

# **Distance Education's Effect on Academic Achievement in a Pharmacy care course**

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## **Abstract**

The motivation behind this study was to analyze the presentation of drug store understudies signed up for a Pharmaceutical Care course instructed using dynamic instructional methods through distance training (DE) and grounds based designs. Throughout the span of two semesters, understudies (n = 82) concentrated on portion of the subject by means of distance training and half face to face. Toward the beginning of the semester, surveys were circulated to determine the segment profile of the understudies. Their not set in stone by their grade in the course. Module 1 (Information on Medication) arrived at the midpoint of 7.1225 nearby and 7.5519 on DE (p = 0.117). Module 2 (Pharmaceutical Services) arrived at the midpoint of 7.1595 nearby and 7.7025 through distance training (p = 0.027\*). There was a distinction in learning results between eye to eye and distance training in the Pharmaceutical Care Course. Accordingly, understudy execution was fundamentally worked on in the internet based training module, showing that distance schooling can be utilized effectively in Pharmacy Programs.

**Keywords:** Distance Education, Academic Achievement, Pharmacy care course

## **Introduction**

Taking into account the expanded utilization of virtual modes in wellbeing training, barely any investigations have been directed to decide if distance classes bring about scholastic execution inconsistencies when contrasted with the grounds based design for similar course and conditions.

While the advantages of far off training are much of the time self-evident, especially as far as understudy access and accessibility, there are sure negatives. Understudies can't foster the friendliness and relational abilities related with more customary methods of guidance. Everyday communication with personnel and cohorts that adds to the improvement of amazing skill can likewise be lost for drug store understudies. Despite the fact that there was no distinction in understudy results among distance and up close and personal study halls across a scope of advanced education programs, there is less exploration on the impacts of innovation on drug store educational programs.

In 2010, Harrison et al. revealed that there were 20 foundations in the United States of America offering courses by means of distance training, including 16 grounds working simultaneously, bringing about particular understudy bunches for every one of the four years of the PharmD program. Twelve of these sixteen schools offered content simultaneously, one school conveyed content nonconcurrently, and three schools conveyed content in a mixture style joining coordinated and offbeat conveyance. This maintained and huge improvement shows the basic idea of

understanding the conceivable effect of understudies' far off instruction encounters on scholarly accomplishment. Certain investigations exhibit that far off instruction has a positive impact, for example, at Creighton University, where distance understudies beat nearby understudies. The creators verified that the conveyance procedure affected far off understudies. Then again, Reid and partners exhibited that the method of conveyance of a course significantly affects scholarly execution when they analyzed scholastic information from PharmD understudies at the University of Florida College of Pharmacy's customary and remote grounds.

## **Materials and methods**

### **Description of the pharmaceutical care II course**

The drug care II course happy is conveyed by means of both grounds based and far off instruction choices. A piece of the data was conveyed by means of remote learning, while the rest of conveyed through eye to eye (grounds based) classes, bringing about two unmistakable learning modules. The two organizations and learning goals were utilized to show this measured subject.

The Table 1 sums up the course's classes and the way in which every action was conveyed by means of distance or up close and personal mode. The far off method of guidance was carried out through the Moodle stage, which housed instructional materials and learning objects notwithstanding the exercises. Moreover, each class had the choice of settling questions by means of an offbeat gathering. Up close and personal meetings were held in the homeroom or in a PC lab, as suitable. Furthermore, the up close and personal classes utilized the Moodle stage to get to the informative materials. Educators made composed texts and logical articles accessible to understudies both from a distance and in the homeroom, helping them in enhancing their investigations.

CONTENTS OF THE CLASS	DISTANCE EDUCATION	FACE-TO-FACE EDUCATION
Lesson 1—Module 1: Presentation.	Presentation of the course: objectives, contents, form of evaluation. How to use moodle platform features. How to be a virtual student.	Presentation of the course: objectives, contents, form of evaluation.
Lesson 2—Module 1: Information and rational use of medicines.	Virtual visit to the Medicines Information Center; Individual led study posted on the Moodle platform. Medication Information Center Discussion Forum.	Face-to-face visit to the Medication Information Center; Individual directed study and face-to-face discussion.
Lesson 3—Module 1: Passive and Active Information on Medications.	Search tutorial on drug information sites asynchronously assisted. Exercise presented in the form of games about drug information sources.	Web site search tutorial, presented in a computer lab, with exercises on the topic.
Lesson 4—Module 1: Sources of Medication Information.	Asynchronous recorded lesson on book presentation and tutorial on the MICROMEDEX database. Exercise on information search.	Classes about books and presentation of the MICROMEDEX database. Exercise on information search.
Lesson 5—Module 1: Primary sources.	Asynchronous recorded classroom on Structures of scientific articles and Introduction to critical reading. Critical Analysis Exercise of an article posted on the platform.	Lecture on Structures of scientific articles and Introduction to critical reading. Critical Analysis Exercise of an article made, delivered and presented in class.
Lesson 1—Module 2: Pharmaceutical Care in the World and DRAC.	Recorded asynchronous class on concepts and context of pharmaceutical attention and Brazilian legislation on the subject. Exercise on legislation applied to professional practice. Reminder about virtual student.	Lecture on concepts and context of pharmaceutical care and Brazilian legislation on the subject. Exercise on legislation applied to professional practice.
Lesson 2—Module 2: Dispensing.	Reading text about Dispensing medications. Videos Analysis of dispensing simulations and posting of evaluations in the Moodle platform. Beginning of the development of a drug dispensing roadmap, using the knowledge obtained in module 1.	Lecture on dispensing medications. Projection of videos of simulations of dispensation with evaluation exercise. Beginning of the development of a drug dispensing roadmap, using the knowledge obtained in module 1.
Lesson 3—Module 2: Treatment adherence.	Reading of book chapter and articles on the topic. Development of a conceptual map to be posted on the moodle platform.	Expositive-dialogue session on adherence to treatment. Discussion on the topic with the preparation of a script about the problems of adherence to treatment.
Lesson 4—Module 2: Medication Errors.	Court of the Jury synchronous on the platform Moodle, using the discussion forum, on a case of medication error.	Court of the Jury on a case of medication error.
Lesson 5—Module 2: Distribution System of Medicines in Hospitals and Blood Pressure Measurement.	Video asynchronous lecture about the distribution system of medicines in hospitals and on the measurement of blood pressures.	Lecture about the distribution system of medicines in hospitals and practical demonstration on the measurement of blood pressure.
Lesson 6—Module 2: Pharmaceutical Guidance.	Text, video-oriented pharmaceutical guidance, audio simulation. Exercise of registration of attendance and posting in the platform. Submission of the final version of the drug dispensing roadmap that will be simulated in the skills assessment.	Lecture about orientation, presentation of simulation of attendance and exercise of registration of attendance. Submission of the final version of the drug dispensing roadmap that will be simulated in the skills assessment.
Lesson 7—Module 2: Gymkhana.	Gymkhana content review asynchronously via Moodle.	Gymkhana review of classroom content.
Lesson 8—Module 2: service simulation.	Presential assessment of skills in patient care: simulation of individually recorded care.	Presential assessment of skills in patient care: simulation of individually recorded care.
Lesson 9—Module 2: patient care simulation.	Presential assessment of skills in patient care: simulation of individually recorded care.	Presential assessment of skills in patient care: simulation of individually recorded care.
Lesson 10—General Test.	Knowledge test on the contents of the 2 modules.	Knowledge test on the contents of the 2 modules.

**Table.1. Comparison of the topics covered in the discipline of pharmaceutical care II, in the distance and face-to-face modalities.**

The main illustration covers Drug Information, with understudies evaluating clinical remedies for use in recreated care in the subsequent module. The subsequent module examines patient consideration methods, for example, medication conveyance and drug specialist guiding, as well as elements influencing results, for example, prescription errors and adherence to pharmacological treatment.

The ongoing review examined understudy information and course assessments from the 2012 first and second semesters. In the 2012 first semester, the medication data module was conveyed eye to eye, though the subsequent module was conveyed by means of distance instruction. In the second semester of 2012, the circumstance was switched. In this manner, every understudy enlisted in the course gotten a module in both eye to eye and far off learning.

Members were shown similar illustrations and themes paying little heed to site, by similar teachers, and with similar appraisal goals. The sole differentiation between the two gatherings was the method of guidance (distance or grounds based). For understudies signed up for the homeroom mode, the Moodle stage filled in as an archive for their examples and similar pedantic materials were likewise made

accessible to understudies signed up for the distance mode by means of the Moodle stage. This dispenses with irregularities during the time spent counseling educating materials.

All through the semester, members finished information and execution assessments that contained the accompanying substance:

**Module 1:** Exercises assessing the capacity to gather data, notwithstanding class support;

**Module 2:** Introducing the essential thought hidden prescription administering and drug guiding; examining recordings portraying medicine apportioning and drug directing; Trial by jury, in which understudies are partitioned into bunches addressing the guard, arraignment, and jury and utilize their specialized information to investigate a genuine case including a drug mistake detailed in the news; reenactments of administering meds; forager chases using course information and class support;

**Module3:** I was assessed through the assessment of activities created in every meeting and a singular task on the assessment of a solution that was appropriated at the Module's decision. Then again, module II was assessed utilizing the normal score from Gymkhana, Jury's Court, and Attendance Simulation (an action recorded eye to eye toward the finish of the module, creating relational abilities).

Alongside the module notes, understudies finished similar eye to eye test with composed inquiries at the finish of the semester to assess the subject gained. The assessment comprised of shut and open inquiries and depended on the goal of clinical cases that covered the two modules' substance. All assessments were reconsidered in copy, without respect for visual impairment, by the discipline's instructor and the educating learner. Whenever conflicts emerged, agreement was looked for and the assessment's reasoning was examined.

### **Student profile**

The course enlisted forty understudies in the principal semester of 2012, and 42 in the subsequent semester. 74 understudies answered the poll, while four understudies exited the course and four were missing all through the application cycle.

Table 2 subtleties the profile of understudies from the 2012 scholastic year. The survey likewise evaluated the understudies' level of advanced proficiency, which uncovered no huge contrasts between gatherings, with 23% having recently taken distance instruction programs.

Variables	N	%
<b>Students Enrolled (respondents)</b>		
First semester	40 (26)	48.78 (37.23)
Second semester	42 (38)	51.21 (46.34)
<b>Gender</b>		
Female	35	88.29
Male	8	10.71
<b>Age</b>		
Average (years)	23.9 (19-31)	
<b>How do you prefer to work?</b>		
Onsite	18	22.5
Distance	36	93.5
Individual	17	34
<b>Pharmacy area you want to specialize (open question)</b>		
Industrial Pharmacy	14	30.6
Clinical analysis	13	17.8
Research	4	5.9
Hospital pharmacy	4	5.9
Teaching	4	5.9
Cosmetology	4	5.9
Criminal Expertise	3	4.4
Do not know	16	23.5
Others	6	16.3
<b>Satisfaction with the Pharmacy course</b>		
Completely Dissatisfied	0	0
Somewhat Satisfied	11	15.1
Satisfied	32	71.2
Very Satisfied	7	9.8
Completely Satisfied	3	4.1
<b>Advantages of distance education</b>		
Comfort, no need to leave home	25	39.7
Ease and speed in performing tasks	9	14.3
Time flexibility	8	12.7
Tools contribute to learning	7	11.1
Others	14	22.2
<b>Disadvantages of distance education</b>		
Lack of contact between students	15	34.1
Difficulty of solving doubts	10	22.7
Incomplete understanding, does not capture as much	6	13.6
There are no disadvantages	4	9.1
Others	9	20.5
<b>Have you used the MOODLE platform yet?</b>		
Yes	24	100
<b>How often do you check emails?</b>		
Every day	23	96.6
Once a week	1	1.4
<b>Where from do you access internet?</b>		
From home	38	92.2
From work	2	2.7
From university	1	1.4
From several places	2	2.7
<b>Have you taken an DE course before?</b>		
Yes	23	31.1
No	51	68.9

**Student performance**

Module scores and the final test grade were used to assess student performance, with exam averages used to compare courses for the two formats. The goal of this study was to see if there were significant differences in student performance across formats. Table 2 shows that there were no significant differences between the course modules.

	Módulo I/ Module I	Módulo II/Module II	Total
<b>Average grade</b>	7,3288	7,4416	7,5364

**Table3. Average student's grade in the modules of the discipline of pharmaceutical care II.**

Table 4 shows the results of a comparison of average performance from semester to semester based on the learning format employed. For module 1, which dealt with drug information, there were no significant differences between the two forms, however the distance mode received a higher score than the campus-based version. In Module

II, which dealt with pharmaceutical services, there was a significant difference, and the students' average was higher in the distant modality, at 7.7025.

	<b>N</b>	<b>Average</b>	<b>P<sup>1</sup>.</b>
Performance in Module 1			
(campus-based)	40	7.1225	0.117
(distance)	37	7.5519	
Performance in Module 2			
(distance)	40	7.7025	0.027*
(campus-based)	37	7.1595	

<sup>1</sup> The t-test (\*p<0.05) was used to compare average grades for modules I and II in each semester

**Table.4. Comparison of average grades for modules I and II of the pharmaceutical care II course.**

**Conclusion**

Students' admittance into the Pharmaceutical Care II Course varied depending on whether they used campus-based or distance learning modalities in combination with active techniques. Student performance in DE modules was greater, which could be related to the semester-long requirement for increased participation.

**References**

1. Mattheos N, Schitteck M, Attström R and Lyon HC. Distance learning in academic health education A literature review. Eur J Dent Educ 2001; 5: 67–76

Allen M, Bourhis J, Mabry E, Burrell N, Timmerman E, Titsworth S. Comparing distance education to face-to-face methods of education. In: Gayle B, Preiss R, Burrell N, Allen M, eds. Classroom and Communication Education Research: Advances through meta-analysis. Hillsdale, NJ: Erlbaum;

Allen M, Mabry E, Mattrey M, Bourhis J, Titsworth S, Burrell N. Evaluating the effectiveness of distance learning: a comparison using meta-analysis. Paper presented at: Communication Education Division, National Communication Association Convention; November 2001, 2001; Atlanta, GA.

Callahan AL, Givens PE, Bly RG. Distance education moves into the 21st century: a comparison of delivery methods. Paper presented at: American Society for

Engineering Education Annual Conference and Exposition; June 1998, 1998; Seattle, Washington.

Navarro P, Shoemaker J. The power of cyberlearning: an empirical test. *J Comput Higher Educ.* 1999; 11.

Wade WE, Cobb HH III, Spruill WJ, Chisholm MA. Assessment of student performance in an advanced pharmacokinetics course taught by three methods of instructional delivery. *Am J Pharm Educ.* 1999; 63: 82–85.

Chisholm MA, Miller AW, Spruill WJ, Cobb HH, Reinhart BO, Terry AV, et al. Influence of interactive videoconferencing on the performance of pharmacy students and instructors. *Am J Pharm Educ.* 2000; 64: 152–158.

Harrison LC, Congdon HB, DiPiro JT. The status of US multi-campus colleges and schools of pharmacy. *Am J Pharm Educ.* 2010;74(7)

Lenz TL, Monaghan MS, Wilson AF, Tilleman JA, Jones RM, Hayes MM. Using performance-based assessments to evaluate parity between a campus and distance education pathway. *Am J Pharm Educ.* 2006; 70(4): Article 90. pmid:17136209

Ried LD, McKenzie M. A preliminary report on the academic performance of pharmacy students in a distance education program. *Am J Pharm Educ.* 2004;68(3)

Carr S. Online psychology instruction is effective, but not satisfying, study finds. *Chronicle of Higher Education.* 2000. 46(27), pA48, 2/5p.

Russell TL. The "No Significant Difference" phenomenon. Raleigh: North Carolina University. 1999.

Schoech D. Teaching over the Internet: Results of one doctoral course. *Research on Social Work Practice,* 2000, 10, 467–487.

Bower B. Distance education: Facing the faculty challenge. *Online Journal of Distance Learning Administration,* 2001, 4(2).

Hara N. & Kling R. Student's frustrations with a web-based distance education course. *First Monday,* 1999. 4(12).

Middleton AJ. How effective is distance education? *International Journal of Instructional Media.* 1997; 24, 133–138.

Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm.* 1990; 47(3):533–543. pmid:2316538

Martínez-Sánchez AM. How to implement pharmaceutical care in the curriculum? The Cuban pharmacy education experiences. *Lat Am J Pharm.* 2009; 28(1):100–102.

Mesquita AR, Souza WM, Boaventura TC, Barros IMC, Antonioli AR, Silva WB, et al. (2015) The Effect of Active Learning Methodologies on the Teaching of Pharmaceutical Care in a Brazilian Pharmacy Faculty. *PLoS ONE* 10(5): e0123141. pmid:25969991

MacLaughlin EJ, Supernaw RB, Howard KA. Impact of distance learning using videoconferencing technology on student performance. Am J Pharm Educ. 2004;68(3)