes. There was also a preliminary section which collected demographics and data about each subject such as their age, sex, class standing, major, minor, level of online course experience, course modality preference, which type of course they were currently enrolled in through which they received the instrument, and primary reason for taking the course, see Appendix A. These key specifics were gathered in the survey so they could be tied to each specific answer set and be proactively used in the analysis of the data. This section was also designed to comfort the learner by asking simple questions about themselves to involve and familiarize them with the survey before the weightier questions are asked.

The section of the instrument measuring involvement was developed using nine explicit types of student involvement specifically identified by the literature (see Table 2 on page 42). As involvement is defined by the time and effort a student exerts into these nine types the survey was built around asking these two questions for each of the nine types (Astin, 1984; Berger &

Milem, 1999; Braxton, Milem, & Sullivan, 2000; Foubert & Grainger, 2006; Rovai, Wighting, & Lucking, 2004). The instrument first asked how much time, in terms of hours the student puts into each of the nine areas during the average week. Each of the nine areas were phrased into a question, followed with clarification statement and examples all taken from the literature. Students typed in the number of hours into a blank field so that their judgment was not swayed by categories and predetermined examples and so that open-ended ratio data would be obtained for simple and advanced calculations, see Appendix B. Students were then given a likert-style matrix containing each of the nine areas with identical clarification statements from the first section and were asked to provide a one-to-five measurement of how much effort they put into each of the nine sections, see Appendix C. Categories will range from “Little to no effort” to “High effort”. This measure was given on a different page from the previous so that subjects were not able to see their time entries. This was hoped to prevent students from attempting to purposefully correlate their answers to the time entries.

The section of the instrument measuring incidental learning outcomes was given next. This component used criteria and definitions of those criteria obtained exclusively from the literature and organized them into a multi-step quantitative format. This measured the incidental outcomes most experienced by the student in the course, how each outcome was experienced in comparison to the others, and to what degree each individual outcome was experienced. Students were given a list of twenty-two explicit incidental learning outcomes specifically identified by the literature (see Table 1). They were then asked to select the top ten outcomes that they “have learned, grew in, developed in, or acquired” through the course, see Appendix D. A literature-based description and elaboration of each of the outcomes was given on the same page. On the next page subjects were presented with the ten outcomes that they selected and

again the description and elaboration of them. They were then asked to rank the outcomes in order from one-to-ten one being most significant and ten being least to indicate the levels that they “have learned, grew in, developed in, or acquired” the outcomes through the course, see Appendix E. This was accomplished by interactively dragging and dropping them with the mouse. Lastly, and on a separate page, students were provided with a likert-style matrix of all twenty-two outcomes and asked to provide a zero-to-five measurement indicating the magnitude that they had have learned, grew in, developed in, or acquired each separate outcome through this course, see Appendix F. The list of descriptions and elaborations of the outcomes was also given on the same page.

### **Pilot**

The instrument was piloted in order to refine the questions, phrasing, delivery procedures, and inefficiencies as well as to obtain reliability. The pilot occurred during the Spring 2011 semester. It consisted of six COMM 101 and COMM 103 sections which did not conflict with the sections chosen for the primary study. The pilot study was not used to gather data according to the paired online and onsite course methodology of the primary study. This was done in order to not contaminate any of the available course pairings needed for the primary study. The pilot study was conducted in two phases. The first phase was a large scale implementation of the entire instrument to five course sections which was conducted in order to refine the instrument and to determine reliability for the scales. A second phase was conducted only on the incidental learning outcomes scale due to numerous revisions made to the instrument. This second phase involved a pretest posttest application to a single course section in order to determine reliability of the scale and internal consistency for the given applications used.

### **Reliability**

The scale was examined for reliability using tests for internal consistency among the items as well as repeatability using a pre-test and a post-test. The scale used to measure learner involvement in terms of effort was examined for internal consistency both in the pilot test and in the full study and reported using a Chronbach Alpha Coefficient. The scale used to measure incidental learning outcomes was also examined for internal consistency both in the pilot test and in the full study and reported using a Chronbach Alpha Coefficient. This incidental learning outcomes scale was further examined via pilot study using a pretest posttest strategy where the internal consistency of the scale was reported using a Chronbach Alpha Coefficient in a pretest that was compared with the Chronbach Alpha Coefficient taken one week later in a post test using the same subjects with no treatment given. Furthermore, the reliability of the incidental learning outcomes scale was also measured by comparing the mean of each subject's pretest score with the mean of that same subjects posttest score resulting in a Persons Correlation Coefficient which determines the correlation between the pretest group and the posttest group.

### **Pilot Study Sample**

Of a potential 162 subjects, an *N* of 78 respondents completed phase one of the pilot study which was used to examine and refine the entire instrument as well as test the reliability of the scales. Of a potential 33 subjects, an *N* of 11 subjects completed both the pretest and posttest of phase two of the pilot study; this phase was used to further examine the refined incidental learning outcomes scale. Phase one had a response rate of 48% while phase two had a response rate of 33%.

## CHAPTER 4: DATA ANALYSIS

### Distinction Between Learner Types

It was the intent of this study to compare equal numbers of exclusively online learners with onsite only learners. However, due to disproportions of subject types the sample consists primarily of hybrid online learners and onsite learners. There were 199 subjects that reported taking an online course, 35 of which took exclusively online courses during the semester of study. The analysis of the data for hybrid online learners also contains the 35 exclusively online learners. There may be some contamination of the analysis of hybrid online learners caused by the inclusion of exclusively online students; provision for which was discussed in the limitations section.

### Characteristics of the Sample

The following information is presented in order to describe the diversity of the sample and to gauge the effectiveness of the sampling methods. The sample consisted of a total  $N = 497$  subjects that participated in the final study which came from 24 course sections with a total of 12 course instructors. See Table 7 for the class standing of all subjects.

Table 7

#### *Class Standing*

<u>Class Standing</u>	<u>Number</u>	<u>Percentage of Total</u>	<u>Cumulative Percentage</u>
Freshman	103	21%	21%
Sophomore	196	40%	61%
Junior	104	21%	82%
Senior	82	17%	99%
Graduate Student	6	1%	100%

The total potential sample of the 24 course sections was approximately 975 subjects, resulting in a response rate of 50.9%. The response rate was considered good as it was over three times as high as previous studies done involving similar instrumentation with the same population (Konetes & McKeague, 2011) No underage, sensitive, or otherwise ineligible participants were identified in the sample. The sample was diverse in terms of class standing with sophomores being the largest group at 196 subjects. For more information see Table 7 on page 55. The mean age of the subjects was 21.5, 90% of which were 23 years of age or younger, see Table 8 for details.

Table 8

*Subject Age*

<u>Age</u>	<u>Number</u>	<u>Percentage of Total</u>
18	38	8%
19	97	20%
20	155	31%
21	77	16%
22	48	10%
23	23	5%
24-40	25	9%
41-59	7	1%

The subjects were 51% males and 49% female, while the university average was 57% female. Approximately 67 differed majors and 106 major tracts were represented by the sample. The primary reasons subjects took the course in which they received the instruments were as follows: required for major 56%, required for minor 9%, elective or personal interest 31%, and other 4%. Approximately 70% of subjects self reported to have a grade point average between

2.1 and 3.5. See Table 9 for additional details concerning the ranges of subject's grade point average or GPA.

Table 9

*Subject GPA*

<u>GPA</u>	<u>Number</u>	<u>Percentage of Total</u>	<u>Cumulative Percentage</u>
Less than 1.0	3	1%	1%
1.0 - 2.0	17	4%	5%
2.1 - 2.5	97	20%	25%
2.6 - 3.0	155	32%	57%
3.1 - 3.5	136	28%	85%
3.6 or higher	83	17%	100%

### **Characteristics of Course Modality**

Of the 975 potential subjects from the 24 sections, a total of 449 were enrolled in the online sections while 526 were enrolled in the onsite sections. Of the 497 participants, 199 or 40% were from an online course while 292 or 60% were from an onsite course. There were 449 potential online students resulting in a 44% response rate and there were 526 potential onsite students resulting in a response rate of 56%. Of the students from online courses, 164 were hybrid online learners. Additionally, 35 subjects reported taking only online courses during the semester of the study while 244 subjects reported taking only onsite courses during the semester of the study. Approximately 30% of the subjects reported having never taken an online college course before, 55% of subjects reported having taken between 1 and 5 online courses in their college career, and 15% of subjects reported having taken six or more online courses. See Table 10 on page 58 for additional details concerning the online course experience of the subjects.

Concerning course preference, 8% of subjects say they prefer online courses, 40% say they prefer a blend of online and onsite courses, and 52% say they prefer onsite courses.

Table 10

*Online Course Experience*

<u>Online Courses Taken</u>	<u>Number of Subjects</u>	<u>Percentage of Total</u>	<u>Cumulative Percent</u>
0	149	30%	30%
1	88	18%	48%
2	77	16%	64%
3	50	10%	74%
4	34	7%	81%
5	36	5%	86%
6-10	49	10%	96%
11+	17	3%	100%

**Reliability**

Each of the reliability values of the scale were well within acceptable thresholds demonstrating that the items within each scale did have consistency in what was being measured and the scales were consistent over time. See Table 11 for comparative reliability values between the pilot study and final study.

Table 11

*Comparative Reliability*

<u>Scale</u>	<u>Pilot Reliability</u>	<u>Final Reliability</u>
Involvement Effort	0.74	0.91
Incidental Learning Outcomes	0.91/0.97*	0.95

\*Indicates pretest and posttest reliability

In the pilot study the scale used to measure learner involvement in terms of effort was found to have a Chronbach's Alpha Coefficient of 0.743 with an *N* of 78, while in the final study this scale was found to have a Chronbach's Alpha Coefficient of 0.809 with an *N* of 481. These values indicate internal consistency within the scales. In the administered pilot study pretest, the scale used to measure incidental learning outcomes was found to have a Chronbach Alpha Coefficient of 0.914 with an *N* of 11; during the posttest a Chronbach Alpha Coefficient of 0.965 with same subject pool was reported. When comparing the mean of each subject's pretest score on the scale used to measure incidental learning outcomes with the mean of that same subject's posttest score, a Person's Correlation Coefficient of 0.72 at *N* = 11 was found which is significant at the 0.05 level. In the final study the scale used to measure incidental learning outcomes was found to have Chronbach Alpha Coefficient of 0.945 with an *N* of 467. These values indicate consistency overtime and repeatability.

### **Research Question 1**

Research question one deals with the percentages of incidental learning outcomes that occur in onsite and online courses. Half of the outcomes occurred more in online courses than in onsite while fourteen of the twenty-two outcomes had greater prominence in onsite courses. Prominence refers to the relative impact that each outcome had when compared with the other outcomes that the student experienced. The incidental learning outcome with the highest rate of occurrence in both online and onsite courses was time management with an occurrence rate of 91.5% and 81.2% respectively. This outcome also displayed the lowest mean score concerning degree of prominence, when there is an occurrence, with an online course mean of 2.23 and an onsite course mean of 3.17. See Table 12 on page 60 for the complete results concerning Occurrence of Incidental Learning Outcomes in Hybrid Online and Onsite Learners.

Table 12

*Occurrence of Incidental Learning Outcomes in Hybrid Online and Onsite Learners*

<u>Incidental Learning Outcomes</u>	<u>Rate of hybrid Occurrences</u>	<u>Rate of Onsite Occurrences</u>	<u>Hybrid Course Mean</u>	<u>Onsite Course Mean</u>
time management	91.5%	81.2%	2.23	3.17
self-directive behavior	68.8%	42.5%	4.59	5.64
problem solving	72.9%	65.8%	5.12	4.30
self-confidence	57.8%	58.2%	5.81	5.04
self-efficacy	60.8%	48.6%	5.40	5.45
self-discipline	76.4%	61.0%	3.59	4.65
informational awakening	52.3%	46.9%	6.12	5.01
inspirational awakening	21.6%	24.3%	6.51	6.10
self-discovery	43.7%	39.7%	6.01	6.03
clarification of personal ambitions	43.7%	40.8%	6.94	5.76
changes in world view	21.6%	31.8%	6.86	6.13
social networking	46.7%	49.3%	6.30	6.25
developing interpersonal relationships	16.6%	25.7%	7.67	6.99
sense of professional community	35.7%	38.4%	7.72	6.92
professional identity	48.2%	46.2%	6.91	6.56
team-working skills	27.6%	38.0%	5.96	6.27
motivation to learn	77.9%	67.1%	5.61	5.18
cultural awareness	19.6%	30.8%	6.77	6.47
appreciation of cultural diversity	14.1%	20.2%	7.46	7.08
second language acquisition	2.5%	7.5%	5.40	6.14
vocabulary advancement	46.2%	43.8%	6.22	5.38
interpersonal communication skills	33.7%	37.3%	6.54	6.80

*Note.* A lower mean represents a greater degree of prominence when there is an occurrence.

This indicates that when time management was selected as an outcome that occurred in a course, it was selected by subjects as the most prominent of the outcomes they selected. In other words, it was the most frequently chosen primary outcome that occurred when subjects ranked their top ten from one to ten. Outcomes with a mean of one, two, or three represent the top three

outcomes that occurred as a lower mean score indicates outcomes of higher prominence. These items were ranked towards the bottom of the list.

Motivation to learn had the second highest rate of occurrence and was selected by 77.9% of hybrid online learners and 67.1% of onsite learners. However this outcome displayed a lower degree of prominence than time management with means of 5.61 and 5.18 respectively. This indicates that although motivation to learn was the second most frequent outcome to occur, it was not the second most prominent outcome when it did occur. See Table 12 on page 60 for the complete list of online and onsite course occurrences and means.

The outcome with the lowest degree of occurrence was second language acquisition which was selected by subjects in 2.5% of online courses and 7.5% of onsite courses. Though this outcome occurred the least, when it did occur, it was more prominent than several outcomes which occurred more frequently with means of 5.40 for online courses and 6.14 for onsite courses. This signifies that incidental learning outcomes which occur rarely may have greater prominence to the few subjects who experience them than the outcomes which occur with greater frequency. Refer to Table 12 on page 60 for the complete list of online and onsite course occurrences and means.

When comparing the outcomes for the exclusively online group, the results generally mirror the polarity and directionality of the hybrid and onsite results. For example, time management had a higher occurrence among hybrid students and higher prominence among hybrid students. This outcome has a slightly higher occurrence and prominence among the exclusively online group. With numerous outcomes when the hybrid group was lower than the onsite group then the exclusively online group was lower than the hybrid group. One anomaly among the exclusively online group is that the mean prominence is higher than the other groups.

This may be a result from the smaller group size as the mean prominence should mathematically be similar to the other groups. See Table 13 for the rates of occurrence and prominence of the exclusively online students.

Table 13

*Occurrence of Incidental Learning Outcomes in Exclusively Online Learners*

A lower mean represents a greater degree of prominence when there is an occurrence.

<u>Incidental Learning Outcomes</u>	<u>Rate of Online Occurrences</u>	<u>Online Course Mean</u>
time management	93.9%	2.03
self-directive behavior	76.8%	3.76
problem solving	78.8%	3.82
self-confidence	63.6%	3.94
self-efficacy	72.7%	4.36
self-discipline	81.8%	3.12
informational awakening	51.5%	3.00
inspirational awakening	24.2%	1.67
self-discovery	45.5%	2.61
clarification of personal ambitions	42.4%	2.88
changes in world view	9.1%	0.61
social networking	24.2%	1.70
developing interpersonal relationships	13.8%	0.73
sense of professional community	30.3%	2.73
professional identity	48.5%	3.30
team-working skills	30.3%	1.73
motivation to learn	87.9%	5.33
cultural awareness	12.1%	0.55
appreciation of cultural diversity	12.1%	0.64
second language acquisition	0.0%	–
vocabulary advancement	45.5%	3.18
interpersonal communication skills	27.3%	1.67

## Research Question 2

Research question two deals with the correlations between learner involvement and incidental learning in online and onsite applications. This section of the analysis contains correlations primarily analyzing specific qualities between exclusively online learners and onsite students, however there are some general calculations done examining hybrid online learners as well. A strong correlation between involvement time and involvement effort was found for every group and subgroup within the sample except exclusively online students. In examining the correlation between involvement time and involvement effort for the entire sample, a Spearman's Rho of .425 was found which is statistically significant at the 0.01 level. This indicates a positive and high correlation between involvement time and effort in general. See Table 14 for all of the learner involvement correlations.

Table 14

### *Learner Involvement Correlations*

<u>Variable One</u>	<u>Variable Two</u>	<u>Correlation</u>	<u>Significance level</u>
Involvement Time All	Involvement Effort All	0.425	0.01
Involvement Time Hybrid	Involvement Effort Hybrid	0.426	0.01
Involvement Time Onsite	Involvement Effort Onsite	0.372	0.01
Involvement Time Online	Involvement Effort Online	0.262	–

The correlation between involvement time and involvement effort for hybrid online subjects was a Spearman's Rho of .426 which is significant at the 0.01 level as well. The correlation between involvement time and involvement effort for exclusively online subjects was a Spearman's Rho of .262 which is not statistically significant. The correlation between involvement time and involvement effort for onsite subjects was a Spearman's Rho of .372 which is significant at the 0.01 level. These correlations indicate a strong relationship between

learner involvement time and learner involvement effort for every group of subjects tested except exclusively online students.

No differences were found in the degree of time put into the social and academic activities for all subject groups; however onsite students did put a higher degree of effort into their social and academic activities. See Table 15 for the list of learner involvement group means.

Table 15

*Learner Involvement Group Means*

<u>Variable One</u>	<u>Variable Two</u>	<u>Variable One Mean</u>	<u>Variable Two Mean</u>	<u>Significance level</u>
Involvement Time Online	Involvement Time Onsite	40.09	45.05	-
Involvement Effort Online	Involvement Effort Onsite	22.27	24.98	0.05

The mean for exclusively online student involvement in terms of time was 40.09 while the mean for onsite student involvement in terms of time was 45.05. No statistically significant difference was found between these groups. This suggests no significant difference in the amount of time put into the social and academic aspects of college life by onsite students and exclusively online students. The mean for exclusively online student involvement in terms of effort was 22.27 while the mean for onsite involvement in terms of effort was 24.98. A statistically significant difference does exist between these groups at the 0.05 level. This indicates that a significantly higher degree of effort was put into the social and academic aspects of university life by onsite students when compared to exclusively online students.

Strong positive correlations were found between both involvement time and involvement effort in for all student groups. In examining the correlation between incidental learning and involvement time in onsite only subjects, a Spearman's Rho of .177 was found which is

statistically significant at the 0.01 level. See Table 16 for all of the learner involvement and incidental learning correlations. This indicates a positive correlation between time spent in the social and academic aspects of university life and incidental learning. The correlation between incidental learning and involvement effort in onsite subjects was a Spearman's Rho of .402 which is also significant at the 0.01 level. This indicates a strong correlation between the effort spent in the social and academic aspects of university life and incidental learning.

Table 16

*Learner Involvement and Incidental Learning Correlations*

<u>Variable One</u>	<u>Variable Two</u>	<u>Correlation</u>	<u>Significance level</u>
Involvement Time Onsite	Incidental Learning	0.177	0.01
Involvement Effort Onsite	Incidental Learning	0.402	0.01
Involvement Time Online	Incidental Learning	-0.208	-
Involvement Effort Online	Incidental Learning	0.416	0.05

The correlation between incidental learning and involvement time in exclusively online subjects was a Spearman's Rho of -.208 which is not statistically significant. This indicates no significant relationship between incidental learning and involvement time in exclusively online students. The correlation between incidental learning and involvement effort was a Spearman's Rho of .416 which is statistically significant at the 0.05 level. This indicates a strong correlation between the effort spent in the social and academic aspects of university life and incidental learning.

### **Research Question 3**

Research question three examines the differences between the degree that incidental learning occurs on an outcome by outcome basis in hybrid online learners and onsite students. The exclusively onsite students are included in hybrid group. There are significant differences in

the degree of incidental learning that occurs in online and onsite courses in respect to the incidental learning outcomes. When comparing all onsite course subjects  $N = 292$  with hybrid online learners;  $N = 199$ , sixteen incidental learning outcomes were found to have statistically significant differences in degree of occurrence with fourteen being significant at the 0.05 level and two at 0.10 level.

Table 17

*Incidental Learning Outcomes in Online and Onsite Applications*

<u>Incidental Learning Outcomes</u>	<u>Hybrid Online Learner Mean</u>	<u>Onsite Learner Mean</u>	<u>Significance Level</u>
time management	4.93	4.47	0.05
self-directive behavior	4.66	4.14	0.05
problem solving	4.49	4.26	0.10
self-confidence	4.18	4.27	–
self-efficacy	4.25	4.23	–
self-discipline	4.55	4.23	0.05
informational awakening	3.97	4.00	–
inspirational awakening	3.59	3.65	–
self-discovery	3.70	3.87	–
clarification of personal ambitions	3.67	4.02	0.05
changes in world view	3.09	3.59	0.05
social networking	3.21	3.80	0.05
developing interpersonal relationships	3.07	3.68	0.05
sense of professional community	3.24	3.87	0.05
professional identity	3.39	3.87	0.05
team-working skills	3.04	3.64	0.05
motivation to learn	4.10	4.30	–
cultural awareness	3.02	3.59	0.05
appreciation of cultural diversity	2.96	3.55	0.05
second language acquisition	2.08	2.54	0.05
vocabulary advancement	3.58	3.82	0.10
interpersonal communication skills	3.40	3.95	0.05

A dash (–) indicates that no significant difference was found

The outcomes which had a statistically significant degree of occurrence that was higher in online course sections than in onsite course sections were time management, self-directed behavior, problem solving, and self discipline. The outcomes which had a statistically significant degree of occurrence that was higher in onsite sections were clarifications of personal ambitions, changes in world view, social networking, developing interpersonal relationships, sense of professional community, professional identity, team-working skills, cultural awareness, appreciation of cultural diversity, second language acquisitions, vocabulary advancement, and interpersonal communication skills. Refer to Table 17 on page 66 for all of the incidental learning outcomes with their means and degree of significant difference.

#### **Research Question 4**

Research question four examines the effects that learner involvement has on the degree that incidental learning occurs in exclusively online and onsite learning. These results suggest that effort put into the social and academic aspects of the college experience has a greater effect on incidental learning than the time put into the social and academic aspects of the college experience. See Table 18 for linear regression summary concerning involvement and incidental learning.

Table 18

#### *Linear Regression Summary*

<u>Dependant Variable</u>	<u>Independent Variable</u>	<u>Learners</u>	<u>F Value</u>	<u>Significance Level</u>	<u>B Coefficient</u>
Incidental learning	Involvement Effort	Onsite	91.6	0.01	1.96
Incidental learning	Involvement Effort	Online	7.15	0.05	1.56
Incidental learning	Involvement Time	Onsite	3.97	0.05	0.07
Incidental learning	Involvement Time	Online	3.74	N/A	N/A

These results also suggest that learner involvement in terms of both effort and time have greater effects on incidental learning on onsite students than on exclusively online student.

Learner involvement in terms of effort had a statistically significant effect on incidental learning in both exclusively online and onsite subjects. The regression analysis used describes the change in one variable that is produced by a change in another variable and the significance level of each effect. According to the data presented in Table 18 on page 67 a 1.96 unit increase in involvement effort equates to a 1.96 unit increase in incidental learning onsite. Likewise a 1.56 unit increase in involvement effort equates to a 1.56 unit increase in incidental learning online.

Learner involvement in terms of time had a less of an effect on incidental learning in both exclusively online and onsite subjects than involvement time. Onsite involvement time had an effect that is statistically significant at 0.05 level with a B Coefficient of 0.07. This indicates that a 0.07 unit increase in involvement time equates to a 0.07 unit increase in incidental learning onsite. Exclusively online involvement time did not have a statistically significant effect on incidental learning. Refer to Table 18 on page 67 for the side by side summary of linear regression findings.

### **Follow-up Questions for Course Instructors**

Of the twelve instructors that participated in the study, four participated in the follow-up interview. None of these instructors identified any distressing anomalies or disruptions to their courses that could potentially skew the data. The professors indicated that current events caused them to make adjustments to their courses due in part to discussion that developed from questions; see Table 19 on page 69 to view the instructors' responses concerning the effects of current events on courses.

Many of the responses were cursory, however several general themes emerged. Instructors indicated delivering similar content concerning current events and purposeful discussions to both their online and onsite sections. The instructors did note that there were some impromptu discussions in their onsite sections which were not mirrored in the online sections and discussions initiated by onsite student questions were often not replicated in the online sections.

Table 19

*Follow-up Question One for Course Instructors*

As the course progressed did current events adjust or alter your lesson plans or course discussions? (Such as the Tucson shootings, riots in Egypt, injury/death of an IUP student, etc...) If so, did both the online and onsite sections both experience comparable adjustments?

Answers

I did not specifically adjust my lesson plans or plans for discussions—but students asked questions primarily about the governor’s budget that were not asked by my online students.

---

We used a few examples from current events in the live section, there was not much opportunity to get beyond the curriculum in the online course.

---

The lesson plans were not altered as the course went on. The online course is very structured and is based on teaching techniques related to productivity software and computer literacy. The content is not tightly coupled to current events. In the in-class section of the course current events of interest in the computing industry were mentioned from time to time to reinforce the importance of computers in daily life.

---

Yes – I feel that external events often dictate the ways course topics are handled especially in an ‘intro...’ course... the same was true for both sections, but more so for the onsite one

---

One instructor mentioned that onsite students received more “war stories” than their online students. This corroborates with other statements detailing how more of the instructors’ professional experiences were brought up in onsite courses. See Table 20 on page 20 in order to

view the instructors' responses to discussing prior experiences which were recounted in the courses studied.

A contributing factor to learner involvement is out-of-class collaborative activities.

However there were no substantial group or out-of-class collaborative activities mentioned that were assigned to the onsite students.

Table 20

*Follow-up Question Two for Course Instructors*

Did you find yourself telling any stories or recounting any experiences (e.g., that help illustrate a course topic, provide an applicable learning experience, or perhaps things that were tangential to the lesson prompted by discussion or student questions, etc...) in either the online or onsite section of the course that the other section might not have heard? Elaborate.

Answers

Well I always use personal experience about small businesses I have worked with during my in class sections but somehow they never get added to my online class discussions.

---

I used some anecdotes in many cases, certainly more with the live group. It is much easier to establish a rapport with students in person; asynchronous text interactions are severely limited for content, and an inefficient use of time.

---

Yes, I am sure that this occurred more in the onsite course than the online one. I do not think that such happenstance, tangential stories or experiences are conveyed as authentically in an online environment as they are in a face-to-face one

---

There were some stories in the in-class section geared towards maintaining the interest of students interspersed with the lecture. This was done to break the monotony when the content got too heavy or boring and the students started to lose interest/focus.

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Also, none of the instructors noted any activities that required campus involvement from their onsite students. All of the instructors noticed a lack of impromptu student discussions in

their online courses. See Table 21 to view the instructors' responses concerning online and onsite discussions.

Table 21

*Follow-up Question Four for Course Instructors*

Did you notice more impromptu discussions developing in either the online or onsite section of the course, be them verbally or through some type of forum postings or other medium of communication? If so, explain.

Answers

No none that I did not start for the online. In class though we do a series of cases and two of them led to discussions of where students saw technology 10 years down the road. I didn't start it but I did encourage it once the question was asked.

---

The online course was completely devoid of impromptu discussions.

---

It did not happen much in the in-class section. Few people would comment on some topics I would mention on rare occasions. The online course did not incorporate discussions of any sort. In previous occasions some discussions did take place but it was related to problems students were having on assignments. For the semester in which data was collected I was using D2L which is new to most students and I would assume that most students spent their time getting to know the basic functionality for the Learning Management System. D2L was also used for the in-class course lectures and quizzes.

---

Onsite – I got the feeling that the online folks either talked / discussed just enough and with the right amount of depth but w/o any cross-pollination. IOW the online students just did the work, they were not motivated to go beyond and look at each others' post even though I encouraged them (often with bonus points) to do so. Couldn't understand that.

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## CHAPTER 5: DISCUSSION

### Introduction

Through the course of this study numerous projected outcomes were substantiated or augmented, although there were some unexpected findings in terms of the impact of incidental learning. It was anticipated that there would be a clear difference in incidental learning between exclusively online and onsite students. However, in actuality there appeared to be a gradual shift in the experienced incidental learning where exclusively online students experienced the least, hybrid online students experienced more and onsite students experienced the most as noticed in table 12 on page 60 and table 13 on page 62. The results of this study yielded data that reinforced various stated hypothesis while others were not substantiated. Hypothesis two and four which deal with the variables of incidental learning, learning type, and involvement effort were substantiated by the results while the aspects dealing with involvement time proved somewhat inconclusive. Hypothesis one and three which deal with incidental learning and modality was supported by the results and was found to be in accordance with the expected outcomes detailed by the literature; namely the socially generated outcomes occurred more in onsite courses. Onsite courses produced the most statistically significant occurrences of incidental learning outcomes. The results of involvement effort substantiated each hypothesis and were in accordance with the expected outcomes detailed by the literature. However the results of involvement time produced weaker or insignificant results that were contrary to expectations produced by the literature. Learner involvement in terms of effort was the greatest predictor of incidental learning in all course types, especially in onsite courses. It was expected for learner involvement in terms of effort to be a greater predictor of incidental learning than time but it was not expected for the differences to be as significant as they were found to be.

## **Sampling**

### **Sampling Procedures**

The study sample closely met the expectations for response rate and sample diversity. The expected number of subjects was 500 with an expected response rate of approximately 50%. The actual subject count was 497 subjects with a response rate of 50.9%. The sampling methodology of using the course instructors to disseminate the instrument to the students was more than five times as effective as direct dissemination of instrumentation with similar populations. One study, conducted by Konetes & McKeague (2011) sampled 500 students at the same university using a direct email to subject methodology delivering a shorter instrument with numerous reminders and obtained a 13.4% response rate.

### **Sample Characteristics**

As expected, the sample returned a broad range of subjects in terms of major, class standing, gender, and course modality. The larger proportion of sophomores is not unanticipated since subjects with this class standing could be registered in entry level, intermediate, and advanced courses while freshmen and seniors are more limited to entry level or advanced courses respectively. The low occurrence of exclusively online students was not unexpected due to nature of IUP's limited online degree offerings. The analysis procedures and the statistical power of the calculations were chosen and adjusted in order to account for this potential outcome before the data collection had occurred. The larger general proportion of onsite to hybrid online and exclusively online students is due partially to there being more subjects enrolled in the onsite sections, thus there were more potential onsite and hybrid online subjects than exclusively online students.

### **Onsite to Online Proportions**

There may be additional reasons for this varying proportion or participation between exclusively online to onsite subjects. One proposed explanation which draws from the instructor feedback concerning general course dynamics is that in class appeals to participation may have generated discussion around the topic which created a deeper impression on subjects to participate. This draws from comments made by the course instructors which noted that there were numerous impromptu in-class discussions, especially ones initiated by students which were not replicated in the online sections. There may be further explanations but their pursuit is beyond the scope of this study. Such explanations may include irregular link placement in online course management systems and increased sensitivity to onsite appeals due to instructor-to-student relationships resulting from previous courses or interactions.

### **Instructor Sampling**

One sampling element which did not proceed as expected is that of instructor participation in the feedback interview which followed the collection of the student data. There were only four of the potential twelve instructors which participated in this closing exercise. This may be due to the nature of the general methodology which requires data collection to occur at the end of the semester. The instructor data was not obtained until the semester had ended and all of the student data had been obtained. At this point most of the instructors became unresponsive to inquiries and some appeared to have left campus for the semester. For future applications of this methodology it is suggested that an appointment be made to conduct a face-to-face interview with each of the course instructors during the last two weeks of the semester while the student data collection is concurrently occurring. Potential interaction effects in such a

case would have to be carefully weighed, but collection of the instructor data should occur before the semester ends and instructors conclude their work for the academic year.

## **General Discussion**

### **Occurrence of Socially Generated Outcomes**

Of the eight socially generated incidental learning outcomes, six of them occurred with onsite learners more than they occurred with hybrid online learners as Hypothesis 1 theorized. Also in accordance with Hypothesis 1, seven of the eight outcomes had greater prominence among onsite learners than they did among hybrid online learners. However, each outcome which had greater online occurrence had greater onsite prominence and the outcome which had greater hybrid online prominence had greater onsite occurrence. See Table 12 on page 60 for the complete list of incidental learning outcomes and their occurrence. None of the outcomes had both greater occurrence and prominence among hybrid online students while five of the eight did have both greater occurrence and prominence among onsite students. Hypothesis 1 seems to then be well substantiated but cannot be considered conclusive.

### **Situated Learning Occurrence**

The three outcomes which exhibit these anomalies are professional identity, motivation to learn, and team working skills. The higher hybrid online occurrence of these socially generated outcomes suggests that within the technologically mediated instruction, situation cognition was achieved via meaningful social interactions that enabled group identity construction to transpire as discussed by Beldarrain (2006). Additionally, the hybrid online and onsite rates of occurrence and prominence between other incidental learning outcomes were similar even though onsite outcomes occurred slightly more. This further displays the capacity for situated learning to

occur via technologically mediated learning environments as discussed by (Handley, et al., 2006), even though these effects took place more frequently in onsite courses.

### **Involvement Time and Course Modality**

Hypothesis 2 states that there would be a higher occurrence of learner involvement in terms of time and effort in onsite courses when compared to exclusively online courses, however there was no statistically significant correlation found between learner involvement time and course modality. This finding seems to diverge from concepts discussed by Braxton, et al., (2000) where student involvement occurs in areas related to the physical institution. The finding also seems to differ from Foubert & Grainger (2006) who discuss the various social and academic functions and happenings that involvement occurs through. It is unexpected that exclusively online student's would not differ from exclusively onsite students in terms of time spent in the social and academic aspects of college life. A potential explanation for this occurrence is that social communications and the consumption of course content may take more time in online environments than in onsite environments. This is supported by Jestice & Kahai (2010) who state that certain online learning application may cause students be overwhelmed with course content and by Beldarrain (2006) who states that technology may alter the dynamics of how social interactions occur.

### **Involvement Effort and Course Modality**

Although Hypothesis 2 was unsubstantiated in terms of involvement time, there was a statistically significant difference found in terms of involvement effort thus partially affirming the hypothesis. This finding indicates that a significantly higher degree of effort was put into the social and academic aspects of university life by onsite students when compared to exclusively

online students. Foubert & Grainger (2006) substantiate this finding and discuss various activities ranging from social clubs to student employment which cause students to increase their level of involvement through channels that require high levels of effort. This concept is also supported by Rovai, et al., (2004) who states that distance learning may often lead to student non-involvement where shallow amounts of community form, albeit slowly and through restricted channels. This concept may also partially account for the differences in involvement time as it points to students enrolled in online courses expending a limited amount of effort over a long period of time in order to achieve a low level of involvement. Thus it seems that student enrolled in online courses expend comparable amounts of time on the social and academic aspects of college life yet they do not engage in these aspects with the same level of effort that onsite students do.

### **Involvement and Incidental Learning**

Hypothesis 2.1 states that higher levels of involvement in terms of time and effort will correlate to higher levels of incidental learning. This hypothesis is fully substantiated for onsite subjects; although it is only partially substantiated for exclusively online subjects, see Table 16 on page 65. For exclusively onsite subjects there are statistically significant correlations at the 0.01 level between incidental learning and learner involvement in terms of both time and effort. However for exclusively online students there is a significant correlation at the 0.05 level between incidental learning and involvement effort but there is no significant correlation between incidental learning and involvement time. These findings indicated that learner involvement is positively correlated with incidental learning in all subjects except in terms of time among exclusively online subjects. This finding further reinforces the statements made by Rovai, et al., (2004) where students enrolled in online courses tend to spend more time

accomplishing less socially than onsite students. Beldarrain, (2006) also points out that inefficient technology choices may serve to hinder numerous functions of online courses. Thus it may be that a higher investment of time among students enrolled in online courses enables them to overcome the technical difficulties faced in order to learn. Yet without a higher investment of effort they may not reach further to sufficiently engage instructors and students in order to experience the incidental learning associated with these interactions.

### **Significant Onsite Incidental Learning Outcomes**

Hypothesis 3 states that incidental learning will occur significantly more in onsite courses than in online courses in regards to the incidental learning outcomes. Though this hypothesis cannot be definitively confirmed, twelve incidental learning outcomes were found to occur in significantly greater degree in onsite courses while four outcomes were found to occur in significantly greater degree in online courses among hybrid online learners. All but one of the socially generated outcomes were experienced to a greater degree among onsite learners, all of the observational outcomes were experienced more among onsite students and two functional outcomes were experienced more among onsite learners, refer to Table 17 on page 66 for the comprehensive list. The only outcomes which did occur to a greater degree in online courses among hybrid online learners were time management, self-directive behavior, problem solving, and self-discipline, all of which are essentially independent of situated learning. The findings concerning the higher degree of socially generated outcomes being experienced to a greater degree in onsite courses is supported by (Brown, et al., 1989) who states that classroom experiences create the social environment necessary for situated learning to take place. Lankard (1995) elaborates by stating that these types of interactions facilitate both situated and incidental learning. Also, the informal face-to-face social interactions between students and instructors are

among the most significant factors in increasing student learning resulting from social measures (Astin, 1993; Vermeulen & Schmidt, 2008).

### **Significant Online Incidental Learning Outcomes**

It is not surprising that the four incidental learning outcomes which occurred more in online courses among hybrid online learners were all functional outcomes. As described by McFerrin (1999), these are areas in which students develop in order to be able to meet the organizational and intellectual demands of course work. Online courses may exhibit less instructor presence and assistive social structure than onsite courses (Clarke & Dede, 2007; Jestice & Kahai, 2010), which in turn places greater responsibility on the student as an individual to meet the organizational and intellectual demands of the course. Thus there appears to be a greater need to develop time management, self directed behavior, self discipline, and problem solving in online courses. A question for further study that arises in this area as the results are placed in the context of the literature, and this is whether or not these incidental learning outcomes are developed through the coursework and content, or if they are developed as a response to the needs of online learning in order to adapt to the new medium.

### **Effects of Modality and Involvement**

The effects of learner involvement in terms of time and effort on incidental learning are similar in several regards to the previous results concerning involvement time and effort. As in the previous correlations and mean analyses, involvement effort is found to have greater effects than involvement time. In onsite courses, involvement effort was shown to produce the greatest statistically significant effect on incidental learning. In online courses among exclusively online learners, involvement effort was shown to produce a significant but slightly smaller effect on

incidental learning. Involvement time however was shown to produce a significant but small effect on incidental learning in onsite courses and was not shown to produce any significant effect on incidental learning in online courses among exclusively online learners. These results do not support Hypothesis 4 as there are substantially greater effects on incidental learning from involvement effort than from time. Rovai, et al., (2004) conceptualizes involvement through the pursuit of relationships, academic experiences, and institutional activities through which strong student involvement facilitates learning and student development. Additionally, the most valuable contributions to learning outcomes result from social interactions and activity between students, peers, and faculty centered on intellectually significant topics (Astin, 1993; Vermeulen & Schmidt, 2008). These interactions are largely effort based. Thus it appears from both the data and the literature that the effort used to pursue and engage in the aspects of the university experience which correlate with incidental learning is of greater effectiveness than the amount of time spent pursuing and engaging. However additional time spent by online students may not be time spent on task or engaging with course content. It is possible that the data reflects additional time spent integrating with the technology and structural framework of online courses.

### **Trends in Onsite, Online, and Hybrid Learning**

Throughout the calculations involving onsite, exclusively online, and hybrid learning there is an emerging theme of face-to-face interactions producing higher degrees of incidental learning and learner involvement. Speaking in cumulative terms, subjects with a greater onsite presence experienced greater incidental learning and learner involvement than subjects with less and no onsite presence. Incidental learning and involvement linked with degree of onsite interaction. Exclusively onsite students experienced the greatest degrees, hybrid online students experienced less, and exclusively online students experienced the least. This finding seems to

correlate with statements made by McFerrin (1999) in that the learning situation is of primary importance and incidental learning will be shaped by this learning environment. Considering this, it may be expected for a more involved learning situation to produce greater incidental learning. Also, additional onsite presence may result in greater familiarity of context. A more familiar learning environment creates a more favorable instance for incidental learning to occur (Spencer, 2008; Williams & Sher, 2008). Rovai, et al., (2004) goes on to state that removing a student from campus hinders their involvement and incidental learning opportunities. There may also be an opposite cumulative effect wherein a concentrated regimen of onsite courses compounds incidental learning and involvement opportunities both inside and outside of the classroom.

### **Overall Implications**

The results of this study indicate that different types and different levels of incidental learning occur in onsite courses when compared to online courses. This finding serves to challenge the paradigm of equivalency between online and onsite learning, albeit in an indirect manner. The legitimacy of objective based outcomes research which compares the effectiveness of online and onsite learning through measurable and purposeful learning outcomes (Malan, 2000) is not challenged, rather this conceptual framework is expanded. This study functions to quantify the dimension of incidental learning and bring it into the debate of online and onsite educational effectiveness. This research implies that there are elements to onsite and online learning which have not been considered and may have been overlooked. There appears to be statistically significant benefits to onsite courses in the form of incidental learning which exist beyond learning objectives and their assessments. This is evidenced as three times as many incidental learning outcomes occur significantly more in onsite courses. However, there are also

unrealized benefits to online courses as four of the incidental learning outcomes do occur significantly more therein. This research implies that there may not be overall equivalency in online and onsite learning; that each modality has distinct advantages and disadvantages; and that onsite learning has greater benefit than previous research has been able to identify. Perhaps the greatest implication which can be made from this study is the need for further research in this area.

## **Future Research**

### **Synchronous Formats in Future Research**

Future research in this area should take care to control for synchronous and asynchronous online course delivery and interaction formats. It may be possible that online courses which occur in a synchronous format or include synchronous communication or collaborative periods may produce results that differ from online courses which occur in purely asynchronous formats. The study of incidental learning and learner involvement may lend itself to replace the variable learning type with the variable of synchronous and asynchronous learning format. Thus the methodology may be replicable with different formats of only online courses or may compare synchronous online and onsite courses.

### **Recommendations for Future Research**

While the study logically and linearly progressed as desired, there were several elements which could be improved for future research endeavors. The sampling procedures were effective in achieving the desired outcomes; however the obstacle of obtaining the desired number of exclusively online subjects was difficult to overcome. This dynamic could be better accounted for by performing the study at a university offering more online renditions of traditional onsite

programs. However, the solution is not so simple, as exclusively online programs do not tend to have concurrent onsite counterparts offered by the same instructor. Thus obtaining a larger sample, or selecting a university offering similar blended programs with a larger number of exclusively remote students may increase the desired subject characteristics. Conducting the study over multiple semesters may also be a viable way to boost the online subject count. Conceptual and mechanical improvements could be made to the instrument in the areas of selecting the top ten incidental learning outcomes and ranking them. A more conceptually sound incidental learning outcome selection method may produce more relevant data and higher order data that would be conducive to advanced statistical analysis. Additionally, instructor follow-ups should occur during the semester in order to avoid loss of contact as the semester ends. It may be conceptually feasible to begin and end data collection a few days earlier in the semester to facilitate the necessary time to conduct instructor follow-ups without risk of instructor-to-subject contamination. The study may also be conducted adding graduate students with the purpose of examining if their additional work experience impacts their incidental learning.

**Changes for Study Reproduction.** Drawing from the lessons learned through the research process, several core changes would be suggested if this study were to be replicated. Future applications of this methodology should make provisions both in concept and instrumentations to analyze learner type in terms of onsite, exclusively online, and hybrid online learners as three separate groups. This dynamic was not anticipated in this study and thus could only be partially examined. The focus would shift from the paired course and instructor model, to a paradigm examining exclusively online, hybrid online, and onsite students in all capacities. If the same university population was used, all online courses which had an onsite counterpart would be examined regardless of instructor pairings. This may serve to increase the number of

exclusively online subjects while maintain sample sizes of hybrid online learners and onsite students. Each of the three student groups would be separated and analyzed. It may also be advisable for the data collection to span multiple semesters, including the summer semester where a higher number of exclusively online students may be obtained due to higher portions of students living off campus. Approaching the conceptual framework and methodology with the realization that three distinct groups exist would enable a more efficient instrument and analysis to occur. However, part of the value of this exploratory study has been the discovery process. Future iterations of this conceptual approach or methodology may benefit from the lessons learned through this process.

### **Questions for Future Research**

Is it possible to manipulate the types and degree of incidental learning that occur in either online or onsite courses by initiating purposeful development of situated learning environments and opportunities? Results indicate a relationship between socially generated outcomes and situated learning environments raise the idea that purposeful implementation of situated learning environments may positively impact incidental learning.

What is the perceived or experienced value of the incidental learning outcomes which most prominently occur when compared with purposeful course outcomes? It may add some depth to the results of this study if some detail was given to the importance or value of the incidental learning outcomes studied. If the same definitions from the literature were used to explore these concepts then the findings from this study could become more beneficial and less abstract.

What are the long term effects of experienced incidental learning outcomes when compared with purposeful cognitive curriculum outcomes? For example, what impact would a strong learning experience in professional identity have several years after a course when compared with memorized course content? This question arises from numerous sources within the literature that discuss the possibility of incidental learning being more important than purposeful learning, however no quantifiable measures examining these ideas were found.

Are there aspects of physical immediacy which effect incidental learning beyond the scope of situated learning and learner involvement? There may be factors reaching beyond those examined in this study that provide insight into why onsite students tend to experience higher degrees of incidental learning. Perhaps physical presence and subsequently created emotional connections influence the situated learning environment.

### **Conclusions**

As assessment measures for online and onsite courses continue to develop, the area of incidental learning should be explored and developed as well. Though this specific area has only been initially investigated by this study, the results indicate that incidental learning is indeed happening and is behaving differently in online and onsite applications. As seen through the findings, increasing a subject's onsite learning experiences may serve to increase their overall incidental learning. This study serves to challenge part of the accepted body of knowledge concerning the equality of online and onsite learning experiences. This challenge however does not occur by discounting prior research but rather by adding a quantifiable learning dimension to the discussion.

Future assessment measures should recognize and include this learning dimension for the purpose of better understanding and maximizing incidental learning. It may be that online and onsite learning offer different incidental learning advantages which can be manipulated to provide a more rounded educational experience. Potentially online or onsite learning situations may be modified to provide greater incidental learning opportunities. Perhaps the strongest conclusion which can be drawn from this study is the need for additional research.

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Please select your class standing

- Freshman
- Sophomore
- Junior
- Senior
- Graduate Student

What is your age?

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Gender?

- Male
- Female

**What is your Major?**

For example, Comm Media, Math Education, Chemistry, etc.

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What is your Minor (If applicable)?

For example, Comm Media, Math Education, Chemistry, etc.

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What is your primary reason for taking this course?

- Required for Major
- Elective for Major
- Required for Minor
- Elective for Minor
- General Elective
- Personal Interest
- Other (Please explain)

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The professor who sent you this survey is your professor which type of course? Online or On-Campus?

- The professor who sent me this survey is my professor for an **Online** course
- The professor who sent me this survey is my professor for an **On-campus** course

**Which choice best describes your approximate college GPA (Results will be kept both anonymous and confidential)**

- Less than 1.0

- 1.0 - 2.0
- 2.1 - 2.5
- 2.6 - 3.0
- 3.1 - 3.5
- 3.6 or higher

How many online courses are you taking this semester? (Number please)

How many on-campus courses are you taking this semester? (Number please)

Which choice best describes your overall course preference?

- I prefer online courses
- I prefer a blend of online and on campus courses
- I prefer on campus courses

Approximately how many total online courses have you taken in you college career thus far? (Number please)

>>

**On average, how much time per week do you spend studying in general?**

(Preparing for class or exams, working on projects reading, etc.)

Please keep the following time conversions in mind:

15 minutes equals 0.25 hours

20 minutes equals 0.33 hours

30 minutes equals 0.5 hours

An hour and a half equals 1.5 hours and so on.

Hours \_\_\_\_\_

**On average, how much time per week do you spend studying for this course?**

(Preparing for class or exams, working on projects reading, etc.)

Hours \_\_\_\_\_

**On average, how much time per week do you actively participating in all of your courses?**

(Answering questions, asking questions, commenting in discussions, etc.)

Hours \_\_\_\_\_

**On average, how much time per week do you actively participating in this course?**

(Answering questions, asking questions, commenting in discussions, etc.)

Hours \_\_\_\_\_

**On average, how much time per week do you spend interacting with your instructor for this course?**

(Before or after class, during office hours, in the hallways, chance encounters, emails, phone calls, etc.)

Hours \_\_\_\_\_

**On average, how much time per week do you spend talking and interacting with faculty outside of class time? Think in terms of all of the faculty members you interact with, including your instructor for this course.**

(Before or after class, during office hours, in the hallways, chance encounters, emails, phone calls etc.)

Hours \_\_\_\_\_

**On average, how much total time per week do you spend talking or interacting with everyone you have class with?**

(During class, out of class, socially, via email, phone or text etc.)

Hours \_\_\_\_\_

**On average, how much time per week do you spend talking or interacting with your classmates from this course?**

(During class, out of class, socially, via email, phone or text etc.)

Hours \_\_\_\_\_

**On average, how much time per week do you spend talking and interacting with other college students that you do not have class with?**

(In all settings and using any forms of communication face-to-face, phone, email, etc.)

Hours

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On average, how much time per week do you spend participating in college clubs or groups?  
(Sports, fraternal organizations, social groups, activity clubs, intellectual groups, etc.)

Hours

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On average, how much time per week do you spend participating in campus activities or events?  
(Sporting events, social events, concerts, guest lectures, awareness activities, ceremonies and traditional happenings, etc.)

Hours

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On average, how much time per week do you spend participating in volunteer service activities?  
(Environmental, social awareness, charity, political, etc.)

Hours

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Please rate how much effort you put into each of following activities during the average week.

	Little To No Effort	Below Average Effort	Average Effort	Above Average Effort	High Effort
<b>Studying</b> (Preparing for class or exams, working on projects reading, etc.)	<input type="radio"/>				
<b>Participating in Class</b> (Answering questions, asking questions, commenting in discussions, etc.)	<input type="radio"/>				
<b>Interacting with your Instructor</b> (Before or after class, during office hours, in the hallways, chance encounters, emails, phone calls, etc.)	<input type="radio"/>				
<b>Interacting with Faculty in General</b> (Before or after class, during office hours, in the hallways, chance encounters, emails, phone calls etc.)	<input type="radio"/>				
<b>Talking and Interacting with Classmates</b> (During class, out of class, socially, via email, phone or text etc.)	<input type="radio"/>				
<b>Talking and Interacting with College Students that you do not have class with</b> (In all settings and using any forms of communication face-to-face, phone, email, etc.)	<input type="radio"/>				
<b>Participating in College Clubs or Groups</b> (Sports, fraternal organizations, social groups, activity clubs, intellectual groups, etc.)	<input type="radio"/>				
<b>Participating in Campus Activities or Events</b> (Sporting events, social events, concerts, guest lectures, awareness activities, ceremonies and traditional happenings, etc.)	<input type="radio"/>				
<b>Participating in Volunteer Service Activities</b> (Environmental, social awareness, charity, political, etc.)	<input type="radio"/>				



Of the list provided please select the top 10 items(in any order) that you have learned, grew in, developed in, or acquired through this course. This is a drag and drop exercise. Note: A list of definitions and explanations for each item appears below this question.

**Items**

- Time Management
- Self-Directive Behavior
- Self Confidence
- Self Efficacy
- Problem Solving
- Self-Discipline
- Informational Awakening
- Inspirational Awakening
- Self-Discovery
- Clarification of Personal Ambitions
- Changes in World View
- Social Networking
- Development of Interpersonal Relationships
- Professional Identity
- Team-Working Skills
- Motivation to Learn
- Cultural Awareness
- Appreciation of Cultural Diversity
- Grown in a Second Language
- Vocabulary Advancement
- Interpersonal Communication Skills
- Sense of Professional Community

Click to write Group 1

Description and Elaboration of Choices:

**Time management:** The ability to use your time and resources effectively to complete a task.

**Self-directive behavior:** The ability to independently manage your coursework and accomplish your objectives.

**Problem solving:** The ability to develop creative solutions to course problems and then transfer that ability to real world applications.

**Self-confidence:** Being assured of your own judgment or ability to accomplish a task.

**Self-efficacy:** The feelings of self worth and value that result from your ability to produce a desired result.

**Self-discipline:** The ability to control yourself in order to do work and accomplish goals when faced with challenges.

**Informational awakening:** Coming to a greater understanding and awareness of new levels or ways of thinking concerning a topic, course or field.

**Inspirational awakening:** Coming to greater appreciation and fervor concerning a topic, course of field.

**Self-discovery:** Examining and developing in your own beliefs, ideals and aspirations.

**Clarification of personal ambitions:** Coming to a greater realization and validation of your place in the field or realizing that your place is not within the field.

**Changes in world view:** Your perspective of the world in terms of size, diversity, societal order and your role within it changes.

**Social networking:** The gaining of professional or social contacts that have value beyond the course.

**Developing interpersonal relationships:** Developing deep and meaningful personal connections and friendships.

**Sense of professional community:** You feel part of a specialized community where you can share or receive ideas and concepts concerning your field.

**Professional identity:** Developing a sense as to your role and place as a skilled member of your discipline.

**Team-working skills:** The ability to work well together with others to accomplish common goals.

**Motivation to learn:** Desire to learn more about the content of the course or content outside of the scope of the course or field.

**Cultural awareness:** Becoming more alert or responsive to different cultures.

**Appreciation of cultural diversity:** Valuing the differences and unique elements of other cultures and cultural practices.

**Second language acquisition:** You acquire or further develop skills in a second language, i.e. Spanish, French, English, etc.

**Vocabulary advancement:** You learn and are able to use new words and terms in your primary language, or are able to use known words in new ways.

**Interpersonal communication skills:** The ability to more effectively share information, thoughts or feelings verbally and face-to-face.



Please rank the following items in the order that you have most learned, grown in, developed in or acquired through this course. 1 being the most learned, grew in, developed in or acquired and 10 being the least. This is a drag and drop exercise. Note: A list of definitions and explanations for each item appears below this question.

Problem Solving

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Time Management

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Self-Discipline

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Inspirational Awakening

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Self Confidence

---

Clarification of Personal Ambitions

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Social Networking

---

Informational Awakening

---

Cultural Awareness

---

Development of Interpersonal Relationships

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Description and Elaboration of Choices:

**Time management:** The ability to use your time and resources effectively to complete a task.

**Self-directive behavior:** The ability to independently manage your coursework and accomplish your objectives.

**Problem solving:** The ability to develop creative solutions to course problems and then transfer that ability to real world applications.

**Self-confidence:** Being assured of your own judgment or ability to accomplish a task.

**Self-efficacy:** The feelings of self worth and value that result from your ability to produce a desired result.

**Self-discipline:** The ability to control yourself in order to do work and accomplish goals when faced with challenges.

**Informational awakening:** Coming to a greater understanding and awareness of new levels or ways of thinking concerning a topic, course or field.

**Inspirational awakening:** Coming to greater appreciation and fervor concerning a topic, course or field.

**Self-discovery:** Examining and developing in your own beliefs, ideals and aspirations.

**Clarification of personal ambitions:** Coming to a greater realization and validation of your place in the field or realizing that your place is not within the field.

**Changes in world view:** Your perspective of the world in terms of size, diversity, societal order and your role within it changes.

**Social networking:** The gaining of professional or social contacts that have value beyond the course.

**Developing interpersonal relationships:** Developing deep and meaningful personal connections and friendships.

**Sense of professional community:** You feel part of a specialized community where you can share or receive ideas and concepts concerning your field.

**Professional identity:** Developing a sense as to your role and place as a skilled member of your discipline.

**Team-working skills:** The ability to work well together with others to accomplish common goals.

**Motivation to learn:** Desire to learn more about the content of the course or content outside of the scope of the course or field.

**Cultural awareness:** Becoming more alert or responsive to different cultures.

**Appreciation of cultural diversity:** Valuing the differences and unique elements of other cultures and cultural practices.

**Second language acquisition:** You acquire or further develop skills in a second language, i.e. Spanish, French, English, etc.

**Vocabulary advancement:** You learn and are able to use new words and terms in your primary language, or are able to use known words in new ways.

**Interpersonal communication skills:** The ability to more effectively share information, thoughts or feelings verbally and face-to-face.



Please rate the following items based on how greatly you learned, grew in, developed in or acquired through this course. 0 being the least, and 5 being the greatest. Note: A list of definitions and explanations for each item appears below this question.

	0	1	2	3	4	5
Time management	<input type="radio"/>					
Self-directive behavior	<input type="radio"/>					
Problem solving	<input type="radio"/>					
Self-confidence	<input type="radio"/>					
Self-efficacy	<input type="radio"/>					
Self- discipline	<input type="radio"/>					
Informational awakening	<input type="radio"/>					
Inspirational awakening	<input type="radio"/>					
Self-discovery	<input type="radio"/>					
Clarification of personal ambitions	<input type="radio"/>					
Changes in world view	<input type="radio"/>					
Social networking	<input type="radio"/>					
Developing interpersonal relationships	<input type="radio"/>					
Sense of professional community	<input type="radio"/>					
Professional identity	<input type="radio"/>					
Team-working skills	<input type="radio"/>					
Motivation to learn	<input type="radio"/>					
Cultural awareness	<input type="radio"/>					
Appreciation of cultural diversity	<input type="radio"/>					
Second language acquisition	<input type="radio"/>					
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Interpersonal communication skills	<input type="radio"/>					

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