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Snakes and ladders : a new method for increasing of medical students excitement

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Abstract

Introduction: With respect to abundance of text books and frequency of topics in medical education, new methods can help instructors and students to achieve better results in learning. In this study we proposed a new method and then analyzed students function and attitudes about the efficacy of that. **Material and Method:** We designed a Snakes and ladders game that there were many questions in that boxes. The questions were about trunk anatomy and this puzzle gave to the 31 first year medical students. The students divided to four people group randomly. After that a questionnaire were given to them including 7 questions. For analyzing data we used SPSS. ver 19. **Results:** 10 of the students were female(32/2%) and the others were male(67/8%). The mean age of students were 18/73± 0/78. 67/7% of students said that the quality of our exam were good. 51/6% of them thought very good positive attitude. 64/5 % of them believed that our design had a very powerful effect on learning. For designing the puzzle 20/45% of questions were designed 3 degree difficulty, 43/18% of them 2 degree difficulty and 36/36% 1 degree difficulty. **Discussion :** Using new method can excite the students, create landmarks for remembering memorizing methods and can improve their team work. In medical profession, team working has a major role to management the patients.

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Keywords: medical student; medical learning; student excitement

Introduction

There are a number of definitions to characterize educational games: One definition describes an educational game as an instructional method requiring the learner to participate in a competitive activity with preset rules [1]. Another describes it as a type of experiential learning where the learner engages in a particular activity, looks back at the activity critically, abstracts some useful insight from the analysis, and puts the results to work [2]. Most games differ from other educational strategies in their competitive nature and the use of prescribed settings constrained by rules and procedures (3).four categories of games: Simulations, virtual environments, social and cooperative play, and alternative reality games. Simulations or role playing implantations are strategies to replicate real situations with guided experiences in a fully interactive way (e.g. endoscopy or cardiopulmonary resuscitation simulation). Another category of games is virtual environments which are web-based applications – such as Second Life - offering interaction in virtual environments that are visually rich and engaging. Social and cooperative games – such as board games and games based on television game shows - are based on interaction with other players in a social setting and in a cooperative way. Finally, alternative reality games mix gameplay and real life and challenge players to discover and then solve a mystery. Using games as an educational implantation may improve education outcomes[4]; learning as a process whereby knowledge is created by the transformation of experiences [5]. This process has four phases:

(1) concrete experience, (2) reflective observation, (3) abstract conceptualization, and (4) active experimentation. Games have the potential to facilitate and enhance this process by providing an active experience in which the learner conceptualizes knowledge and then actively experiment with the concept in the game [6]. Both card games and board games are widely used on medical topics for medical teaching of both undergraduate and postgraduate students.[7]

Materials and methods:

This study was conducted using randomized clinical trial method. The participants first year medical students who have chosen anatomy course include 31 medical students (entry of 2011) out of 60 students who were randomly selected using obligation list. The students were given a particular number and then using the randomly choosing software the participants were selected. In the next step the participants were divided into 4 member groups and the remained students were assigned as control group. In this research some implantations, such as adding game activities to students' syllabus, were carried out; they were compete in 4-member groups over playing snakes and ladders game which was designed as a wall poster. After playing the game, students perspective about the game were asked given a questionnaire designed by the author and finally the gathered data were analyzed using SPSS ver.19 software package.

Design:

“Snakes and Ladders” is an ancient Indian board game regarded today as a worldwide classic game [8]. It is played between two or more players on a game board having numbered and gridded squares. A number of "ladders" and "snakes" are pictured on the board, each connecting two specific board squares. The objective of the game is to navigate one's game piece from the start (bottom square) to the finish (top square), helped or hindered by ladders and snakes, respectively. The historic version had root in morality lessons, where a player's progression up the board represented a life journey complicated by virtues (ladders) and vices (snakes). The game is a simple race contest lacking a skill component, and is popular with young children.[9]

Game Testing and Implementation:

The game was designed in a way in which there were implemented 100 squares with 44 trunk anatomy questions including topics such as thorax, abdomen, and pelvis. The students were competing in 4-member groups and had the maximum time of 45 minutes. The questions were designed in flash card and imagery forms and the participants had to orally answer the questions. Based on their taxonomy, the questions were categorized into three grades in term of their difficulty and put in three envelopes and then the students were asked to randomly choose the questions. In the designed game, difficulty of the questions was marked on the squares: The squares with snakes had questions with difficulty grade of 1 (easy and intellectual), those having ladders had difficulty grade of 3 (difficult and intellectual), and the other remaining squares, once in every 3 squares, had questions with difficulty grade of 2 (average). Out of 44 questions in the game, there were 9 (20.45 %), 19 (43.18 %), and 16 (36.36 %) questions with difficulty grade of 1, 2, and 3, respectively. It must be added that the total number of squares were 100 where the final score of the students were calculated in the score of 0 to 1.5.

Rules and condition:

Once student correctly answer the questions they will continue the game but when they fail answering a question with difficulty grade of 1 (taxonomy grade 1) they will descend to the lower squared. In the case of facing with questions with difficulty grade of 3 (taxonomy grade 3), the correct answer leads to their going to upper squares but when they give wrong answer they will use the following conditions (if they fail answering the question through using the defined conditions they lose and have to leave the game): The participants can leave answer to 3 questions with difficulty grade of 3 (very difficult), 2 questions with difficulty grade of 2 (average), and one question with difficulty grade of 1 (easy) and if they lose the allowed times(chance) of using the conditions they will not be able to continue the game.

Results:

In this study, 31 medical students were selected out of 60 students (entry of 2010). There participants of this study were 10 (32.2 %) female and 21 (67.8 %) male students with age range of 18.73 ± 0.78 . The participants were randomly

selected and the “Snakes and Ladders” game was implanted in their educational curriculum. After students played the game once, they were polled through filling in the questionnaire designed by the researcher. Through statistical analysis of the students’ opinions by SPSS19 software package, it was found that 67.7 % of participants believe that evaluation system is in a “good” level. Besides, the participants believe that this kind of innovation in educational method planning is “very good”. Also, 51.6 % of students mentioned that this method has a “very” positive effect in change of their attitude toward learning. For simulation of the test condition, 54.8 % of students selected the choice of “fairly”. About the (positive) effect on students learning rate, the answer of 64.5 % was “very”. Also, 71 % of students believed that this method is “very” applicable and practical. And finally, 61.3 % of participants believed that the game is designed “very good” in term of logical aspects. However, in another study we will try to measure test anxiety using Spiel Berger test anxiety questionnaire after 10 times playing the game. Moreover, we will try to measure increase of students’ motivation and also exam anxiety by spielberger test, depression using Beck depression test and questionnaire after 10 times playing the game.

Discussion:

Through the overall examination of the results gathered through the questionnaire used in this study, it was found that using education games lead to increase of learning excitement and development of a positive attitude toward learning. In this research, application of educational games, namely “Snakes and Ladders”, was evaluated in anatomy course; however, in many other studies application of other educational games such as puzzle matching and game cards have been previously studied in courses such as pharmacology, immunology, etc. Elie A. et al conducted a systematic review, “educational games for health professionals”, from the “The Cochrane Collaboration. Published by John Wiley & Sons, Ltd”. Through study of 1156 papers they concluded that: The findings do not confirm nor refute the utility of games as a teaching strategy for health professional, so, there is a need for additional high-quality research to explore the impact of educational games on patient and performance outcomes.[10] In addition, Konrad Bochennek et al conducted another study, “more than mere games: a review of card and board games for medical education”. They reviewed all card and board games for medical education purpose listed in NCBI PubMed database and Internet game databases (n=29) the study summarizes games that might be useful to medical teaching staff. To categorize these games, a new schema for medical games categorization, based on the game mechanism and theories on experiential learning circles, is proposed and discussed. Additionally, they have a view on card and board games with medical topics for entertainment (n=22).[7]and also in other study Petros Lalos et al. turn the snake and ladders from card game to A hypermedia educational environment for portable device that called : e-SNAKES and LADDERS ,in other hand it was a m-learning method for education. [11]Despite all existed investigations, it is proposed to employ credible psychology questionnaires about test anxiety exam such as anxiety test spielberger and depression, such as Beck (depression) and educational motivation questionnaires, as well as implantation of educational games to control efficacy of this kind of activities.

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