

THE EFFECTIVENESS OF IQ-STICK GAME ON STUDENTS' LEARNING PROBLEMS IN PHYSICAL EDUCATION

MOHD IZWAN SHAHRIL¹, NORKHALID SALIMIN² & NURHAYATI SHAHRIL³

^{1,2}Universiti Pendidikan Sultan Idris, Tanjong Malim, Perak

³Sekolah Kebangsaan Bandar Batu Pahat, Johor

ABSTRACT

The teaching and learning process has become more and more attractive with the aid of IQ-Stick Game, a new innovation in helping students and teachers in conjunction with learner-centered teaching approach. This teaching aid consists of questions contained in the syllabus of Physical Education and Health Education for primary school students with learning problems. Apart from generating knowledge, the students can have fun learning through the game concept. There are 30 respondents from Sekolah Kebangsaan Bandar Batu Pahat, Johor selected and questionnaires are used as instrument to study the effectiveness of IQ-Stick Game. Result shows the validity value of IQ-Stick Game by panel experts (N = 3) is $r = .85$. Meanwhile the reliability value of using IQ-Stick Game based on interobserver agreement is between 80% - 91% with the percentages $M = 86.57\%$, $N = 30$. Results obtained indicate that all respondents studied have positive perception towards the teaching aid. There are several recommendations presented in this study to increase the effectiveness of the teaching aid. The curiosity and interest among the students can be discovered via the usage of IQ-Stick Game and this indirectly makes the learning and teaching more interesting and attractive. In addition, the teaching aid is seen to be a source idea in fostering creativity of teachers and students and it may be commercialized in the future for general use.

KEYWORDS: IQ-Stick Games, Teaching Aid, Teaching Approach, Physical Education

INTRODUCTION

In this era of modernization, in line with the rapidly evolving information technology, teaching aids are not left without evolution. From using the board, it switches to the use of computers, electronic materials and so on. Something is needed to make the lessons easily delivered. Stimulus is needed to facilitate students in understanding the lesson content during learning sessions. The difficulty in adapting stimulus which is difficult to respond to makes it cannot be processed and thus they will never experience it. Hence, no matter how intelligent the students are, the development of effective intelligence and experience cannot be achieved due to the lack of stimulus.

Based on this fact, the role of teachers in the use of teaching aids for teaching and learning is very important. This is because the use of these teaching aids is able to establish that further stimulus action to develop intelligence and experience. The teaching process goes smoothly with the use of teaching aids. This is because the instructional content delivered by the teachers is well-received by the students with these teaching aids. Without teaching aids, the teaching and learning techniques and methods solely by the teachers cannot guarantee effective learning process. Therefore, teaching aids play an important role in confirmation and comprehension of students.

In today's education, teaching aids are not something new. Thus, teachers need to choose the appropriate teaching methods for the students wisely because it helps teachers to prepare meaningful and interesting teaching materials that are able to develop the talents and potential in students in achieving the objectives of the National Education Philosophy (Ee Ah Meng, 1997). In addition, according to Amir Hasan (2002), every individual has different psychological and intellectual abilities from each other in a classroom. Thus, the lessons designed should be suitable, well arranged (according to the students' level) and supported (with teaching aids) to stimulate the development of individual potential to the maximum level.

Students can enhance their understanding of a subject and thus make learning easier and more enjoyable by these teaching aids. (Mohd Fazreen, 2003) states that teacher-centered learning (one-way) where teachers deliver the lesson content and the students just listen makes the students passive learners. Therefore, it is recommended that teachers can organize and plan the teaching and learning activities well, especially in terms of selection, adaptation and usage of teaching aids as this will affect the performance of the students. The problem of passive learners can be solved with teaching aids and this will also attract students to learn.

IQ-Stick Game is a new innovation to help teachers during the more student-centered teaching and learning process. This teaching aid emphasizes the concept of playing while learning. This concept has attracted the attention of students to learn and indirectly makes teaching and learning more efficient. The strengths of the IQ-Stick Game help teachers to deliver lesson content well and the information delivered can be absorbed by the students with more significantly. In addition, IQ-Stick Game creates an active and attractive learning atmosphere, and thus helps the students to understand the concepts and content better.

In other words, by using IQ-Stick Game, explanation that requires thousand words can be explained easily. Besides, students can learn in a harmonious atmosphere and think creatively using this teaching aid. With the harmonious teaching atmosphere, students will be interested to learn and interact actively. Indirectly, this process can lead to improved quality of teaching and learning. IQ-Stick Game has been commercialized for general use beside generating creativity among teachers and students.

PROBLEM STATEMENT

IQ-Stick Game is designed to be used in teaching and learning for students with learning difficulties and to overcome some problems faced by teachers. Students can have fun while learning with this teaching aid because it is a device that can play with while learning. This teaching aid will surely create interest to learn among students. This is supported by the Rosini (1998) in Mohd Fazreen (2003) which states that the use of appropriate teaching aids generally make education more concrete, generate curiosity and interest and add variation to the teaching styles in classrooms. Therefore, the problem of student feeling bored and not interested in the subject will be solved.

Through this teaching aid, the important information to be conveyed by the teacher can be absorbed by the students. Thus, the difficulty in understanding a lesson can be overcome more effectively. According to Omardin (1999), the traditional teaching that only focus on listening to the teacher's explanations in theory without evidence cannot be used as reinforcement for the student to understand quickly and remember effectively. This clearly shows that the usage of teaching aids can strengthen teaching and learning as students can experience what is being taught. In addition, the learning environment will be more cheerful when this teaching aid is used. Moreover, students are not only able to listen to the

explanation by the teacher, but also see and feel which indirectly motivate them to learn.

IQ-Stick Game acts as a facilitator in assisting the delivery of teaching and learning and achieving teaching objectives that have been planned by teachers so that students understand better and absorb quickly. This is supported by Julismah, (2005) which states that the role of teacher is to impart knowledge in the field of expertise through a variety of teaching approaches so that the students can learn effectively. The process of teaching and learning can be 'saved' from discipline problems in the classroom with IQ-Stick Game. Students' creativity can be discovered with the teaching aid as it explains a concept more effectively. This will support the government call, that is School Based Assessment (SBA), which requires students to be assessed continuously.

The problem of teachers not able to attract students' attention in the learning process can be overcome by IQ-Stick Game which is a tool that incorporates game concept. Then, using teaching aids can optimize teaching time to some extent (Muhamad Sobri, 2000).

RESEARCH QUESTIONS

In this research, the researchers have stated some research questions that will be discussed to answer the problem stated, namely:

- To what extent the validity of IQ-Stick Game towards students with learning disabilities in teaching Physical Education?
- To what extent the reliability of the IQ-Stick Game towards students with learning disabilities in the teaching of Physical Education?
- To what extent the effectiveness of the usage of IQ-Stick Game in teaching students with learning disabilities in Physical Education?

RESEARCH OBJECTIVES

According to the problem statement and research questions that have been stated, the objective of this research is to find out about the following matters, namely:

- To identify the validity of IQ-Stick Game towards students with learning disabilities in teaching Physical Education.
- To identify the reliability of IQ-Stick Game towards students with learning disabilities in teaching Physical Education.
- To identifying the effectiveness of IQ-Stick Game in teaching students with learning disabilities in Physical Education.

METHODOLOGY

This innovation is the result of library research conducted in obtaining information guided by the core element in instructional design, also known as ADDIE Model by Rosset (2003) which is an organized and planned rule. The core elements of instructional design consists of five main criteria in producing something, namely analysis, design, development, implementation and evaluation. The first criterion is the analysis which means to determine what is taught.

Design criterion is to determine the specifications, whereas development criterion is to develop and produce ingredients. The fourth criterion, application is to use the materials and fifth criterion, evaluation is to assess the effectiveness and capabilities of the innovation. Based on these guidelines, IQ-Stick Game is innovated as a comprehensive teaching aid. Besides, the researchers refer to the past studies on teaching methods and student-centered learning researches (Mosston and Ashworth, 1990). Curriculum, primary school Physical Education syllabus and the concept of school-based assessment (SBA) also serve as a guide in designing the teaching aid. The conceptual framework of the study is shown in Figure 1.

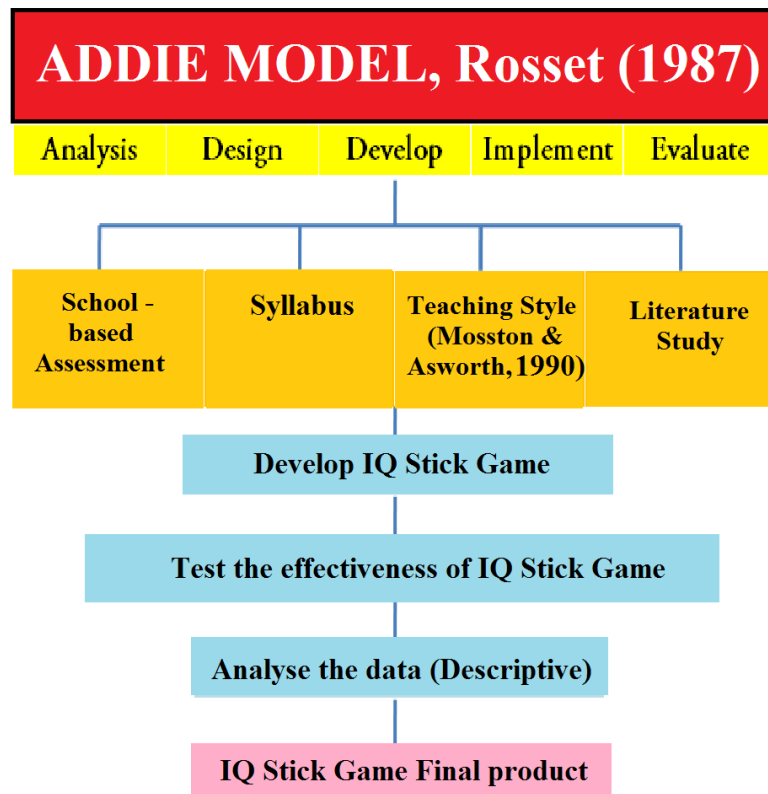


Figure 1: Conceptual Framework of the Study

Sample

Random sampling method is used in this study. A total of 30 students with learning disabilities of Sekolah Kebangsaan Bandar Batu Pahat, Johor are chosen as respondents for this research.

Details of the Game

- The game can be played by a minimum of 2 people and a maximum of 6 people.
- The game contains sticks, dice, stationeries and question cards.
- The sticks consist of 6 colors, that are red, blue, green, yellow, orange and pink.
- The dice consists of 6 colors, that are red, blue, green, yellow, orange and pink.
- The question cards consist of 6 colors, that are red (10 questions), blue (10 questions), green (10 questions), yellow (10 questions), orange (10 questions) and pink (10 questions).

Color Detail

- **Stick**

Color	Red	White	Green	Yellow	Orange	Pink
Question level	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation

- **Dice**

Color	Red	White	Green	Yellow	Orange	Pink
Question level	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation

- **Question Card**

Color	Red	White	Green	Yellow	Orange	Pink
Question level	Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation

Game Procedures

- Players' turn is based on the consent of all players.
- The first player has to grasp the sticks and release them.
- After that the dice is rolled to determine the color according to the level of the questions obtained.
- After knowing the color obtained, the player need to take the stick of the respective color using his/ her own way and creativity without moving other sticks. If other sticks move accidentally, automatically the player cannot continue the game and has to wait for another round.
- If the stick is taken successfully, the question will be read by the representative of other players of that respective color stick. Each question carries a different mark value according to the predetermined level.
- If the player is able to answer the question correctly, then the points will be awarded based on the level of the question and if not, there is no mark given.
- The players' turn in rotation continues until the end of the game according to mutually agreed terms. (I. Whoever reaches 20, 30 or 50 points in advance is considered the winner, ii. Until the sticks or the questions cards finish, iii. Based on the time allocated (eg. Suggested 30 minutes, 40 minutes, or a teaching and learning session)

IQ Stick Game Anatomy

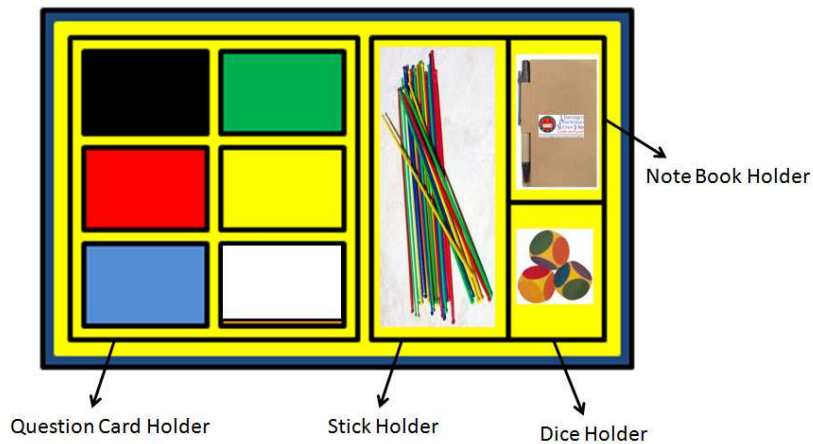


Figure 2: IQ Stick Game Anatomy

FINDINGS

The validity of IQ-Stick Game Towards Students with Learning Disabilities in Physical Education

A total of 4 expert panels involved in obtaining the content validity of this study. Based on the feedback and advice of the experts, the instrument has been improvised and all the content validity data of the expert panels are calculated using the following formula:

$$\frac{\text{Total Expert Score}}{\text{Maximum Score}} \times 100\% = \text{Content Validity Score}$$

Table 1: The Content Validity of the Expert Panels

Item	Expert 1 (Content)	Expert 2 (Language)	Expert 3 (Performer)	Σ	M
Content	0.80	0.83	0.82	2.45	0.81
Instructional Design	0.82	0.84	0.83	2.49	0.83
Technical Writing	0.85	0.84	0.83	2.52	0.84
	0.82	0.83	0.82	2.47	0.82

Based on Table 1, the validity of IQ-Stick Game of the study is $r = .82$ ($n = 3$). The value of 0.70 is considered to have mastered or achieve a high level according to Abu Bakar (1985), Mohd Izwan et. al (2015), Norkhalid et. al. (2014) and Sidek & Jamaludin (2005).

The Reliability of IQ-Stick Game Towards Students with Learning Disabilities in Physical Education

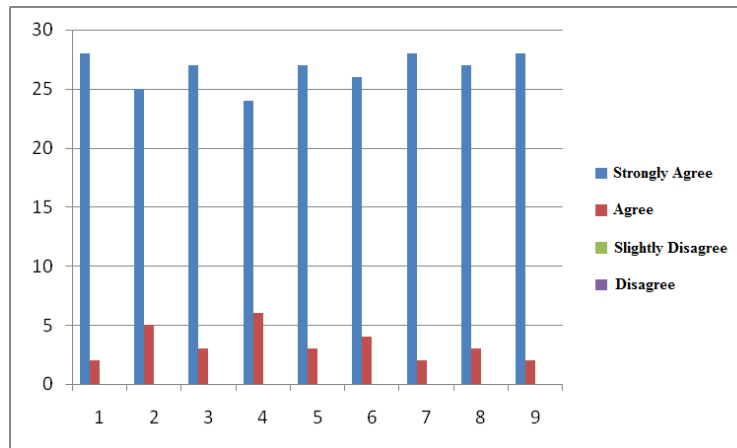
The method of obtaining the interobserver agreement value is conducted based on Bryington et al. (2002), Mohd Izwan et. al (2015), Norkhalid et. al. (2014) and there are two ways to obtain the interobserver agreement, ie the percentage agreement and Kappa method. According to Mohd Izwan (2015), Norkhalid et. al. (2014), if there is more than one assessor for a test item, then the percentage agreement method is suitable to be used. The interobserver agreement is obtained using the following formula:

$$\text{Interobserver Agreement Percentage} = \frac{\text{Total Agree}}{\text{Total (Agree + Disagree)}} \times 100$$

The interobserver agreement percentage for IQ-Stick Game is between 80% - 91% with the percentage of M = 86.57%, N = 30. According to Izwan et. al (2015), Norkhalid et. al. (2014) and Rink (2002), the reliability of adoption is at least 70% (0.70) interobserver agreement. The finding shows that IQ-Stick Game is suitable to be used during learning process.

The Effectiveness of IQ-Stick Game in Teaching Students with Learning Disabilities in Physical Education

Figure 3 shows the statistical result of the questionnaires given to 30 respondents who are selected randomly. The findings is studied descriptively by looking at the frequency and percentage. In overall, all the respondents have mentioned that IQ-Stick Game gives some impact to the students in the teaching and learning process. Beside facilitating the teaching and learning process, IQ-Stick Game also can attract students to learn while play.



Scale/ Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
Strongly Agree	28	25	27	24	27	26	28	27	28
Agree	2	5	3	6	3	4	2	3	2
Slightly Disagree									
Disagree									

Figure 3: Statistics of the Effectiveness of using IQ-Stick Game Towards Students with Learning Disabilities in Physical Education

DISCUSSIONS AND CONCLUSIONS

Indeed, teaching aids play an important role in the teaching and learning process. According to Atan Long (1982), the awareness about teaching and learning that concern only chalk and talk and textbooks no longer guarantee the effectiveness of teaching and learning, and to test and challenge the mind ability and imagination of the students. Therefore, the duty of teachers is to use appropriate teaching aids to comprehend the lesson taught.

Muhammad Sobri (2000) states that there are three significances of using teaching aids. First, they assist teachers in the teaching and learning process. They play the role of assisting the teacher in explaining the lesson content. Secondly, they serve to control the students' discipline during the teaching and learning process. Thirdly, they reduce the boredom of

students during the learning process.

By using IQ-Stick Game, teaching and explaining process which requires thousand language descriptions can be explained easily. The usage of this teaching aid not only facilitate the Physical Education teachers, but also explain the information in a harmonious atmosphere and trigger them to think creatively. Furthermore, IQ-Stick Game is able to attract open market especially teachers who use it to help in solving teaching aid problems when teaching and learning process takes place. Students will understand easier and and have fun while learning.

In addition, this products is able to compete in the local market due to it's interesting design idea. IQ-Stick Game can be commercialized because it is not yet available in the market and there is no teacher in any school using it Of course many teachers will use it in teaching and learning process when the product is marketed on a large scale. This teaching aid is not costly. The cost required is very reasonable and is affordable for everyone. The product and the cost are very worthwhile and reasonable as the materials used are easy to obtain.

This product will benefit the country much. It will produce quality students holistically. By using the IQ-Stick Game, cognitive, psychomotor and affective learning domain can be achieved while students can understand what is being taught easily. Indirectly, the quality of national education will also increase due to the production of smart students. The quality of national sports also increase and we will be able to compete with other countries that are growing in their sports. Our country will also set a good example as there is no yet any other countries that use IQ-Stick Game in education

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