April 2017

Learner-directed vs. Instructor-provided Curriculum Among Undergraduate Students

Christopher D. Martinez
University of South Florida, cdmartin@mail.usf.edu

Learner-directed vs. Instructor-provided Curriculum Among Undergraduate Students

by

Christopher D. Martinez

A dissertation submitted in partial fulfillment
of the requirements of the degree of
Doctor of Philosophy
Department of Leadership, Counseling, Adult, Career and Higher Education
with a concentration in Distance Learning
College of Education
University of South Florida

Major Professor: Waynne James, Ed.D.
William H. Young, III, Ed.D.
Yi-Hsin Chen, Ph.D.
Glenn G. Smith, Ph.D.

Date of Approval:
March 31, 2017

Keywords: Learning Object, self-directed learning, distance learning, gender, major, age

Dedication

This dissertation is dedicated to my wife, Ellen, who encouraged me these many years, and my mother, Angela, who started the whole process.

Acknowledgments

This humble student would like to acknowledge the tireless and sometimes tiring efforts of Dr. Waynne James as she nursed this dissertation into a document worthy of defense, Dr. Yi-Hsin Chin for his invaluable assistance with statistical measures, Dr. Glenn Smith for his guidance in the qualitative aspects, and Dr. William Young for his expanded view of adult education and encouraging support.

Also thanked are the more than 100 students who participated in the study and the faculty who cooperated in allowing access to their classes.

Table of Contents

List of Tables iii

List of Figures iv

Abstract v

Chapter 1: Introduction 1
- Statement of Problem 2
- Statement of Purpose 3
- Research Questions 3
- Theoretical Framework 4
- Limitations of Study 9
- Definition of Terms 9
- Organization of Study 11

Chapter 2: Review of Related Literature 13
- Learning Objects 13
- Teaching World Religions Online 17
- Learner-directed Learning 20
- Adult Learner-directed Learning 22
- Asynchronous Online Learning 23
- Online Digital Media 25
- Jainism 27

Chapter 3: Method 30
- Research Questions 30
- Independent Learning Object 31
- PowerPoint 32
- Research Design 32
- Population and Sample 32
- Instrumentation 34
  - Interview questions 35
  - Post-presentation survey 36
  - Initial development of the Learning Object 36
  - Types of student feedback 37
  - Perceived effectiveness 37
  - Suggestions for improvement 38
  - Evaluation of the validity of the Independent Learning Object and the narrated PowerPoint 39
- Collection of Data 42
- Data Analysis 45

Chapter 4: Results and Findings 48
Demographic Characteristics of Participants 49
Quantitative Results 49
Learning results by method 49
Learning results by gender 54
Learning results by age 58
Learning results by major 63
Interviews and Post-presentation Survey 67
Interviews responses 68
Questionnaire responses 70
Observations 75

Chapter 5: Discussion of Results and Findings 78
Summary of Study 78
Conclusions 80
Implications 81
Recommendations for Future Research 84

References 86

Appendices 97
Appendix A: Invitational E-mail 98
Appendix B: Consent Form 98
Appendix C: Survey for Online Learning Study 101
Appendix D: Pre-test and Post-test World Religions Jainism Test 103
Appendix E: Interview Questions for Students 106
Appendix F: Members of The Validity Panels 107
Appendix G: Post-presentation Survey 108
Appendix H: The Evaluation Criteria for Learning Objects and PowerPoint 110
Appendix I: Narrated PowerPoint Presentation 111
Appendix J: Independent Learning Object 118
Appendix K: IRB Approval From USF 139
Appendix L: IRB Approval From St. Petersburg College 141

About the Author ..... End Page

List of Tables

Table 1: Frequency Distribution of Participants' Demographics 50

Table 2: Multiple Regression for Research Question 1 52

Table 3: Descriptive Statistics of Knowledge Gain for Two Learning Methods 52

Table 4: Statistics of Independent *T* Test Between Two Learning Methods 54

Table 5: Multiple Regression for Research Question 2 54

Table 6: ANOVA Summary for Learning Method by Gender 55

Table 7: Two-Way ANOVA Summary Table for Effects of Learning Method by Gender on Score Gain 57

Table 8: Statistical Independent *T* Test for the Mean Score Gain Comparison Between Students 58

Table 9: Multiple Regression for Research Question 3 Between Learning Method and Age 59

Table 10: Descriptive Statistics of the Mean Knowledge Gain Score for Students 60

Table 11: Two-Way ANOVA Summary Table for Effects of Learning Method and Age. 61

Table 12: Results of Independent *T* Test for the Mean Knowledge Score Gain Comparison Between Students Accessing Learning Method by Age 63

Table 13: Multiple Regression for Research Question 4 for Major 65

Table 14: Descriptive Statistics of the Mean Knowledge Gain Score for Students Accessing Learning Method by Major 66

Table 15: Marginal Means of Learning Method and Major on Knowledge Gain 67

List of Figures

Figure 1: Independent Learning Object 37

Figure 2: Knowledge gain of students accessing PowerPoint Compared to Learning Object 53

Figure 3: Knowledge gain of students accessing PowerPoint and Learning Object by gender 56

Figure 4: Knowledge gain of students accessing PowerPoint and Learning Object by age group 61

Figure 5: Knowledge gain of students accessing Learning Object (LO) and PowerPoint (PP) by major 64

Figure 6: Reactions to using Learning Object (LO) and PowerPoint (PP). 68

Abstract

There has been little or no research on the use of a Learning Object in the field of religious studies. The purpose of this research study was to assess undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods, which is the independent variable, using asynchronous, online, narrated PowerPoint presentations compared to undergraduate student knowledge gain using an online learning-objects unit, in a college-level world religions survey course at St. Petersburg College. This study assessed undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods among 90 college undergraduate students and determined whether there was a significant difference in the knowledge gain of students, a difference by gender, age, and major, in studying a unit of Jainism online in a world religions survey course using either a narrated PowerPoint presentation or using an Independent Learning Object, as well as their perception of the two methods. Students were divided randomly into two groups with each accessing one of the two learning methods. The results were the Learning Objects students' knowledge gain was higher than the PowerPoint students, while females scored higher using the PowerPoint and males scored higher using the Learning Object. The implications of this study are that instructors in any discipline could better serve their students if they investigate using Learning Objects in their online learning rather than the use of PowerPoint. The majority of students who used the Learning Object online performed better than students who listened to the PowerPoint,

supporting the contention that student-accessed learning leads to greater cognition. The implications of this study are that instructors in many disciplines could better serve their students if they implemented the use of Learning Objects in their online learning rather than the use of PowerPoint presentations.

Chapter 1

Introduction

Alternatives to the traditional lecture method of higher education have been proposed and evaluated with the aim of improving student cognition (Fokides & Tsolakidis, 2008; McLinden & McCall, Hinton & Weston, 2006; Östlund, 2005). One of these approaches is learner-directed, as represented by a multi-media presentation known currently in the literature as the Independent Learning Object. Learning Objects and learner-directed learning are synonymous (Wan & Niu, 2015). The use of an Independent Learning Object is based upon studies that indicate that students' cognitive learning improves more through exploration of a subject–the way learners have access to the information and direct their own progress–than listening to a traditional lecture, the way an instructor presents the information in colleges and universities (Hsu, 2012; Kay, 2011; Martins, Bastiaens, & Kirschner, 2007). One such discipline is religious studies. Online religious studies courses are often presented in traditional lecture format, with asynchronous presentations such as a narrated PowerPoint**.** This method is based on how an instructor would present information. Few, students, if any, are presented with an Independent Learning Object, which is centered on how learners access the information and direct their own learning.

Learning Objects can be generally understood as digital learning activities deliverable over the Internet. Many people can access and use them simultaneously, as opposed to classroom-based, traditional instructional media, such as an overhead or

videotape, which can only exist in one place at a time (Wiley, 2000). More broadly, a Learning Object is best described as a representation designed to be used in different disciplines (Churchill, 2007, p. 1). Learning Objects can be shared by their developers with other designers and instructors who can add their own content (King & Griggs, 2006). In that context, Learning Objects are activities in which students can interact to learn specific subjects. Students who also interact with Independent Learning Objects raise their awareness of their learner-directed learning (Morrison, 2001).

Independent Learning Objects are interactive, multi-media learning environments, as defined by Moreno and Mayer (2007, p. 310), in which "students are presented with a verbal representation of the content and a corresponding visual representation of the content." These Learning Object activities can be manipulated by the learners who decide on the order and the structure of their learning within the activity within certain confines. The borders of their learning boundaries is defined by the scaffolding of the Learning Object, so learners' pursuit of knowledge is confined to the subject material available, so they are not distracted by other information.

Statement of Problem

There is a lack of research on the knowledge gain of students using learner-directed curriculum in religious studies courses, particularly in an undergraduate world religions survey courses online. There are no known research studies that have compared the use of asynchronous online narrated PowerPoint presentations to learner-directed curriculum using online Learning Objects. Most of the literature appears to have been focused on comparing traditional face-to-face classes and online

classes (Brewer & Klein, 2006; Garrison & Kanuka, 2004; Hall, 1997; Naidu & Oliver, 1999; Watson, 2008).

Statement of Purpose

The purpose of this research study was to assess undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods, which was the independent variable, using asynchronous, online, narrated PowerPoint presentations compared to undergraduate student knowledge gain using an online-learning objects unit, in a college-level world religions survey course at St. Petersburg College. Using Jainism as the subject, the study sought to assess whether there was a difference between results in student knowledge gain, the dependent variable, using narrated delivery by PowerPoint and results in student knowledge gain using information delivery by an Independent Learning Object. A post-assessment instrument measured this outcome between these two groups. Some participants were interviewed at the end of the study to supplement the data.

Research Questions

The research questions for this quantitative study, with a qualitative aspect, include one major research and three variable-specific questions:

1) Is there a significant difference in the knowledge gain of students studying a unit of Jainism online in a world religions survey course using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit on Jainism?

2) Is there a significant difference in knowledge gain by gender of students using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit of Jainism?

3) Is there a significant difference in the knowledge gain by age of students using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit of Jainism?

4) Is there a significant difference in knowledge gain by college major of students studying a unit of Jainism online in a world religions survey course using a narrated PowerPoint presentation and that of those using an Independent Learning Object?

5) Is there a difference in perception among students concerning the accessibility and cognitive potential of learner-directed and instructor-provided learning?

Theoretical Framework

Of more than 18 million U. S. college students, 3.9 million were enrolled in at least one online college course in fall 2007, a 13% rise from 2006. During the same period, traditional on-campus enrollment increased 1% (Butcher, 2009).

A survey of studies by Östlund (2005), McLinden, McCall, Hinton, and Weston (2006), and Fokides and Tsolakidis (2008) show that the use of traditional lecture—such as a PowerPoint presentation—in an online class negates the advantage online learning has. Classroom curriculum must be adapted to fit the learning styles served in the online medium. Fokides and Tsolakidis (2008), in a study of driver's education students, determined that interaction with a three-dimensional simulated traffic scene on the computer with visual, auditory and other stimuli facilitates, increased student knowledge gain better than a two-dimensional simulation of the same scene. Users

could interact with this virtual world and directly handle the objects. Such an approach included a joystick, engaging visual, oral, and tactile senses. Such a three-dimensional approach minimalized distraction among the students who engaged more fully in the learning program. This differs from a PowerPoint presentation, which is two-dimensional and often does not interact with the tactile sense. As such, students are passive observers.

According to Östlund (2005), many distance education courses are now moving toward a more interactive and collaborative approach. In distance learning, there has been a shift from a representational view of learning in which learning is viewed as being acquired, such as that found in a PowerPoint presentation, to a constructivist view in which learning is primarily developed through activity, such as that of a Learning Object (McLinden et al., 2006).

A tool of learner- directed curriculum, Learning Objects are being used in a wide variety of disciplines, including science, engineering, and education courses (Merlott II). The heaviest concentration appears to be in STEM (science, technology, engineering, and mathematics) including physical sciences and the health fields.

Piaget's learning theory of constructing knowledge (1926) addresses learner-directed education this way: interaction in learner-directed learning, mainly with Learning Objects. People construct knowledge as they encounter information. They do this by selecting information pertinent to them (Miller, 2002). In this way, students are autonomous, taking the responsibility for their own learning and following their individual cognitive styles, interests, and preferences and learn how to learn. According to

Stefanov, Stoyanov, and Nikolov (1998), the theoretical basis for this constructivist learning is the theories of Piaget.

Learner-directed curriculum may include, as mentioned previously, interaction with Learning Objects. This interaction, with the student selecting pertinent information from the module, is part of Piaget's theory. This interaction is similar to the processes Piaget calls assimilation and accommodation (Yacci, 2000). A PowerPoint presentation, however, does not allow for student interaction.

The use of a collection of patterns for developing fine, granular, and highly reusable Learning Objects with interactive tools fits well into Piaget's theory. These Learning Objects are the equivalent of *objects concepts* of information Piaget said learners use to construct knowledge (Piaget, 1999). Piaget said that learners digest or absorb information in chunks or pieces of information, what he called a fine granular pattern. A fine granular pattern, a pattern of knowledge in particles or chunks of information, is also used to facilitate the development of reusable Learning Objects in that learners interact with different components (Silveira, Grigas, Ferreira, & Araujo, 2003). Interaction with these chunks of information is the characteristic of a Learning Object. This can be seen in a multi-media presentation that displays short portions of the narration before or after corresponding short portions of the animation. Students accessing successive portions of the presentation in "successive small bites" perform better than those accessing "larger bites" of narration (Mayer, Moreno, Boire, & Vagge, 1999). A PowerPoint presents information in a linear, non-interactive way.

Information processing theory, derived in the 1960s, is also based on the fundamentals of Independent Learning Objects. This theory states that people's logical

capabilities could be simulated by a computer program, with robots using artificial intelligence playing chess or other games, serving drinks, etc. (Miller, 2002). This theory applies to the activity that learners use when interacting with Learning Objects. Positive results emerge from learner control. Information theory provides a way for allowing students with individual differences to exert a positive influence without instructor control (Ahmed & Ives, 2001), which is an element in the interaction with Learning Objects and in learner-directed education. There is no learner control with a PowerPoint presentation, other than manipulating the speed of the presentation.

Brown (1997) stated that it is paramount to know that Internet learning is not an electronic version of classroom learning. Early online formats of the Internet were characterized by *long scrolling screeds* (large number of words in discourse or essay form) *of text* in a linear format. He stated that this approach was rudimentary at best. Internet students like to explore a subject, so limiting them to screeds of information tends to stifle their creativity, according to Brown, and online students like to engage in a *time for reflection* during the process (Brown, 1997). Learning Objects in learner-directed learning allow students time to reflect. Such an asset is not built into a PowerPoint presentation.

Improvements to online learning include incorporating hypertext into copy so students may learn more about a cursory-mentioned topic if they wish. The hypertext in a Learning Object takes them to a web site or document with more information. Brown (1997) said studies suggest learning through hypertext resembles the workings of human memory in the way the mind organizes and retrieves information. Another advantage in the use of hypertext is it allows learners to choose their own pathways to

explore. These Learning Objects can include visual or auditory interaction with data (Fokides & Tsolakidis, 2008). PowerPoint presentations lack these characteristics.

The advantages of online discussion include its asynchronous nature. Students can respond at a time that works best for them as opposed to being online when the instructor is online (Brown, 1997). As mentioned before, online discussion also gives students time for reflection. Fokides and Tsolakidis (2008), in the aforementioned survey of Greek children, found that Internet learning encourages cooperation instead of competition among students. Brown also suggested that online discussion is a more egalitarian learning environment. The physical anonymity enables students to speak their mind when they feel they will be *heard* and will not be intimidated by more verbose students.

Some of the factors that have enabled students in a learner-directed study include specific Learning Objectives and feasible and detailed learning activities and resources, according to Du (2012), who conducted a pilot program with 12 students in an intensive Chinese-language learning program. Constant monitoring and feedback was also included, which may be present to a lesser degree with the use of an online, Independent Learning Object, though an instructor would be available in a facilitating role.

Women learn differently than men in online learning (Brunner, 1991; McSporran & Young, 2001). Women tend to look for small, appealing objects to manipulate, while men look for power, speed, and wisdom in an online learning environment. Consequently, McSporran and Young (2001) discovered that women learn better in an online learning environment than men, who need the discipline of a classroom-base

course to excel. Yang, Cho, Mathew, & Worth (2011) found that men spent more time on an online learning course than women do. Palloff and Pratt (2003, p. 42), in a literature search, found that women are not as intimidated by technology as they were in the past, but that "some women continue to feel that the world of technology is foreign territory." They said there are two theories of gender issues in online communication: women communicate as well as men online because gender boundaries are blurred, and women communicate less than men online because virtual world is just a reflection of the actual one where men dominate in conversations. But several studies found no difference in gender-based learning in an online course (Arbaugh, 2000; Yukselturk & Bulut, 2009). Gender equality in online communication was achieved in a study using a *ping-pong* approach in which students were encouraged to send a message and then wait for a response before posting the next message (Seward, Harvey, & Carranza, 2009)

Limitations of study

A larger sample size may have increased the statistical significance of the findings, particularly those based on gender and major. More questions on the pre-test and post-test would had to the validity of those instrumentations.

Definition of Terms

The following are terms used operationally in this research.

College major—the emphasis of a course of studies defined generally by St. Petersburg College which include general studies (liberal arts education), arts and entertainment, business, communications, computer information technology, education, engineering, manufacturing and building arts, health sciences, hospitality and tourism, natural

sciences, nursing, public safety, policy and legal studies, and veterinary technology. Students are classified in one of these majors.

Instructor provided—Information that is delivered through the direct intervention of an instructor.

Jainism—an ascetic, India-based religion founded by Mahavira as a protest against Hinduism (Young, 2013).

Jainism unit—A section in a world religions course concerning the religion of Jainism, which teaches the history and basic tenets of Jainism.

Knowledge gain—the degree of the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of knowledge and skills (Neisser, 2003) in a post-test when compared to an identical pre-test.

Learner-directed—Information that is accessible by a student at his or her own discretion, without direct instruction by an instructor. Learner-directed learning can be seen in the use of Learning Objects, defined as web-based learning tools or on-demand learning modules, and are designed to be explored by students.

Learning Object—a computer-based or Internet-based repository of knowledge that is designed for learning and that is reusable.

> *Independent Learning Object*—an online, educational program that encourages users to explore and acquire knowledge themselves within specific educational parameters, without the intervention of an instructor (Hsu, 2012; Kay, 2011; Martins et al., 2007).
>
> *Instructor-provided Learning Object*—an online, educational program that is within specific educational parameters, and includes instructor intervention.

Narrated PowerPoint presentation—A linear learning media such as the traditional PowerPoint presentation enhanced with a pre-recorded narration.

Online—any Internet-based or Internet-delivered program of instruction.

Learner-directed learning—learner-driven education facilitated by materials developed by an instructor for content or technical assistance.

Undergraduate—a college student who has not yet earned a bachelor's degree.

World religions survey course—an undergraduate college-level, survey course on world religions, namely REL 2300, as listed in the Florida Department of Education's Statewide Course Numbering System.

Organization of Study

Chapter 1 includes the statement of problem concerning a lack of research on the use of Independent Learning Objects, the statement of purpose to study the results of comparing lecture online survey course with a Learning Objects survey course, the research questions on the differences including gender, the definition of terms, organization of the study and the theoretical framework on the aforementioned instructional techniques.

Chapter 2 presents the results of the search of the literature concerning Learning Objects, teaching World Religions online, learner-directed learning, adult learner-directed learning, asynchronous online learning, online digital media, and Jainism.

Chapter 3 presents the methods of the experiment, the research questions the Learning Object, research design, population and sample, quantitative and qualitative instrumentation, collection of data, and data analysis.

Chapter 4 includes the results and findings, demographic characteristics of participants, quantitative results concerning learning results by method, gender, age and major, and the qualitative findings and results.

Chapter 5 includes the discussion of the results and findings, summary of the study, conclusions, implications, and recommendations for future research.

Chapter 2

Review of Related Literature

The purpose of this research study was to assess undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods, which was the independent variable, using asynchronous, online, narrated PowerPoint presentations compared to undergraduate student knowledge gain using an online-learning objects unit, in a college-level world religions survey course at St. Petersburg College. Using Jainism as the subject, the study sought to assess whether there was a difference between results in student knowledge gain, the dependent variable, using narrated delivery by PowerPoint and results in student knowledge gain using information delivery by an Independent Learning Object. A post-assessment instrument measured this outcome between these two groups. Some participants were interviewed at the end of the study to supplement the data.

There also appears to be a total absence of studies on the use of online Independent Learning Objects in religious studies.

Learning Objects

Learner-directed learning can be seen in the use of Learning Objects, defined as web-based learning tools or on-demand learning modules, and are designed to be explored by students. This exploration gives rise to curiosity, which is tied with learning according to Berylne, one of the earliest psychologists who studied curiosity: the “term

perceptual curiosity to refer to states of high arousal that can be relieved by specific exploration and in which, therefore, specific exploratory responses are likely to occur" (Berylne, 1960, p. 193). One of the characteristics of good learner-directed learning is autonomy: the view that view that the learner is responsible for learning (Ivanovska, 2015). Learning Objects take advantage of that by letting students accessing and directing the elements according to their own will.

Online Learning Objects, as mentioned earlier, can be reused and revised for an instructor's particular needs (King & Griggs, 2006). Online Learning Objects are defined as all digital resources that can be used and reused to support learning and their main features are accessibility, reusability, adaptability, scalability, and durability (Yalcinalp & Emiroglu, 2012). They include "Web-accessible entities such as web pages, pictures, programs, audio, video, etc. They are distributed in the Internet and are identified by URL" (Hsu, 2012, p. 301). Such elements are interactive, and engage the five common types of interactivity: dialoguing, controlling, manipulating, searching, and navigating (Moreno & Mayer, 2007). The Learning Object used in this study is composed of web pages, pictures, and audio and video programs.

Reusable Learning Objects are often low-cost, low-input, stand-alone methods to teach cognitive knowledge. They are used as a template to write educational objectives, and they focus on a singular Learning Objective and can be based upon Bloom's cognitive domain (Strong, 2012).

Another benefit of Learning Objects is that complex materials can be presented in easily learned content. According to Reisner, Stewart, Williams, Goj, Holland, Eppley, and Johnson (2012), there are few journal articles on how to teach

undergraduate organometallic chemistry, though there have been several Noble prizes awarded in the field. Reisner et al. (2012) proposed using Learning Objects for undergraduate education. The Learning Objects included literature research in which students interacted with a computer-based Learning Object to access papers on organometallic chemistry, group exploration using provided material in the laboratory--which was a scaffolding technique designed to keep them on task, and illustration of chemical reactions by drawing them on a sidewalk. This is the basis of learner-directed curriculum.

In another case, a qualitative study that instructed five obstetrics and gynecology nurses in research ethics, using a learner-directed, web-based program with modules (Learning Objects) on different aspects of research ethics showed an increase in confidence in their abilities to interact with patients (Cibulka, 2011).

At the middle and high school levels, science and math-based Learning Objects were associated with significantly higher student attitudes toward the learning, design, and engagement value as well as performance in the courses, according to a study by Kay (2011) of 832 students. There was about a 25% increase in students' positive attitudes toward their studies, and about a 13-39% improvement in their learning performance.

As mentioned, Learning Objects are used in a wide variety of areas. As part of the collection of Merlot II, a collection of 46,638 online Learning Object links, hard sciences such as computer science, biology, engineering, health sciences, physics and math make up 57% of the collection (Merlot). English, sociology, psychology, music

and history are 11% of the collection. Other Learning Object areas include professional coaching, fire safety and world languages.

Columbia University also has an online collection of Learning Objects: 24,616 files made up of mainly written studies (Columbia University, n.d.). Hard sciences, such as engineering, math, science, geography and computer science, make up about 76% of the Learning Objects.

St. Petersburg College, where this study took place, has a repository of 360 Learning Objects (SPC course resources). The single largest group of Learning Objects was in the humanities and cinema: 16%. Hard sciences, such as medical topics – nursing and veterinary science – make up 15% of the collection.

Instructors at St. Petersburg College used Learning Objects for many disciplines including computer science. College of Computer and Information Technology instructor D. Wesburg said she uses it for her introduction to computers class. “I use a You-Tube video of Charles Babbage's Difference Engine as part of the ‘Everything you want to know about computers, but were afraid to ask’ segment of my first face-to-face or blended COP 1000 Introduction to Computer Programming course. I find it an effective way to tie the Grandfather of modern-day computers to today's machines” (Personal communication, October 30, 2015). College of Nursing instructor K. Lane said she uses “Wisc-online for the students to use this activity as a learning option to help them with a concept related to levels of prevention in health. I have used this for as long as I have had the class which is 3 years and I am sure it has been used before that. I provide the students with the URL and they can do the activity, then they have to post to a discussion forum about their results and what they learned from the activity”

(Personal communication, October 30, 2015). Dental hygiene instructor K. Woods said she uses flash cards, and pick a letter, fill in the blank, matching and crosswords exercises. “They all came from the textbook's publisher and the students (or many of them) like them for studying for exams. I think it's important to use as many Learning Objects as possible due to the different learning styles or preferences of our students” (Personal communication, October 29, 2015).

Other instructors at St. Petersburg College are familiar with the availability of Learning Objects at the college, but opted not to use them. “I don’t use any of the Learning Objects unfortunately,” according to A. Tillman, instructor in the College of Computer and Information Technology. “I haven’t found any that have peaked my interest for use in the programming courses” (Personal communication, October 29, 2015.) “None of the Building Arts classes are offered in an on-line format,” according to instructor R. Hudson. “I have some experience teaching on-line at another institution; I try to keep that under wraps” (Personal communication, October 28, 2015.)

Teaching World Religions Online

Although there have been previous studies of online learning in other subject areas (Abraham, Fisher, Kamath, Izzati, Nabila, & Atikah, 2011; Fisher, King, & Tague, 2001; Jimenez, Browder, & Courtade, 2009), there is very little in the literature concerning the use of Learning Objects in online religion instruction at the college level.

Religious studies online instruction varies depending on the instructor and institution. An e-mail requesting information on the method of instruction from officials at college and universities in the Tampa Bay area revealed none using online Learning

Objects for their world religions classes or any online class (S. Geisz, chair, Department of Philosophy and Religion, University of Tampa, personal communication, July 31, 2012; S. Kowalski, Center for Innovative Teaching and Technology facilitator, Hillsborough Community College, personal communication, January 21, 2014; V. Westergard, executive director, e-Campus, Web and instructional technology, personal communication, St. Petersburg College, January 21, 2014). Officials at the colleges and universities reported that they use recorded lectures or narrated PowerPoint in their online classes, except for the University of Tampa, which has no online religious instruction.

Religious education techniques encourage students to use rigorous philosophical methods to question all assumptions and religious truth claims (Simpson, 2012). Vermeer (2012) advocated a predominantly cognitive approach to religious education, instead of facilitating the development of a religious identity or a personal philosophy of life. Critical thinking is important in religious studies courses so that people's traditions will not cause them to lapse into discrimination or sexism, according to Nord (2010). Religious studies lends itself to critical thinking, according to education standards created by the government of Newfoundland and Labrador (*A Curriculum Guide*, 2005). An important component in the religious education program is the interpretation of information in a critical manner in order that students will be in a position to make informed decisions" (*A Curriculum Guide*, 2005, p. 26). Students should not so much learn about religion as they should learn from religions, applying the information to their lives (Teece, 2010).

Religious studies curriculum can include sociological elements, since religion and society have been united, according to Heischman (2012). As a result, religious studies, combined with ethics, can contribute to "the development of a more democratic and just society," according to the Quebec Ministry of Education (Morris, 2011, p. 207). According to Arroyo (2010), society and religion are so close, that teaching religion at the college level should include students' cultural backgrounds. In online classes, Arroyo believes that incorporating the students' backgrounds and experiences into the religious curriculum as examples would cause the topic matter to be more relevant. Arroyo stated religion instructors teaching online courses should present primary sources, such as the main scripture of each religion, and avoid reading about scripture through secondary sources, since the latter have different interpretations.

This literature review surveyed previous studies on learner-directed learning, adult learner-directed learning, Learning Objects, and techniques of online religious studies instruction. As shown in the review, learner-directed learning is a fixture in adult education. It contributes to the development of basic study and problem-solving skills in both undergraduate and graduate levels as well as among elementary school students. Adult learner-directed learning has been shown through studies to give more independence and greater life satisfaction to adults. The literature shows, though, that there are few studies conducted on Learning Objects. They are reusable to fill an instructor's needs, are low-cost and low-input, and can be based on Bloom's cognitive domain (Strong, 2012). They are effective at explaining complex subjects. There appears to be an absence on the use of Learning Objects in religious studies. Some religious studies programs are patterned after a master program that is used at the

college level, but they are narrated, online PowerPoint presentations. Religious studies promote critical thinking, so students make informed decisions, and it can include sociological elements. But no study on the use of Learning Objects in religious studies was found in this literature search, demonstrating a need for such a study.

Learner-directed Learning

Learner-directed learning in the literature is not new. It is an outgrowth of self-planned learning that included hobbies, crafts, child care, health and beauty, and travel (Penland, 1977). According to Knowles (1975), learner-directed learning

> is a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. (p. 18)

Fisher, King, and Tague (2001) created a learner-directed learning readiness scale for students measuring self-direction in learning, openness to learning opportunities, self-concept as an effective learner, initiative and independence in learning, informed acceptance for one's own learning, love of learning, creativity, future orientation, and the ability to use basic study skills and problem-solving skills. Della-Dora and Blanchard (1979) defined the characteristics of learner-directed learning as education differing in a democratic society from schooling in autocratic societies.

Learner-directed learning has been linked to transformative learning theory in a Taiwan study of 593 adult students with Internet-based learning experience from 26 community colleges and senior learning centers. With an average age of about 50 years, these students were given an instrument composed of an adapted constructivist Internet-based learning environment scale and a learner-directed learning readiness

scale. The study revealed that transformational learning did occur in the learner-directed learning (Chu, Chu, Weng, Tsai, & Lin (2012).

According to Abraham et al. (2011), learner-directed learning is necessary to pursue lifelong learning. Abraham et al. conducted a study of 130 first-year medical students, and concluded that there was a correlation with high achieving students who scored high on a learner-directed learning readiness scale instrument. A similar study with 847 nurses and radiology technicians who had completed their degrees showed a majority reached a high level of learner-directed learning as measured by the Self-Rating Scale of Learner-directed Learning Instrument (Cadorin, Suter, Dante, Naskar Williamson, Devetti, & Palese (2012).

The activity of students creating a class by deciding what areas of study should be pursued is a form of learner-accessed learning, and students do better than their peers who do not, according to Creese (2011). Twenty honors students were told to select sources for an economics course. Upon completion of the design and subsequent assignments, the group did better than students in previous honors classes, according to faculty feedback.

In the case of distance learning, learner-accessed learning must be structured (the use of scaffolding as mentioned earlier) for consistent results among students. Over a two-semester period, 88 students were enrolled in a structured, learner-accessed learning course, and 97 in an unstructured, learner-directed learning course on business (Dynan, Cate, & Rhee, 2008). There was an average of only a one point difference between the two groups' final exam scores, but structured students scored consistently higher with less variability on their final exams. Student outcomes were

measured by the SDL Readiness Scale at the beginning and end of the semester for the four courses for which data were collected.

There are different forms of learner-accessed learning, but according to the American Disabilities Act of 1990, they must be accessible also by students with disabilities (Rose, 2014). A Learning Object has superiority in this matter in that the text can be read by a text reader program. A video version of a narrated PowerPoint excludes reading by a text reader program.

Adult Learner-directed Learning

Adult students, being more independent and with a greater life satisfaction, benefit more from learner-accessed learning than younger students, according to the literature. In an Oklahoma study by Ausburn (2002), 63 students (78% high school students, 22% older adults) were given a Likert scaled-instrument to determine their perception of learner-accessed learning versus traditional classroom learning. A majority of both groups agreed that learner-accessed learning was effective, but there were several differences in the age that did. Adults rated the learner-accessed technique higher than did their younger counterparts. Among adult students, 93% ranked learner-accessed learning as effective or extremely effective, while 69% of high school students agreed with that effectiveness. Adult students (36%) also believed learner-accessed learning was extremely effective, compared to the response of high school students (27%).

Life satisfaction was linked to learner-accessed study among adults older than 60 in a Montana study. A sample of 64 adults was given a survey to measure their attitude toward learner-accessed learning and self-satisfaction. The study found a statistically

significant connection between the two. The author of the study, Brockett (1985) concluded that there was tentative support for a relationship between a tendency toward learner access as a learner and such issues as independence and quality of life during the later years.

Using a Learning Object to teach adult learners online permits them to exercise power on their own behalf. The latter is a fundamental aspect of adult instruction, according to Brookfield (2013). Adults seek this power in society and in the classroom, and this can be extended to online learning.

Although most of the research mentioned in this section used the term learner-accessed, this paper prefers to term learner-directed in that students decide on the pattern and pace of their learning, and not just accessing the learning object. The terms learner-accessed and learner-directed are used interchangeably in the literature.

Asynchronous Online Learning

Asynchronous online learning has its roots in discussions in 1994, the purpose of which was to create a method different from synchronous television-based learning (Hiltz & Goldman, 2005). Asynchronous online learning is defined as collaborative interaction with the elements, such as Learning Objects, on the Internet at differing times (Hiltz & Goldman, 2005). Engaging in goal-oriented collective thinking improves knowledge gain (Mercer, 2013).

The advantage of asynchronous online learning over synchronous online learning is that the former method provides time for reflection and supports autonomous student motivation (Giesbers, Rienties, Tempelaar, & Gijselaers, 2013) and improves cognitive thinking (Yang, 2008). Asynchronous online learning also compares favorably

to face-to-face-learning (deJong, Verstegen, Tan, & O'Connor, 2011). Asynchronous online learning is preferable when using team learning (Hosier, 2013; So, 2009) and works well with collaborative learning (Abawajy, 2012; Liljeström, 2010). *Thought-leaders*, students who contribute more than other students in online learning, benefit from asynchronous online learning (Milman, Hillarious, & Walker, 2012; Waters, 2012). Asynchronous online learning assists people with learning disabilities, such as attention deficit disorder or hyperactivity disorders and these students can review course content and referencing notes and sources online if they missed points in the original presentation (Graves, Asunda, Plant, & Goad, 2011).

Techniques of asynchronous learning include discussion strategies. Discussion strategies require learners to take a perspective in an authentic scenario to facilitate cognitive presence, and thus critical thinking and higher levels of learning, as long as students were guided by a scaffolding element (Darabi, Arrastia, Nelson, Cornille, & Liang (2011). Key elements in the science of instruction are reducing extraneous processing—cognitive processing that does not support the instructional goal and is attributable to confusing instructional design (Mayer, 2008). Working on a specific project facilitates knowledge gain in asynchronous learning (Koh, Herring, & Hew, 2010). Mapping the course material, online lectures and interactivity among participants, particularly older students, facilitates knowledge gain in asynchronous online classes (Majeski & Stover, 2007).

Online Digital Media

Online digital media has been used for a variety of purposes, such as archiving history (Esling, 2013), as well a plagiarism check through research paper-selling sites (Castree, 2012), reducing HIV infection among homosexual males (Hirshfield et al., 2012), and advertising products (Cheong, Gregorio, & Kim, 2010). Despite initial objection about online digital media, online text imbedded with media increased reading comprehension among young and older readers (Kretzschmar, Pleimling, Hosemann, Füssel, Bornkessel-Schlesewsky, & Schlesewsky, 2013). Online digital media holds the interests of students better than reading longer lines of text, and enhancing cognitive learning through exploration (King, 2009). Youth respond well to multimodality educational presentations of online digital media because they are familiar with such formats in their everyday lives (Vasudevan, DeJaynes, & Schmier, 2010). Online digital media can cut educational costs in that such media is cheaper than printed alternatives (Schaffhauser, 2012). Furthermore, online digital media shifts the burden of adaptation from the student to the designer, as the latter creates online material that can appeal to a wider variety of learners (Rose & Meyer, 2002).

Online digital media, however, is lacking in Learning Objects that apply to Jainism. A survey of 19 open-source Learning Object repositories revealed no Jainism Learning Objects. The following are the repositories with accompanying results.

- BBC, Jainism texts learning repository, http://www.bbc.co.uk/religion/religions/jainism/texts/texts.shtml Learning Object text, but no interaction or audio-video

- British Library, http://www.bl.uk/# Pictures and texts of Jainism, but no Jainism Learning Objects

- Chattanooga State Technical College Collection, Hippocampus, Religions of the World,
  http://www.hippocampus.org/HippoCampus/Religion;jsessionid=08109D818EB74982ADDB194CCA73B6DA
  Online class on religions of the world: static video lectures, Jainism not mentioned.

- Columbia University Academic Commons,
  http://academiccommons.columbia.edu/
  No Jainism Learning Objects, or mention of Jainism as a subject.

- Consortium for Educational Communication Learning Objects Repository, India, http://cec.nic.in/LOR/Pages/results.aspx?k=Jainism#
  Video lecture and paragraph of text on Indian philosophy, but no Jainism Learning Objects.

- D2L Learning Center, learning repository, University of Wisconsin, Milwaukee, http://www4.uwm.edu/learningobjects/
  No Jainism Learning Objects.

- Edutopia, George Lucas Educational Foundation, http://www.edutopia.org/
  No material about Jainism

- Learning Objects Studio, Wesleyan University,
  http://learningobjects.wesleyan.edu/projects/index.php
  No Jain Learning Objects

- Merlot II (Multimedia Educational Resource for Learning and Online Teaching),
  http://www.merlot.org/merlot/materials.htm?sort.property=relevance&materialType=&keywords=Jainism&newsearchbutton =
  No Jain Learning Objects

- National Digital Learning Resources Network, owned by Australian school jurisdictions, http://www.ndlrn.edu.au/default.asp
  No Jainism Learning Objects

- National Vet Toolbox Learning Object Collection,
  http://toolboxes.flexiblelearning.net.au/collection/index.htm No Jainism Learning Objects

- North Carolina Learning Object Repository, http://explorethelor.org/ No Jainism material

- Nova Learning Objects, PBS, http://www.pbs.org/wgbh/nova/
  No Jainism Learning Objects

- Open Learning Initiative, Carnegie Mellon University, http://oli.cmu.edu/get-to-know-oli/learn-about-our-courses No Jainism Learning Objects.

- PBS learning media, http://www.pbslearningmedia.org/
  No Jainism Learning Object, just videos

- Real World Learning Objects Resource Library for community college faculty, http://www.k12science.org/pathways/rwlo/search.php
  No Jainism Learning Objects

- Smithsonian, http://www.si.edu/Search/Index/default/1?q=Jain Static Jain art and architecture and recorded songs, but no Jain Learning Objects

- Texas Learning Object Repository, http://txlor.org/
  No Jain Learning Objects

- WISC Online, Wisconsin Technical College System, https://www.wisc-online.com/
  No Jainism Learning Objects.

Jainism

Jainism, a religion centered around Mumbai, India, began with a Hindu prince named Nataputta Vardahama, who was born in the 500s BCE (Before Common Era) and practiced rigid asceticism, denying any attachment to comfort, including clothes (Fisher, 2012). He eventually died of voluntary starvation, and the community grew in war-torn India due to its belief in ahimsa, which means nonviolence (Fisher, 2012). Jainism is functional atheism--Jains are encouraged to ignore the gods since they are

Hindu deities--and believe heaven is at the top of the universe for those who follow Jain ways (Vallely, 2012). There are two major branches: the Digambaras, “sky-clad,” who are naked so as not to even be attached to clothing, and the Shvetembaras, “white-clad,” who wear white and often have a mask over their mouths so as not to hurt any airborne life (Young, 2013). The Shvetembaras accept women as members, the Digambaras do not due to attachment issues (Young, 2013). The sacred scripture is called the Agamas, and is composed of Jain metaphysics, cosmology, doctrine and beliefs about the nature of the universe (Vallely, 2012). It is a small religion, with only about 6 million members (Young, 2013).

Summary

The literature showed that Learning Objects are based in educational theories on curiosity, and includes efficacy and the reusability of Learning Objects. The research also demonstrated how complex subjects could be explained using Learning Objects. The literature also showed while online religious studies instruction promotes knowledge gain, there is little in the literature that addresses online learning in this discipline. Learning Objects are facilitators of learner-directed learning, and the literature showed that the latter facilitates knowledge gain, problem-solving skills, and higher post-instrument scores. Adult learner-accessed learning, according to the literature, improved attitudes and self-satisfaction, and was found to be effective. Asynchronous online learning was defined as a collaborative approach to computer-based education that benefits *thought-leaders* as long as scaffolding was employed. Online digital media was defined as multimodality educational presentations that engaged the interest of students more than online text did. It was shown to improve

knowledge gain. Jainism is the subject of the Learning Object. Jainism, as a religion, was described as a 2500 year-old, non-theistic, Indian religion that emphasized no injury to any living being through austere methods.

Chapter 3

Method

The purpose of this research study was to assess undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods, which was the independent variable, using asynchronous, online, narrated PowerPoint presentations compared to undergraduate student knowledge gain using an online-learning objects unit, in a college-level world religions survey course at St. Petersburg College. Using Jainism as the subject, the study sought to assess whether there was a difference between results in student knowledge gain, the dependent variable, using narrated delivery by PowerPoint and results in student knowledge gain using information delivery by an Independent Learning Object. A post-assessment instrument measured this outcome between these two groups. Some participants were interviewed at the end of the study to supplement the data.

Research Questions

The research questions for this study include one major research and three variable-specific questions:

1) Is there a significant difference in the knowledge gain of students studying a unit of Jainism online in a world religions survey course using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit on Jainism?

2) Is there a significant difference in knowledge gain by gender of students using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit of Jainism?

3) Is there a significant difference in the knowledge gain by age of students using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit of Jainism?

4) Is there a significant difference in knowledge gain by college major of students studying a unit of Jainism online in a world religions survey course using a narrated PowerPoint presentation and that of those using an Independent Learning Object?

5) Is there a difference in perception among students concerning the accessibility and cognitive potential of learner-directed and instructor-provided learning?

Independent Learning Object

The Independent Learning Object created for this research was an Internet-based web page created by Adobe Dreamweaver. It was connected to Internet websites via hyperlinks. These websites include videos and definition of terms.

Hyperlinks addressed the main aspects of Jainism: its history, philosophy, scripture, and the types of Jains, Jain terms, and the Young Jains of America. Located in the main body of the Learning Object was an overview of Jainism and the Jain myth, or religious story of the creation of Jainism. The specifics of the Independent Learning Object are discussed in more detail later.

PowerPoint

The narrated PowerPoint developed for this research was a standard PowerPoint used in World Religions classes at the college where this research took place. It was narrated by a male voice. It included the history, philosophy, and the types of Jains, Jain terms, and the Young Jains of America. Also included was an overview of Jainism and the Jain myth, or religious story of the creation of Jainism. Additional discussion is provided later.

Research Design

This study used a quantitative design with several interviews to add additional depth. A quantitative design is desirable for attaining a statistically significant analysis in quantitative research. This approach has been shown to be the preferred analysis when collecting numerical data and using mathematical modeling (Muijs, 2010; *Quantitative Psychology*, 2014). A quantitative design can calculate pre-treatment scores and post-treatment scores from an instrument to determine a gain in scores. One group of college students received instruction on the religion of Jainism through the use of an Independent Learning Object and another received instruction by an online narrated PowerPoint presentation. A qualitative approach may be desirable in that it describes how different variables are distributed across a population, to uncover the meaning of the phenomenon being investigated (Merriam & Tisdell, 2015).

Population and Sample

The focus of this study was the target population of students who took an online world religions course at St. Petersburg College. The accessible population was approximately 12,500 undergraduate students enrolled in online classes in the e-

Campus of St. Petersburg College, a Pinellas County-wide institution. An online, stratified sample of two groups of undergraduate students were tested at the college.

Students in world religions classes were invited to join the study during the Spring 2016 semester through an e-mail using addresses provided by the college with an incentive—a book store voucher—if they were selected for the study. See Appendix A for a copy of the e-mail. For this process, IRBs from University of South Florida and St. Petersburg College were obtained. Also departmental and religion instructor approvals were necessary to obtain. Students who responded were e-mailed a consent form. See Appendix B for the consent form. They were then directed to complete an on-line survey instrument, created through Survey Monkey. See Appendix C for a copy of the survey.

Using a confidence level of 95%, which is a statistically significant confidence level (Lane, n.d.), the confidence interval was 9.76. A sample size of 100 students was needed to achieve a 95% confidence level, with a 9.76 confidence interval within the population of 12,500 students (Creative Research System, 2012).

An online, stratified sampling technique randomly assigned students to the treatment groups based on gender. Eighty-nine students were randomly assigned to one of the two treatment groups (Narrated PowerPoint and Independent Learning Object groups). However, since stratification by gender was necessary for this research design, selected participants were randomly assigned to the two treatment groups by gender. Students were randomly selected until there was enough students to meet met the correct qualifications for each group. This resulted in 19 males accessing the narrated PowerPoint presentation and similarly 19 men accessing the Independent

Learning Object, and 26 women accessing the narrated PowerPoint presentation and 26 women accessing the Independent Learning Object. According to Trost (1986), who first proposed it, stratified random assignment is the preferred method for random sampling when the single variable has two components, ensuring that sufficient numbers of the two components are available for study.

Students were instructed to write their study ID on the survey, which consisted of the last letter of their first name plus the day of the month in which they were born. From those who responded, students were assigned a number by Survey Monkey based on the order of their completion of the questionnaire. Using those numbers, an Internet-based random number generator from Random.org selected the participants for the different groups of the study.

Instrumentation

There were several means of collecting data through the instruments. When the students first agreed to participate in the study, they completed the Survey for Online Learning (Appendix C) which contained the demographic information. The pre- and post-tests were used to measure knowledge gain. Upon completion of the Independent Learning Object, five students were interviewed through personal communications. Students were provided a link to compete an online survey. See Appendix C for the online learning survey which contained the demographic information.

A pre-treatment test and a post-treatment test were given to all the participating students one week apart. Both the pre-test and post-test questions were drawn from the same information about Jainism, including questions about the origins, theology, philosophy, and history of the religion. See Appendix D for a copy of the pre- and post-

tests, which were identical. Pre- and post-testing has been shown to be effective to measure change in specific student performance outcomes (Michlitsch & Sidle, 2002), when used with one-time, short-duration programs (Nielsen, 2011). Identical questions in the pre- and post-testing compensates for the validity threat associated with response shift bias based on changing questions (Pelfrey & Pelfrey, 2009).

Members of the validity panel (who also reviewed the Independent Learning Object) were asked to determine whether the pre- and post-tests were representative of the content that should be covered in a unit on Jainism. See Appendix E for a listing of the panel members names and their expertise.

The reliability of the instrument used for the pre-test and post-test was determined through the test-retest method. Thirty-six students in a Florida community college, different from the community college in the study, completed the instrument in November 2013, and then a week later, were given the instrument again. Reliability was determined through Pearson Product-Moment Correlation using the SAS program. With a high coefficient of .83, the reliability of the test was determined to be sufficient for the study (Stevens, 2007).

Interview questions. Five student participants in the study were interviewed using questions based on the research questions. See Appendix E for a flow-chart of the questions and order they were used in the interviews. The responses from these questions were used to supplement and enlarge upon the quantitative data. Such work can help develop insights into various phenomena of interest that cannot be fully understood using only a quantitative or a qualitative method (Chow, Quine, & Li, 2010; van Wesel, Alisic, & Boeije, 2014; Venkatesh, Brown, & Bala, 2013). The questions

were delivered via a funnel approach to questioning. Answers that lead into an area not covered by the initial questions were addressed with new questions not listed on the qualitative question document.

Post-presentation survey. Students were invited by e-mail to participate, and 69 accepted, in a survey requesting information on their major, which learning method they accessed, their impression of it, what they liked and disliked about it, and how well did they think they did on the post-test.

Initial development of Learning Object. In an attempt to develop the Learning Object website, a pilot study to determine the clarity and functionality of the Learning Objectives was conducted in June 2013 with students of a mid-Florida community college different than the community college in the study. This was undertaken as part of a course being taught at the time. Sixty-four students were invited to go voluntarily online and work with the website hosting the Jainism Learning Object. Of those, 22 participated, receiving extra-credit in the course. Students were given no instruction prior to their encounter with the website since the Learning Object was designed to be self-explanatory with no instructor intervention. Students were asked to provide feedback about their interaction with the Learning Object. Feedback included their perceptions of the content and effectiveness of the Learning Object and their suggestions for improvement.

Figure 1. Independent Learning Object. Illustration of how to click on links on the Independent Learning Object.

Types of student feedback. Reports from student interaction with the Learning Object were categorized into three types of feedback. Ten comments evaluated the effectiveness of the Learning Object itself. Eleven responses were concerned with what students learned about Jainism. One student evaluated the Independent Learning Object and what she learned from the content. Two students reported that they were not able to access the Learning Object based on technical problems. Students were only asked to provide responses about the Learning Object. All 22 provided some feedback.

Perceived effectiveness. Evaluations of the effectiveness of the Learning Object varied. Nine students stated that the Learning Object was effective in its presentation on Jainism. One student described the Learning Object in negative terms.

Some comments included: “I think it would be an awesome tool to use for studying reviews for the tests in this course.” Another student commented:

> I liked the idea of the Independent Learning Object. I found that a few of the sections, namely the history, philosophy and Shvetambaras sections were very informative and helpful . . . . Overall, I felt as though the site is great because it provides a lot of visual aids for those who learn better in that way and also provides access to great resources and information not found in the text.

One student liked the media part of the Learning Object: “This information in this site is well explained and contain[s] many illustrative videos that help the readers understand better the subject.” Another student evaluated the object overall: “The independent project seemed very well thought out; . . . [having] information that is repeatable and retrievable at any time for a student that needs it.”

Suggestions for Improvement. Of the nine students who indicated positive attitudes toward the Learning Object, eight had suggestions for improving it. So did the student who described the Learning Object in negative terms. Four students had suggestions for changing the structure or content of the Learning Object. Seven students gave suggestions concerning the hyperlinks in the Learning Object.

Structure and content suggestions included the color and design. One student wrote:

> I believe that the web page design was a little lack of color, gallery of images and design that invites the reader to read. I think the design of a website is very important to capture the first reader's attention.

Another student, who said he was formerly from graphic arts industry, wrote, “The graphics are of a child’s level. The website is simple and appears to have been set up with little regard for quality or professionalism.”

Professional graphics are of little concern in the effectiveness of a Learning Object or distance learning. The primary aspects of effective learning are simplicity and clarity (Pomales-Garcia & Lopez, 2010). Entertaining graphics were found to be the least desirable. Learning Objects should avoid such elements (Galitz, 2002). Though face validity may be in question, its significance is overcome because the Learning Object is designed to be an assignment given to students, not as a suggested Website for them to peruse.

Hyperlink suggestions included more background for some of the links, particularly that of the Digambara, a link displaying the sky-clad Jains who wear no clothes. "The cultural dancing and singing was impressive but I wish there were subtitles so I knew what they were saying," commented one student. One student complained the video was too long. Another said the video should have some background information to describe it, since there are no English words in it. The first link had audio problems in that the volume was too low, according to some students. One student complained that the "glossary of Jain Terminology (Indian language) is all but incomprehensible, for anybody who is not interested in Jainism." As a result of these comments, two video links--the one that had a volume problem and the one concerning the Digambaras--were replaced with links to a video with better sound. Another link was added that specifically addressed the Jain concept of the universe. The glossary was kept as a reference tool.

Evaluation of the validity of the ILO and narrated PowerPoint.

The Independent Learning Object and narrated PowerPoint presentation were evaluated by two validation panels of three University of South Florida distance learning

professionals who validated the technical aspects of the presentations, and three St. Petersburg College religious studies scholars, who validated the content of the presentations (See Appendix E). The six members evaluated the two presentations using validation criteria agreed upon by all members in a model inspired by a social roles study conducted by James, Witte, and Galbraith (2006). See Appendix H for the criteria used by both panels.

The religious studies scholars evaluated the Independent Learning Object and narrated PowerPoint on a comparison of objectivity, attractiveness to students, and accessibility. All reported that the Independent Learning Object did not have any content-based advantage over the narrated PowerPoint presentation. Comments included: “Both provide an objective overview of Jainism, and I could see either providing the necessary information for a student testing in the subject.” Another: “your work was very informative and detailed.” All three also said both are effective learning presentations, though one preferred the Power Point.

As far as attractiveness was concerned, the three faculty members reported both equally attractive. One comment: “Both were constructed quite well.” One suggested more color in the PowerPoint presentation.

Accessibility to the PowerPoint was easy, according to faculty members. Two members commented that a link on the Independent Learning Object was not working. This was determined to be an e-mail problem when a file was not included. One said the written captions did not match the dialogue in one of the hyperlinked video. A check of the video did not reveal the stated problem.

The distance-learning professionals listed design accessibility, presentation design, and objectivity as the criteria that should be used to analyze the Independent Learning Object and the narrated PowerPoint presentation. Opinions on presentation design varied. "The webpage provided more in-depth details on the subject," commented one. "From a design standpoint, what the webpage lacks is consistency. The links don't differentiate whether they link to videos or another webpage." This panelist was also critical of the Power Point. "The PowerPoint is effective; however, using the timing option on PowerPoint can be problematic," stated one. "The controls to play/pause can be tricky and interrupt how students control their pace of learning. From a design standpoint, you need to keep in mind that students may want to view the presentation on a mobile device or tablet. Power Point presentations make this difficult."

As far as student accessibility was concerned, both presentations had different strong points, according to the distance learning panel members. "From a student standpoint, what I like about the webpage is that it provides me with detailed information. It encourages me to want to learn more and maybe Google/Bing more information on my own," commented one, and "from a student standpoint, this PowerPoint gives me the direct information I need." Another member commented that the PowerPoint was ideal for more "passive" learners since it is linear in design, while the Independent Learning Object is "more in line in the way people learn." Students explore an Independent Learning Object, and everything they need to know is contained in it, he said, calling the process knowledge "consumption." The only downside is that

an Independent Learning Object “can present technological barriers” such as difficulty with links, or broken links.

Another commented on student accessibility and writing, “The PowerPoint is coherent. The text is easy to read (better than many I've seen). The audio was fine both in the volume levels and the ability to understand what is being said,” though sometimes the narration does not directly match the captions… As far as the website itself is concerned I don't see any problems logistically. The layout and the navigation through the site is straightforward and I don't see any pitfalls with that.”

All three distance learning professionals stated both presentations were equal in their quality and access. “Both presentations give well-informed information. Neither has an advantage over the other, just a different way of presenting the information,” commented one.

In summary, the evaluation of the Independent Learning Object and the Power Point by these two panels of six experts indicate that neither presentation had a clear advantage over the other. They stated they saw equality in content, appearance, student accessibility, and design.

Collection of Data

Assessment of the effectiveness of the two types of online, asynchronous, narrated PowerPoint and the Independent Learning Object were via the pre-study and post-study instruments. An online, stratified sample of students were administered a pre-test and post-test. See Appendix D for a copy of the pre-test and post test. These tests were administered to determine statistical increases in knowledge gain. Stratification divides the sample into different subgroups. It is useful when there are

data for subgroups to be analyzed. This often improves the representativeness of the sample by reducing sampling error. Questions 1 through 3, 8 and 9 cover the philosophy of Jainism ("The word 'jina' means, Tirthankaras in Jainism, Ahimsa means, the Agamas, an ajiva is"). Questions 4, 6 and 7, 10, and 13 cover the history of Jainism ("Nataputta Vardhamana became a jina, 'Mahavira' means, The Young Jains of America, and describe how Nataputta Vardhamana achieved unattachment"). Questions 5 and 10 cover theology (kevalin, the levels of Loka, how Jainism believes salvation will come to the world"). As previously discussed, part of the sample of students participated in an Independent Learning Object-centered online unit, and part participated in a lecture-based online unit. Scores between the two groups were compared to determine if there is a statistically significant difference between their knowledge gain from the pre-test and post-test.

As previously stated, students enrolled in world religions classes were sent an invitational e-mail (see Appendix A) to join a study testing an online teaching method. From the group of students who answered in the affirmative, two groups were chosen through stratified random sampling. The goal was to include close to equal numbers of males and females, since studies have shown there may be a significant difference in outcomes between men and women who take a course online (Graddy, 2006; Yukselturk & Bulut, 2009); however the number of students who volunteered for the study was not sufficient to have equal numbers of males and females. Students were assigned an identifier and an Internet-based random selection generator chose which identifiers to use in the sample. The groups were assigned time frames to access a

specific Internet address to participate in the study. The Internet access portion of the study was conducted asynchronously.

This group included 19 males and 26 females who were directed to a one-week, asynchronous course on Jainism composed of a narrated PowerPoint presentation. See Appendix I for a copy of the narrated PowerPoint presentation. Nineteen males and 26 females were assigned to a one-week, asynchronous unit on Jainism composed of an Independent Learning Object. See Appendix J for a copy of the Learning Object. Students received no guidance other than an introduction telling them to click on aspects of the object and learn about it. The history of Jainism, its philosophy and scripture were accessible depending on where the students clicked on the Learning Object. Students also received no guidance on viewing the PowerPoint presentation, though the presentation began automatically when opened.

The John Henry effect, or compensatory rivalry, was minimized by the lack of knowledge among participants that they are part of competing groups (John, 2010). The same held for compensatory equalization of treatments which creates a competitive atmosphere among groups and resentful demoralization upon perception of progress by students (Onghena, 2005).

Students were administered an online pre-test on their knowledge before taking their course. The pre-test had 10 questions worth 10 points each (Appendix D). This strategy accounted for any prior knowledge of the subject. At the end of the week-long course, students were administered an online post-test (see Appendix D) on the content of their course, with the same questions as pre-test so students may self-report any change in their knowledge gain of the subject matter. Knowledge gain was compared

by gender and by which instructional method was accessed to obtain results for data analysis.

As mentioned before, a total of four groups were included in this study: males in the narrated PowerPoint presentations survey course, females in the narrated PowerPoint presentations survey course, males in the Learning Object survey course, and females in the Learning Object survey course. Data from the online pre-test and post-test were collected and compared to each other to determine if knowledge–as measured by the instruments–had increased.

Data Analysis

Statistical significance was determined using multiple regression analysis with categorical predictors. Multiple regression analysis is a mathematical formula used for predicting the unknown value of a variable from the known value of two or more variables—also called the predictors. This is the ideal method for determining validity since there are two independent variables, both of which are categorical: gender and the type of presentation students received (Cody & Smith, 2006). The data were analyzed to determine if online students interacting with a Learning Object retain knowledge gain differently than students in a narrated PowerPoint online survey course, and whether there was a difference in learning by gender. The results of the pre- and post-tests were interpreted through multiple regression to determine if the knowledge gain difference was statistically significant between the Learning Object group and the narrated PowerPoint group, the difference between the results of males and females, and differences based on age and college major. The data were analyzed using the SPSS program, which can be utilized for multiple regression problems (Ngo, 2012).

The multiple regression equation for each quantitative research question (1-4) is listed as follows:

- Research question 1: Knowledge gain = post-test score - pre-test score by learning method;
- Research question 2: Knowledge gain = post-test score - pre-test score and gender by learning method interaction;
- Research question 3: Knowledge gain = post-test score – pre-test score and age by learning method interaction;
- Research question 4: Knowledge gain = post-test score – pre-test score and major by learning method interaction.

Summary

he purpose of this research study was to assess undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods, which was the independent variable, using asynchronous, online, narrated PowerPoint presentations compared to undergraduate student knowledge gain using an online-learning objects unit, in a college-level world religions survey course at St. Petersburg College. Using Jainism as the subject, the study sought to assess whether there was a difference between results in student knowledge gain, the dependent variable, using narrated delivery by PowerPoint and results in student knowledge gain using information delivery by an Independent Learning Object. A post-assessment instrument measured this outcome between these two groups. Some participants were interviewed at the end of the study to supplement the data. A post-assessment instrument measured the knowledge gain outcome. The sample consisted of undergraduate

college students in two groups of students. Data analysis was conducted by multiple regression analysis to address the four research questions: if online students interacting with a Learning Object retain knowledge differently than students in the narrated PowerPoint online survey course, and if there was a difference in learning by gender, if there was a difference by age, and if there was a difference by major.

Chapter 4

Results and Findings

The purpose of this research study was to assess undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods, which was the independent variable, using asynchronous, online, narrated PowerPoint presentations compared to undergraduate student knowledge gain using an online-learning objects unit, in a college-level world religions survey course at St. Petersburg College. Using Jainism as the subject, the study sought to assess whether there was a difference between results in student knowledge gain, the dependent variable, using narrated delivery by PowerPoint and results in student knowledge gain using information delivery by an Independent Learning Object. A post-assessment instrument measured this outcome between these two groups. Some participants were interviewed at the end of the study to supplement the data.

This chapter consists of a review of the quantitative aspects of the study, including the demographics of the participants, qualitative results of the knowledge gain of students interacting with the Learning Object and PowerPoint, the knowledge gain based on gender, age, major, and the statistical significance of the knowledge gain differences. It also includes the statistical analysis of the data. This chapter also contains a review of the interviews with five students total who interacted with the

Independent Learning Object and the PowerPoint. In addition, the results the post-presentation 67 students who also participated in the study are discussed.

Demographic Characteristics of Participants

Among students who participated in the study, 54 were female and 38 were male. Of the students who reported race, 51 were white, 9 Hispanic, 4 Asian, 2 black, 2 Hispanic and white, and 1 reported Asian and white. Of the 74 students who reporting an education level, 73 said they had some college; one student reported she had an A.A.. Students reporting college major included 38 in hard sciences (nursing, dentistry, biology, etc.), 23 general education majors, and 19 soft majors (business, psychology, pre-law, communications, etc.). See Table 1 for the demographics of the participants based on major.

Quantitative Results

Ninety students were included in the study who accessed the PowerPoint or Learning Object. Sixty-two students who did not complete the pre- and post-tests, or who could not be identified with either the Learning Object or PowerPoint, were excluded from the study (see Table 1). Numbers of males and females were equalized through random assignment as they completed the pre- and post-tests. For example, once equal numbers for the males for both learning methods was identical, no additional males were utilized.

Learning results by method. Forty-five students viewed the PowerPoint presentation and 45 interacted with the Learning Object. The average knowledge gain for Learning Object students was 40.6 points. The average knowledge gain for

PowerPoint students was 33.7 points, about a 7-point difference among methods. See Figure 2.

Table 1

Frequency Distribution of Participant Demographics

Demographic		%
Learning Method		
Learning Object	41	45.6
PowerPoint	49	54.4
Gender		
Male	36	40
Female	54	60
Race		
White	51	56.7
Hispanic	9	10.0
Hispanic/White	2	2.2
Asian	4	4.4
Asian/White	1	1.1
Black	2	2.2
Not reported	20	23.2
Age		
18-24	55	61.1
25-34	8	8.9
35-44	7	7.8
45-54	4	4.4
Missing	16	17.8
Major		
General	23	23.9
Hard	38	39.6
Soft	19	19.8
Other	6	6
Not reported	10	9

n = 90

The four quantitative research questions were tested for statistical significance using IBM's SPSS program. The four research questions, reduced to their statistical elements, were these:

- Research question 1: Knowledge gain = post-test score - pre-test score by learning method;
- Research question 2: Knowledge gain = post-test score - pre-test score and gender by learning method interaction;
- Research question 3: Knowledge gain = post-test score – pre-test score and age by learning method interaction;
- Research question 4: Knowledge gain = post-test score – pre-test score and major by learning method interaction.

Multiple regression analysis was used to test if in Research Question 1, Knowledge gain = pre-test score – post-test score by learning method, there was a statistical significance with the post-test score as the dependent variable and the pre-test score and learning method as predictors, whether the learning method was the Learning Object or PowerPoint presentation. The results of the regression indicated that the predictors explained 5.4% of the variance of the posttest score (R^2 = .054, $F(2,97) = 3.3$, $p < .05$). The overall test results are shown in Table 2. The *R*-squared value was .054 and adjusted *R*-squared value was .034. The results of multiple regression showed that either pretest score ($t = 1.70$, $p = 0.09$) or learning method ($t = 1.29$, $p = 0.20$) was statistically significant, ($t = 3.145$, p = .048). The partial *R* = square for the predictor prescore was .034.

Table 2

Summary Table of Multiple Regression for Research Question 1

Model	*SS*	*df*	*MS*	*F*	*p*
Regression	2150.679	2	1075.340	3.145	.048
Residual	32482.994	87	341.926		
Total	34633.673	89			

Table 3 shows the descriptive statistics of knowledge gain for the two learning methods. The standard deviation for both methods is low, 27, as is the standard error mean (PP SE = 3.8760, and LO SE = 4.3085.

Table 3

Descriptive Statistics of Knowledge Gain for Two Learning Methods

Learning Method	Mean	Standard Deviation	Standard Error Mean
PowerPoint (PP)	28.163	27.1319	3.8760
Learning Object (LO)	38.049	27.5880	4.3085

n = 90

Figure 2. Knowledge gains of students accessing PowerPoint (PP) compared to Learning Object (LO).

The result of the independent *t* test for the mean comparison of score gain between two learning method (Learning object versus PowerPoint) showed that there was no statistically significant difference, t (88) = 1.71, p = 0.91. However, the Cohen's *D* effect size for this comparison was .36, which is a small to medium effect size. Since there were only 90 participants in this study, it might not have enough statistical power to reach the statistical significance. Effect size of .36 indicated that it might have a practical significance since there was a mean difference of 9.89 between the mean score gain of learning object and PowerPoint. See Table 4 for the Independent *t*-Test results.

Table 4

Statistics of Independent t Test for Score Gain Mean Comparison between Two Learning Methods

	T	*df*	*p*	Mean Difference	Effect Size
Learning Method	1.71	89	.091	9.89	.36

Learning results by gender. Results of *F* test for the overall model indicated that in the case of Research Question 2, Knowledge gain = post-test score - pre-test score and gender x learning method interaction, there was no significant statistical significance, $F(4.93) = 1.63$, $p = .173$. In other words, the set of predictors including pretest score, gender, learning method and the interaction between gender and learning method could not significantly predict the dependent variable, posttest score. See Table 5 for the multiple regression results for gender.

Table 5

Multiple Regression for Research Question 2

Model	*SS*	*df*	*MS*	*F*	*p*
Regression	2269.135	4	567.284	1.630	.173[a]
Residual	32364.538	85	348.006		
Total	34633.673	89			

Table 6

ANOVA Summary Table for Learning Method by Gender

Source	*Type III Sum of Squares*	*Df*	*MS*	*F*	*p*	*Partial Eta Squared*
Corrected Model	4530.476[a]	3	1510.159	2.080	.109	.072
Intercept	85409.585	1	85409.585	117.617	.000	.595
Gender	159.816	1	159.816	.220	.640	.003
Type	2946.912	1	2946.912	4.058	.047	.048
Gender x Type	2194.839	1	2194.839	3.022	.086	.036

Scores gains by gender were investigated, with males (*n* = 19) and females (*n* = 26) both accessing the Learning Object. The males' average knowledge gain was 50 points; while the females' average knowledge gain was 35.4. Females (*n* = 26) who accessed the PowerPoint presentation had a knowledge gain of about 37 points. The males (*n* = 19) had a knowledge gain of 27 points. See Figure 3 for interaction graph of the knowledge gains by gender and learning method. In that figure, it is noticeable that the female knowledge gain resulting from access to the Learning Object is very close to the female knowledge gain resulting from students watching the PowerPoint presentation. A review of the interaction graph depicting gender responses shows it is

possible that the similar numbers for the polar opposites in gender balanced each other in the statistical results.

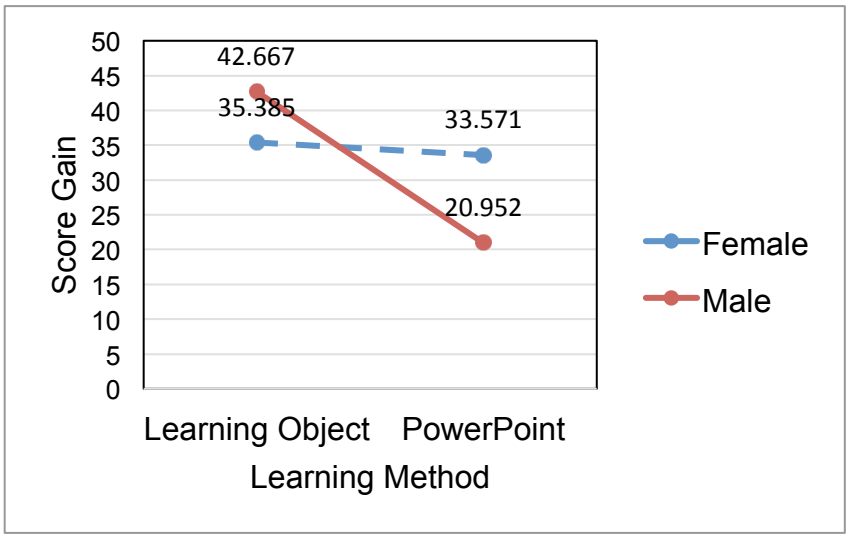


Figure 3. Knowledge gain of students accessing PowerPoint (PP) and Learning Object (LO) by gender.

Two-way ANOVA was conducted to see if there was an interaction effect between learning method and gender. Table 7 shows the statistics from the two-way ANOVA analysis. The result indicated that the main effect of learning method (Type) showed significant $F(1,86) = 3.99$, $p < 0.05$, but the interaction effect between learning method and gender was not significant, $F(1,86) = 2.85$, $p = 0.095$. Again, this might be lack of statistical power because of small sample size. The means and standard deviations of score gain for men who used the Learning Object (LO) were 42.67 and 26.85, respectively, and for those men who used PP were 20.95 and 25.87,

respectively. Based on the mean difference (42.67 – 20.95 = 21.72) of male students accessing to learning object (LO) and PowerPoint (PP), the independent *t* test was conducted to see if there was a statistical significance between both score gains

Table 7

Two-way ANOVA Summary Table for Effects of Learning Method by Gender on Score Gain

Source	Sum of Squares	*df*	Mean Square	*F*	*p*
Corrected Model	4596.70	3	1532.23	2.080	.109
Intercept	93261.23	1	93261.23	126.579	.000
Gender	151.14	1	151.14	.205	.652
Type	2937.16	1	2937.16	3.986	.049
Gender x Type	2101.51	1	2101.51	2.852	.095
Error	63363.30	86	736.78		
Total	164000	90			
Corrected Total	67960	89			

Note. R Squared = .068 and Adjusted *R* Squared = .035

The result of the independent *t* test indicated that there was a significant difference of the mean score gain between male students accessing two different learning methods, $t(34) = 2.45$, $p < .05$. The Cohen's *D* effect size was 0.82, which is a large effect size. It was evident that students accessing to Learning Object (LO) had a significantly higher score gain than those who accessed the PowerPoint (PP). See Table 8 for the results of the independent *t* test.

Table 8

Statistics of Independent T Test for the Mean Score Gain Comparison Between Students Accessing Learning Method by Gender

Gender	*t*	*df*	*p*	Mean Difference	Effect Size
Male (*n* = 36)	2.45	34	.020	21.71	.82
Female (*n* = 54)	.24	52	.811	1.80	.07

Learning results by age. Multiple regression analysis was used to test if in Research Question 3 (Is there a significant difference in the retention of knowledge by age of students studying a unit of Jainism online in a world religions survey course using a narrated PowerPoint presentation and the knowledge gain of students studying a unit of Jainism online in a world religions survey course using an Independent Learning Object?) as seen in the formula for Question 3, Learning gain = post-test pre-test-score + age + learning method + age and learning method. The results of the regression indicated that the predictors explained 39% of the variance (R^2 = .392, $F(4,81)$ = .01, p < .05). The results are shown in Table 9. The results of multiple regression showed that either pretest score or learning method was statistically significant, (t = 3.588, p = .010).

Table 9

Multiple Regression Research Question 3 Between Learning Method and Age

Model	*SS*	*df*	*MS*	*F*	*p*
Regression	4435.446	4	1108.861	3.588	.010
Residual	23795.042	85	309.027		
Total	28230.488	89			

Multiple regression analysis was used to test if in Research Question 4, (Knowledge gain = post-test score - pre-test score + major + learning method + major and learning method interaction with learning method. The results of the regression indicated that the predictors explained about 25% of the variance (R^2 = .249).

Due to small sample size in the age categories of 25-34, 35-44, 45-54 (see Table 1), students in these categories were grouped into the age category of 25 and above. The total number of participants in age group of 25 years and older was 19. There were 16 missing participants who did not indicate their age. Table 10 presents the descriptive statistics of the means of score gain for the two learning methods by age. The means and 95% confidence interval are not statistically significant.

Table 10

Descriptive Statistics of the Mean Knowledge Gain Score for Students Accessing Learning Method by Age

				95% Confidence Interval	
Age	Type	Mean	Standard Deviation	Lower Bound	Upper Bound
18-24	LO (*n* = 28)	43.57	27.11	34.14	52.38
	PP (*n* = 27)	25.93	25.76	16.96	35.80
25 and above	LO (*n* = 7)	32.86	21.38	17.14	50.00
	PP (*n* = 12)	25.83	30.58	10.00	44.99

Note. LO = Learning object; PP = PowerPoint

Knowledge gain by age varied with students interacting with the Learning Object. Students age 25-34 years (*n* = 4) scored an average of 45 gain points using the Learning Object, and about 40 (*n* = 4) on the PowerPoint presentation. Students 35-44 years (*n* = 3) averaged 35 points using the Learning Object and 32.5 (*n* = 4) using the PowerPoint. Students 18-24 years (*n* = 28) scored an average of 33.5 points using the Learning Object and almost 40 points (*n* = 27) using the PowerPoint. Two students aged 45-54 years, scored 30 points average using the Learning Object. Two others the same age scored an average of 25 points using the PowerPoint. Older students, in this case 45-54 years of age may be becoming more computer literate than their predecessors, in this age group. Individuals at the lower ages in this category were introduced to computers during some of their K-12 schooling while previous generations reported in prior research might not be exposed to computers during their pre-college schools. This may account for difference by age. See Figure 4 for the interaction graph knowledge gains based on age group.

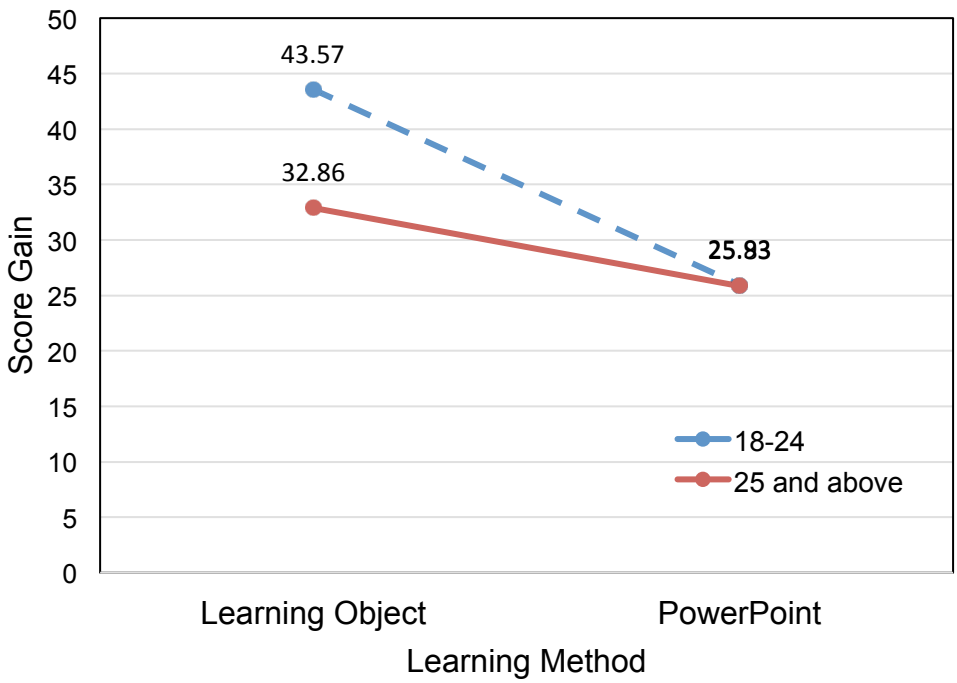


Figure 4. Knowledge gain of students accessing PowerPoint (PP) and Learning Object (LO) by age group.

No significant results for two main effects (age and type) and interaction. But sample size even smaller (*n* = 74) due to missing data. See Table 11 for the two-way ANOVA effects for learning methods and age. The *p* scores for age, type, and age x type were .465, .096., and .470, respectively, not statistically significant. A *t* test was conducted to measure the knowledge score difference between age and type. See Table 12 for the *t* test. With sum of squares high and the *p* level at .078, the comparison of the age data is not statistically significant. As mentioned before, the sample size was small due to unreported data: some students did not respond to the age question.

Table 11
Two-Way ANOVA Summary Table for Effects of Learning Method and Age on Score Gain

Source	Sum of Squares	*df*	Mean Square	*F*	*p*
Corrected Model	5092.39	3	1697.46	2.370	.078
Intercept	54967.62	1	54967.62	76.756	.000
Age	390.67	1	390.67	.546	.463
Type	2035.76	1	2035.76	2.843	.096
Age x Type	377.40	1	377.40	.527	.470
Error	50129.23	70	716.13		
Total	137000	74			
Corrected Total	55221.62	73			

Note: R Squared = .092 and Adjusted *R* Squared = .053.

The *t* test showed that for the younger group, the difference of knowledge gain between young students accessing two learning methods was significant, $t(53) = 2.47$, $p < .05$. For the older group, the difference of knowledge gain between older students accessing two learning methods was not significant, $t(17) = .53$, $p = .601$. See Table 12 for *t* test results for knowledge score gain comparison by age group.

Table 12

Results of Independent T Test for the Mean Knowledge Score Gain Comparison Between Students Accessing Learning Method by Age

Age	*t*	*df*	*p*	Mean Difference	Effect Size
18-24*(n*= 55)	2.47	53.00	.017	17.65	.68
25 and above (*n*= 19)	.53	17	.601	7.02	.27

Learning results by major. Knowledge learned scores were also determined by the major of the student as grouped per Biglan's classification of disciplines (Goel, 2010). Not all students in the sample indicated a major. Of the students who accessed the Learning Object, students with a major in the hard discipline (health sciences, computer science, natural sciences) (*n* = 7) scored about 29 in knowledge learned points. Those majoring in the soft disciplines, such as communication, public safety, and psychology (*n* = 12), scored 55 on average. Students in general education (*n* = 23) scored about 53 points on the average.

Gains scores for students per major watching the PowerPoint presentation included students in general education (*n* = 23), 35.8 points; soft disciplines such as business, public safety, education, and legal majors (*n* = 10), 17.5 points; and hard disciplines such as health science and engineering majors (*n* = 38), 32.7 points. No communications student reported interacting with the PowerPoint presentation. See Figure 5 for a graph of the knowledge score gains by major by the two learning methods (Learning Object and PowerPoint).

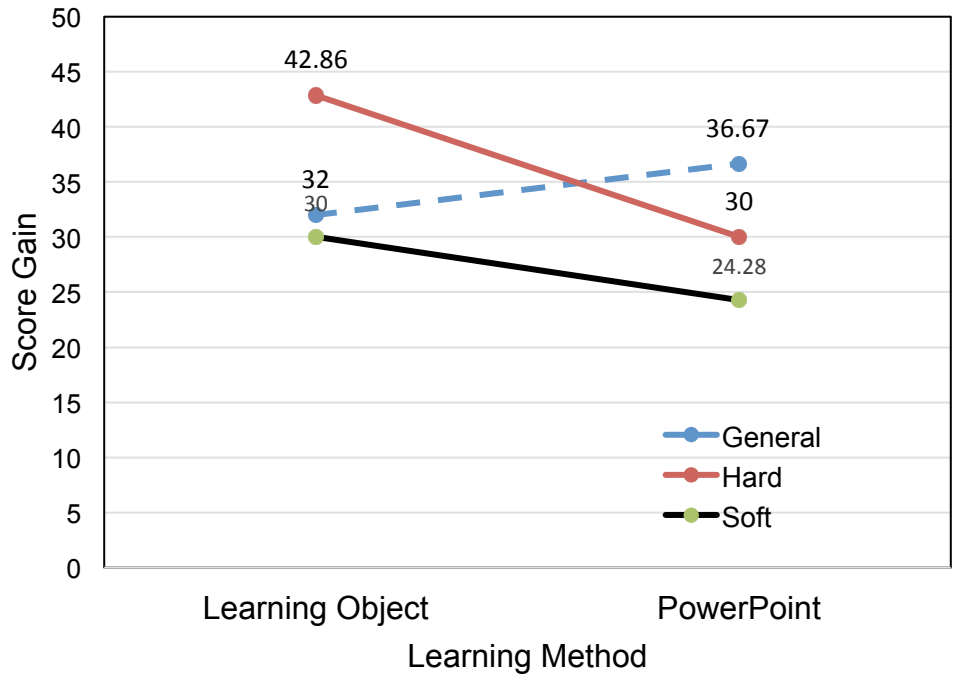


Figure 5. Knowledge gain of students accessing Learning Object (LO) and PowerPoint (PP) by major.

A multiple regression analysis of Research Question 4 (Knowledge gain = post-test score – pre-test score by learning method and interaction with age), showed that the difference was not statistically significant: $F(4, 57) = 2.138$; $p = .088$. See Table 13 for results for the multiple regression analysis by major. Students who did not have a declared major were counted as general education for the purposes of analysis ($n = 10$). These students are also counted by college that is the bases of this study as non-declared major students. Such students are known as general education until they declare a major.

Table 13

Multiple Regression for Research Question 4 for Major

Model	*SS*	*df*	*MS*	*F*	*P*
Regression	2862.075	4	715.519	2.138	.088
Residual	19073.409	57	334.621		
Total	21935.484	61			

The standard deviation was high among descriptive statistics of the mean score gain demonstrating showing no statistical significance among the different majors, possible due to a low sample number. See Table 14 for the descriptive statistics for major.

An estimated marginal means test was conducted on the effects of learning method and major on knowledge gain. The means were far apart, indicating there was no statistical significance among the relationships. See Table 16 for the estimated marginal means on the effects of learning method and major on knowledge gain. The means were different, indicating a wide variance between the major groupings with no statistical significance among them. Many students did not report their majors on the survey that they accessed online.

Table 14

Descriptive Statistics of the Mean Knowledge Gain Score for Students Accessing Learning Method by Major

Major	Type	Mean	Std. Deviation
General	LO	34.29	21.492
	PP	35.83	31.467
	Total	35.26	27.562
Hard	LO	46.32	29.853
	PP	32.67	26.313
	Total	40.29	28.761
Soft	LO	30.00	24.495
	PP	17.50	27.124
	Total	23.75	25.788
Total	LO	37.95	26.772
	PP	28.00	27.519
	Total	32.62	27.468

n = 80

Effect sizes between the Learning Objects and PowerPoint scores were medium to large, adding to the validity of the initial assessment. See Table 16 for the estimated marginal means.

Table 15

Marginal Means of Learning Method and Major on Knowledge Gain

				95% Confidence Interval	
Major	Type	Mean	Std. Error	Lower Bound	Upper Bound
.	LO	24.000	12.038	.024	47.976
	PP	20.000	8.512	3.046	36.954
General	LO	34.286	10.174	14.022	54.549
	PP	35.833	7.771	20.357	51.310
Hard	LO	46.316	6.175	34.016	58.615
	PP	32.667	6.950	18.824	46.509
Soft	LO	30.000	9.517	11.045	48.955
	PP	17.500	9.517	-1.455	36.455

Note: LO = Learning Object, *PP* = PowerPoint

Interviews and Post-presentation survey

Interviews and the post-presentation survey were used to elicit additional information. Five students were interviewed (questions are in Appendix F). The questionnaire was added to the research model to add more depth to the quantitative findings. A majority of students who accessed the Learning Object and the PowerPoint said they both liked the method of learning that they used. Six had mixed opinions about the Learning Object: all said the design was good, and the videos were poor. Two

said they had negative experiences about the Learning Object: it had a lack of unity and was confusing. Four had mixed opinions about the PowerPoint: they liked the video but sound was low, liked presentation but did not help on post test. Two had negative remarks about the PowerPoint: "not happy with it," low audio, needed a different program, and no one to answer questions.

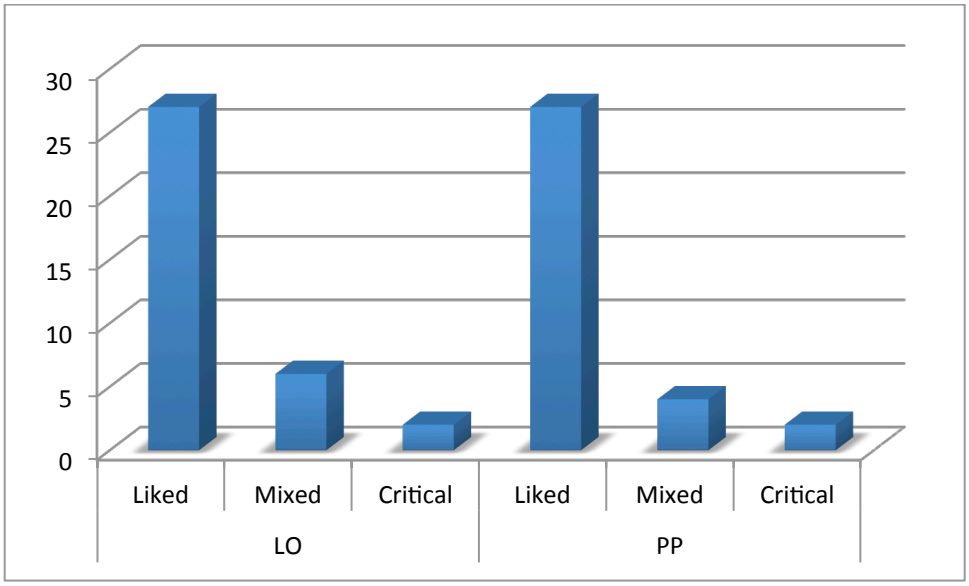


Figure 6. Reactions to using Learning Object (LO) and PowerPoint (PP).

Interviews responses. Five of the students who participated in the study responded to requests for interviews on their experiences in an effort to supplement the quantitative results. Two interacted with the Learning Object and three watched the PowerPoint presentation. These students had the following majors: criminal justice, biotechnology, business management, architectural design, and nursing.

The criminal justice major interacted with the Learning Object. She said she is an auditory learner and used the Learning Object with e-textbook provided with the class. “I actually liked it, honestly. With the book itself, the e-text, I enjoyed how it was able to cite, read out loud.” When pressed, she said nothing came to mind about what she like or disliked about the Learning Object. But “I feel like it was something for future students to use.” When asked about any video incorporated into the Learning Object, “I enjoyed it,” but could not remember which video she watched. But she said she believed the Learning Object helped her on her post-test. When asked how she thought she did on the test, she responded, “I think I did good.”

A biotechnology major who was interviewed said she watched the PowerPoint, but said her memory of her experience was sketchy. She remembered enjoying the presentation, though. “That particular section was one of my favorite ones. I learned more on that section than the other ones.” She said she used two mediums to study for the post-test. “I used the textbook. I looked at the PowerPoint and I looked at the textbook.” As far as her grade on the post-test was concerned, she said “I know I got an A. I think it was a low A.”

A business management major who said she liked its format and information used the Learning Object. “I think I was helpful, full of information, and it covered a lot.” She said compared to PowerPoint presentations she had watched in the past, the Learning Object had more information a student could access. The advantages of the Learning Object over PowerPoint was “the variety of information and the different types of way[s] you were taught,” including text, videos, and sound. She said she prefers learning by reading text, but could not think of any aspect she did not like of the

Learning Object. As far as her score on the post-test was concerned, she responded "I did well."

An architectural design major praised the PowerPoint presentation, saying, "I liked it a lot because it highlighted the main point of what we needed to know." What she did not like about the PowerPoint, and she admitted she was being contradictory, was "sometimes it was kind of hard too. I wish it was a little more explanatory." She said she would prefer if the PowerPoint had complete sentences, though she said she knows they usually do not. As far as her score on the post-test was concerned, she said "I think I did good."

A nursing major said she liked the Jainism PowerPoint presentation because it prepared her well for the post-test. "I did well on most of the quiz because of the way the questions were created." She declined to elaborate when pressed repeatedly, but added, "I really enjoyed it."

The themes of the interviews could be categorized into three areas. All interviewers felt the PowerPoint or the Learning Object (whichever one they used), **helped them do well on the post-test**. A majority also **liked and enjoyed whichever learning method they experienced.** Most of the students **mentioned using multiple mediums or sources**, including two. One student said she preferred different forms of learning, and preferred using many sources, while another liked to use the Learning Object as a tool--one of several tools for learning.

Questionnaire responses. In addition to these interviews, students selected from four classes were asked to complete an online survey. See Appendix K for a copy of the survey. Students were asked their overall impression of either the Learning

Object or the PowerPoint their likes and dislikes and how well they believed they did on the post test. Of the 67 students who responded, 64 students were able to identify the learning method they used and their responses are summarized below. Thirty-eight of the respondents were female, 29 were male. Twenty-eight said that they accessed the Learning Object, 36 watched the PowerPoint presentation.

Twenty-four students praised the Learning Object. Comments included one from a business major, a male:

> The impression I received from the presentation with which I experienced was a positive one. I loved how there were a variety of ways in which information was presented. Such as being able to listen the educational videos on Jainism as well as read some background information on Jainism and have the list of key words a.k.a. vocabulary within Jainism. Having all this made it easier for me to understand the topic.

Students also indicated they liked the navigation of the Learning Object. "It wasn't bad. The way it was set up made it easy to navigate compared to most courses designed for online," wrote a computer science major, who was male. "I enjoyed it quite a lot in fact, the material was well organized and worded, and it definitely helped me understand the material" as if an instructor was teaching it, responded a finance major.

Six students had mixed opinions on the Learning Object. "It was current and updated. The material could have been organized better, and maybe more eye appealing, but I enjoyed the video material," responded a veterinarian technician major who was a female. "I thought the website was broken down into easily understandable subsections but I personally prefer retaining my information through a PowerPoint," wrote a biology major. "I thought that some pages were very well written and easy to

comprehend, however a few of the longer excerpts became boring to read toward the end," responded another biology major.

Two students indicated they had a negative experience as an overall impression. "Although initially I believed that the format with which information was presented seemed professional, the lack of unity in the linked material (website structure and even information presented) gave a disorganized impression," wrote a psychology major, a male. "I thought some of it was a bit confusing. Some sources had more information than others, and more than a few overlapped," wrote a liberal arts major, also male.

What students liked the most about the Learning Object, among 28 responses, was its design. Thirteen students indicated the design facilitated their learning experience. Wrote a male biology major: "The most impressing aspect from the website was how the web designers outlined their page, which made accessing information a lot easier than most websites." Wrote a male nursing major: "There was tabs and videos with explanation of the whole chapter and dictionary was very useful." "I liked the organization. It was nice having everything sorted as opposed to it being splatted over the page. It was definitely a nice touch if I might say," commented a male pharmacy major.

Eight students who explained what they liked about the Learning Object emphasized the detail, clarity, thoroughness, and preciseness of the material. "I like the fact that they are informative about the topic and clear" said a female education major. "I really appreciated the depth in detail on the presentation," commented a female architecture major. "I liked how informative and in-depth it was," said a female business

major. “I enjoyed the fact that it reminded me of the History Channel. I really do like watching documentaries,” stated a female liberal arts major.

Six students said they liked the video aspect of the Learning Object. A male finance major stated that:

> I enjoyed a lot but the part I liked the most in regards to the Jainism presentation were the informative videos. I’m a learner with my eyes, so when I hear information along with a video of said information in action I absorb it much better.

What users disliked included the structure of the Learning Object and certain videos. Ten of the 33 students responding to this question stated that the structure of the Learning Object was too confusing or hard to navigate, having too many tabs. “I did not like that the presentation brought me to many links and pages. The volume of tabs and videos was daunting at times, other than that, it was ok,” said a female nursing major. Three students said they had problems with the videos in the Learning Object. “Some of the YouTube videos were not of the greatest quality. Most of them were clear and easy to understand, but some were hard to hear,” wrote a male computer science major. A plurality of students, 16, declined to comment on anything they did not like about the Learning Object. “I do not see anything I did not like about the presentation,” said an a female architectural major.

The overall impression of the PowerPoint was also positive among the 36 students who responded. Twenty-four said they liked the PowerPoint presentation. A male paralegal student wrote:

> The reason I enjoyed the video PowerPoint presentation is because rather than having to read the information by itself, it helped make it seem like the lecture that would be given in class is brought right into the comfort of your home.

“I was satisfied with the video presentation because it was like being in a face to face class and it was very informative. I could go at my own pace,” commented a female business major. “I personally thought the presentation was well made and had everything it needed,” commented a female liberal arts major.

Four students had mixed comments on the PowerPoint. “Sound was a little low but I enjoyed the video,” said a female art major. “I like the presentation but I used it for the post test and strangely did awful,” wrote a liberal arts major.

Two students had negative comments about the PowerPoint presentation. “Not too happy about it,” commented a social work major without explaining why. “The audio was weak. I downloaded it and tried several different programs to play it with before finding one that played it loud enough for me,” wrote a male computer science major.

What respondents liked about the PowerPoint presentation, mostly, was the information delivery. Out of 28 respondents, 15 said they liked the way the information was presented. “I liked the information was neatly categorized so it made it easier to organize my written notes so I could study through them,” said a female liberal arts student. “I enjoyed the pace of the presentation, it allowed enough time to take accurate notes,” commented another female liberal arts major. “I liked that I got to learn without feeling the pressure of being taught,” stated a female business major.

Six each of the respondents liked the navigation and the audio of the narrated PowerPoint presentation. “It was very neat and organized. It was easy to follow and understand,” commented a nursing student. “The audio readings on each slide that helped with understanding the material,” wrote a male respiratory therapy major.

Most of the respondents, 34 out of 48, reported that they had nothing to dislike about the PowerPoint. “I really didn't have any issues. I enjoyed it,” said a female pre-med student. Four students said they did not like the quality of the information: it was either too much or too little. “Many slides were consumed with too many sentences, taking away from the overall pleasure of studying a PowerPoint rather than the textbook itself,” wrote a female liberal arts major. “Information was maybe too brief, in that it didn't seem to be enough information to successfully answer all the questions correctly on the test,” countered the male respiratory therapist major. The other complaint was there was no opportunity for feedback from the instructor. “Generally what I do not like about presentations like this is that if I was to have a question it is harder to get an immediate answer from the professor. However, I would prefer this method,” wrote a female business major. “If I needed to ask a question there was no one to ask,” added a female liberal arts major.

Observations

When first starting this study, as an instructor of religious studies, I was looking for a better way to educate students through distance learning. The methods that were assigned to me as an instructor dovetailed with the literature about what constitutes good curriculum. The online offerings included discussion groups, writing assignments, and tests. However the information was still delivered using the modified slide show called PowerPoint, depriving students of an interactive experience that they might enjoy when pursuing knowledge. The literature demonstrated that student-directed learning was superior to instructor-provided curriculum, and that distance education needs to advance in the ever-improving field of adult education.

Presenting the idea of non-linear instruction like Learning Objects to educators and educational technologists proved challenging. One university mentioned in the study had an unwritten policy among its faculty against online learning. Faculty, educational technologists, and student focus groups had never encountered a Learning Object and reacted both positively and negatively toward it. Educational technologists were more interested in the non-linear type of learning represented by a Learning Object than faculty were. There was little support from other faculty for testing the Learning Objects in their class. Of the 20 instructors contacted who taught World Religions, REL 2300, four participated in the study. Some responses from others included "I am retiring," "I have too many classes to teach," or it would add to one's workload. Faculty who did participate were willing to add me to their online classes so I could install the Learning Object and PowerPoint.

Institutionally, administrators were tepid to the implementation of the Learning Object study. Upon receiving IRB approval at the college used in this study, I was referred to the grant department to apply for money that would be used as an incentive for students to participate. After filing an application, and following up, I was told my request was never submitted for a grant. A second attempt at an incentive was vouchers for the online text for the students who participated in the study. Staff at the campus bookstores was open to the idea and said they would check into the feasibility. After three months, I contacted the bookstores and was told no decision had been made. I successfully convinced an assistant manager at one branch campus, a former student of mine, to offer the incentive, although though no other college bookstore

participated. The main campus bookstore declined to honor a student's request for a voucher.

Since the incentive for students participating in the study–a free, online textbook for the course–was offered prior to the beginning, an incentive to keep students in the study was lost. It could not be helped in this case, since Jainism was not the first subject students learned in the courses, and they needed the textbook prior to their first class. A recommendation would be for the incentive to be offered upon successful completion of the study, something other than the required textbook.

The University of South Florida has limited the ability of its faculty and staff to create Learning Objects. Because of a new agreement with Adobe, the owner of Dreamweaver, faculty, staff, departments and students have to pay a licensing fee. Technology fees collected by USF no longer cover the license fee. There is no other program that can create a non-linear Learning Object in the university's Technology Gateway Website, which was confirmed by two educational technology specialists.

Chapter 5

Discussion of results and findings

The purpose of this research study was to assess undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods, which was the independent variable, using asynchronous, online, narrated PowerPoint presentations compared to undergraduate student knowledge gain using an online-learning objects unit, in a college-level world religions survey course at St. Petersburg College. Using Jainism as the subject, the study sought to assess whether there was a difference between results in student knowledge gain, the dependent variable, using narrated delivery by PowerPoint and results in student knowledge gain using information delivery by an Independent Learning Object. A post-assessment instrument measured this outcome between these two groups. Some participants were interviewed at the end of the study to supplement the data. Parts of this chapter include a summary of the study, conclusions, implications, and recommendations.

Summary of Study

Alternatives to the traditional lecture method of higher education have been proposed and evaluated with the aim of improving student cognition; one of these approaches is the use of learner-directed, learning, as represented by a Independent Learning Object. The literature has shown that such an approach is preferable for cognitive gain. The findings of this study also indicate that this may be the case.

The use of learner-directed instruction has been used in other disciplines, but rarely, if at all, in the field of religious studies. In this study, four research questions were created to determine the effectiveness of this learner access through the use of a Learning Object.

The research questions for this study include one major research and three variable-specific questions, plus a qualitative question.

1) Is there a significant difference in the knowledge gain of students studying a unit of Jainism online in a world religions survey course using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit on Jainism?

2) Is there a significant difference in knowledge gain by gender of students using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit of Jainism?

3) Is there a significant difference in the knowledge gain by age of students using a narrated PowerPoint presentation and that of those using an Independent Learning Object in a unit of Jainism?

4) Is there a significant difference in knowledge gain by college major of students studying a unit of Jainism online in a world religions survey course using a narrated PowerPoint presentation and that of those using an Independent Learning Object?

5) Is there a difference in perception among students concerning the accessibility and cognitive potential of learner-directed and instructor-provided learning?

This study assessed undergraduate student knowledge gain outcomes between instructor-provided and learner-directed methods among 90 college undergraduate students and determined whether there was a significant difference in the knowledge gain of students, a difference by gender, age, and major, in studying a unit of Jainism online in a world religions survey course using either a narrated PowerPoint presentation or using an Independent Learning Object, as well as their perception of the two methods. Students were divided randomly into two groups with each accessing one of the two learning methods. The results were the Learning Objects students' knowledge gain was higher than the PowerPoint students, while females scored higher using the PowerPoint and males scored higher using the Learning Object.

Conclusions

The majority of students who used the Learning Object online performed better than students who listened to the PowerPoint, supporting the contention that student-directed learning leads to greater knowledge gain. This was borne out in the literature such as in Abraham et al. (2011), Chu et al. (2012), Creese (2011), and Knowles (1975).

Males performed better interacting with the Learning Object, while females performed better listening to the PowerPoint presentation. The literature is at odds on this, with some studies saying men and women learn differently online (Brunner, 1991; McSporran & Young, 2001), while others conclude there is no difference (Arbaugh, 2000; Yukselturk & Bulut, 2009). However, in this study, males and females responded similarily.

Students aged 25-34 years performed better using the Learning Object. However, 18-24 year olds performed similarly on both the Learning Objects and the PowerPoint presentation. Older students aged 45-54 years, did better interacting with the Learning Object than they did listening to the PowerPoint presentation, though others between 18 and 44 did better listening to the PowerPoint.

Soft discipline majors performed better than any other majors interacting with the Learning Object. General education majors scored higher than others using the PowerPoint. Students' majors may be important in which type of learning increases their cognition more. Also, students' majors may reflect on how they learn online, according to the literature (Cadorin et al., 2011; Cibulka, 2011; Reisner et al. (2012). They learned similarly.

Qualitative findings showed equal numbers of students praising the Learning Object and the PowerPoint. Those liking the Learning Object praised its design and content. Those liking the PowerPoint said it was similar to a linear lecture in a face-to-face classroom setting. Women preferred the Learning Object, while men preferred the PowerPoint in their comments. How well they did on the post-test, though, often was at odds with what they believed they scored. General education majors tended to like the PowerPoint, while hard and soft majors were about evenly split between the two.

Implications

Distance learning has been a prolific topic in the literature (Brown,1997; Fokides & Tsolakidis, 2008; McLinden et al., 2006; Miller, 2002; Östlund, 2005), as has the debate concerning student-accessed versus instructor-delivered learning. Student-accessed learning particularly in the religious studies field is lacking. The implications

of this study are that instructors in any discipline could better serve their students if they investigated using Learning Objects in their online learning than the use of PowerPoint presentations. Since gender, major, and age may have no significance when students interact with a Learning Object, the Learning Object may be a more universal method to increase cognitive gain among college students than other methods.

Not only is this a change in teaching method by switching to Learning Objects, but a change in teaching philosophy among college instructors. The Learning Object is an important alternative to teaching by rote and delivering online learning with screeds of text (Arroyo, 2010; Kay, 2011; Martens & Kirschner, 2007). The use of student-directed learning could apply the teachings of Piaget and Vygotsky to a new medium that engages students' auditory, verbal, and tactile methods of learning.

For college administrators, the results of this study demonstrate a viable shift for hiring and training purposes. Instructor hires could be familiar with software that can create Web-based Learning Objects, such as Adobe Dreamwaver or SoftChalk, etc. Those who are not as familiar should be given access to training programs that teach such software use. Instructors could also be familiar with sources for their discipline on the Internet. Administrators can also use Learning Objects for training their staff, likely resulting in an increased cognitive gain on administrative procedures and rules. Learning Objects would free administrators or their staff from using time to give PowerPoint-based lectures.

Training is a large part of human resources departments; the use of Learning Objects could increase cognitive ability in the areas employees need to be productive members of the company, college or university. Use of Learning Objects could save

time in training as employees grasp concepts quicker than using traditional linear learning methods.

Funding for education by state legislatures could be altered as a result of this study. Instead of funding classroom construction, the legislatures could divert funding to online learning now that a viable alternative to PowerPoint presentations can be used. Online learning might become more attractive for funding. Legislatures can use Learning Objects to educate elected officials and staff on issues, such as the important parts of a bill. Creation and use of Learning Object repositories could enable state and national education institutions and human resource departments to use these resources to increase cognition in their programs.

The U.S. Department of Education would have another asset to include in its education policy since it recently proposed new rules for distance learning in postsecondary education (Education Department). Implementing Learning Objects nationwide and worldwide at military bases may improve the distance learning experience for military and civilian personnel.

Learning Objects appeared to work better for men than for women. Previously mentioned studies concluded that men and women learn differently online. Gender might need to be considered in the implementation of Learning Objects.

Age might also be considered when implementing the learning method, since younger learners (18-24 years) surpassed older learners using PowerPoint, and older students (25-54) performed better with the Learning Object.

Recommendations for Future Research

Due to the lack of statistical significance among some variables in this study--major, gender, and age--more research is needed with an increased sample size. Future research could focus on increasing the sample size to test the research questions in this study. More qualitative input would add to a greater understanding how students see, interpret, and access online Learning Objects. Increasing the number of questions on the pre-test and post-test would add to reliability.

Gender of the narrator of the PowerPoint should be factored in as a variable. A male voice, as used in this study, may have a different effect than a woman's.

Additional research on other sections or classes of online World Religions courses could be conducted, as well as in other subjects and disciplines, not just religious studies. As mentioned before in this paper, other disciplines are using learning objects in their curriculum.

More research could be conducted in other schools, with possible variables being region or accreditation status or accreditation source. Whether the school is public or private can be another variable.

Age is another aspect that merits further research. With older adults becoming more familiar with computers, those doing better accessing the Learning Object may change over time.

On a larger scale, researchers can test the Learning Object in other fields besides educational institutions, as well as the military. These include human resources' training, military training, and skills such as those in electrician and plumbing training

programs. The use of Learning Objects to orient new employees in a business can also be studied.

References

A curriculum guide. (2005). Division of Program Development, Department of Education, Government of Newfoundland and Labrador. Retrieved from http://www.ed.gov.nl.ca/edu/k12/curriculum/guides/religion/rel_ed3101_3106.pdf

Abawajy, J. (2012). Analysis of asynchronous online discussion forums for collaborative learning. *International Journal of Education and Learning, 1*(2), 11-21.

Abraham, R. R., Fisher, M., Kamath, A., Izzati, T. A., Nabila, S., & Atikah, N. N. (2011). Exploring first-year undergraduate medical students' self-directed learning readiness to physiology. *Advances in Physiology Education, 35*(4), 393-395.

Ahmad, R., & Ives, B. (2001). Web-based virtual learning environments: A research framework and a preliminary assessment of effectiveness in basic IT skills training. *MIS Quarterly*, *25*(4), 401-426. Article Stable URL: http://www.jstor.org/stable/3250989

Arbaugh, J. (2000). An explanatory study of the effects of gender on student learning and class participation in an Internet-based MBA course. *Management Learning, 31,* 503-519. Retrieved from: http://mlq.sagepub.com/content/31/4/503.

Arroyo, A. (2010). It's not a colorless classroom: Teaching religion online to black college students using transformative, postmodern pedagogy. *Teaching Theology & Religion, 13*(1), 35-50.

Ausburn, L. (2002). The freedom versus focus dilemma in a customized learner-accessed learning environment: A comparison of the perceptions of adult and younger students. *Community College Journal of Research and Practice*, *6*(3), 225-235

Berlyne, D. E. (1960). *Conflict, arousal, and curiosity. McGraw-Hill series in psychology*. New York, NY: McGraw-Hill. doi: 10.1037/11164-001

Boyd, R. D. (1989). Facilitating personal transformations in small groups: Part I. *Small Group Behavior, 20*(4), 459-474. Retrieved from http://search.proquest.com/docview/63057819?accountid=14745; http://sfx.fcla.edu/usf?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&sid=ProQ:ProQ%3Aericshell&atitle=Facilitating+Personal+Transformations+in+Small+Groups%3A+Part+I.&title=Small+Group+Behavior&issn = &date=1989-11-01&volume=20&issue=4&spage=459&au=Boyd%2C+Robert+D&isbn = &jtitle=Small+Group+Behavior&btitle=

Brewer, S., & Klein, J. D. (2006). Type of positive interdependence and affiliation motive in an asynchronous, collaborative learning environment. *Educational Technology Research & Development, 54*(1), 331-354.

Brockett, R. (1985). The relationship between learner-accessed learning readiness and life satisfaction among older adults. *Adult Education Quarterly, 35*, 210-219. doi: 10.1177/0001848185035004003

Brookfield, S. (2013). *Powerful techniques for teaching adults.* New York. NY : Wiley.

Brown, A. (1997). Designing for learning: What are essential features of an effective, online course? *Australian Journal of Educational Technology, 13*(2), 115-126. Retrieved from: http://hdl.voced.edu.au/10707/126745

Brunner, C. (1991). Gender and distance learning. *Annals of the American Academy of Political and Social Science*, *514*(1)*,*133-145. Retrieved from: http://www.jstor.org/stable/1047136

Butcher, D. (2009). Online degrees viewed more favorably. *Industry Market Trends.* Retrieved from http://news.thomasnet.com/IMT/archives/2009/10/online-college-degrees-viewed-more-favorably-according-to-reports-still-some-skepticism.html

Cadorin, L., Suter, N., Dante, A., Naskar Williamson, S., Devetti, A., & Palese, A. (2012). self-directed learning competence assessment within different healthcare professionals and amongst students in Italy. *Nurse Education in Practice, 12*(3), 153-158.

Castree, S. (2012). Cyber-plagiarism for sale!: The growing problem of blatant copyright infringement in online digital media stores. *Texas Review of Entertainment & Sports Law, 14*(1), 1-32.

Cheong, Y., Gregorio, F., & Kim, K. (2010). The power of reach and frequency in the age of digital advertising: Offline and online media demand different metrics. *Journal of Advertising Research*, *4*, 403-415.

Chow, M. K., Quine, S., & Li, M. (2010). The benefits of using a mixed methods approach–quantitative with qualitative–to identify client satisfaction and unmet needs in an HIV healthcare centre. *AIDS Care*, *22*(4), 491-498. doi:10.1080/09540120903214371

Chu, R., Chu, A., Weng, C., Tsai, C., & Lin, C. (2012). Transformation for adults in an Internet-based learning environment--Is it necessary to be self-directed? *British Journal of Educational Technology, 43*(2), 205-216.

Churchill, D. (2007). Towards a useful classification of Learning Objects. *Educational Technology Research and Development, 55*(5), 479-497. doi: 10.1007/s11423-006-9000-y

Cibulka, N. (2011). Educating nurses about research ethics and practices with a self-directed practice-based learning program. *Journal of Continuing Education in Nursing, 42*(11), 516-521.

Cody, R., & Smith, J. (2006). *Applied statistics and the SAS® programming language* (5th ed.). Upper Saddle River, NJ: Pearson.

Columbia University Academic Commons. Columbia University. (n.d.) Retrieved from: http://academiccommons.columbia.edu

Creative Research System sample size calculator. (2012). Retrieved from: http://www.surveysystem.com/sscalc.htm#one

Creese, J. (2011). Self- and cohort-directed design in research training tutorials for undergraduate researchers: Increasing ownership and relevance to improve learning outcomes. *Journal of Academic Librarianship, 37*(4), 327-332.

Darabi, A., Arrastia, M., Nelson, D., Cornille, T., & Liang, X. (2011). Cognitive presence in asynchronous online learning: A comparison of four discussion strategies. *Journal of Computer Assisted Learning, 27*(3), 216-227

Della-Dora, D., & Blanchard, L. (Eds.). (1979). *Moving toward self-directed learning.* Alexandria, VA: Association for Supervision and Curriculum Development.

deJong, N., Verstegen, D., Tan, F. & O'Connor, S. (2011). A comparison of classroom and online asynchronous problem-based learning for students undertaking statistics training as part of a Public Health Masters degree. *Advances in Health Science Education, 18*(2). doi 10.1007/s10459-012-9368-x

Du, F. (2012). Using study plans to develop self-directed learning skills: Implications from a pilot project. *College Student Journal, 46*(1), 223-232.

Dynan, L., Cate, T., & Rhee, K. (2008). The impact of learning structure on students' readiness for self-directed learning. *Journal of Education for Business, 84*(2), 96-100.

Education Department proposes rule on state authorization of postsecondary distance education, foreign locations (2016). U.S. Department of Education. Retrieved from: http://www.ed.gov/news/press-releases/education-department-proposes-rule-state-authorization-postsecondary-distance-education-foreign-locations

Esling, N. (2013). Dance archives in an online environment: The impact of digital media on the preservation of dance history. *Canadian Theatre Review, 156,* 30-34.

Fisher, M. (2012). *A brief introduction: Living religions* (3rd ed). Boston, MA: Pearson.

Fisher, M., King, J., & Tague., G. (2001). Development of the self-directed Learning Readiness Scale*. Nurse Education Today, 21*, 516-525. Retrieved from: http://ccnmtl.columbia.edu/projects/pl3p/self-directed%20learning%20scale%20for%20nurses.pdf

Fokides, E., & Tsolakidis, C. (2008). Virtual reality in education: A theoretical approach for road safety training to students. *European Journal of Open, Distance and E-Learning*, *2*, 1-7. Retrieved from http://www.eurodl.org/index.php?article=343

Galitz, W. (2002). *The essential guide to user interface design: An introduction to GUI design principles and techniques.* New York, NY: Wiley.

Garrison, D., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education, 7*(95), 105.

Giesbers, B., Rienties, B., Tempelaar, D., & Gijselaers, W. (2013). A dynamic analysis of the interplay between asynchronous and synchronous communication in online learning: The impact of motivation. *Journal of Computer Assisted Learning, 4*(1)*,* 30-50*.* doi: 10.1111/jcal.12020

Goel, S. (2010). Computing education: Reflections and ideation. International Conference on Contemporary Computing blog. Accessed at: https://goelsan.wordpress.com/2010/07/27/biglans-classification-of-disciplines/

Graddy, D. (2006). Gender salience and the use of linguistic qualifiers and intensifiers in online course discussions. *American Journal of Distance Education, 20*(4), 211-229.

Graves, L., Asunda, P., Plant, S., & Goad, C. (2011). Asynchronous online access as an accommodation on students with learning disabilities and/or attention-deficit hyperactivity disorders in postsecondary STEM courses. *Journal of Postsecondary Education and Disability, 24*(4), 317-330.

Hall, D. (1997). Computer mediated communication in post-compulsory teacher education. *Open Learning, 12*(3), 54-56.

Heischman, D. (2012). The great uncomfortable. *Independent School, 71*(3), 110.

Hiltz, S. & Goldman, R. (2005). What are asynchronous learning networks? *Learning together online: Research on asynchronous learning networks.* Mahwah, NJ: Lawrence Erlbaum.

Hirshfield, S., Chiasson, M., Joseph, H., Scheinmann, R., Johnson, W., Remien, R., & . . . Margolis, A. (2012). An online randomized controlled trial evaluating HIV prevention digital media interventions for men who have sex with men. *Plos One*, *7*(10), 1-11.

Hoser, A. (2013). Using team-based learning in an online, asynchronous information literacy course. *Journal of Library Innovation, 4*(2), 111-121.

Hsu, I. (2012). Intelligent discovery for learning objects using semantic web technologies. *Journal of Educational Technology & Society, 15*(1), 298-312.

Ivanovska B. (2014). Learner autonomy in foreign language education and in cultural context. *Procedia—Social And Behavioral Sciences* [serial online]. May 5, 2015, 180

James, W. B., Witte, J. E., & Galbraith, M. W. (2006). Havighurst's social roles revisited. *Journal Of Adult Development*, *13*(1), 52-60.

Jimenez, B., Browder, D., & Courtade, G. (2009). An exploratory study of self-directed science concept learning by students with moderate intellectual disabilities. *Research & Practice for Persons with Severe Disabilities, 34*(2), 33-46.

Kay, R. (2011). Exploring the influence of context on attitudes toward web-based learning tools (WBLTs) and learning performance. *Interdisciplinary Journal of E-Learning and Learning Objects, 7,* 125-142. Retrieved from: http://go.galegroup.com.ezproxy.lib.usf.edu/ps/i.do?id=GALE%7CA293351478&v=2.1&u=tamp59176&it=r&p=EAIM&sw=w

King, J. (2009). The grill: Aaron E. Walsh. *Computerworld, 24*, 1-3.

King, K., & Griggs, J. (2006). *Harnessing innovative technology in higher education: Access, equality, policy and instruction.* Madison, WI: Artwood. Retrieved from: http://works.bepress.com/kathleen_king/2/

Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. New York, NY: Association Press.

Koh, J., Herring, S., & Hew, K. (2010). Project-based learning and student knowledge construction during asynchronous online discussion. *The Internet and Higher Education, 13*(4), 284-291. doi.org/10.1016/j.iheduc.2010.09.003

Kretzschmar, F., Pleimling, D., Hosemann, J., Füssel, S., Bornkessel-Schlesewsky, I., & Schlesewsky, M. (2013). Subjective impressions do not mirror online reading effort: Concurrent EEG-eyetracking evidence from the reading of books and digital media. *Plos ONE*, *8*(2). doi:10.1371/journal.pone.0056178

Lane, D. (n.d.). Confidence interval on the mean. *Introduction to statistics.* Online edition. Retreived from: http://onlinestatbook.com/Online_Statistics_Education.pdf

Liljeström, M. (2010). *Learning text talk online: Collaborative learning in asynchronous text based discussion forums*. Pedagogiska institutionen, Umeå Universitet. Retrieved from: http://umu.diva portal.org/smash/get/diva2:319875/FULLTEXT01

Mayer, R. (2008). Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *The American Psychologist*, *63* (8), 760-769.

Mayer, R., Moreno, R., Boire, M., & Vagge, S. (1999). Maximizing constructivist learning from multimedia communications by minimizing cognitive load. *Journal of Educational Psychology, 91*(4),638

Majeski, R., & Stover, M. (2007). Theoretically based pedagogical strategies leading to deep learning in asynchronous online gerontology courses. *Educational Gerontology, 33*(3), 171-185. doi:10.1080/03601270600850826

Martens, R., Bastiaens, T., & Kirschner, P. A. (2007). New learning design in distance education: The impact on student perception and motivation. *Distance Education, 28*(1), 81-93.

McLinden, M., McCall, S., Hinton, D., & Weston, A. (2006). Participation in online problem-based learning: Insights from postgraduate teachers studying through open and distance education. *Distance Education*, *27*(3), 331-353. Retrieved from: http://dx.doi.org/10.1080/01587910600940422

McSporran, M., & Young, S. (2011). Does gender matter in online learning? *Research In Learning Technology, 9*(2). doi:http://dx.doi.org/10.3402/rlt.v9i2.12024.

Mercer, N. (2013). The social brain, language, and goal-directed collective thinking: A social conception of cognition and its implications for understanding how we think, teach, and learn. *Educational Psychologist*, *48*(3), 148-168. doi:10.1080/00461520.2013.804394

Merlot II, (2016). *Academic communities*. Retrieved at: https://www.merlot.org/merlot/index.htm?action = communities

Merriam, S. & Tisdell, E. (2015). *Qualitative research: A guide to design and implementation.* Newark, N.J.: Wiley. Retrieved from http://www.ebrary.com.

Michlitsch, J. F., & Sidle, M. W. (2002). Assessing student learning outcomes: A comparative study of techniques used in business school disciplines. *Journal of Education for Business, 77*(3), 125-130.

Miller, P. (2002). *Theories of developmental psychology* (4th ed.). New York, NY: Worth.

Milman, N., Hillarious, M., & Walker, B. (2012). An exploratory qualitative analysis of graduate student learning and division of labor resulting from student cofacilitation of an asynchronous online discussion. *Quarterly Review of Distance Education, 13*(2), 51-64.

Moreno, R., & Mayer, R. (2007). Interactive multimodal learning environments. *Education Psychological Review. 19.* 309–326. doi10.1007/s10648-007-9047-*2*

Morris, R. (2011). Cultivating reflection and understanding: Foundations and orientations of Québec's Ethics and Religious Culture Program. *Religion & Education*, *38*(3), 188-211. doi 10.1080/15507394.2011.609118

Morrison, B. R. (2011). Self-directed learning modules for independent learning: IELTS exam preparation. *Studies in Self-Access Learning Journal, 2*(2), 51-67. Retrieved from: http://search.ebscohost.com.ezproxy.lib.usf.edu/login.aspx?direct=true&db=eft&AN = 508435971&site=ehost-live

Muijs, D. (2010). *Doing quantitative research in education using SPSS.* Thousand Oaks, CA: Sage. Retrieved from: http://www.sagepub.com/upm-data/36869_muijs.pdf

Naidu, S., & Oliver, M. (1999). Critical incident-based computer supported collaborative learning. *Instructional Science, 27*(5), 329-354.

Neisser, U. (2003). Adventures in cognition: From cognitive psychology to the rising curve. In R. J. Sternberg (Ed.), *Psychologists defying the crowd: Stories of those who battled the establishment and won* (59-172). Washington, DC: American Psychological Association. doi:10.1037/10483-010

Ngo, T. (2012). The steps to follow in a multiple regression analysis. *Proceedings of the SAS Global Forum 2012*, 1-12. Retrieved from: http://support.sas.com/resources/papers/proceedings12/333-2012.pdf

Nielsen, R. (2011). A retrospective pretest-posttest evaluation of a one-time personal finance training. *Journal of Extension, 49*(1), 1-8. Retrieved from: http://www.joe.org/joe/2011february/a4.php

Nord, W. (2010). *Does God make a difference: Taking religion seriously in our schools and universities*. Oxford, UK: Oxford University Press. Oxford Scholarship Online. doi: 10.1093/acprof.oso/9780199766888.003.0006

Onghena, P. (2005). Compensatory equalization. In S. Everitt & D. Howell (Eds.), *Encyclopedia of statistics in behavioral science,* p. 337.. Hoboken, NJ: Wiley

Östlund, B. (2005). Stress, disruption and community—adult learners' experiences of obstacles and opportunities in distance education. *European Journal of Open, Distance and E-Learning, 2005*. Retrieved from: http://www.eurodl.org/materials/contrib/2005/Ostlund.htm

Palloff, R., & Pratt, K. (2003). *The virtual student. A profile and guide to working with online learners.* San Francisco, CA: Jossey-Bass

Pelfrey, W., & Pelfrey, W. (2009). Curriculum evaluation and revision in a nascent field: The utility of the retrospective pretest-posttest model in a homeland security program of study. *Evaluation Review*, *33*(1), 54-82.

Penland, P. (1977). *Self-planned learning in America: Final report.* Pittsburgh, PA: University of Pittsburgh Graduate School of Library and Information Sciences. (ED184589)

Piaget, J. (1926). Psychology. *The Monist, 36*(3), 439. Retrieved from: http://www.jstor.org/stable/27901077

Piaget, J. (1999). *The construction of reality in the child.* Oxford, UK: Routledge. Retrieved from: http://books.google.com/books?hl=en&lr=&id=hK37xrpqdIkC&oi=fnd&pg=PA3&dq=Piaget&ots=yf7DoQDCcZ&sig=YrFPyOFZZ5fZqAe6MU0UXV6fA7U#v=onepage&q=Piaget&f=false

Pomales-Garcia, C., & Lopez, A. (2010). Digital dimensions and attributes for web-based learning distance modules. *The American Journal of Distance Education, 24*(1), 33.

Quantitative psychology, (2014). Introduction. American Psychological Association Website. Retrieved from: http://www.apa.org/research/tools/quantitative/

Ray, J. J. (1982). The construct validity of balanced Likert scales. *Journal of Social Psychology*, *118,* 141-142.

Reisner, B., Stewart, J., Williams, B., Goj, L., Holland, P., Eppley, H., & Johnson, A. (2012). Virtual inorganic pedagogical electronic resource learning objects in organometallic chemistry. *Journal of Chemical Education, 89*(2), 185-187. doi: 10.1021/ed200200w

Rose R., (2014). Access and equity for all learners in blended and online education. *International Association For K-12 Online Learning*, October 1, 2014. Accessed at: http://www.inacol.org/resource/access-and-equity-for-all-learners-in-blended-and-online-education/

Rose, D., & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning.* CAST Teaching Every Student Website e-book. Retrieved from: http://www.cast.org/teachingeverystudent/ideas/tes/index.cfm

Schaffhauser, D. (2012). The best free Web 2.0 tools. *THE Journal, 1*(47), (n.p.). Retrieved from: http://thejournal.com/articles/2011/10/26/the-best-free-web-2.0-tools.aspx

Seward, L., Harvey, V., & Carranza, J. (2009). Computer-mediated communication that brings learning into the present: Gender differences in status differentials and self-disclosure in online peer teaching. In N. Kock, (Ed.), *E-collaboration: Concepts, methodologies, tools, and applications* (pp. 1171-1181). Hershey, NY: Information Science Reference.

Silveira, I., Grigas, M., Ferreira, V., & Araujo, C. (2003). From Socrates to Piaget: Patterns for distance learning. *Proceedings of the 3rd IEEE International Conference on Advanced Learning Technologies*. Retrieved from: http://www.computer.org/plugins/dl/pdf/proceedings/icalt/2003/1967/00/19670402.pdf?template=1&loginState=2&userData=St.%2BPetersburg%2BCollege%253ASt.%2BPetersburg%2BCollege%253A66.194.104.5

Simpson, J. (2012). Bridging the gap between religious education and gifted education: Theory and praxis in three secondary school programmes in Cambridgeshire. *British Journal of Religious Education, 34*(3), 247-261. doi: 10.1080/01416200.2011.649342

So, H. (2009). When groups decide to use asynchronous online discussions: Collaborative learning and social presence under a voluntary participation structure. *Journal of Computer Assisted Learning, 25*(2), 143-160. doi: 10.1111/j.1365-2729.2008.00293.x

SPC course resources. (2015). SPC mycources website. Retrieved from: https://mycourses.spcollege.edu/d2l/lor/search/search.d2l?ou=58066

Stefanov, K., Stoyanov, S., & Nikolov, R. (1998). Design issues of a distance learning course on business on the Internet. *Journal of Computer Assisted Learning, 14*(2), 83-90.

Stevens, J. (2007). *Intermediate statistics: A modern approach* (3rd ed.). New York, NY: Lawrence Erlbaum.

Strong, R. (2012). Reusable learning objects enhanced master goat producers' learning. *Journal of Extension, 50*(2), 1-7. Retrieved from: http://www.joe.org/joe/2012april/rb7.php

Teece, G. (2010). Is it learning about and from religions, religion or religious education? And is it any wonder some teachers don't get it? *British Journal of Religious Education*, *33*(2), 93-103. doi: 10.1080/01416200903537399

Trost, J. (1986). Statistically nonrepresentative stratified sampling for qualitative studies. *Qualitative Sociology, 9*(1), 54-57. doi: 10.1007/BF00988249

Vasudevan, L., DeJaynes, T., & Schmier, S. (2010). *Adolescents' online literacies: Connecting classrooms, digital media and popular culture.* New York, NY: Peter Lang

Vallely, A. (2012). Jaina traditions. In W. Oxtoby & A. Segal, *A concise introduction to world religions* (pp. 336-369). Ontario, Canada: Oxford.

van Wesel, F., Alisic, E., & Boeije, H. (2014). Using qualitative evidence to optimize child PTSD treatment guidelines. *Psychological Trauma: Theory, Research, Practice, And Policy*, *6*(5), 546-554. doi:10.1037/a0035172

Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitive divide: Guidelines for conducting mixed methods research in information systems. *MIS Quarterly*, *37*(1), 21-54.

Vermeer, P. (2012). Meta-concepts, thinking skills and religious education. *British Journal of Religious Education, 34*(3), 333-347.

Wan, S. &, Niu, Z. (2015). A learner oriented learning recommendation approach based on mixed concept mapping and immune algorithm. *Knowledge Based Systems, 103*(1) 28–40.

Waters, J. (2012). Thought-leaders in asynchronous online learning environments. *Journal of Asynchronous Learning Networks, 16*(1), 19.

Watson, J. (2008). Blended learning: The convergence of online and face-to-face education. *Promising practices in online learning,* 3-17. Retrieved from http://rogersfoundation.org/system/resources/0000/0015/NACOL_promising_practices_in_blended_learning.pdf

Wiley, D. A. (2000). Connecting learning objects to instructional design theory: A definition, a metaphor, and a taxonomy. In D. A. Wiley (Ed.), *The instructional use of learning objects* (pp.1–35). Retrieved from http://reusability.org/read/chapters/wiley.doc

Yacci, M. (2000). Interactivity demystified: A structural definition for distance education and intelligent computer-based instruction. *Educational Technology, 40*(4), 5-16.

Yalcinalp, S., & Emiroglu, B. (2012). Through efficient use of LORs: Prospective teachers' views on operational aspects of Learning Object repositories. *British Journal of Educational Technology, 43*(3), 474-488. doi: 10.1111/j.1467-8535.2011.01212.x

Yang, Y. (2008). A catalyst for teaching critical thinking in a large university class in Taiwan: Asynchronous online discussions with the facilitation of teaching assistants. *Educational Technology, 56,* 241-264.

Yang, Y., Cho, Y., Mathew, S., & Worth, S. (2011). College student effort expenditure in online versus face-to-face courses: The role of gender, team learning orientation, and sense of classroom community. *Journal of Advanced Academics*, *22*(4), 619-638.

Young, W. (2013). *The world's religions* (3rd ed.). Saddle River, NJ: Pearson/Prentice Hall

Yukselturk, E., & Bulut, S. (2009). Gender differences in self-regulated online learning environment. *Educational Technology & Society*, *12*(3), 12–22.

Appendices

Appendix A

Invitational e-mail to students

Dear Student,

You are being offered a chance to participate in a ground-breaking method of online learning!

And you will receive a voucher good for merchandize as the St. Petersburg College bookstore on your campus if you participate in this study.

This study will be a one-week, online class on a particular topic. It may include online games, video-links, etc. and other exciting aspects.

Please indicate your willingness to participate by e-mail: Martinez.Christopher@spcollege.edu.

Appendix B

Consent form

Online study at St. Petersburg College

Consent Form

USF IRB#: CR1_Pro00016364

Before agreeing to this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

Title of study: Learner-accessed vs. instructor-provided religion curriculum among undergraduate students

Principal investigator: Christopher Martinez

Purpose of this study: You are being asked to participate in a study of online Learning Objects. The researcher is seeking to determine which Learning Objects work the best.

Study procedures: You will be asked to take a background survey, and if selected for the study, a weeklong, online course with two tests. You may plan on spending 15 to 30 minutes a day on the course material.

Foreseeable risks: There are no foreseeable risks in this study.

Appendix B continued

Benefit to the subject and others: Participants will gain knowledge of a religion and future students may benefit from a new type of instruction.

Compensation for participants: Students selected to participate will receive a voucher redeemable at SPC's bookstore.

Procedures for maintaining confidentiality: The confidentiality of your individual information will be maintained in any publications or presentations of this study.

Questions about the study: If you have any questions about the study, you may contact Christopher Martinez, Martinez.Christopher@spcollege.edu

Appendix C

Survey for online learning study

Survey for online learning study

1. Please add an anonymous study ID. This will consist of the last letter of your first name plus the day of the month in which they were born.

Please add an anonymous study ID. This will consist on the last letter of your first name plus the day of the month in which they were born.

2. Which of the following best describes your ethnicity (choose only one)

- ☐ American Indian or Alaskan Native
- ☐ Asian or Pacific Islander
- ☐ Black or African American
- ☐ Hispanic or Latino
- ☐ White/Caucasian
- ☐ Prefer not to answer

3. What is your age?

4. What is your major?

5. What is the highest level of education you have completed?

What is the highest level of education you have completed?

Other (please specify)

5. What is your gender?

- Female
- Male

Done

Appendix D

Pre-test and Post-test World Religions Jainism Test

Multiple choice (10 points each). Please select the choice that best completes the answer.

1) The word “jina” means

a) “all knowing one”
b) “conqueror”
c) “blissful one”
d) “Dome of the Universe”

2) Tirthankaras in Jainism

a) are reincarnated voluntarily to help others
b) are the gods of Jainism
c) followed Mahavira as disciples
d) are cross finders

3) Ahimsa means

a) one must be a vegetarian
b) one can only kill in self defense
c) no injury
d) the goal of Jains, the Dome of the Universe

4) Nataputta Vardhamana became a jina

a) when he became unattached

Appendix D continued

b) when he left his family
c) when he first took his clothes off
d) when he avoided killing his first bug

5) An “all knowing one” refers to the term of

a) jiva
b) jina
c) kevalin
d) ajiva

6) “Mahavira” means

a) “Unattached One”
b) “Hero”
c) “Great God”
d) “Conqueror”

7) The Shvetambaras

a) accept women
b) are naked
c) do not worship in temples
d) can be mainly found in south India

Appendix D continued

8) The Agamas

a) are not sufficient to bring about salvation
b) are the actual words of Mahavira, according to the Shvetambaras
c) are the liberated jivas in the Dome of the Universe
d) are pure spirit

9) An ajiva is

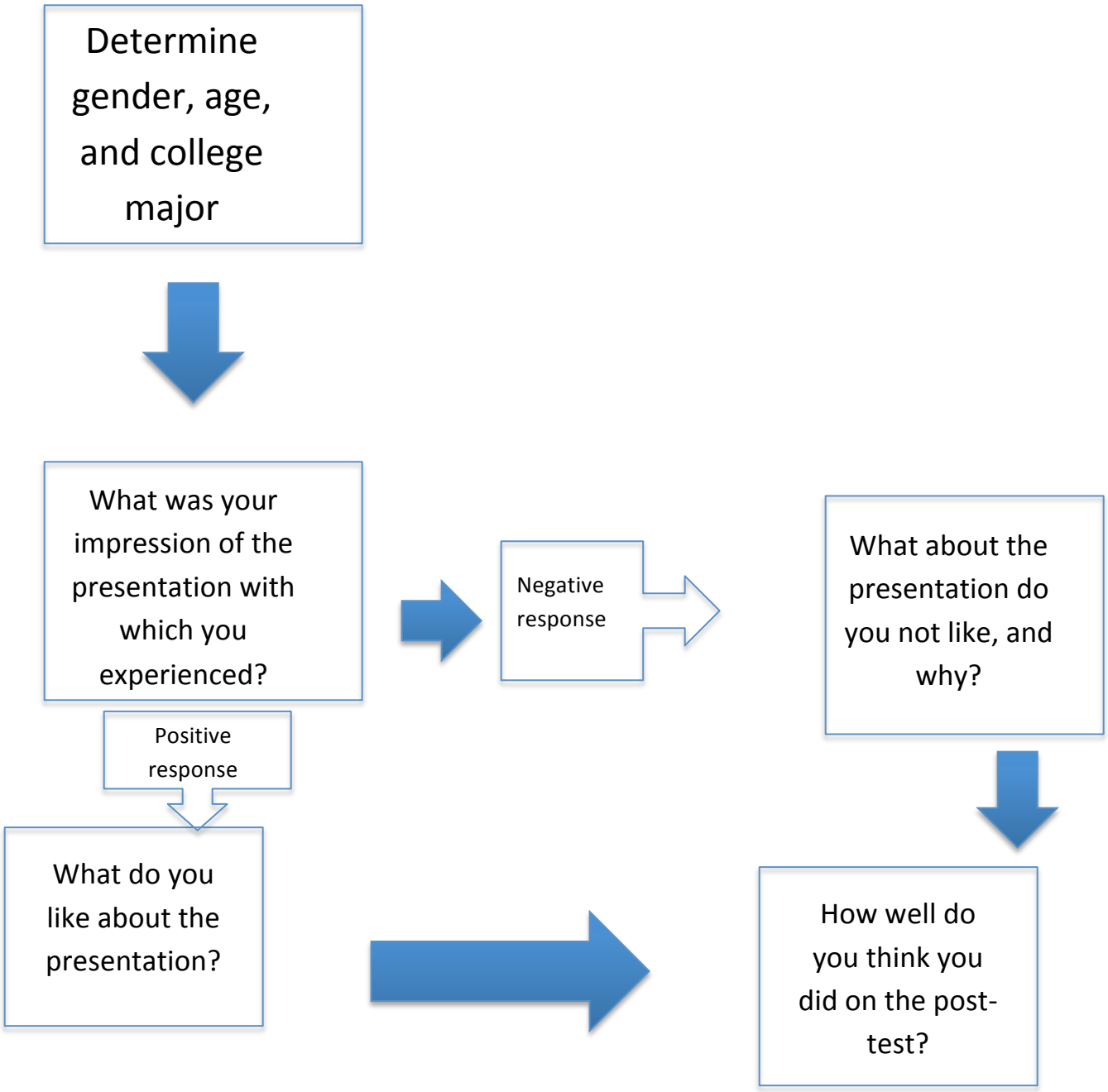
a) karma
b) the spirit
c) everlasting and eternal
d) a conquering soul

10) The Young Jains of America

a) are just for young Jains
b) aim to covert the United States to Jainism
c) do not believe in the Internet because it is material
d) aim to starve their members to death

Appendix E

Interview Questions for Students



Appendix F

Members of the Validity Panels

Content Panel Members

Brandy Stark, World Religions instructor, St. Petersburg College

Christy Stortz Davis, World Religions instructor, St. Petersburg College

Marc Unger, assistant professor of Humanities and Religion, St. Petersburg College

Technology panel

LaSaundria Bass, coordinator, Online Course and Faculty Development, Innovative Education, University of South Florida Tampa

Michael Mathon, media resources specialist, Online Learning and Instructional Technology Services, University of South Florida St. Petersburg.

Otis Wilder, instructional designer, Online Learning and Instructional Technology Services, University of South Florida St. Petersburg

Appendix G

Post-presentation survey

Survey for online learning study

*

1. Please add an anonymous study ID. This will consist on the last letter of your first name plus the day of the month in which they were born.

Please add an anonymous study ID. This will consist on the last letter of your first name plus the day of the month in which they were born.

2. What is your ethnicity? (Please select all that apply.)

- ☐ What is your ethnicity? (Please select all that apply.) American Indian or Alaskan Native
- ☐ Asian or Pacific Islander
- ☐ Black or African American
- ☐ Hispanic or Latino
- ☐ White / Caucasian
- ☐ Prefer not to answer

Appendix G (continued)

3. What is your age?

- What is your age? 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 to 74
- 75 or older

Other (please specify)

4. What is the highest level of education you have completed?

What is the highest level of education you have completed?

Other (please specify)

5. What is your gender?

- What is your gender? Female
- Male

6. May we quote you anonymously?

- May we quote you anonymously? Yes
- No

Appendix H

Evaluation criteria for Learning Object and PowerPoint

Criteria for evaluating Learning Object and PowerPoint by religious scholars

1) Do either the Learning Object or PowerPoint have a content advantage over the other, or do they both objectively present the information about Jainism?

2) What is the overall attractiveness of the Learning Object and PowerPointas far as illustration of content concerned?

3) As far as accessing the appropriate information, does either the Learning Object or the PowerPoint have an advantage?

Criteria for evaluating Learning Object and PowerPoint by distance learning professionals

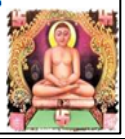
1) From a technical view, how accessible is the Learning Object and the PowerPoint (links, design consistency)?

2) From a design perspective, what is the quality of the interaction of the Learning Object and PowerPoint with users?

3) In their design, does either the Learning Object or PowerPoint have an advantage over the other in design?

Appendix I

Narrated PowerPoint Presentation

 Jainism Noninjury to starvation	**Narrator:** Jainism is one of the most extreme religions in the world, emphasizing noninjury to any living thing, and some of its members voluntarily starve to death so they can be totally unattached to anything.
Jainism • Small religion, about 4 million members • Concentrated around Mumbai (Bombay), India • While small, has impacted other religions with uncompromising ascetic ideals (like noninjury) • "Jainism" comes from "jina," meaning "conqueror" 	**Narrator:** Jainism is a small religion, having only 4 million members who live around Bombay, India. Though small, it has influenced other religions with ideas such as non injury. The word "Jain" comes from the word "jina," which means conqueror.
 Mahavira • Within current cosmic cycle, 24 teachers have become tirthankaras ("crossing finders or markers," finding ways to cross the river or off the cycle of rebirth) • Historically, though, evidence exists for only the last two, possibly • Last was Nataputta Vardhamana (b. about 597 BCE), whose legendary life was similar to Buddha's 	**Narrator:** Within the current cosmic cycle of the universe, there have been 24 teachers who are called "tirthankaras," which means crossing finders because they have found their way across the figurative river to heaven, escaping reincarnation. Historically, though, we only have evidence for the last two, possibly. We're not sure the second-to-the-last teacher existed, but we are sure about last one, the historical founder of Jainism. He is Nataputta Vardhamana, and his legendary life is so similar to Buddha's, scholars for awhile thought they were the same person.

Mahavira • Nataputta was born in warrior caste • Became disillusioned with his comfortable life • Left his wife and daughter at 30 • Wandered for 12 years naked through central India, abandoning worldly fetters that causes rebirth • Joined others who shared self-denial, but thought too much attachment to others	**Narrator:** Like Buddha, Nataputta was born in the Hindu warrior caste, and became disillusioned with his life. He left his family and wandered for 12 years, instead of Buddha's six, and he was naked because he did not want to be attached to anything causing rebirth. He joined other men involved in self-denial, but thought this was too much attachment, and left them.
Mahavira  • Rarely stayed in more than once place each night to avoid attachment to a place • Not first to practice ahimsa (noninjury), but carried it to the extreme • Swept path with broom so as not to step on bugs • Strained water through cloth to keep from drinking any living thing, no matter how small	**Narrator:** He moved from place to place so as not to become attached to one place. He carried ahimsa, noninjury, to the extreme by sweeping his path of bugs and straining water so as not to drink any living thing, no matter how small.
Mahavira • Asceticism not new, either, but he carried it to the extreme • Meditated in the heat in summer • Meditated in the shade in the winter • Shunned shelter when it rained • Maybe because he would not talk to anyone – so as not to be attached – people abused him	**Narrator:** He carried asceticism to the extreme, meditating in the heat in the summer and the shade in the winter. He shunned shelter in the rain. People abused him because he would not talk to them so as to remain unattached.

 **Mahavira** • One tradition: people lit fire under him while meditating to see if he would move and stuck pins in his ears. But he remained oblivious. • In 13th year, achieved his goal. Became a jina, winning victory over desire and attachment • Remainder of life spent teaching (agreed to some sort of attachment)	**Narrator:** One tradition says people lit a fire under him and stuck pins in his ears to see if he would move, but he remained oblivious. In his 13th year, he becomes a jina, conquering desire and attachment. Then he agrees to some sort of attachment by teaching.
Mahavira • He attracted followers to his lifestyle • In about 527 BCE died of voluntary starvation, the ultimate act of self-denial • Called with reverence Mahavira ("Great Man" or "Hero") • Tradition says his parents also starved themselves to death (may be retroactive)	**Narrator:** Others jointed him, and around 527 BC he dies of voluntary starvation, the ultimate act of self-denial. There is also a story, which may have been invented later, that his parents also starved themselves to death. He is called with reverence by his followers, "Mahavira," which means "Great Man" or "Hero."
Jainism • Leadership passes to first disciples • Movement spreads from central India to the south and northwest. • Supported by Maurya dynasty in 3rd century BCE • Split into two factions: Digambaras (sky-clad) and Shvetambaras (white-clad)  	**Narrator:** Leadership passes on to his first followers, and the movement spreads from central India south and northwest. It is supported by King Asoka of the Maurya dynasty because of the same reason he supported Buddhism: ahimsa. The movement will divide into the Digambaras, who are known as sky-clad, and the Shvetembaras, who are white-clad. You can see what they wear by the pictures. Shvetembaras often wear a cloth over their mouths to prevent from hurting any airborne life.

## Jainism • Shvetambaras accepted women, Digambaras did not • Shvetambaras became prominent in West and Northwest India while Digambaras sucessful in Central and Southern India • Gradually, Jainism faded in all areas except around Bombay	**Narrator:** Shvetembaras accept women membership, Digambaras do not over attachment issues. Shvetembaras were more popular in the north, and Digambaras in the south, due to climate. Eventually, Jainism will contract to the areas around Bombay (Mumbay).
## Agamas  • Jain texts are the Agamas ("tradition" in Sanskrit) • Religious and philosophical in character • Shvetambara say the Agamas are the remembered sermons and discourses of Mahavira • Digambaras say Mahavira's teachings are lost, but their "essence" is preserved in the Agamas	**Narrator:** The Jain scripture are the Agamas, which means "tradition" in Sanskrit. They are religious in that they talk about the afterlife, and they are philosophical in that they refer to ethics. The Shvetembara say the scripture contains Mahavira's remembered sermons, but the Digambaras say the sermons were lost, so only the "essence" of them are in the scripture.
## Agamas • Scripture seen as guiding person to right path • But unlike other religions' scriptures, they are not the complete truth • Jainism teaches nothing in the material world, including scripture, is capable of expressing pure knowledge	**Narrator:** The Agamas are seen as guiding a person the right way, but unlike other religions' scriptures, they are incapable of expressing the complete truth, because they are physical, and nothing physical can express true knowledge.

Appendix I Continued

 The Jain Universe and modern Jainism	**Narrator:** The Jain universe is shaped like a person with his hands on his hips. The general outline is pictured on this slide. The swastika represents rebirth and the open hand represents ahimsa.
 Jain worldview • Every living being has a spiritual, eternal soul, jiva. Jivas are by nature perfect, blissful, all-knowing, eternal and infinite in number • Jivas get weighed down by karma, which is fine matter (like dirt). Causes jiva to be reborn at a lower level. Karma also limits a jivas knowledge, bliss, ect.	**Narrator:** Let's look at some new vocabulary words. Anything alive has an eternal soul, a jiva, which are perfect and all knowing. Karma, which is actually physical, limits a jiva's bliss and knowledge and causes it to be reborn in the next life at a lower level.
 Jain worldview • All actions, not just desire, cause karma. Commitment to inactivity or active that focuses on liberation will keep karma off. • A jiva that liberates itself from the bondage of karma is a jina, conqueror. Jina rise to the top or dome of the universe (loka is the universe) and dwell eternally in full consciousness, knowledge and bliss	**Narrator:** All actions, not just desire – like in Buddhism – causes desire, so Jains should be committed to inactivity. A jiva that escapes karma is a jina, a conqueror, and rise to the top of the universe, which is Loka. The top is known as the Dome or Nirvana, Jain heaven.

Appendix I Continued

Jain worldview • A jina is an "all-knowing one," kevalin • Joins all the other jinas, like Mahavira at the top of the universe, higher than the gods • Way to do this is self-denial, so one is not attached to the world or karma and ahimsa 	**Narrator:** The all-knowing aspect of a jina is called a kevalin. They join all the other jinas in the Dome of Loka, higher than the Hindu gods, which, in turn, are higher than humans and life on earth. But the way to get to Jain heaven is self-denial and unattachment, and practicing ahimsa.
Jain worldview • Dualism of reality: matter – ajiva – and spirit – jiva • Ajiva is evil in nature and obscures purity and goodness of jivas • Atomic theory of karma • Jainism is functional atheism like Buddhism 	**Narrator:** Reality is made up of two different aspects: ajiva, which is matter, and jiva, which is spirit or soul. Ajiva is evil and obscures the purity of jivas. So all matter is evil. Jains say karma sticks to your jiva like a molecular bond, which is why one should avoid karma. Like Buddhism, Jainism is functional atheism. While there are gods, one should ignore them, function like an atheist, because they are not the highest entities in the universe: jinas are.
Modern Jainism • We are currently in a period of decline that will last 21,000 years. Jainism and all other religions will fade with human virtue • Another 21,000 years will follow, bringing an end of civilization. This will complete downward spiral of cosmic cycle, and then a period of ascendancy will begin (Jains not worried about spreading their faith)	**Narrator:** Jains believe the world is declining over a period of 21,000 years. This will bring about another 21,000 year cycle that will see all civilization, religion and virtue ending. This will be followed by a period of ascendency when virtue, civilization and religion will return, and all will become Jains. That is why Jains are not worried about converting anyone.

Modern Jainism • Jainism comes to west with Indian immigrants, temples built • Young Jains of America are formed to support religion of Jain youths, claim to have 3,500 members in 2003. 	**Narrator:** Jainism comes to Western countries with Indian immigrants. To preserve their religion in these different cultures, Jains create support organizations, such as the Young Jains of America. The Young Jains goal is to support the religion of Jain youths.

Appendix J

Independent Learning Object

- **Start Here**
- Jain history
- Jain philosophy
- Jain scripture
- Digambaras (sky clad)
- Shvetambaras (white-clad)
- Jain terms
- Young Jains of America

Jainism is a religion that claims to have no one founder, but 24 Tirtankaras, "crossing finders," who have found their way"across the river" and off the wheel of life.

Jainism

It is a small religion, about 4 million members, concentrated around Mumbai (Bombay), India. While small, has impacted other religions with uncompromising ascetic ideals (like noninjury). "Jainism" comes from "jina," meaning "conqueror."

Jain myth

Within current cosmic cycle, 24 teachers have become tirthankaras ("crossing finders or markers," finding ways to cross the river or off the cycle of rebirth) Historically, though,evidence exists for only the last two, possibly Last was Nataputta Vardhamana (b. about 597 BCE), whose legendary life was similar to Buddha's.

Sub-Categories of Scriptures-Sacred Books

- Pravachansara
- Tattvarth Sutra
- Prasamarati Prakarana
- Samay Sar
- Chha Dhala
- Chha Dhala in Hindi
- Purushartha-Siddhyupaya
- Saman Suttam

Scriptures-Sacred Books > Purushartha – Siddhyapaya

Purushartha - Siddhyapaya

Acharya Amrit Chandra Suri

Translated by Ajit Prasada

Exposition of Purushartha-Siddhyupaya.

1. Victory to that Supreme Intelligence, where, a it were in a mirror, is reflected the chain of all substances, in all their infinite conditions.

2. I bow to Anekant (Jaina Philosophy), which is the root basis of the Highest Scripture, which dispels the wrong notions about elephant, of person born blind, and which removes the contradictions amongst all those who entertain one-sided or limited points of view.

3. After having carefully studied the Highest Scripture, which affords a matchless vision of the three worlds, I proceed to expound, for the sake of scholars, this (treatise) Purushartha-Siddhyapaya.

4. True philosophy is promulgated in the Universe, by those who, themselves conversant with the real and the practical aspects, dispel the difficult-to-be-

- Niyamsara
- Ashta Pahuda
- Dravya Samgraha
- Samaya Sara
- Jinagamsar in Hindi
- Jina Sutra - Quotations
- Dravyasamgraha

removed ignorance of pupils by an exposition of both the absolute and the relative aspects of things.

5. In this connection, Nishchaya is defined as the Real, and Vyavahara as unreal. Almost the whole world has its face against Knowledge of the real aspect.

6. The high saints point out Vyavahara for the guidance of the ignorant. A discourse is of no avail to one, who knows Vyavahara only.

7. Just as a cat represents a lion to one who has not known as lion, similarly Vyavahara alone is Nishchaya unto him who does not know what Nischaya is.

8. That student alone achieves the full benefit of teaching, who, having well understood both Vyavahara and Nishchaya, in their true nature, becomes neutral.

9. Purusha (the soul) is pure consciousness. It is free from touch, smell, taste and colour, has its own attributes and conditions, and is possessed of manifestation, disappearance and continuity.

10. Undergoing, through illusory knowledge, constant changes since eternity, it causes and experiences its own thought activities.

11. When Jiva, having got rid of all illusion, attains everlasting consciousness, it then becomes one who has accomplished all that was to be accomplished, and is possessed of the success resulting from right exertion.

12. Again, other molecules of matter, coming in contact with the stimulus of (impure) thought-activities emanating from the Jiva, themselves turn into the form of Karma.

13. To a Jiva, modifying itself by its own (impure) thought activities, the material Karma (in operation) acts only as a stimulus.

14. Thus, though Jiva is not identified with the thought activities caused by Karmas, yet to the ignorant it appears to be so identified. This illusion is verily the seed of samsara.

15. Having got rid of the above perversity and having well realized the nature of the Self, steadfastness therein is the means to the acquisition of the object

of Jiva.

16. The life-routine of such saints as follow this path, as are ever averse to questionable conduct, and have adopted complete renunciation, is uncommon indeed.

17. He who, in spite of repeated dissertations, in unable to accept the path of absolute renunciation, should in that event, be lectured upon partial renunciation.

18. The unwise (preceptor) who without discoursing upon the "order of saints" only lectures upon "order of the householder" is, according to the saying of the worshipful, deserving of censure.

19 Because, on account of the ill-regulated discourses of the unwise (preceptor), even the disciple, who had pitched up his resolution high, is made to content himself only with a low position and is thus misled.

20 And, for him also the three-fold path of liberation, consisting of right belief, right knowledge, and right conduct, is to be constantly followed according to his capacity.

Back Next

Glossary of Jain Terminology

Page historylast edited by PBworks 6 years, 9 months ago

Glossary of Non-English Terms

Abhavya	One who is incapable of attaining moksha.
Abhigraha	Resolution.
Abhisheka	Anointing ceremony.
Abrahma-varjana	Abandonment of all incontience.
Acaksurdarshana	Perception by means of the senses other than visual.
Acharya/ji	A Sadhu who learned, mastered and taught religious scriptures, follows them, and is now the head of a Sangh. Head of a mendicant group, spiritual leader and monk-scholar. Acharya Shri Chandanaji is the only female acharya in the entire 2600-year tradition of the Jain religion.
Adhi	Two and a half.
Adho-loka	The lower world. The home of infernal beings.
Agama	Scripture. Canonical literature.
Aghati	The four types of karmas whose powers are much milder than those of the four ghati karmas. These

Appendix J continued

	powers end at the end of a life.
Agni	Fire.
Ahimsa	Non-violence, non-harming. The supreme mahavrat or anuvrat that all Jains must adhere to. Jain religion is remarkable in that it upholds nonviolence as the supreme religion (Ahimsa Paramo Dharmah) and has insisted upon its observance in thought, word, and deed at the individual as well as social levels.
Ahimsa Paramo Dharma	"Non-violence as the supreme religion."
Ailaka	The highest state of a Digambara layman, wherein he retains only one piece of clothing.
Akasha	Space.
Aloka-akasha	Totally empty space.
Amari	Prohibition of animal sacrifice.
Anekaantvaad	"Non-singular conclusivity" or multiplicity of viewpoints. The concept that humans, with obstructed knowledge, will only be able to see limited parts of any whole (situation or truth).
Antaraay	A Ghati karma that obstructs the strength of a soul.
Anuvrat	A vow that is not as strict as a Mahavrat. Anuvrats are for people living family lives. The five vratas are: Ahimsa (non-violence), truth, non-stealing, non-possessiveness and chastity or self-control.
Aparigraha	Non-possessiveness. One of the mahavrats and anuvrats.

Appendix J continued

Ara	One of the six divisions of time in one half of the time cycle. Runs from thousands to billions of years. We are currently in the 5th ara of the descending half of the time cycle, which started some 2500 years ago.
Arambhatyaga-himsa	Violence occurring either accidentally or through the performance of an acceptable occupation.
Arati	The lamp-waving ceremony.
Ardha-phalaka	A piece of cloth worn by ancient Jaina monks.
Arihant	Conqueror of internal enemies, such as anger, pride, deceit, greed, jealousy, hatred, intrigue and various other passions.
Ashrava	Karmic influx. One of the nine tattvas.
Asteya	Non-stealing. One of the mahavrats and anuvrats.
Atishaya	Thirty-five special attributes of Tirthankaras.
Atithi	One who may come any time, unexpectedly, without invitation, and is still welcomed with love and respect.
Atma	Soul.
Avamaudarya	Eating only a very small portion of food.
Avarsarpini	Regressive half of the time cycle.
Ayu karma	Karma that determines the span of a given lifetime.
Ayushya	An aghati karma that determines how long you will live.
Bandh	Karmic bondage. One of the nine tattvas.

Appendix J continued

Beindriya	Souls that live with two sense, namely touch and taste.
Bhante	Repected (Lord).
Bharat	Name of a kshetra. We live in Bharat Kshetra. It is located in the southern part of Jambu Dweep (look at geography section for more details).
Bhav	Internal. States of a dravya. Thoughts, contemplations.
Bhoga-antaraya	Karma that restricts enjoyment.
Brahmacharya	Physical control, abstinence, chastity. One of the mahavrats and anuvrats. Jainism emphasizes abstinence from over-indulgence, voluntary curtailment of one's needs, and the consequent subsiding of the aggressive urge. For shravaks and shravikas, this also means remaining sexually monogamous to one's own spouse. For sadhus and sadhvis this entails strict abstinence.
Brahmacharya-ashrama	The life of a student. The first of four stages that a Jain shravak and shravika are recommended to pass through in his or her lifetime.
Charitra	Conduct.
Chattari	Four
Chauvisantho	A prayer to the twenty-four Tirthankaras of this kaal in Bharat Kshetra. We list, bow and praise them for their great virtues.
Choindriya	Soul that lives with four senses, namely touch, taste, smell and sight.
Chovisi	A group of twenty-four.

Appendix J continued

Dana	Charity. Alms-giving.
Dana-antaraya	A type of karma that hinders the practice of charity.
Darshan	Vision. Intuition. Insight. Perception. A system of philosophy. A pure soul has infinite vision.
Darshana varaniya	A ghati karma that obstructs the capacity of a soul to see things clearly.
Dev	A soul in heaven, or at a high spiritual level.
Deva-dusya	"Divine" cloth. A finely woven piece of cloth.
Devlok	Heaven. The place where devs reside.
Dhariya	Patience. A pure soul has infinite patience.
Dharma	Holy law. Elements in Buddhist doctrine. Righteousness (ten forms).
Dharma dravya	The principle of motion.
Dharma tirtha	Holy path.
Dhivyadhvani	Miraculous sound. When a Tirthankara attains enlightenment, this sound emerges from them, silent, yet understood by every living thing in his or her own language.
Digambara	Sky-clad. Name of the Jaina sect whose mendicants practice ascetic nudity.
Dravya	Substance.
Dukkadam	Forgive me (or dissolve my mistakes).
Dvija	Twice-born.
Dweep	Island. A large isolated area. There are two and a

Appendix J continued

	half dweeps, each with three kshetras in them.
Eka	One; unitary.
Ekantavada	Extremism. Absolutist doctrine.
Eka sataka	A mendicant who wears a single piece of cloth.
Ekendriya	A being with only one sense faculty- that of touch. A synonym for sthavara beings.
Ganadhara/ji	The first mendicant disciples of Tirthankaras. Supporters of the order. Mahavir had eleven, the most famous of which was Gautamswami.
Gandhasti	The best elephant.
Ghati	The four types of karmas, whose powers are much stronger than those of the aghati karmas. Karmas that have a vitiating effect upon the qualities of the soul. These powers may last for many lives.
Ghoratavassi	One who practices severe austerities.
Gnan (jnana)	Knowledge. A pure soul has infinite knowledge.
Gnanavaraniya	A ghati karma that obstructs the capacity of soul to know things in their purest forms.
Gotra karma	Karmas that determine environmental circumstances.
Gruhasth-ashrama	Family life. The second of four stages that a Jain shravak and shravika are recommended to pass through in his or her lifetime.
Gunastana	The fourteen stages of purification.
Gunavratas	Retraints that reinforce the practice of anuvratas.
Himsa	Injury, harming violence.

Appendix J continued

Hundavasarpini	A period of avasarpini in which extraordinary events may take place.
Indriya	Sense organ.
Jaina	Followers of a Jina, a synonym for Nigantha. One who has samyak-darsana.
Jainabhasa	False Jainas.
Jaina-brahman	Laypeople in charge of priestly functions within certain Jaina communities.
Jambu dweep	"The continent of the rose-apple tree." The realm in the universe that is inhabited by humans. This region is transversed by six mountains which divide the region into seven regions. The most important regions are India in the south, Airavat in the north, and Mahavideha in the middle. It is believed that in these three regions, humans may find rewards for religious pursuits and that deliverance may be possible.
Janma-kalyana	Birth. One of the five auspicious events in the career of a Tirthankara.
Jina	"Conqueror." He who has conquered love and hate, pleasure and pain, attachment and aversion, and has thereby freed `his' soul from the karmas obscuring knowledge, perception, truth, and ability, is a Jina. The Jains refer to the Jina as God.
Jina-agama	Jaina scripture.
Jina-bhavana	Jaina temple
Jina-bimba	Image of a Jina.
Jiv	Soul.

Appendix J continued

Jiva Daya	Compassion toward living beings.
Jyotish Chakra	Area of space in which zodiac planets, stars, etc. are located
Kaal	Time. Time stages within the progressive and regressive half-cycles. Runs into more than billions of years, per cycle.
Kalyanaka	Auspicious moments.
Kanyadana	Ceremony of giving away the bride.
Karemi	"I do."
Karma	Action. A deed, good or bad. A form of matter. Upon maturing, it delivers its fruit. There are 4 Ghati and 4 Aghati types of karmas. Powers of Ghati karmas are much stronger, and they last for many lives.
Kashaya	Passion.
Kausagga	A motionless state of body, as if the soul has departed from it.
Kayotsarga	Abandonment of the body, a standing or sitting posture of meditation.
Kevaldarshan	Infinite vision and perception. After acquiring it, the cycle of births and deaths is broken forever. Any soul can attain it, by getting rid of karmas, attachments and hatreds. With it comes kevalgnan, infinite Dhariya, Tapa and Veerya.
Kevaldarshi	One who has kevalgnan.
Kevangnan	Infinite knowledge. Knowledge isolated from karmic obstruction. Omniscience. Knowledge involving awareness of every existent in all its

Appendix J continued

	qualities and modes.
Kevalin/gnani	One who has kevalgnan. Synonym for arhat.
Khamana	Homages, or salutations.
Khamasamano	Forgiving Gurudev.
Krodha	Anger.
Kshama	Forgiveness.
Kshetra	An area, site or location where humans exist. Each kshetra has four more similar counterparts.
Ksullaka	Minor. A junior monk. A Jaina layman on the eleventh pratima. One who wears three pieces of clothing.
Kumara-sramana	A life-long celibate.
Logassa	(Masters) of the entire universe.
Loguttama	Supreme.
Maharaj Saheb	"King, sir". A title used for sadhus, to indicate respect.
Mahavideha	Name of a kshetra. Twenty Tirthankaras currently exist there, deeming it the most sacred kshetra.
Mahavir	Twenth-fourth Tirthankara in this ara of the time cycle. His name means "The most courageous one." Mahavir was an actual historical figure who lived some time between 599-527 BCE. He was a contemporary of another great spiritual teacher--Gautama Sakyamuni--who would come to be known in history as Buddha. According to most

Appendix J continued

	accounts, Mahavira was also a high-born member of a warrior caste who renounced the world when he was thirty to pursue a life as an ascetic. His moment of enlightenment came after twelve years of spiritual pursuit. He then gathered twelve disciples around him, and it is through these disciples that his teachings were eventually documented and disseminated.
Mahavrat	A vow that is much stricter than an Anuvrat. Only those who take diksha will take on these vows (i.e. sadhus and sadhvis). There are five mahavrats- namely ahimsa, anekantvaad, aparigraha, asteya and brahmacharya.
Mangal/Mangalam	Destroyer of sins. Auspicious.
Mantra	A prayer with strong psychological powers.
Maun	Silence.
Michchhami	"I wish."
Mohaniya	A ghati karma that obstructs the capacity of soul to think properly.
Moksha	The state of freedom, for a soul, from the cycle of birth and death.
Muktishila	The topmost area of the universe, the area of freedom. After death, a liberated soul rises to it, and never comes back into the cycle of birth and death. Every soul that exists there is Kevalgnani, Kevaldarshi and has infinite dhariya, tapa and veerya.
Muni	One who keeps maun. He only observes, without praising or complaining.

Appendix J continued

Naam	An aghati karma that determines the body
Namoththunam	Expression of respect to the virtuous gurus.
Namaskara mantra	Reverent salutation to the five holy beings- arihants, siddhas, acharyas, upadhayas and sadhus/sadhvis. A prayer consisting of nine lines, which is the most meaningful of all Jain prayers in that it allows the follower to pay homage to all teachers.
Naraki	Hell beings.
Nigoda	The lowest form of life.
Nirjara	Dissociation of karma. One of the nine tattvas.
Nitya	Eternal.
Niyati	Fate.
Niyativada	Fatalism.
Om	Sacred sound formed by combining the first syllable of each word in the namaskara mantra.
Pachchakhan	Formality for taking a vow.
Pad	Poem
Panch	Five
Panch kalyana	The five auspicious events in the life of a Tirthankara.
Panchendriya	Souls with five senses, namely touch, taste, smell, sight and hearing.
Pani patra	Hand-bowl.
Pannato	Spoken, or taught.

Appendix J continued

Papa	Unwholesome karmas.
Paramanu	Atom.
Paramataman	The highest liberated soul.
Parasparopagraho Jivanam	"Souls render service to one another." From Tattvartha Sutra 1: 4: 1.
Parvan	Jaina holy days.
Parigrahatyaga-pratima	The ninth stage in which a layman abandons the cares of worldly possessions.
Paryushan-parva	A ten-day holy period for fasting during the rainy season (usually August or September).
Pavazzami	"I seek."
Phala	Fruit.
Poshadh	A day chosen by a householder to live like a muni.
Pratikraman	Going back to the original virtues (of soul), which are: compassion, peace, even-temperament, forgiveness, etc.
Pratima	Stages of renunciation for a layman.
Pudgala	Matter
Puja	Worship
Pumveda	Sexual cravings for a female.
Pundarik	The best lotus.
Punya karma	Wholesome karma.
Puranas	Name of a class of sacred texts dealing with the lives of Tirthankaras.

Appendix J continued

Purva	A group of fourteen Jaina canonical texts, now extinct.
Pushakarvar	Name of a dweep. Only half of it is used for living.
Raga	Desire. Passion. Attachment.
Rajlok	Geographical term. The universe is divided into 14 rajloks, consisting of hells, dweeps, heavens, etc.
Sadhu/sahoo	A male who has given up the family life, wealth and worldly comforts for seeking liberation. He learns scriptures religiously.
Sadhvi/ji	A female who has given up the family life, wealth and worldly comforts for seeking liberation. She learns scriptures religiously. Sadhvi Shilapiji is the only Jain sadhvi to ever study outside of India. She is currently pursuing her PhD at Oxford, in England.
Salekhana	Voluntary and controlled fasting to death. This is a very misunderstood and controversial concept in Jainism. It is believed that in 420 BCE, Mahavir engaged in salekhana.
Samayik	State of calmness and sinlessness of mind and speech. Usually 48 minutes for householders and a lifetime for sadhus and sadhvis.
Samiti	Five areas of caution: walking, speaking, taking food, handling materials and discarding excretion.
Samkeet	Awakening of the soul to the right path. Once a soul has samkeet, he gets liberated within a few incarnations.
Samurchchhin	A small human-like life, of bacterial size, residing inside our human bodies. It can be born

Appendix J continued

	spontaneously, by itself.
Samavasarana	Holy assembly of the Jina.
Samaya	Moment.
Samkalpaja-himsa	Intentional, premeditated violence.
Samsara	Cycle of transmigration for all non-liberated souls.
Samvar	Stoppage of the influx of karmas. One of the nine tattvas.
Sangh	Fourfold society, as founded by a Tirthankara, consisting of male and female sadhus and householders who follow the principles of Jainism. Establishing a sangh is what distinguishes a regular kevali from a tirthankar (a kevali who establishes a sangh).
Santharo	Peaceful, voluntary and planned religious death.
Sanvibhag	Sharing equally, with love and respect.
Sanyast-ashrama	Life as a monk, a period of renunciation. This is the fourth of four stages that a Jain shravak and shravika are recommended to pass through in his or her lifetime.
Sharanam	Shelter.
Shikshavrat	Four vows, which prepare and train a householder for the eventual muni life.
Shravak/ji	Male householder, following the principles of Jainism.
Shravika	Female householder, following the principles of Jainism.
Shri	A prefix used to indicate respect.

Appendix J continued

Siddha	One who has achieved complete liberation from cycles of births and deaths, and now in muktishila.
Stavara	Immobile beings, such as plants.
Sthapana	Ritual act of asking a monk to stop for alms.
Sutra	A scripture written in the ancient Ardhamaghdhi language.
Svetambara	White, cotton-clad. Name of a Jaina sect whose medicants wear white garments.
Tapa	Penance which contributes to the destruction of karmas. A pure soul has infinite tapa.
Tassa	For (my blemished soul).
Tattva	The nine "reals", regarded as objects of faith for a Jaina.
Teindriya	Lives with three senses, namely touch, taste and smell.
Tikhkhooto	Three times.
Tirthankara	"Builders of the ford." One who reestablishes the religion and fourfold society system of Sadhus, Sadhvis, Shravaks and Shravikas.
Upadhyay/ji	A sadhu who learned, mastered and now teaches religious scriptures.
Uttari	Upliftment or elevation.
Vandana	Act of bowing, or offering salutations.
Vanaprasth-ashrama	Family and service to society. This is the third of four stages that a Jain shravak and shravika are recommended to pass through in his or her lifetime.

Appendix J continued

Vanasi	Forest dweller.
Vandana	Reverent salutation.
Varna	Caste, hierarchy, class. Color. A quality of matter.
Varnalabha	Ritual celebrating the establishment of a new household by a married son.
Veda	Sexual feelings.
Vedniya	An aghati karma that determines the mundane experience of pain and pleasure.
Veerya	Strength. A pure soul has infinite strength.
Vira-nirvana	Beginning of the Jaina era. Death anniversary of Mahavir.
Vitraag	One from whom attachment is gone for materials.
Vrat	Vow.
Yathapravrtta-karana	The soul's ineradicable tendency towards spiritual growth.
Yati	A spiritually advanced layman of the Svetambara sect.
Yatra	Pilgrimage.
Yoga	Vibration, activities. Meditation.
Yojana	A measure of distance equal to about eight or nine miles.

These terms have been compiled from the following sources:

http://www.yja.org/education/glossary.html

- http://www.ops.org/scrtec/india/jainism.html

- http://www.csupomona.edu/~plin/ews430/jain2.html
- Jaini, Padmanabh S. The Jaina Path of Purification. Motilal Banarsidass, Delhi: 1979.
- Jain Center of Southern California, Winter Camp 1991 Information Packet.

Home

Appendix K

IRB Approval from the University of South Florida

RESEARCH INTEGRITY AND COMPLIANCE
Institutional Review Boards, FWA No. 00001669
12901 Bruce B. Downs Blvd., MDC035 • Tampa, FL 33612-4799
(813) 974-5638 • FAX (813) 974-7091

November 20, 2014

Christopher Martinez L-CACHE - Leadership, Counseling, Adult, Career & Higher Education 2555 Madrid Way South St. Petersburg, FL 33712

RE: Expedited Approval for Initial Review

IRB#: Pro00016364

Title: THE SIGNIFICANCE OF LEARNING OBJECTS IN RELIGIOUS STUDIES ONLINE LEARNING

Study Approval Period: 11/20/2014 to 11/20/2015

Dear Mr. Martinez:

On 11/20/2014, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents outlined below.

Approved Item(s): Protocol Document(s): IRB Protocal Guidelines for Research on Independent Learning Object.docx

Consent/Assent Document(s)*: Consent document (**granted a waiver)

*Please use only the official IRB stamped informed consent/assent

document(s) found under the "Attachments" tab. Please note, these consent/assent document(s) are only valid during the approval period indicated at the top of the form(s). **Waivers are not stamped.

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review

_____

_____

category:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your study qualifies for a waiver of the requirements for the documentation of informed consent as outlined in the federal regulations at 45CFR46.117(c) which states that an IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds either: (1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; or (2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval by an amendment.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Kristen Salomon, Ph.D., Vice Chairperson USF Institutional Review Board

Appendix L

IRB approval from St. Petersburg College

12 September 2014 (Preliminary approval)

Dear Mr. Martinez, The St. Petersburg College Research Review Committee reviewed your request to conduct research for the study entitled:

“The Significance of Learning Objects in Religious Studies On-line Learning”.

We are pleased to inform you that your research request was approved pending review and approval by your University IRB. This constitutes preliminary approval only; final approval will be granted based on the assessment of the final project as approved by your University IRB. You may not begin the study until this final approval is received. Please note that approval constitutes human subjects review by this committee only and in no way indicates St. Petersburg College’s willingness to support this study which is a separate administrative decision at the Department level. Subject to Departmental authorization, the final approval will allow you to conduct research at St. Petersburg College provided such research conforms to College policy and the methodology defined in your research proposal/SPC research application.

The final research authorization will cover a one year period beginning on the date of final approval. The time frame should be adequate to satisfy your research needs based upon your application. If the research extends beyond this time frame, you will be required to contact the Research Review Committee for an extension of the authorization period. When the study is

completed you are required to provide the SPC Research Review Committee with a copy of your completed study results and all publications and presentations resulting from it.

Thank you for your interest in conducting research at St. Petersburg College. Best wishes to you. Sincerely,

Dorraine Watts, PhD, RN Faculty Chair, Research Review Committee St. Petersburg College

About the Author

Christopher D. Martinez is an adjunct instructor at five colleges and universities, teaching religious studies, having received awards for his teaching style and curriculum development. Prior to his education career, he was an award-winning journalist, as well as an author of two published books, and a peer-reviewed article on distance learning.