

Use of chain gain game in understanding pathology

M. Sagana, M. P. Brundha*

ABSTRACT

Aim: This study aims to determine the use of chain gain game in understanding pathology. **Introduction:** Game-based learning is typically assumed to be digital (or computer mediated). However, there are unit several academic games on the market that does not need a PC host. Non-digital game-based learning has several benefits over digital game-based learning, including value effectiveness and low body overhead, it demands few requirement skills and provides opportunities for increased social interaction. Promotion of collaboration and social activities among students will increase involvement in learning, whereas sharing one's own concepts and responding to others' reactions sharpen thinking and deepen understanding. The study aims were to work out perceived uses of non-digital game play and to work out sociodemographic factors that may predict perceived uses. **Materials and Methods:** Sample size: The sample size was 150 samples, 75 samples exposed to chain gain game and 75 samples will not be exposed to chain gain game. Comparing both by having test and the data will be collected. Results will be analyzed statistically. **Results:** This study shows a significant difference in students who have taken chain gain game. Hence, this method of learning is effective in students and has great impact in studies. **Conclusion:** The research indicates that visual tools could facilitate students to develop better recall, comprehension, and important thinking skills. It is vital that the tools be used mindfully and judiciously. Chain gain game is most helpful throughout group action, note-taking, and developing clinical eventualities.

KEY WORDS: Active learning, Chain gain game, Game-based learning, Mind mapping, Pathology

INTRODUCTION

The term pathology springs from a pair of Greek words and refers to the study of disease apparently; in Modern Greek, a pathologos could be a physician. Pathology represents a basic link between the essential sciences and clinical medication and between the traditional and also the abnormal.^[1] It is, therefore, central to the study of drugs and makes literature review relevant to any or all teachers and learners. Pathology encompasses tissue pathology, medical specialty, clinical chemistry, biology, immunology, molecular pathology, and more and more.^[2] Pathology is an interesting subject with students because, by its very nature, it has a simultaneous relevance to the business of studying medicine.^[3] The two major components of pathology are anatomical studies of structure and function at levels ranging from the whole organism to the subcellular level, and laboratory techniques and procedures to analyze bodily fluids.

A game is “a physical or mental contest that has specific rules, with the aim to amuse or reward the gamers” and an another provides the following definition of a game, “A game is an artificially constructed, competitive activity with a specific goal, a set of rules and constraints that are located in a specific context.”^[4,5]

Serious games became an essential topic within the academic technology domain. “Games have the power to teach, train, and educate.” Games are the essential means for learning skills and attitudes that are not so easy to learn by memorization.^[6] Promotion of collaboration and social activities among students increases involvement in learning, while sharing one's own ideas and responding to others' reactions sharpen thinking and deepen understanding.^[7] Game-based learning (GBL) has evolved from an idea to involve games in the academic method, aiming to promote learning activities through an interesting media that capture, retain student attention, memory, and interest in subject, as well as offer intuitive and collective environment.^[8] GBL eventualities interact learners into

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Department of Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India

***Corresponding author:** Dr. M. P. Brundha, Department of Pathology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 162, Poonamallee High Road, Velappanchavadi, Chennai - 600 077, Tamil Nadu, India. E-mail: generalpath2015@gmail.com

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interactive, problem-solving situations that encourage important thinking, communication, collaboration, and adaptability for functional knowledge acquisition. In addition, the game players are very meant to interact the recreation activities, driven by the story/goal behind, interactivity, and risk to enhance performance through repetition. GBL will interact and encourage students to actively method academic content and further development processes within the consciousness, similarly as improve expertise, self-efficacy, and students' satisfaction in similar learning environments.^[9] Despite the benefits that game taking part in will contribute to the educational method, there is a very important gap between theory and observe for effective integration of games within the academic programs, due to completely different barriers for implementation.^[10] GBL makes student growth and development, including leadership development, improved interpersonal skills, increased knowledge of social justice issues, and enhanced self-understanding.^[11] Educators have acknowledged that coming up with or developing games could further enhance students' scientific discipline ability and cultivate their problem-solving capability.^[12] GBL students increase the science knowledge and they were motivated and enjoyed the experience.^[13]

In a review of articles in seven major SSCI journals related to technology and learning between 2001 and 2010, Hwang and Shanghai dialect (2012) discovered that Taiwanese researchers revealed 22 articles on game-based learning, second solely to researchers in the America (30 articles) and followed by researchers from the United Kingdom (20 articles). These studies targeted totally on the achievements, motivation, and perspective of scholars concerned in learning numerous subjects and most of the researchers in Taiwan investigated the difficulty of learning achievements. Game-based learning has been applied in several science-related faculty subjects. Yien, Hung, and Hwang (2011) used game-based learning in a nutrition course, discovering that this approach was more practical in enhancing the learning effectiveness and attitudes of students than ancient PPT teaching and even influenced their dietary habits. Through game-based learning, participants learn additional actively and with bigger interest, sanctioning the learned content to depart a deeper impression than would be doable victimization typical strategies.^[14-16] In recent years, analysis on learning with card games has created a substantial contribution to the discipline. Siegler and Ramani speculated that a lack of skills within the use of varieties among kids from low-income households may be due to their restricted opportunities to play number games throughout their childhood. Thus, a series of variety card games from low-income households were designed to slender the variations between poor children and people from

middle-income households. Their results demonstrate that the training effectiveness of pricey equipment for digital games is often matched by inexpensive cheap or perhaps self-handmade card games.^[17,18]

Mind mapping has been outlined as “visual, non-linear representations of concepts and their relationships.”^[19] Mind maps comprise a network of connected and related ideas. However, in mind mapping, any plan will be connected to the other. Free-form, spontaneous thinking is needed once making a mind map, and therefore, the aim of mind mapping is to seek out inventive associations between concepts. Thus, mind maps are chiefly association maps. These techniques concerned using line thicknesses, colors, photos, and diagrams to help information recollection.^[20]

The chain gain game can be used as a guide to teach, supervise, and chart a way through the concepts of learning and may help to produce more robust learning.^[21]

In this method, mind mapping will assist participants to better frame their experience and can facilitate qualitative researchers in the design and development of additional knowledge collection strategies.^[22] In addition, creative teaching strategies such as mind mapping can make a class not only more interesting, but fun.^[23]

Mind maps enable students to form a visible image to reinforce their learning and might be used as a metacognitive tool that enables them to form connections to material in significant ways.^[24] The advantages of mind mapping embody its “free form” and free structure. These games are used as a teaching tool to market important thinking in medical education by encouraging students (adult learners) to integrate information between disciplines and perceive relationships between the essential and clinical sciences.^[25] Mind mapping as a search technique provides a multidimensional insight and discovers deeper levels of learners preconcert. The mind maps may be utilized in totally different phases of instruction, for example, for editing, practicing, and fixing the information and as a way of feedback. Novak^[26] distinguishes four ways that, however, the mind maps may be used, i.e., as learning methods and teaching methods suggest that to form a concept map on the concepts of any subjects into a simplified manner. This will be useful for the learners to understand and recollect the concepts during their exams very well. He additionally mentions different ways that, for example, ways toward effort (mastering) new learning content, analysis, etc.^[27] The power to integrate data by finding valid relationships between ideas permits students World Health Organization to construct either mind maps or construct maps to achieve a metacognitive level.^[28] However, the additional dimensions of images

and colors that are distinctive to mind maps have not solely been shown to facilitate memory,^[29] however, could charm to a large vary of scholars with visual- and linear-oriented learning designs. Consequently, the advantage of victimization mind maps in medical education is that this strategy could profit additional students with numerous learning designs. Maps create new data a lot of usable. Usable data are often a lot of simply processed. This can be why we tend to draw maps in preference to providing long and careful verbal directions.^[20] Mind maps are potentially useful techniques that can enhance learning.^[30] Both mind maps and construct maps permit students to acknowledge the intra- and inter-relationships between ideas that reflect the type of real-world thinking predominant within the clinical setting.^[31]

This study aims to find and evaluate whether chain gain game is useful in learning pathology.

MATERIALS AND METHODS

Sample Size

The sample size was 150 students.

- Group A: Seventy-five students without the exposure to chain gain games
- Group B: Seventy-five students exposed of chain gain games.

Inclusion Criteria

Undergraduate students who have not learnt these topics before were included in the study.

Exclusion Criteria

Students who have learnt the topic before and who do not have pathology as their main subject were excluded from the study.

The topic of chain gain game was taken as pathogenesis of apoptosis. Pathogenesis of apoptosis includes the sequence of apoptotic changes in the cell. Apoptosis consists of two phases – initiation phase and executionary phase. Initiation phase includes two pathways – mitochondrial pathway and death receptor pathway. Initially, 150 students attended the lecture about the pathogenesis of apoptosis. Now, they are divided into two groups – Group 1 and Group 2, each group containing 75 students. Group 2 which includes 75 students, was given a game called ‘CHAIN-GAIN’, a mind map based game on the given lecture on Apoptosis. The students were asked to prepare for a small test with the help of a mind map. Group 1 students who were also given lecture were asked to prepare for the test, but they were not exposed to chain gain game. Now, all the students were asked to take up a small test for 15 marks. The marks of Group 1 and Group 2 were compared and analyzed statistically.

RESULTS AND DISCUSSION

This study promotes the integration of GBL within the room atmosphere rather than book method as well as enhances social interaction and cooperative learning, competitive spirit, and friendly relationship that are sometimes inspired throughout the game playing. It enhances the GBL activities with standard technological tools that do not need further value or time for development, also as programing. It follows a comprehensive approach that counsels choice of traditional games, from wealthy lore within the region, and their adaptation in keeping with state program information. The study reveals that game slightly adjusted and suitably aligned with the content, games will be useful with youngsters of variable ages and varied topics in several subjects. It shows that GBL will offer enhanced learning outcomes, not simply on test scores, however, additionally, in children’s interest and engagement, moreover, as interaction with the teacher and classmates. The practical presentations of the material through the chosen game permits students to enhance learning the content and use the information outside of the training atmosphere that could be a real challenge with game learning.^[7,32,33]

This research is one of the efforts to generate some improvement in teaching methods among medical students. It has been discussed in the previous section that mind mapping technique is one of the alternatives to obtain the intention. As shown in Table 1, the mean of students who have taken chain gain game (Group 2) is 12.786 and the mean value of people who do not take chain gain game (Group 1) is 0.92. Thus, there was a significant difference between mean values, which meant that mind mapping was proved to improve students learning skills. In other words, the mean value score of students in the experimental group was significantly higher than those of the control group. As the Table 2 showed, the pass percentage (above 7.5) of students taught using the chain- gain game was 98.66% while that of the control group taught using

Table 1: Mean and standard deviation of marks

Groups	Mean	SD
Group 1	10.92	2.202
Group 2	12.786	1.594

SD: Standard deviation

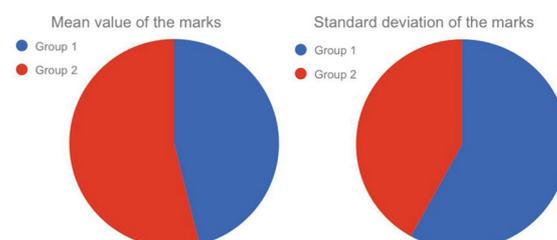
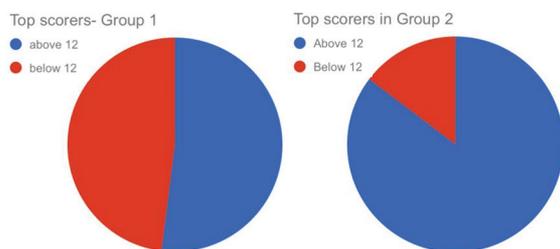


Table 2: Pass and fail percentage

Groups	Pass percentage	Fail percentage
Group 1	90.66	9.33
Group 2	98.66	1.33

**Table 3: Top scorers**

Groups	Above 12	Below 12
Group 1	52	48
Group 2	85.33	14.66



conventional technique was 90.66%. These findings also mean that teaching using chain-gain game to the medical students is more effective than the one using conventional technique. In addition, with respect to top scorers (above 12), the findings also revealed the expected outcome. The top scorers who have taken chain gain game are about 85.33%, whereas the top scorers who have not taken chain gain game are about 53% (Table 3) which meant that the difference between top scorers of Group 1 and Group 2 was significant. Thus, there was an empirical evidence to conclude that there was an interaction effect between the two variables.

Referring to the above findings, the researcher draws to a conclusion that chain gain game is very useful in studying pathology rather than conventional method. In addition, mind maps are used to generate, visualize, structure, and build concepts, and as an aid in study, organization, drawback determination, deciding, and learning. In addition to teach technique, another vital side associated with learning outcome is intelligence.^[34] This technique that makes advanced text less complicated and improves self-learning is gaining attention. The employment of engaging colors, photos, and flowcharts captures the interest of

audience creating it pleasing to the eyes of the reader, conveyance a couple of revived sense of enthusiasm within the classroom. Mind mapping technique helps significantly in the retention of information for long time.^[35] The traditional methodology of reading textbooks is represented as an ordinary activity by the students, and this may be turned to be a lot of pleasant activity using some innovative techniques. The mind map technique is one such innovative technique that has created interest among the scholars. This was clearly visible within the rating and comments given by the scholars for this system. One of the scholar described, "In this method of learning, the amount of time required for studying is less and it is more efficient," and few students expressed that learning by mind map created them attention and remember the topic for longer time. Several students felt that this can be way more better than the boring lecture. Thus, the requirement of the hour in medical teaching is to shift from the teacher-centered standard strategies to student-centered innovative strategies, because the aim of education is not simply creating a student literate, however, adds explanation thinking, knowledgeability, and self-sufficiency. The mind mapping technique is one such innovative technique that was found to be helpful in remembering things higher than the routine method of reading texts and this strategy was found engaging by the learners too.^[36]

A total of 150 participants were recruited and randomized into two groups of 75 each. There was a significant difference between the mean marks obtained in the small test in the subject of pathology ($P < 0.0001$). Based on the analysis findings, the conclusion of the study is that mind mapping technique is an efficient teaching technique for teaching medical students. Since mind mapping technique is easy, fun, and arousing students creative thinking in generating and organizing their concepts, students are getting active and more inspired to study and enhance their learning skills. As a result, the students learning action is improved optimally.

CONCLUSION

The research indicates that visual tools could facilitate students to develop better recall, comprehension, and important thinking skills. It is vital that the tools be used mindfully and judiciously. Chain gain game is most helpful throughout group action, note-taking, and developing clinical eventualities.

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