Original Article

The Effect of Avazma Game Software on Students' Clinical Function during Voice Disorder Internship

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Abstract

Background: This study aimed to assess the use of game software on the clinical performance of speech therapy students during their internship.
Methods: This study was a clinical trial. The population of the study comprised 69 students of Ahvaz Jundishapur University of Medical Sciences of 2012, 2013, 2014, and 2015 who passed the voice disorder internship unit in the sixth semester. The first group consisted of 32 students of 2012 and 2013 who passed the voice disorder unit in traditional way, and the second group consisted of 37 students of 2014 and 2015 who passed the voice disorder unit in traditional way along with using game software (combined method). At the end of the sixth semester, students' internship score was recorded and internship coaches were surveyed about students' clinical performance. Data were analyzed using SPSS software (22).
Results: The age range of the first group was 20-22 years (20.11±3.02) and that of the second group was 20-22 years (20.25±2.12). The mean and standard deviation of the internship score of the students, who learned the unit by software, were 19.36±0.36 and for students who learned the unit by traditional way were 14.12±0.36. Independent *t* test showed significance difference between the two groups ($P \leq 0.001$). 80% of the coaches rated the performance of the students who used the game software to be very good and good in comparison with the traditional educational group.
Conclusion: Using educational games in class has led to an increase in students' clinical performance in dealing with patients with voice impairments and increased satisfaction of their internship coaches from students' performance.
Keywords: GAME, LEARNING, CLINICAL, VOICE DISORDER

Journal of Medical Education **Spring 2019; 18(2):99-103**

Introduction

Training has been considered as one of the most important sources of human force development in all communities, including developing and developed countries. Along with technology development, educational approaches are changing and today the use of information and communication technology, including the use of educational game software, is emphasized (1), because this technology can change training and learning fields (2, 3). Individuals learn lessons without stress and with willingness, and they learn more and better skills with learning new concepts after playing educational games (4, 5). One of the most fascinating ways in learning is the use of educational games, which helps to increase the attention and concentration of individuals and all the senses involved in education and transfer knowledge to students. It also increases

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the ability to problem solving, the skill of partnering, and the ability to communicate (6, 7). According to existing studies, educational computer games can have a positive impact on cognition, feelings and emotions, social relationships, individual motivation, and the transfer of concepts in the educational environment (8). By introducing the game into the educational field, a fundamental revolution was created and facilitated the delivery of educational materials, which led to the achievement of learning goals (2, 3).

Numerous experiences in different countries have achieved regarding the importance and impact of game software in training (9, 10), but the research findings regarding the use of game software in rehabilitation training as one of the fields of medical science have not been provided.

Due to the importance of voice in communication and the prevalence of voice disorders in the community, promoting the knowledge level of speech therapy students as important therapists for voice disorders in the future is important and plays a crucial role in the future success of those students. The lesson of vocal disorder is one of the major and specialized courses in speech therapy, which has a lot of content. Among all the courses in speech therapy, this lesson is more objective in relation to the study of musculoskeletal mechanisms of voice production compared with other lessons that are related to mental and cognitive processes. Therefore, the use of imaging techniques is of particular importance. Many studies have been conducted on the importance and impact of game software in education (9, 10). No research has done yet about the effect of the game on students' clinical performance. Therefore, considering the importance of teaching and its impact on students' clinical function and treatment and the lack of studies on the use of educational technology (game software) in internship courses in the field of rehabilitation, this study aimed at assessing the use of game software on clinical performance of speech therapy students during their internship.

Methods

This study was a clinical trial. The population of the study comprised 69 students of semester 5 of Ahvaz Jundishapur University of Medical Sciences, department of speech therapy of 2012, 2013, 2014, and 2015. In this study, speech therapy students of these years were divided into two groups.

The first group consisted of 32 students of 2012 and 2013 who passed the voice disorder unit in traditional way, and the second group consisted of 37 students of 2014and 2015 who passed the voice disorder unit in traditional way along with using game software (combined method). Then, the students passed voice disorder internship unit in the sixth semester. It should be noted that in all periods the voice disorder unit was taught by a single teacher and in the same way in each group, and the instructors were the same throughout the semester.

The tools used in this research were:

1. The software Avazma that has been designed with Android operating system, where the voice unit questions are categorized. These questions are provided from the instructors' question archive and randomly given to students in each chapter. Students receive a coin if they answer each question, and if they give a wrong answer, one coin will be deducted from their coins. Additionally, by providing each correct answer, a piece of puzzle related to educational image is provided to a student that by completing the puzzle an educational picture for each chapter will be completed. It is worth mentioning that if the student gives incorrect answers consecutively and coins are finished, the person is known as the looser and the game returns to the beginning. The response time is recorded and archived at each step by the game timer.
2. The researcher-made questionnaire that was designed to assess the satisfaction of the coaches with students' clinical performance in the diagnosis, evaluation, and treatment

of patients with voice disorder during the internship period. This questionnaire has 2 questions. How much is your satisfaction with the clinical performance of students who passed the voice disorder unit in traditional way with using game software? How much is your satisfaction with the clinical performance of students who passed the voice disorder unit in traditional way? The internship instructors answered the questions using a 5-point Likert Quality Scale (1=very poor, 2=poor, 3=moderate, 4=good, and 5=very good). Content validity of this questionnaire was verified by 10 speech and language pathologists (CVR=0.80).

At the end of each semester the internship instructors of both groups of training were surveyed about the students' clinical performance in diagnosis, evaluation, and treatment of patients with voice disorder and also their internship scores were recorded in both groups of the students. Data were then entered into SPSS software version 22. Firstly data normality was analyzed by Kolmogorov-Smirnov test. In descriptive statistics, the satisfaction of the instructors and the mean internship scores of the two groups and the difference between the scores of the students in both groups were analyzed using independent *t* test.

Results

The present study was carried out on 32 students of 2012 and 2013 (7 boys and 25 girls) aged 20-22 years (mean age 20.11±3.02) and 37 students (2014 and 2015) (10 boys and 27 girls) aged 20- 22 years (mean age 20.25±2/12). The results also showed that the mean and standard deviation of students' score in the internship unit who acquired the unit by software was 19.36±0.71, and the mean and standard deviation of the internship scores of students who were trained in the traditional way was 14.12±0.36. Independent *t* test showed significant difference between the two groups ($P<0.001$).

Following the study of the results of instructors' satisfaction assessment, 80% of the instructors acknowledged that the performance of students using game software was very good and good in dealing with patients with voice disorder compared with other students who learned the unit traditionally.

Discussion

The main purpose of the present study was to assess the effect of using game software on the clinical performance of speech therapy students during the voice disorder internship. The results of this study that showed the use of games and technology increased the students' ability and learning are matched to the studies of Moradi et al. (2017), Barata et al. (2013), Franklin and Lewis (2003), Brewer et al (2013), and O'Donovan et al (2013) (11-15). This is because the results of our study showed that the internship scores of students who acquired the voice disorder lesson with the help of software were higher than those who learned this lesson in the traditional way with a significant difference. Based on these results, computer games have increased the attention, concentration, and motivation for learning in students who have learnt the voice disorder unit with the help of software and helped students to demonstrate a better clinical performance in dealing with the patients. Computer educational games allow students to challenge and examine various educational materials and use them as a new opportunity for learning. Also, the high flexibility of educational games structures puts students in different situations, sometimes new situations, and makes them to think, solve problem, and choose. Facing these situations while using an educational computer games is also considered a type of learning and initiative. In fact, educational computer games have a significant impact on creativity, enhancement of learning, reinforcement of attention, concentration skills, facilitating the training of complex

cases, and increasing students' motivation, while containing competitive characteristics, complexity, testing, flexibility, self-esteem, and rich content (11).

Also, in studying the results of internship instructors' satisfaction, 80% of the instructors acknowledged that the performance of students using game software in dealing with patients with voice disorder was very good and good in comparison with other students who had learnt the voice disorder unit traditionally. The instructors believed that the group used the computer software game had better performance in dealing with patients with severe conditions, and that the learned materials were stored more in their memory, which could be used for diagnosis, evaluation, and treatment.

Conclusion

Based on this study, the use of educational games in the classroom has increased the clinical performance of students in dealing with the patients with voice disorder and increased the satisfaction of their instructors. The use of software has increased students' learning and motivation, participation in the course, and the provision of a standard question archive in the unit of voice disorders. And it emphasizes the need of using technology in education, according to the importance of teaching and its impact on the society.

Acknowledgment

This article was resulted from a research project entitled "Investigating the effect of using Avazma software on students' satisfaction with speech therapy from teaching and its impact on the amount of learning voice unit in Ahvaz"). Therefore, the Musculoskeletal Rehabilitation Research Center, Ahvaz Jundishapur University of Medical Sciences is appreciated for its support.

Conflict of Interest: None Declared.

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