SIMULATION GAMING RESULTED TO BETTER CARDIO-PULMONARY RESUSCITATION ATTITUDE AMONG NURSING STUDENTS IN THE PHILIPPINES

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Abstract

The comparisons of the merits of simulation games versus other teaching techniques have been carried out by many researchers and a number of comprehensive reviews and/or journals have been published. Unfortunately, few studies dealt with simulation gaming as a pedagogical tool, and its effects in furthering knowledge, skills and attitude among undergraduate nurses. This study explored the possible benefits of integrating simulation gaming as a teaching strategy and pedagogy in nursing education. This quasi-experimental study involved forty-five (45) purposively selected nursing students from a nursing school in the Philippines. Subjects were grouped into three (3) groups namely the traditional lecture group, the simulation group and the combination of lecture and simulation group. Pre-test and post test was done utilizing a self-made validated questionnaire. A discussion on CPR using aforementioned teaching techniques were done in between the tests. Results show that the presence of simulation together with the traditional lecture teaching has the most significant effect (p=0.028) compared to the other two (2) lone groups. It affected all the knowledge, skills and attitude of the participants. Findings of the study may guide policy makers and curriculum developers on the possible benefits of simulation gaming.

Keywords: Attitude, Knowledge, Cardiopulmonary Resuscitation, Nursing, Simulation gaming, Skills

1.0 BACKGROUND

Rosenberg (2011) defined simulation gaming as the process of learning by which people acquire new skills or knowledge for the purpose of enhancing their performance. Furthermore, games bring together play, laughter, and joy to learning - why not make learning joyful (Powers, 1994)? A simulation game attempts to copy various activities in real life in the form of a game for various purposes: training, analysis, education or prediction. Some game designers, on the other hand, have categorized various games into: Real Time Strategy, First-Person Shooter, Empire Builder Simulations, Role Playing Games, Massively Multiplayer Online, Sports and Puzzle (Scarlett, Naudeau, Salonius-Pasternak, & Ponte, 2004). More often than not, there is no specific goal in playing the game - just playing the role of character for improvements.

At present, simulation gaming related to health science education is trending. Various games have been developed to improve performance of learners/players. As stated by deTornyay

and Thompson (1987), it is an activity presided over by precise rules that involve varying degrees of chance, in which, players compete through the use of knowledge or skill in attempts to reach specific goals. Importantly, simulation gaming strategies focus not only on the knowledge and technical skills of the learner but also develop non-technical skills that are inherent in competent clinical practice including communication, teamwork, problem solving and leadership skills (Wildman and Reeves, 1996). Being supported by educational theory, simulation gaming strategies also create a positive environment for learning. The learning environment when using simulation gaming strategies is more relaxed which can reduce the stress and anxiety experienced by the learner (Sealover and Henderson, 2005). Some of the sample simulation games are Nurse Training: Trauma Unit, Sim Health and Your Future in Nursing.

The comparisons of the merits of simulation games versus other teaching techniques have been carried out by many researchers and a number of comprehensive reviews and/or journals have been published. Unfortunately, few studies dealt with simulation gaming as a pedagogical tool, and its effects in furthering knowledge, skills and attitude among undergraduate nurses.

2.0 Review of Related Literature

2.1 Theoretical Framework

This research is anchored in the theory of Piaget's Constructivism that focused on the notion assimilation suggesting that a learner will have a richer understanding of a concept when they have experienced a sufficiently broad range of examples such that they appreciate the full range of application of that concept.

According to this theory, the learners' conceptual structures will be expanded, modified and made more sophisticated when they encounter unexpected experiences that reveal the inadequacy of existing structures. These processes of assimilation and accommodation happen in individuals' informal learning through their experiences of the world and can also inform formal process of learning.

2.2 Literature Review

2.2.1 Knowledge

Simulation has become a trend in nursing education due to the increasing access to computers and technical equipment that can be used in the educational settings (Adams, 2004; Forman et al., 2002; Jeffries, 2001). In our research, one of our main objectives is to prove that simulation can be as effective as the traditional lecture. As stated by Alinier (2004), new training tools imply new ways of teaching and new training methods. Simulation based-education is now widespread in medical and nursing education; however, outcomes research on the effectiveness of full scale simulation is limited by varying degrees of methodological rigor (Issenberg, McGaghie, Petrusa, Gordon, & Scalese, 2005). Although some studies have shown that simulation is effective for medical students, residents, nursing student, and multidisciplinary teams. (Alinier, Hunt, & Gordon, 2003; De Vita, Schaefer, Lutz, Dongilli, & Wang 2004; Holcomb et al., 2002; Lindekaer, Jacobsen, Anderson, Laub, & Jensen, 1997; M 2005ayo, Hackney, Mueck, Ribaudo, & Schneider, 2004; Ravert, 2004), there are few valid and reliable measurement tools for evaluating the effectiveness of simulation-based education and performance of learners in a simulated environment. Teaching in relation to any topic requires considerable creativity and imagination in

order to capture and retain the interest of students/learners (Layne, 2001; Rowe, 2004). Simply having to deal with large groups of nursing students can mitigate against learning opportunities that are lively, creative and enjoyable. Learning in ways that stimulate creativity and imagination in the student/learner will result in better quality and more in depth learning than more traditional approaches to learning (Reece and Walker, 1997; Knowles, 1998). It is suggested that the content of some nursing programs may be unrelated to the realities of clinical practice, highlighting a theory- practice gap (Nolan and Grant, 1992; Lathlean and Vaughan, 1995; Wilson-Thomas, 1995; Harttick et al., 1999 and Landers, 2000).

2.2.2 Skills

As such, a simulation game, "The Ward" was designed to allow student nurses to explore aspects of nursing theory and its relationship to practice in a safe and controlled environment. It prompts students to work in teams, with clear roles, but with all team members working toward the same goal. It also prompts and promotes the application of nursing knowledge to a range of scenarios and situations based on aspects of hospital ward life, that are often beyond the collective range of any one type of clinical environment or clinical placement. "The Ward" engages students/learners attention, allowing them to immerse themselves in the simulation, while at the same time having fun. Generally speaking, simulation can be said to be an activity which attempts to approximate, without necessarily replicating a real world setting, for the purposes of learning in a safe, controlled environment (Beaubien and Baker, 2004). Literature reporting simulation activities usually consider these in terms of their fidelity (Jeffries, 2007). High fidelity refers to those activities which most accurately reproduce life-like situations with e.g. a computer based manikin, programmed to provide visual, auditory cues and feedback, depending on student response. Low fidelity refers to less life-like simulation e.g. using a piece of foam to practice giving injections. Beaubien and Baker (2004) also discuss fidelity in terms of environment, equipment and psychology.

2.2.3 Attitude

Researches have shown that computer aided teaching material can be effective on student's attitude on some courses. It has revealed that computer aided teaching material improve positive attitude on the students. Therefore, all schools should be highly computerized; all teachers should be able to use effectively the computer to enhance their working methods (Zeynep Koyunlu Ünlü and lbilge Dökme, 2011).

Based on the foregoing, the study advances the following question:

Research Question 1: *Is simulation better than traditional teaching in CPR classes among nursing students?*
Research Question 2: *Is there a significant difference in the CPR knowledge, skills and attitude between the simulation, traditional lecture and eclectic groups?*

Subsequently, the following hypotheses were crafted:

H_1: *The presence of simulation will result to better CPR knowledge among students*
H_2: *The presence of simulation will result to better CPR skills among students*
H_3: *The presence of simulation will result to better CPR attitude among students*

2.3 Research Simulacrum

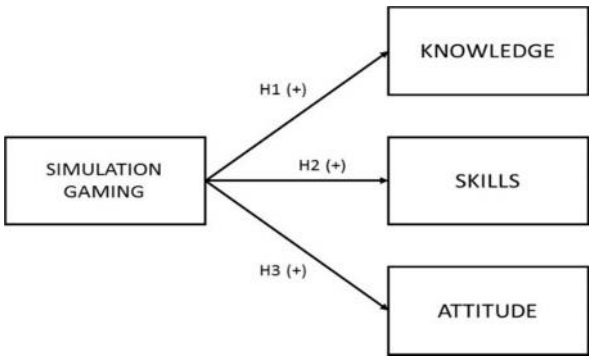

Figure 1: Hypothesized relationship between knowledge, skills and attitude in the presence of simulation gaming.

3.0 Research Method

3.1 Research Design

The study comes with Quantitative and Quasi Experimental type of research. It typically allows the researchers to control the assignment to the treatment condition, but using some criterion other than random assignment. Moreover, it is an empirical study used to estimate the causal impact of an intervention on its target population.

3.2 Research Locale

The researchers conducted the study at Our Lady of Fatima University located at 120 Mc Arthur Hi-way, Marulas, Valenzuela City. The research was conducted here because it provides easy access to both the researchers, participants and the lecturer. Furthermore, it serves as the ideal place for the study for it has the needed equipment to be used.

3.3 Population and Sampling

The researchers purposively selected forty-five (45) first year nursing students with no specific gender, and are currently enrolled at Our Lady of Fatima University. The participants were divided into three groups. Each group has fifteen (15) participants; the first group as the lecture group, the second as the simulation group and the third as the eclectic group. They were demonstrated and lectured about Cardiopulmonary Resuscitation (CPR) by a qualified instructor.

3.4 Research Ethics

The researchers' ethical responsibilities are to maintain competence in one's identified area of research and to maximize possible benefits for all subjects enrolled. The research also helps the respondents to foresee and acquire new knowledge and skills in regards to their nursing care management specifically cardiopulmonary resuscitation.

3.5 Research Instrument

The researchers conducted a study using a pre-test and post-test. In a pre-test-post-test design, a single group of participants is measured on the dependent variable both before and after the manipulation of the independent variable.

The researchers constructed a twenty-item (20) test containing ten (10) questions for knowledge and ten (10) questions for skills. The questions were referenced from the American Heart Association for best information about Cardiopulmonary Resuscitation (CPR). The researchers also included one (1) question reflecting the attitude of the participant regarding the topic discussed. These questions were comprehensively checked by the qualified instructor who is also the one who discussed the lesson.

This study intends to measure the level of comprehensiveness of students with the use of simulation as compared to when the traditional lecture is used.

3.6 Data Collection

The researches decided to use CPR as the lesson to be discussed. They looked for some nursing students that are not yet endorsed to this topic so the researches came up to making the first year nursing students as their participants. They scheduled the data gathering and the participants agreed with it

On the process of Data Gathering, ethica Clearance was secured. The pretest was given to all of the three groups. After the pre-test, the CPR teaching was started to Group A (Lecture Group) and to Group C (Eclectic Group). The instructor used the traditional lecture teaching on these groups. Following the lecture, the instructor taught the students about CPR through the use of simulation: this includes the Group B (Simulation Group) and again, the group C (Eclectic Group).

After all the teaching techniques were given, all the students then, took the post-test which is also the containing the same questions as with the pre-test. The researchers finally checked the test papers of the participants and tallied their scores.

3.7 Data Analysis

Paired T-Test was used to compare the effect of simulation to the knowledge, skills and attitude among students. It was also used to know the effectiveness of the integration of simulation into the learning techniques when compared to the traditional lecture techniques.

4.0 Results

4.1 Group A (Lecture Group)

This table below shows the significance of the lecture alone to the knowledge and skills among nursing students. Attitude shows no significance when lecture technique is used.

Table 1
Difference between Pre-Test & Post-Test scores of Knowledge, Skills and Attitude under Lecture Technique

Dimensions		Weighted Mean	t	P - value	Decision	Remarks
Knowledge	Pretest Posttest	2.7333 5.4667	-6.191	0.000	Reject H_0	Significant
Skills	Pretest Posttest	3.6667 5.8000	-2.849	0.013	Reject H_0	Significant
Attitude	Pretest Posttest	4.8000 5.0000	-1.871	0.082	Do Not Reject H_0	Not Significant

4.2 Group B (Simulation Group)

This table below shows the significance of simulation alone to the knowledge and skills among nursing students. Attitude shows no significance when simulation technique is used.

Table 2
Difference between Pre-Test & Post-Test scores of Knowledge, Skills and Attitude under Simulation Technique.

Dimensions		Weighted Mean	t	P - value	Decision	Remarks
Knowledge	Pretest Posttest	2.5333 5.3333	-7.614	0.000	Reject H_0	Significant
Skills	Pretest Posttest	3.2667 6.2000	-6.644	0.000	Reject H_0	Significant
Attitude	Pretest Posttest	4.6667 4.9333	-1.169	0.262	Do Not Reject H_0	Not Significant

4.3 Group C (Eclectic Group)

This table below shows the significance of using both the traditional lecture and simulation to the knowledge, skills and attitude among nursing students.

Table 3
Difference between Pre-Test & Post-Test scores of Knowledge, Skills and Attitude under Lecture & Simulation Technique

Dimensions		Weighted Mean	t	P - value	Decision	Remarks
Knowledge	Pretest Posttest	2.7333 5.4667	-13.169	0.000	Reject H_0	Significant
Skills	Pretest Posttest	3.6667 5.8000	-8.519	0.000	Reject H_0	Significant
Attitude	Pretest Posttest	4.8000 5.0000	-2.449	0.028	Reject H_0	Significant

5.0 Discussion

A significant implication of any learning strategy is its ability to develop knowledge and understanding and in the case of nursing, to enhance practice. The evidence of impact of the contribution of simulation to the development of pre-qualifying nurses is emerging with the focus moving from content of the simulation to structure and delivery (Harder, 2009).

The result of the study shows (Table 1 & Table 2) that there is significance on the usage of both the simulation group and the lecture group to the knowledge and skills of the participants.

The results on Table 1 regarding the knowledge having a weighted mean of 2.7333 and 5.4667 for the pretest and posttest respectively rejects H0 which shows that there is a significant effect on their performance same as with the skills having 3.6667 and 5.8000 on their pretest and posttest respectively. Going on to the attitude of Table 1, the result shown are pretest = 4.8000 and posttest = 5.00 which do not reject H0 and therefore doesn't have a significant effect on the study.

Moreover on Table 2, the results ended up the same with Table 1. The

knowledge with pretest and post test scores of 2.533 and 5.333 shows that there is a significance on the study. The skills goes the same as the pretest and posttest having 3.2667 and 6.2000 respectively. As for the attitude, again, same for the Table 1 having pretest and posttest scores of 4.667 and 4.9333 respectively has no significance to the study.

On the other hand, (Table 3) the results show that there is significance on all of the knowledge, skills and attitude of the participants on the eclectic group. The knowledge having pretest and posttest scores of 2.7333 and 5.4667, skills with pretest and posttest of 3.6667 and 5.8000 and attitude pretest and posttest of 4.8000 and 5.0000. Measuring transferability of knowledge, skills and attitudes acquired through simulated learning is clearly an essential focus for future research. Measuring outcomes should not however divert attention from understanding process and the attributes of process. This requires the study of the critical attributes this analysis has identified. Many authors agree that simulated learning can be constructed to authentically mimic real life and authenticity is one essential ingredient of success. Despite such agreement, interrogation of how authentic simulated learning needs to be in order for the student to suspend disbelief and engage in learning remains illusive.

Given all of the tables, it only shows that the presence of simulation together with the traditional lecture teaching has the most significant effect compared to the other two (2) lone groups. It affected all the knowledge, skills and attitude of the participants.

6.0 Conclusion

The study purported to understand the significance of simulation to the knowledge skills and attitude of the students as compared to the traditional lecture teaching. It aims to know which type of learning would be most effective to nursing students when CPR teaching is concerned. The researchers used quasi experimental research design for it allows them to control the groups of participants for the data gathering since pre-test and post-test is concerned. As the data was gathered, results poses that the most effective way of teaching CPR is the combination of both the lecture and simulation (eclectic group) for it affects knowledge, skills and attitude. Having read some articles about simulation as a learning pedagogy, this paper provides that the integration of simulation to the traditional lecture teaching is one effective way of learning especially to nursing students.

7.0 Recommendation

Future researchers may benefit from this study and expand it in several ways. Mainly, additional comprehensive samples are essentially recommended to further explore the preferences representative of the entire student population. This study could also help lecturers on different colleges and universities to choose which best type of learning strategy would be best useful and helpful to their students.This study would benefit best in the field of nursing since nursing students need simulation in order to perform well in the clinical area. Also, findings of the study guide policy makers and curriculum developers on the possible benefits of simulation gaming. Finally, the outcome of this research will enlighten future research works concerning the topic.

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