

Comparison Study of Multimedia Instructional Material versus Traditional Method of Education

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Abstract: The purpose of this study is to compare the effects of two methods of teaching multimedia versus traditional teaching on a student of high vocational diploma 2nd-year students of medical record department in Kanchanabhishek Institute of Medical and Public Health Technology. The sample for this study included a total of 108 students who were enrolled in Medical record subject and studied the high vocational diploma 2nd-year students of medical record department in the year 2017. This study used a convenience sampling method because it was based on the easy availability and accessibility of participants. Students enrolled in the course spring 2017 represented the control group ($n=58$) and students in the course fall 2017 represented the experimental group ($n=50$). The descriptive statistics and independent t -tests were employed to compare coding knowledge of pregnancy, abortion, complications during pregnancy, the postnatal period postpartum complications and diagnosis medical record code between control and experimental groups. The analysis of personal factors found that 50.93 percent of respondents were male. Regard to the age of respondent, it was found that 50.93% were 20-21 years. In addition, the respondents presented GPA between 3.01 and 3.50, accounting for 51.85%. The result presented that there is significantly difference of knowledge between control and experimental group with the significant level of .001. The t -test result results in the negative number (-2.786), it means that the post-test score was higher than the pre-test score.

Key words: *multimedia, medical record, education*

INTRODUCTION

Multimedia in education is effective in teaching diverse subjects. Multimedia has changed the way we communicate. The way we send and receive messages is better and more effective. While lectures can provide a great deal of information, lectures that include photos or video can help people learn and maintain information more effectively using interactive CDs can be very effective in teaching students the most diverse subjects in language and music [1]. Sensory experiences can be created for the audience, which will lead to a positive attitude towards the application. Multimedia also demonstrates the highest data retention rates and results in shorter study time [2].

The creator of the design of multimedia applications that are interactive and many feels can be

both challenging and exciting. Multimedia application design offers new insights into the learning process of the designer and forces him or her to present information and knowledge in new and innovative ways [2]. However, information technology applications have different purposes, such as sharing knowledge, portals, search engines, public administration, social services, and business solutions. Brecht, H.D. et al [3] stated that raising awareness of the use of information and communication technology over the past few years has increased in the classroom environment in the third world, such as one-on-one speech in the classroom, communication, ideas, skills, and attitudes to student education are useless. Because the computer has not been widely used in many schools, the teaching process is dominated by the traditional method. It is dominated by the forehead pattern of work that the teacher interacts with enough students. Failure to grow at their own pace

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and the lack of students is one of the disadvantages of this type of teach [4]. In the classroom, we have an uneven child in knowledge and do not pay enough attention to those who do not receive adequate material and who are above their average [5]. This difference is often hampered by teacher evaluations and the way in which knowledge is transferred to a group of children with different knowledge. Teachers choose to provide good instructional quality, which children with inadequate knowledge will not receive the required knowledge. Children with inadequate knowledge can proceed smoothly without feeling upset of their ignorance, frustration, and humiliation while teaching the most advanced children becomes tiresome [6].

According to Adekunmisi, S.R. [1], The instructional media covers what the teacher uses to connect the five senses, hearing, touch, smell and taste while delivering the lesson. In a similar with Agnew, P.W. [2] found the teaching media is intended to help teachers teach effectively and help students to learn more easily. The medium of instruction is the data that has been designed to meet the objectives of the course. The importance of using multimedia instructional material in different disciplines is discussed in the literature. The researchers measured the effectiveness of their multimedia in many fields. Considering the lack of research on the effectiveness of multimedia in education, medical history, especially in the advantages of learning methods will be useful. This study, therefore, aims to compare the effects of two methods of teaching multimedia versus traditional teaching on a student of high vocational diploma 2nd-year students of medical record department in Kanchanabhishek Institute of Medical and Public Health Technology.

MATERIALS AND METHODS

The study originated from the need to compare knowledge about disease coding of the medical record and its retention between two groups of students. We used the independent t-tests to analyze the different level of knowledge about the code of medical record among students. We randomly assigned eligible high vocational diploma 2nd-year students of medical record department year 2017 to the following two groups. The experimental was teaching with the Multimedia instructional material and compare to those who were touch by traditional learning.

The same instructor offers two different learning styles (multimedia and traditional teaching) to plan the curriculum in this topic. "Knowledge of medical coding about pregnancy, abortion, complications during pregnancy, complications postpartum".

Multimedia instructional material was introduced. A set of the questionnaire for the pretest and posttest was employed to assess the knowledge of medical coding about pregnancy, abortion, complications during pregnancy, complications postpartum of both groups of students. Students in the control group received traditional teaching. Students in the experimental group had access to the new instructional multimedia material. For both groups, orientation sessions were held during the first two weeks of the semester. Orientation sessions consisted of two days class period (three hours for each session) in which students received instructions about coding knowledge of pregnancy, abortion, complications during pregnancy, the postnatal period postpartum complications and diagnosis medical record code.

The sample for this study included a total of 108 students who were enrolled in Medical record subject, high vocational diploma 2nd-year students of medical record department in the year 2017. This study used a convenience sampling method because it was based on the easy availability and accessibility of participants. Students enrolled in the course spring 2017 represented the control group ($n=58$) and students in the course fall 2017 represented the experimental group ($n=50$). A majority of students in this course were juniors and seniors majoring either in the medical record. Students' personal information included gender, age, and GPA. Pretest and posttest questionnaires assessed students' coding knowledge of pregnancy, abortion, complications during pregnancy, the postnatal period postpartum complications and diagnosis medical record code, and collected students' demographic data. These two tests were given to students in both control and experimental groups.

All collected data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS). The descriptive statistics and independent *t*-tests were employed to compare coding knowledge of pregnancy, abortion, complications during pregnancy, the postnatal period postpartum complications and

diagnosis medical record code between control and experimental groups. For all statistical tests, a significance level of .05 was applied.

RESULT AND DISCUSSION

The analysis of personal factors found that 50.93 percent of respondents were male, and 49.07% were female. Regard to the age of respondent, it was found that 50.93% were 20-21 years, followed by 18-19 years (46.30%) and more than 20 years accounting for 5.63%. In addition, the respondents presented GPA between 3.01 and 3.50, accounting for 51.85%, followed by GPA 3.51-4.00 (25%) and GPA 2.51-3.00 (24.2%) (Table 1).

Table 1 Frequency and Percentage of Personal Factors

Personal factors	Frequency	Percentage
Gender		
Male	55	50.93
Female	53	49.07
Age		
18-19 years	50	46.30
20-21 years	55	50.93
More than 20 years	5	4.63
GPA		
Less than 2.50	5	4.63
2.51-3.00	24	22.22
3.01-350	56	51.85
3.51-4.00	27	25.00
Total	108	100.0

This study involved 108 students, high vocational diploma 2nd-year students of medical record department year 2017. Table 2 presents the comparison between the control group and experimental group. Before the intervention of the new method, the independent t-test yielded that there was no significantly different of Knowledge of medical coding about pregnancy, abortion, complications during pregnancy, complications postpartum between the control group and the experimental group at the 0.05 significant levels. Taking into account the influence of new method, this study found that there is significant difference of knowledge between control and experimental group with the significant level of .001. The t-test result results in the negative number (-2.786), it means that the post-test score was higher than the pre-test score. On the other

world that the new method intervention is more effective to implement in the teaching.

Table 2 Results of pre and post-test knowledge score from both study groups

Study groups	pre-test Mean ± SD	post-test Mean ± SD
Control group (n = 58)	10.05 ± 2.82	9.44 ± 3.12
Experimental group (n = 50)	13.53 ± 3.97	15.94 ± 4.99
t-test	1.070	-2.786*
Sig	.287	.006

*Significant at .05

DISCUSSION

This result found the comparison between the control group and experimental group before the intervention of multimedia instructional material. The study found that there is significant difference of knowledge of medical coding about pregnancy, abortion, complications during pregnancy, complications postpartum. between control and experimental group with the significant level of .001. The multimedia instructional material intervention is more effective to implement in the teaching which reported the post-test score was higher than the pre-test score. According to Matthies HK. [7] evaluate virtual learning methods and be considered as a starting point for using virtual learning programs in Iranian dentistry schools. Computer-assisted instructional support is offered by educators as another teaching method in traditional classroom teaching, without sacrificing quality education for some courses. Similarly, Wilkinson TJ, Frampton CM [8] found that the development of such multimedia information and communication systems requires a collaborative team of experts who are able to control a wide range of medical and dental disciplines, as well as offering a variety of multimedia facilities. Moreover, the study of Moattari, M. [9] found a collection of student knowledge and retention of knowledge by the same exam preparation with a two-month period. Second post-test results were similarly maintained after two months compared to post-test results.

This result has supported the assumption that the content learned from the multimedia can be learned and researched better. However, in our current study, we

do not measure students' satisfaction with the project. Relatively willing to finish this study reflects their perception of traditional teaching methods and multimedia teaching materials. All students in the traditional group and the experimental group expressed their willingness to attend the meeting. The recommendation is that computer literacy among teachers and students is limited and should be improved.

CONCLUSION

The knowledge of medical coding of the experimental group (multimedia instructional material teaching) was higher than the control group (traditional teaching). The results of this study show that students prefer multimedia instruction in the traditional teaching style. There should be further research to explore the needs of students and learn about other teaching methods, such as web-based learning and multimedia presentations, offered with help. Further studies on the influence of multimedia on various types of learning should be investigated to determine whether individuals with multiple learning styles benefit from multimedia instruction.

LIMITATION OF THE STUDY

Multimedia instructional influenced student learning and positively influenced on the students' knowledge of medical coding about pregnancy, abortion, complications during pregnancy, complications postpartum. The limitation was that the sample in this study was not randomly selected and was confined to high vocational diploma 2nd year students of medical record department enrolled in 2017 at Kanchanabhishek Institute of Medical and Public Health Technology and results should not be generalized to other classes or group of students in a different academic year or to other educational programs.

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