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A Comparative Study of the Effectiveness of Distance Learning in Opticianry Education

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A Comparative Study of the Effectiveness of Distance Learning in Opticianry Education

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APPROVAL PAGE

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CHAPTER I

INTRODUCTION

In the past 10 years, distance education programs have been impacting the educational environment. This is also true of health science programs, but they are highly controversial. Today, the more sought after programs are those that are offered via the internet so that courses have the potential to be taken from anywhere at anytime.

There are currently only seven opticianry programs across the country offering distance education to their students (NFOS, 2006). The face of education is changing yet there are many who are apprehensive or unwilling to believe distance education can be beneficial to the field of opticianry. The following research study is designed to provide statistical data that will determine if opticianry distance education programs are as effective as traditionally delivered programs of study.

Statement of the Problem

The problem of this study was to determine if enrollment by opticianry students in distance education associate degree programs affected pass rates on licensure examinations.

Research Goal

To guide this study, the following hypothesis was established:

H_0: Within the members of the National Federation of Opticianry Schools that offer associate degree distance education programs via the internet for opticianry, there will be no difference in the number of students who will successfully complete their state licensure examinations.

Background and Significance

In the late 1990's, several members of the National Federation of Opticianry Schools (NFOS) began working together to create course materials for an online program. Three of these schools began the online offerings by 1999. Since then, the NFOS members of these schools have assisted four additional member schools to begin their own online programs. Much controversy has surrounded the offerings of online health fields in the past, and the opticianry field has been no different. Several members of the NFOS continue to be skeptical of the effectiveness of online education in the field and if graduates of online distance education programs possess equal knowledge and skills as traditional students.

Since opticianry has offered distance education programs there has not been any study into the effectiveness of this method of instructional delivery. There is a definite lack of substantial information on this subject. An initial study to determine the ability of online students to successfully complete their licensure exams will be significant in persuading doubting NFOS members to adopt distance education in their schools. These data will also be effective in proving the legitimacy of online education programs to industry and professional organizations that may be leery to employ graduates of these programs. Following the initial study, continuing data needs to be tracked to substantiate improvements of online delivery methods as the programs evolve.

Limitations

The following limitations guided this study:

- It involved online programs in opticianry having been in existence for four years or more.

- Distance learning opticianry programs are offered in states that require licensure examinations.
- Online programs are accredited by the Commission on Opticianry Accreditation.
- Online programs are members of the National Federation of Opticianry Schools.
- Opticianry students in the study have graduated from an associate of applied science degree program.
- Schools chosen for the study have had successful traditional programs prior to offering the courses via online distance education.

Assumptions

The following assumptions guided this study:

- Educational qualifications of each online opticianry instructor are equivalent.
- Opticianry course content in the programs contain the same level of minimal competencies as required of the American Board of Opticianry.
- Textbooks used in the programs include Optical Formulas Tutorial by Ellen Stoner and Systems of Ophthalmic Dispensing by Clifford Brooks.
- Instructors possess moderate to advanced proficiency with distance learning delivery via the internet.
- Graduates taking the licensure examinations have varying levels of experience in the field prior to taking the examinations.
- Each student had access to campus resources, faculty and clinical supervisors.

Procedures

In order to collect the data required for this study, the researcher will contact each of the seven schools within the National Federation of Opticianry Schools that offer

online education. The researcher will interview the program directors of the aforementioned schools to determine their willingness and eligibility to participate in the study. Once the eligible schools are identified the researcher will request each program to complete a brief data sheet to collect their results.

The data sheet will be created by the researcher to collect the results of the distance education and the traditional programs required for the study. The data sheet will cover the variables of the study from 2003 to 2006. The data will then be tabulated and analyzed to determine the comparison between the pass rates of traditional students to the pass rates of the students who complete their program through distance education.

The data that will be collected from each school will be confidential in that the students will not be identified. The questionnaire will address the topic areas in a manner that will only require a quantitative response (i.e., how many students in 2004 graduated from the online program and how many of those graduates passed the licensure examination?).

Definition of Terms

The following terms are defined to assist the reader:

- American Board of Opticianry (ABO) – a national not-for- profit organization for the voluntary certification of ophthalmic dispensers (ABO/NCLE, 2006).
- Blackboard (Bb) – an online course management tool that can help organize course materials online. Faculty use this tool to create more engaging course materials, help students prepare more effectively for class, and even optimize time spent in course development (Blackboard Inc, 2006).

- Commission on Opticianry Accreditation (COA) - a not-for-profit operation, is the sole organization recognized by the U.S. Department of Education to accredit opticianry training in the United States. The mission of the Commission on Opticianry Accreditation is the commitment to an accreditation process that is a fair, thorough assessment of educational quality. The goal of COA as an accrediting agency is to assist the opticianry programs in producing well-trained, competent graduates to provide quality professional services to the public (COA, 2006).
- Licensed Optician – an individual who successfully completes a licensure examination administered by a state board of opticianry (DPOR, 2005).
- National Federation of Opticianry Schools (NFOS) – an association of opticianry schools dedicated to facilitating the development of formal educational programs in identified areas of need; upgrading the standards of opticianry education; facilitating the exchange of teaching methods; working for the uniformity of formal education in opticianry; and aiding other national opticianry associations as deemed mutually beneficial (NFOS, 2006).
- Opticianry – The art and science of optics as applied to the fabrication or dispensing of eyeglasses, spectacles, lenses, or related appurtenances for the intended wearers or users on prescriptions from licensed physicians or licensed optometrists, or as duplications or reproductions of previously prepared eyeglasses, spectacles, lenses, or related appurtenances; or who, in accordance with such prescriptions, duplicates or reproduces, measures, adapts, fits, and

adjusts eyeglasses, spectacles, lenses, or appurtenances, to the human face (DPOR, 2006).

- Web Course Tools (WebCT) - an online commercial virtual learning environment system which is sold to colleges and other institutions and it is used extensively in many campuses for e-learning. Instructors can add to their WebCT courses tools such as discussion boards, mail systems and live chat, along with content such as documents and web pages (Wikipedia, 2006).

Overview of the Chapters

To summarize, this research study was designed to show opticianry program directors and industry leaders the validity and successfulness of distance education offerings. It is the goal of the researcher to provide evidence to fellow opticianry schools so that they may be encouraged to adopt this method of introduction and incorporate distance education into their programs. In the following chapters, you will find supporting materials and research, a detailed description of the data collected and the conclusions drawn from those findings by the researcher. Findings will be given to support the significance of the study and its usefulness in marketing online education to opticianry education leaders.

CHAPTER II

REVIEW OF LITERATURE

The problem of this study was to determine if enrollment by opticianry students in distance education associate degree programs affected pass rates on licensure examinations. Since the implementation of distance education in opticianry has been relatively recent, the researcher was unable to find much information on the exact topic. Moreover, there was little research information to be found within the field of opticianry education. However, information related to distance education for health care fields and the technology that is currently being used was available.

This chapter will discuss: 1) what lead to the implementation of distance education delivery in opticianry, 2) general opinions of online health care education, 3) the methods of delivery being used, and 4) the changing face of opticianry education.

Distance Education in Opticianry

Those who are directly involved in opticianry education have long agreed that there is a strong need for college level formal education in opticianry to be available, and even more so required, nationwide. However, due to the varying levels of education and licensure requirements from state to state, it has been extremely difficult to begin new college programs in those states that do not currently require formal education. Secondly, within the states that do offer formal college programs there is typically just one school available to service the entire state.

In the late 1990's the field of opticianry education began to experience a significant drop in program enrollment in various colleges across the United States. As a member of the National Federation of Opticianry Schools (NFOS), the researcher has

listened as fellow program directors express there concerns about the enrollment trends the profession was experiencing. As discussions progressed, all members agreed that the student body has become increasingly non-traditional in nature, which led to brainstorming sessions on how to meet the needs of these students.

With the growing popularity of distance education for many educational institutions, the NFOS focused its discussions on possible new learning options. A number of schools expressed an interest in providing online education. It was then that the NFOS decided to develop a Distance Education Associate Degree in Opticianry with related teaching materials for delivery over the Internet. By making the degree's curriculum, outlines, syllabi, lesson plans, assignments, video tapes and quizzes available to colleges and schools around the country, it hoped to fulfill its goal of providing college level formal Opticianry education nationwide and maintain strong enrollment.

Online Health Care Education

Literature supports the use of distance education in many professions (Jedlicka, et al., 2002). In opticianry, distance education technologies have been used in associate degree programs and continuing education courses. Other health care disciplines including physician assistant, physical therapy, occupational therapy, and emergency medical technology have used distance education strategies with entry-level training.

With increased investigation of distance education in allied health science programs, it is important to discern the most effective methods for delivering the information and the preferred learning method of the students enrolled in these programs. By focusing on how people learn, instructors are aided in moving beyond traditional teaching concepts and help to bring organization to the many choices.

The use of distance education in the health professions is growing. The literature documents many courses or programs taught via distance education methods in allied health (Jedlicka, et al., 2002). These studies document the advantages and disadvantages of distance education methods and technologies and provide suggestions for designing effective instructional strategies. Limited information was found, however, that addressed the students' preferred method of learning using distance learning technologies.

With few exceptions, the bulk of the writings suggest that the learning achievements of students using technology at a distance are similar to the learning outcomes of students who participate in conventional classroom instruction (Phipps & Merisotis, 1999). The attitudes and satisfaction of students using distance learning also are characterized as generally positive. As with anything that is new, there continues to be skepticism among opticianry educators as to distance learning's ability to be as effective as traditional programs.

Methods of Delivery

Distance education opportunities are growing rapidly as new technology is developed. Students who were unable to access educational opportunities before now have many options through online learning options. It is important to identify the methods of instruction that are the most effective in delivering essential course content and the methods that will be most conducive to learning. To provide effective education via distance learning methods, faculty members need to structure assignments that facilitate interaction and communication among learners (Jedlicka, et al., 2002).

Two methods of web-based education are synchronous and asynchronous applications. The methods differ based on the timing of delivery of materials and the

structure of the technology. Synchronous techniques provide the opportunity for learners to interact at the same time virtually. Examples of synchronous options include video conferencing, computer-mediated conferencing, conference calls, and electronic chat rooms. Asynchronous strategies allow greater flexibility in structure and access for learners because students are able to complete their course work in their own time frame. Asynchronous methods include electronic bulletin boards, e-mail, CD-ROMs, and interactive web assignments.

The delivery method used by the seven opticianry schools offering distance education are asynchronous online formats for theoretical courses where students simultaneously gain hands-on clinical experience in a local optical environment. Of the seven colleges, five are using Blackboard software and two are using WebCT software for their online delivery. Colleges and schools can only receive access to the NFOS Distance Education Associate Degree in Opticianry materials when they complete an application to be a "partner institution" (NFOS, 2006). Once they have been approved the college or school will receive access to all materials developed by the NFOS, including periodic updates and improvements made to the materials, free of charge.

Partner institutions who are offering Opticianry for the first time are expected to implement a distance education Opticianry Associate Degree program at their institution within two years from the date of the signed agreement. Partner institutions may initially use all or part of the materials and courses but should be moving toward degree status. Institutions who have Opticianry programs will also need time to integrate the curriculum into their current programs and NFOS will provide a reasonable amount of time for that.

When fully implemented at the associate degree level, all opticianry courses in the NFOS curriculum must be offered by the partner institution. Additional courses may be offered to raise the credit total above 60 credits. All course content must be offered although the sequencing of course topics may be altered and additional information and activities may be included. The courses may also be sequenced differently as the partner institution deems appropriate. All courses must be offered for credit and may not be used for noncredit or continuing education credit. General education content will be chosen by the partner institution.

Asynchronous strategies require a great deal of discipline and are similar to an independent study course. The aspects of independent study that the students cited as the most positive included the flexibility in scheduling, the belief that working independently on a project simulated future work experiences, and the opportunity for self-directed learning. Some students reported that this method was time-consuming, that it required greater discipline, and it required strong time management skills (Jedlicka, et al., 2002).

Evolution of Opticianry Education

The face of opticianry education has been changing rapidly since the mid 1990's. The proliferation of new materials, lens designs, computer software, and equipment robotics has forced educators to make continuous revisions to their program content and the way in which it is delivered. As new technology is being developed every day, the role of the optician looks quite different than the optician of yesterday.

Ten years ago, if you walked in to an optical dispensary it would have been common place to see the optician grinding lenses and fabricating eyewear. Today, very few shops even have laboratory equipment on the premises. The optician of today and

the future is one that is stepping out of the lab and onto the dispensing floor. Opticianry curriculum has also evolved to be more analytically centered with courses emphasizing problem solving skills, critical thinking skills, business management and customer service skills. Although the laboratory courses in today's programs may not be as intensive as prior years, fabrication laboratories are still required for accreditation (COA, 2006). Laboratory and clinical courses continue to be an area of concern for colleges who are considering distance education options.

There are currently seven colleges offering an associate degree in opticianry via on-line education. They include: the Community College of Southern Nevada, Arkansas State University, Dekalb Technical College in Georgia, the Community College of Vermont, J. Sargeant Reynolds Community College in Virginia, Hillsborough Community College in Florida and Durham Technical Community College in North Carolina.

Hillsborough Community College (HCC), along with J. Sargeant Reynolds Community College (JSRCC) and Durham Technical Community College (DTCC), was one of the first to go on-line in 2000. Since its inception, the on-line section of Opticianry students at HCC has grown rapidly every year. The HCC Opticianry Program graduated its first "fully on-line" section of 22 students in July, 2002 (HCC, 2006). This fact has put the HCC Opticianry Program at the forefront of on-line education in the field. These degree programs prepare students to take the nationally recognized examinations administered by the American Board of Opticianry and the National Contact Lens Examiners and/or state licensure examinations.

Summary

On-line instruction is defined as all forms of instruction that are enhanced by or utilize electronic and/or computer-based technology (ASUMH, 2006). It specifically includes distance education, instructional modules delivered via mass media, and computer assisted instruction. Online instruction frequently involves a separation in time or place between the student and the instructor or providing instruction for all or part of the period of study.

On-line distance education in opticianry has been more limited than most other fields. Although 50% to 70% of higher education institutions currently provide courses over the Internet to meet student demand (Jedlicka, et al., 2002), a review of the literature indicates that very little research has been conducted on the availability of distance education in the opticianry profession. When considering online opticianry programs the individual should understand what it is and what it is not.

What it is -

- A way for people who live outside the college service area to earn the A.A.S. Degree in Opticianry without moving.
- Semester-driven: Dependent upon the college the classes typically start in late August and early January, and students have to complete their class work by mid-December and mid-May.
- Non-laboratory Opticianry courses that the student may take from home, a computer in a local public library or a computer in a learning center of a local community college, etc.
- Laboratory-based Opticianry courses that will require the student to either come to the campus or use a program approved clinical site in the student's local area.

What it is not:

- Easier than taking traditional campus courses.
- A way to get college credit for all the years an individual may have been working in the profession.
- A way to take any class a student wants to at any time they want to.
- A way to go to school full time and work full time too.

The advantage of online courses is the convenience -- students do not have to travel to campus frequently and they can take their courses at a time which works better with their schedules. Online courses require the same, if not more, motivation and self-discipline on the part of the student. Students are responsible for learning on their own, and some say this can be difficult.

Research on distance education is highly relevant to the formal and continuing education of opticians. While this study examined the use and effectiveness of opticianry students obtaining degree requirements in this profession, it was apparent from comments by some NFOS members that there is still a concern by faculty regarding the quality of education provided by distance education methodologies versus the education students receive on campus.

The review of literature discussed how online distance learning began in opticianry education, what distance learning in opticianry is and is not, and current articles and expert opinions on the use of distance learning versus traditional education programs. Chapter III will discuss the methods and procedures that were used to conduct the study. It will describe the population of the study, how data will be collected, and which statistical methods were used to analyze the results from each school.

CHAPTER III

METHODS AND PROCEDURES

This study was an experimental research study comparing the results of two methods of instruction. The purpose of this chapter is to describe the method and procedures used to determine if enrollment by opticianry students in distance education associate degree programs affected pass rates on licensure examinations. The following description will include: the study population, the methods of data collection and the statistical analysis.

Population

The population of this study consisted of all graduates from opticianry associate degree programs, eligible for the study, between May 2003 and May 2006. The schools that were included in the study were the Community College of Southern Nevada, Dekalb Technical College, J. Sargeant Reynolds Community College, Hillsborough Community College and Durham Technical Community College.

Of the seven schools that offer online education in opticianry, two schools did not meet the eligibility requirements. A limitation of the study was that the schools chosen had successful traditional programs prior to offering courses via online distance education. This limitation was set to control the variables that would affect the results of the study. Arkansas State University and the Community College of Vermont only offer distance education and therefore did not qualify.

The population of the study included the graduating classes of 2003, 2004, 2005 and 2006. Data on every student in the graduating classes was used in the study so that information could be collected for both the traditional students and the distance learning

students. Since several of the schools offer apprentice and certificate programs, it should be made clear that only students completing the associate degree program were selected for the study. There were 121 students who completed the program through site based courses, 176 students who completed their program through distance learning means and 57 students who completed a hybrid program, a combination of the latter.

Methods of Data Collection

In order to collect the data required for this study, the researcher contacted each of the seven schools within the National Federation of Opticianry Schools to determine if they were eligible to participate in the study. Data collected from each school was held confidential in that the students were not identified. Once the researcher was granted access to student body information required for the study, the program director at each institution was asked to complete a brief data sheet.

The data sheet collected statistics of the distance learning and traditional education students needed for the study. The questions in the data sheet addressed student related topics in a manner that only required a quantitative response. The following variables were covered:

- The number of distance learning graduates and how many have passed the licensure exam on the first attempt.
- The number of traditional education graduates and how many have passed the licensure exam on the first attempt.
- The number of hybrid program graduates and how many have passed the licensure exam on the first attempt.
- The requirements for the state licensure exam of the school.

Statistical Analysis

Once all the data sheets were returned to the researcher, the results were tabulated and analyzed to determine the comparison between the pass rates of traditional students to the pass rates of the students who complete their program through distance learning. A descriptive statistical analysis was applied to the research data. The t-test was used due to its ability to determine if there is a significant difference between two means of grade point averages.

Two t-tests were performed. The purpose of the first t-test was to determine if the frequencies of licensure pass rates of distance learning students observed in the sample deviated significantly from the frequencies of the licensure pass rates of the traditional education students. The purpose of the second t-test was to determine if the frequencies of licensure pass rates of distance learning students observed in the sample deviated significantly from the frequencies of the licensure pass rates of the hybrid education students.

Summary

This chapter provided information on how the research study was conducted. First the researcher collected data, encompassing a four year period, from each of the participating schools. The researcher then conducted statistical analysis to determine the significance of the results. Chapter IV will present an overview of the response rates, report on the data received and summarize the findings from the research.

CHAPTER IV

FINDINGS

This study was conducted to determine if enrollment in distance education opticianry associate degree programs affected pass rates on licensure examinations. This chapter will present the findings of the research conducted.

Data Collection

The three populations compared in this study were the group of students completing opticianry associate degree programs via online education, the group of students completing the same programs through traditional classroom environments, and the students who completed the programs with a combination of on-campus and online courses. For the purposes of this study, these students who had taken a combination of course offerings, part online and part on-campus, were identified as hybrid students. Of the seven schools offering distance education in the United States, six schools were willing to share there results, however two schools did not meet the limitations of the study. The data collected from Community College of Vermont and Arkansas State University was not used in the study due to the fact that they did not have traditional campus based programs to compare the results of their distance programs.

The remaining four schools used in the study were J. Sargeant Reynolds Community College (JSRCC), Durham Technical Community College (DTCC), Hillsborough Community College (HCC), and the Community College of Southern Nevada (CCSN). Of these schools, two schools use Blackboard software and two schools use WebCT software for their online course offerings. Each school was located

in a state that required opticians to be licensed by the state's board of opticians. The requirements for the state licensure examinations of each school are shown in Table 1.

Each of the states involved in the study require both a written and a practical component to the spectacle state board examination. Three of the schools are located in states that also require a contact lens written and a practical examination for Opticianry licensure. The contact lens examination is voluntary in the fourth state. The candidate may take it to become licensed to fit contact lenses, but it is not required for licensure as a spectacle dispensing optician.

Table 1

Requirements of Opticianry State Licensure Examinations

Licensure Requirement	JSRCC	DTCC	HCC	CCSN
ABO written examination	X	**	X	X
State prepared written examination for spectacles		X		X
State prepared practical examination for spectacles	X	X	X	X
NCLE written examination	*	**	X	X
State prepared written examination for contact lenses		X		X
State prepared practical examination for contact lenses	*	X	X	X

***** Voluntary, not required for spectacle licensure
****** Required to graduate from degree program prior to state board examinations

Three of the states have adopted the national American Board of Opticianry examination as their written exam component. It is of value to recognize that although one state in the

study prepares their own written examination, the representing school from that state does require the national examination to be completed prior to graduation from the degree program.

Among the data collected from the participating schools, enrollment data were tabulated from 2003 to 2006. A graphical representation of the enrollment trend over the past four years is presented in Figure 1. The total enrollment of traditional, distance and hybrid students for all four schools in the study is shown. From 2003 there has been a steady increase in student interest in the distance education programs versus traditional campus bound offerings. The data collected shows a slow increase in the total enrollment for the four participating schools. In 2003 the total enrollment in the Opticianry degree programs for these schools was 75 students. By 2006 the total enrollment for the four schools had grown to 104 students.

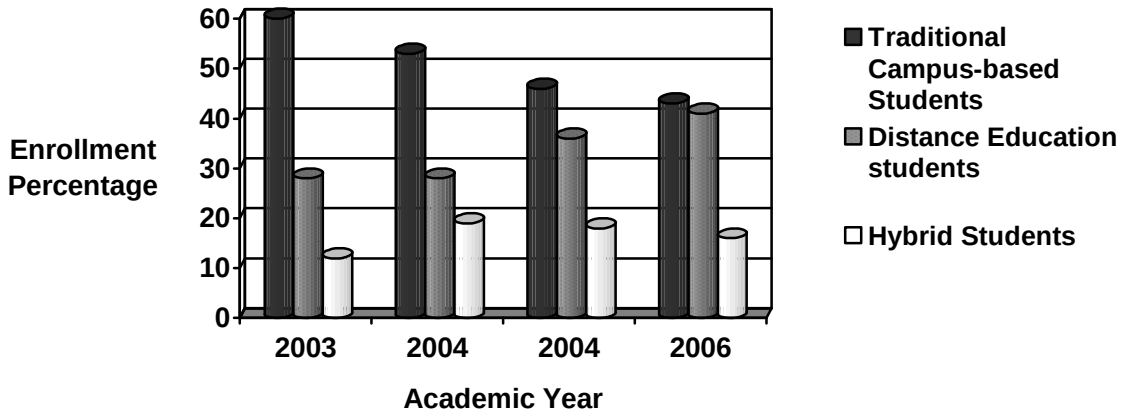

Figure 1

Percentages of Traditional, Distance and Hybrid

Students from 2003 to 2006

Comparison of Examination Results

The principle goal of this study was to prove that the members of the National Federation of Opticianry Schools that offer associate degree online distance education programs will have no difference in the number of students who will successfully complete their state licensure examinations. Each school was asked to report the number of graduates they had by means of traditional, distance and hybrid education offerings and of these graduates how many in each population successfully completed their state board examinations on the first attempt. Hillsborough Community College was unable to report the examination statistics for the 2006 graduates due to the fact that the state board examinations for that year had not yet occurred at the time the data were collected. Due to this fact, their data were not included in the 2006 findings. Two t-test were performed using the findings of this research. The results are as follows:

The results of test 1 were used to compare the licensure examination pass rates of distance education students to the traditional campus-based students. Test 1 had a t value of 1.476. From a two-tailed test at the .05 level of significance, a p value of < 2.447 was shown. These results indicate there is no substantial difference between the two groups. The percentage of distance students passing the licensure examination was slightly higher than that of the traditional students, Figure 2.

The results of test 2 were used to compare the licensure examination pass rates of distance education students to the hybrid students. Test 2 had a t value of 1.443. From a two-tailed test at the .05 level of significance, a p value of < 2.447 was shown. These results indicate there is no substantial difference between the two groups. The percentage of hybrid students passing the licensure examination was slightly higher than that of the

distance students, Figure 2. Figure 2 demonstrates the comparison of the examination pass rates of all three populations. The mean pass rate for the traditional campus-based students was 84.4%, the mean pass rate for the online distance education students was 89.8%, and the mean pass rate for the hybrid students was 95.5%.

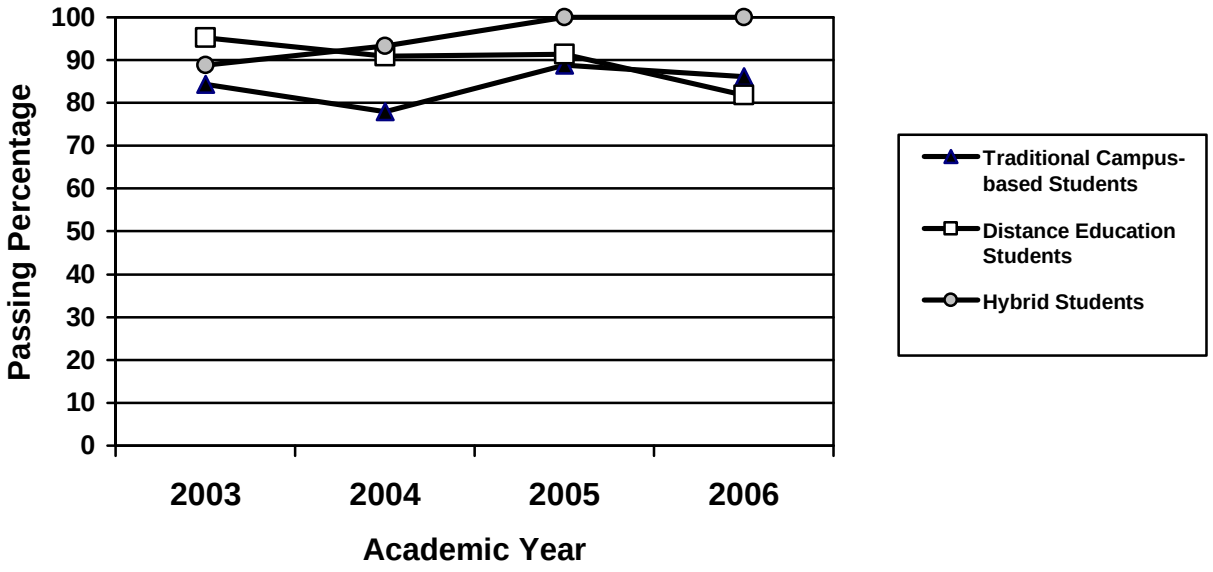

Figure 2

Licensure Examination Pass Rate Percentages

Summary

The following chapter has reported on the data received from the four participating Opticianry schools. Each school who participated has offered the Opticianry AAS degree program through distance education via the internet for at least five years. Prior to the distance education offerings, each school operated long standing, successful traditional campus-based programs. Chapter V will analyze these findings as well as provide research conclusions and recommendations for the future.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to summarize the previous four chapters, to draw conclusions based on the research data collected and to make recommendations for future programs and study of the area.

Summary

On-line distance education in opticianry has been more limited than most other fields. The implementation of distance education in the field of opticianry has only come about in the past six years. A review of literature demonstrated that research in online education has suggested that the learning achievements and satisfaction of distance students were analogous to that of students who participate in traditional classroom instruction. The general consensus throughout the majority of the writings characterized technology based distance learning as generally positive. This research was conducted to determine the effectiveness of the current online programs within the field of Opticianry and establish an initial model for further study.

The problem of this study was to determine if enrollment by opticianry students in distance education associate degree programs affected pass rates on licensure examinations. Data were collected from Hillsborough Community College, Durham Technical Community College, the Community College of Southern Nevada, and J. Sargeant Reynolds Community College. The population used in the study was the Opticianry AAS degree graduating classes at each institution from May 2003 to May 2006. The population was separated into the following three samples: distance education students, traditional on-campus students and hybrid students.

The assumptions and limitations set within the study were used to guarantee the samples within the population received equivalent learning prior to graduation. The findings also showed that the licensure examinations for the population within the study were comparable. This research was conducted by requesting the program director of each school to complete a data collection sheet. The information that was requested enabled the researcher to ensure the limitations and assumptions of the study were met.

Statistical data were collected from each school to determine the number of graduates from each sample and the number of graduates who successfully completed the licensure examination upon completion of the program. Of the five schools in the study, four responded. Upon receiving the data, t-tests were performed to determine the significance of the findings. The results of the comparison of each sample were reported.

Conclusions

The hypothesis in this study was: H_0: Within the members of the National Federation of Opticianry Schools that offer associate degree distance education programs via the internet for opticianry, there will be no difference in the number of students who will successfully complete their state licensure examinations. Upon review of the research findings the hypothesis was accepted at a t value of 1.476 and a p value of < 2.447 at the .05 level of significance. It can be concluded that students who complete Opticianry online distance education programs are as successful in achieving state licensure as traditional campus-based students.

In addition, the findings showed that students taking a combination of distance and traditional courses attained the highest percentage of success when attempting the licensure examinations. Only two of the schools had graduates of the hybrid process at

the time of the data collection with a t value of 1.443 and a p value of < 2.447 at the .05 level of significance. It can be concluded that this method of delivery is equally successful as the only distance or traditional delivery methods. Hybrid course offerings have positive implications as a third alternative for Opticianry education leaders who may still be skeptical of entirely distance learning programs.

Recommendations

To a large extent research in the field of opticianry education is lacking. Based on the results and conclusions of this study, the following recommendations were made:

1. The National Federation of Opticianry Schools should continue to promote distance education via the internet within formal opticianry education.
2. A study on the effectiveness of these distance education programs should be performed as new programs emerge or within a five year period.
3. Further study of opticianry education should be preformed and include additional student factors such as GPA, retention, full- or part-time enrollment and concurrent employment.
4. The National Federation of Opticianry Schools should survey the membership and consider implementation of a hybrid course curriculum for member schools reluctant to offer their programs entirely via distance education.
5. A study should be conducted to determine if schools offering online apprenticeship related instruction have a significant result of apprenticeship students transitioning into the associate degree program.

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APPENDICES

Cover Letter

Kristi Ostrom, Opticianry Program
J. Sargeant Reynolds Community College
700 E. Jackson St. Rm 507
Richmond, VA 23219

November 13, 2006

Dear:

As part of my graduate program, I am completing a research study on comparison of distance education and traditional on campus degree programs within Opticianry. This research will provide valuable data for the future of Opticianry education. I would appreciate you taking your time to complete the attached data collection sheet. You are being asked to participate in this study. This is a voluntary study. By completing the enclosed data sheet you are voluntarily agreeing to participate.

Data collected from each school will be held confidential in that the college and the students will not be identified. The questions in the data sheet address student related topics in a manner that only required a quantitative response. Thank you for assisting me in shedding light on the new face of Opticianry education.

I have included the problem statement and research goals below for your reference and a postage paid envelope for your convenience. Please return the enclosed data sheet by December 1, 2006.

Sincerely yours,

Kristi Ostrom, ABO-AC FCLSA
Program Director

Statement of the Problem

The problem of this study was to determine if enrollment by Opticianry students in distance education associate degree programs affected pass rates on licensure examinations.

Research Goal

To guide this study, the following hypothesis was established:

H_0: Within the members of the National Federation of Opticianry Schools that offer associate degree distance education programs via the internet for Opticianry, there will be no difference in the number of students who will successfully complete their state licensure examinations.

Data Sheet

A Comparative Study of the Effectiveness of Distance Learning in Opticianry Education

Data Collection Sheet

Please supply the following information. Please be as accurate a possible for the most reliable results. Thank you.

School Name: _____

Individual supplying data: _____
(Name & Title)

What method of distance education do you use? On-line or correspondence
(circle one)

If online, what software do you use? _____

How many years have you offered your program online? _____

Is your AAS program offered entirely or partially online? _____

Please check which items are required for your state licensure examination:

_____ ABO written examination
_____ State written examination for spectacles
_____ State practical examination for spectacles
_____ NCLE written examination
_____ State written examination for contact lenses
_____ State practical examination for contact lenses

Complete the following table for the years your program offered distance education:

	2003	2004	2005	2006
# of distance students / how many passed licensure examinations on first attempt				
# of on campus students / how many passed licensure examinations on first attempt				
# of hybrid students / how many passed licensure examinations on first attempt				

Follow-Up Letter

Kristi Ostrom, Opticianry Program
J. Sargeant Reynolds Community College
700 E. Jackson St. Rm 507
Richmond, VA 23219

December 1, 2006

Dear:

I would like to thank you for your willingness to participate in my research study on distance learning in Opticianry. This is a friendly reminder to submit your data sheet and return it to me as quickly as possible. If you have any questions or need any assistance feel free to contact me at any time.

Sincerely yours,

Kristi Ostrom, ABO-AC FCLSA
Program Director