OPEN LEARNING FOCUS

A Comparative Analysis of SDL Online Learning with Traditional Classroom Learning.

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The information age and the knowledge explosion are driving an increasing demand for education. The advent of the World Wide Web and ease of access to the Internet permits the Internet to be used as a delivery mode for distance education courses. However, studies which compare the results of educational content delivered over the Internet to that delivered in the classroom, have been inconclusive. Many report no significant difference.

One criticism of Internet–based courses is that they are poorly constructed—being little more then speaker notes and reference materials published on the Internet. One report that reviewed hundreds of writings published over the last decade found the overall quality of the research to be questionable, rendering many of the findings inconclusive. It cautions that policymakers and education leaders have 'a lot to learn' about how distance education can enhance learning.

This Study

The purpose of this study was to compare the educational outcomes of an Internet (online) course with those of the same course delivered in the classroom. The course, written and tutored by Jack Rotzien, was designed by OnLine Training Institute (OLT), who support our investigation.

Effect size will be used in this study to compare the online students' grade point average to the other non-online student groups grade point average.

The Online Course–Self-Directed Learning Design

Recognising self-directed learners may desire to control when and where they study, the online course selected for study is designed as an asynchronous guided learning course delivered in a virtual classroom which includes automated email to the instructor, and online conferencing between the instructor and students.

The course is designed to prepare individuals who are seeking to become professional insurance agents in the area of life, health, and annuities. The study site is the state of Florida, which tightly regulates insurance agent preparation and licensing. Individuals seeking to become life, health, and annuities agents must complete a mandatory 40-hour pre-licensing course. The course must be approved by the state, be taught by an approved instructor, be offered by an approved educational provider, and be taught from a state mandated study manual. Before an individual is permitted to take the state insurance agent examination, they must first complete the mandatory course, and pass an end of course examination.

Effect Size (ES)

The ES statistic is a quantitative way to describe how the average student who received a strategy performed compared to an average student who did not receive the strategy. Researchers consider effect sizes larger than.33 to have practical significance. A negative effect size means the students receiving the strategy did not perform as well as the average student who did not receive the strategy. An effect size of zero would mean that there were no significant differences between the performance of the average student receiving a strategy and students who did not receive the strategy.

The courses being compared in this study shared the following attributes:

- Same author,
- Same instructor,
- Same course outline,
- Same printed study manual,
- Same end of course examination,
- End of course examination administered under the same test conditions.

The courses being compared had the following differences:

- Different educational grouping—grouped by market;
- Different instructional design—classroom lecture vs SDL online;
- Different delivery mode—classroom vs Internet.

The course was limited by design to place emphasis on knowledge acquisition and comprehension in line with Bloom's Taxonomy. Special emphasis being placed on reinforcement, clues, feedback, and reducing specific identifiable barriers to learning. Of interest is the programmed instruction aspect of the online course—the ES can be negative. This is offset by the other elements of the instructional design—ready access to the instructor through automated email, scheduled online chat, fax, and freephone access as required. The tone of the course is written in an active voice with the intended audience envisioned as an adult who, through current circumstances, must learn the material in order to gain access to a new career field.

Study Population

Pre-licensing training for the life insurance industry can be thought of as four separate markets:

- μ private, in house classes,
- μ commercial classes run statewide,
- μ community college classes, and the emerging
- μ online classes.

The study population of comparative groups was drawn from these samples, allowing comparison of the Internet based course group to each of the other market groups.

Most students have accolades for the methods used online as it is more focused, requiring more continuous concentration than classroom attendance, while also permitting the student to choose when, where, and for how long they study. Of those who enrolled in the online pre–licensing course, only one chose to transfer to a community college, classroom group, based on a reluctance to study online. One must interact with the computer, which is unforgiving in its diligence to keep students focused on the content being presented. Therefore, the online course appeals to those who prefer to make steady progress in their studies, and who do not enjoy sitting and listening to material, not directly applicable to their study goals, or for extended periods. An online course relies on its internal instructional design, individual self-motivation, and not a regimen for the discipline needed to learn.

During the final four hours of each of the insurance pre-licensing courses being compared, three end-of-course proctored examinations were administered. Each of the examinations—annuities, life, and health—is designed to measure the level of comprehensive knowledge acquired. The online students are required to come in to the classroom and complete the examinations under the same conditions as the classroom students. A grade point average (GPA) was computed for each examination. Students are required to achieve a cumulative score of 70 percentile before they are permitted to sit for the state licensing examination.

Methodology and Findings

The data collected were reduced to descriptive statistics, then further reduced to comparative effect size, in order to facilitate the drawing of inferences.

The insurance pre-licensing course covers three discrete topical areas, annuities, life, and health. Each is tested separately representing the knowledge required to effectively conduct a line of business in a specific area. While most students obtain a license in all three areas, some students don't, hence a variation in the number accounted for in the group statistics.

Discussion

Groups being compared were all taught by the same instructor, using the same course syllabus, study manual, and end of course examination. Online the students interact directly with the instructional content, paragraph by paragraph, section by section, and chapter by chapter. In the classroom the instructional method was primarily lecture with some group interaction between the instructor and the students.

The first group, private classes, achieved the lowest overall GPA. To some degree this is a reflection on their lack of interest in the annuity market and possibly the insurance field. Their primary business is banking or investments, and they offer other investment products. Generally, they are individuals with secure positions, engaged in a pre-insurance licensing course primarily because they have been directed to do so, in order to be able to sell certain forms of life and accident insurance. The insurance field is not a core component of their industry.

The second group, commercial schools, includes for–profit training companies that conduct pre–licensing insurance courses state-wide. Classes are tailored to specific student groups. This tailoring is reflected in the lower N for Annuity; not all students who go through the commercial schools require certification for that line of business. Students who enrol with commercial schools range from out of work individuals seeking to enter the new career field of insurance, to individuals who are fully employed in the financial industry. The wide range of scores (Min and Max) reflect this variance in the sample.

The third group, community colleges, conducts pre–licensing courses less frequently. Typically they offer courses during the week one month, and then on weekends the following month. The result two very different groups going through their training with a less homogeneous student population. The evening classes suffer from the fatigue of students trying to learn after a full day of work. The students in the evening class are usually fully employed, while the weekend classes have students fresh and ready to learn, but often unemployed.

The fourth group, community college online, is self-selected. To date this option had only been available through one community college for three months. Three classes of two, six, and 15 students constituted the online group. It can also be thought of as a crossover group because students, who would typically have enrolled with one of the other three groups, chose to enrol in the online group once they became aware of its availability. The online group typically achieved the highest GPA Mean in each topic, and the highest cumulative GPA Average Mean. The SD and Variance for this group indicate a consistent high quality learning of content. The online group is the most successful at cognitive learning as measured by the end of course examinations.

These findings are somewhat surprising given the diverse nature of the students: literally representing new entries to the field, administrative personnel, bankers, brokers, and other individuals presently involved in the financial industry. Also, the instructional design and course delivery in the classroom has matured over an extended period of time (12 years). One should expect them to be optimal. While the online course is relatively new, less than one year, having been revised and improved just a few times since having been placed online.

Effect Size

Tests of statistical significance are often inappropriate for making inferences about the practical significance of research. One approach is to calculate effect size (ES) as an effective means of performing statistical power analysis. Considering the ES calculations for our groups we concluded that an average student in the commercial group would score about 84% in the online class. The improvement for the average student from the private group could be even better.

Private Class Financial Institution Managers—Classroom

	Annuity	Life	Health	Average
Mean	63.53	92.13	84.63	78.35
Mode	60	96	86	#N/A
Median	60	92	86	79.33
SD	20.49	4.81	10.09	13.17
Skew	-0.05	0.15	-0.82	-1.04
Min	28	84	66	44
Max	96	100	96	97.33
Var	419.76	23.18	101.71	173.45
N	17	16	16	17

Commercial Schools – Classroom

	Annuity	Life	Health	Average
Mean	84.67	79.01	84.40	81.62
Mode	100	76	92	92.67
Median	88	80	88	83
SD	13.60	13.78	11.45	10.33
Skew	-1.31	-0.62	-1.08	-0.58
Min	41	42	50	57.33
Max	100	100	100	98
Var	184.86	189.90	131.08	106.70
N	45	73	70	73

Community Colleges – Classroom

	Annuity	Life	Health	Average
Mean	81.52	84.29	83.80	82.80
Mode	96	96	92	#N/A
Median	84	90	88	85.67
SD	15.92	12.71	12.32	12.91
Skew	-0.70	-0.47	-1.05	-0.61
Min	48	62	54	58
Max	100	100	100	98.67
Var	253.37	161.51	151.75	166.70
N	21	21	20	21

Community Colleges — online

	Annuity	Life	Health	Average
Mean	92.27	92.08	92.11	92.37
Mode	100	98	92	94.66
Median	95.5	96	94	94.66
SD	8.50	9.35	9.16	8.02
Skew	-1.37	-1.91	-1.67	-1.71
Min	68	64	68	70
Max	100	100	100	100
Var	68.21	78.81	72.93	56.90
N	22	23	18	23

Effect Size — online Compared to Other Groups

Groups compared	Effect Size
online vs. Private	1.36
Online vs. Commercial	1.04
Online vs. Community College – Classroom	.93

Source: Student records and data collected by Rotzien (1999) to support this research.

The Mean was reported by topic, Annuity, Life, Health, and also as a cumulative Average Mean for each group. The higher the Mean, the better the instructional outcome. The standard deviation (SD) provides an indication of instructional quality and consistency of cognitive learning. The smaller the SD, the more consistent the instructional outcome. The Min and Max provide an indication of range which is a reflection on the homogeneity of the group by topic. The Variance (Var) is an indication, like SD, of the instructional quality and consistency. The N reflects the number of students in each sample, by topic, for which we have descriptive statistics. The N under Average indicates the number of Mean scores used to compute the cumulative Average Mean GPA score for a particular group.

Comments

Students

Students who chose to take the pre–licensing course online uniformly reported it satisfied their desire to control when and where they accessed the course. Some indicated it addressed their need to be home with children (single parents), while handicapped students said it addressed their concern about physical access. Still others expressed concern about physical safety, citing that the online course meant they didn't have to venture out at night or walk late at night across an empty parking lot to reach their car.

Instructor

Online students are more confident in their ability to learn the material on their own. Given the nature of the online course vs. the in the classroom experience the instructor came to believe online is more precise, time efficient, and

effective than the traditional classroom experience. The instructor also felt that online instruction is not for everyone. Many simply would not be able to learn online and should be in a classroom.

OnLine Training Institute

OLT is able to measure the number of times and amount of time a student spends online—including specific activities (like dwelling on a single question or page). Because of the interactive nature of the online course the instructors can know what is being typed, clicked, or selected each time a student makes a choice and moves through the course. Online we know more about student choices and cognitive thought processes than the instructor in the classroom can. This information is reviewed monthly in an effort to improve the instructional design.

The instructor in the classroom can be sure of little more than the student is present—unless actively interacting with each student. When the instructor poses a question only one student can respond. When the instructional design team poses a question online we know each student will respond before they move forward through the course. Properly designed, using a student centred approach, online training can be an effective way of ensuring cognitive learning occurs.

Distributive Level of Effort Model

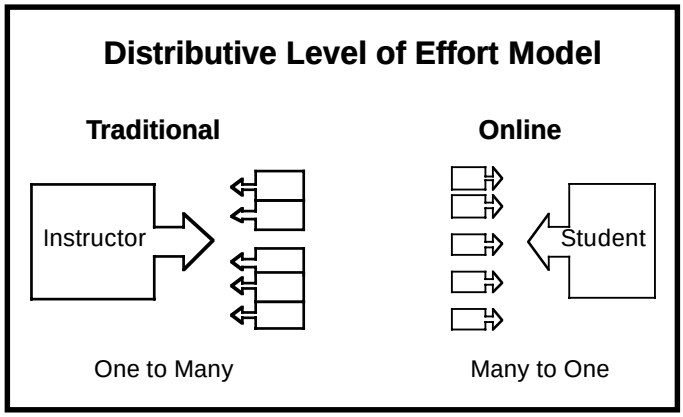
The online pre-licensing course took literally years to design, revise and release. The course has only been available for a few months online. But, it produces consistent cognitive learning outcomes—well above the 12-year-old in-the-classroom model.

After 12 years the classroom instruction should be near perfection—especially as a true 'sage' teaches it. This sage, who is also the author and instructor for the online course, reports that his in–the–classroom course benefited greatly from the detailed effort needed to construct the online course. Each word, phrase, and fact was carefully considered as it was selected for inclusion in the course. The sequence in which elements were taught, laying a firm foundation of knowledge and then comprehension, was considered, then tested and then revised as the design for the course was finalised.

From a distributed level of effort model (shown opposite) it can be argued that a sage on the stage, working with 10 students, must distribute his effort across 10 students. Thus the instructor to student ratio is 1:10. The student can be thought of as receiving 10 percent of the instructor's time.

However, a five man design team (mostly women, by the way) focus their effort on the single student who sits at the computer working through the online course. They have to design for her every potential choice (again—the online students are mostly women). Thus the instructor to student ratio is 5:1. In the online model the student gets a comparable 500% of an instructor's time. The instructor's time and responses are also structured, formal, and never ad-hoc.

From an instructional design point of view–one could say that the online instructional design has an advantage over the classroom instruction with an aspect ration of 50:1.



The distributive level of effort model shows the relationship between the traditional instructional design effort of one instructor to many students, and the online model of a design team to one student.

Recommendations

Given the self-selected nature of the online sample more research is needed before definitive conclusions can be made. Other limitations of the study include the small sample size for the online group and an inability to control for reading level, work/home environment, ethnicity, age, or educational background of any of the participants.

The results of the study do provide support for the conclusion that online instruction for individuals entering the insurance field can be effective, and can be more effective then traditional classroom delivered instruction for those students confident in their ability to learn online.

Based on the results of this study, we would recommend:

- Additional studies should be conducted—following a more robust experimental design in which students are randomly assigned to either the online or the classroom pre-licensing course.
- This study should be replicated comparing other courses, developed using the OLT instructional design methodology, for other fields of employment which require licensure, to determine if this approach to online instruction is transferable to other professions or disciplines.

Background references and full details of the results of this research can be obtained from the author — Terrence R. Redding, PhD, President/CEO, OnLine Training, Inc, Post Office Box 3303, Palm Beach, Florida FL 33480–3303, USA

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