

USAGE OF “FISH BONE” DIAGRAM AS EDUCATION TOOLKIT IN LEARNING PROCESS

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Abstract

The purpose of this study is to improve learning process by using "Fish Bone" diagram as an innovative toolkit for education purpose. It has been introduced to increase students' interest and understanding of the lessons that has been learnt in the classroom. The learning contents would be summarized from selected chapters in every subject and subsequently inserted. The usage of mounting board had been upgraded and improved by using Power Point presentation as a teaching aid.

This research had been conducted as a pilot study by using qualitative and quantitative data to support the findings. The researcher does the observation through pop quizzes, assignments and questionnaires to gain respondents evaluation afterwards. The respondents' for this pilot study were consists of 14 students in semester 2 from College Community Pasir Gudang, who studied in Certificate of Accounting Program. Further, the researcher had summarized Chapter 2 (*Build a Frequency Distribution*) in Statistic subject.

Based on the results, the researcher found that students can improve the quality of learning through a lot of assignments given. While the results were not outstanding, students were able to pass the quiz or tests that were carried out at the time. Usage of “Fish Bone” diagram as education toolkit in learning process was found to be effective if it can be used to summarize selected chapters in each subject.

Keywords: “Fish Bone” diagram, education toolkit, learning process

Introduction

Consistent with the improvement of curriculum for each program offered by Department of Polytechnic and Community College Education, teaching methods that focus on learning process will be more effective if it is being supported by sufficient materials. Besides knowledge and technical skills acquired by the lecturers, they also have had upgraded their andragogy skills to carry out the efficient teaching methods towards the learning process.

Accordingly, in line with appeal from Malaysian Government about the development of research and innovation among lecturers, “Fish Bone” diagram had been introduced as one of education toolkit in learning process to increase the students' interest and

understanding of the lessons that has been learnt. It also can be considered as a Brace Map, which is one of Eight Thinking Processes in i-Think, [co-project between Ministry of Education and Agensi Inovasi Malaysia (AIM)].

Background

Most of the theoretical subjects are exposed towards many risks. For example, students who were not interested to read notes or other reading materials, would find it difficult to memorize the formulas and cannot understand the lessons that they had learnt. Due to this risk, students were not able to complete the assignment given and answered well in the assessments such as quizzes, tests or examination questions.

The quality of learning process is highly depending on the effectiveness of appropriate teaching aids or education toolkit that is chosen by the lecturers. Even if an educational institution has adequate teaching aids, it might not help students in the learning process if the lecturers are not using the equipment optimally and effectively.

Literature Review

According to the findings of a study which has been conducted on the use of teaching aids towards mathematics subject in primary schools, more than 95% teachers who teach mathematics believed that the use of teaching aids are essential to increase the student interest, curiosity and comprehension towards mathematical concepts that had been taught in the classroom. (*Lai Kim Leong, Hong and Khaw Ah Kuan Seah Ai, 2001*).

“Fish Bone” diagram also often being recognized as Ishikawa Diagram, which had been developed in 1960’s by Dr. Kaoru Ishikawa. It is called “Fish Bone” because its shape resembles a fish skeleton and the parts that comprise the frame are the head, fins and spines. “Fish Bone” diagram is a visual tool to identify, explore and graphically describe in detail all of the causes of a problem. In addition, it also can be used in the process of changes. (*Hindri Asmoko, 2013*).

Toolkit can be defined as a collection of documents, such as informational summaries and form letters, that an adviser or instructor uses to inform others about a topic of interest. (*The American Heritage® Dictionary of the English Language, 5th edition Copyright © 2013*). It is also a summarized content which provides guidance for lecturers to highlight to their students in each of the related topics. The aim of the education toolkit is to support lecturers to make their own learned choices and adopt a more ‘evidence based’ approach. The evidence it contains is an addition, rather than a substitute for basic examples.

Definitions of learning refer to a change in behaviour that is due to experience. This is essentially a very basic functional definition of learning in that learning is seen as a function that maps experience onto behaviour. In other words, learning is defined as an effect of experience on behaviour. (*Lachman, 1997*).

Therefore, research and innovation should be done by the lecturers in order to achieve the learning process objectives based on supported by education toolkit such as “Fish Bone” diagram.

Objectives

The objectives of the study towards the usage of “Fish Bone” diagram as education toolkit in learning process are to determine:

- a) The effectiveness of students to memorize theories or technical skills in producing output of the lesson.
- b) The effectiveness of students to understand theories or technical skills in producing output of the lesson.
- c) The effective use of visual graphic to attract students to memorize and understand theories or technical skills in producing output of the lesson.

Methodology

A total of 14 students in semester 2 from College Community Pasir Gudang, who studied in Certificate of Accounting Program, have been selected as the respondents.

Meanwhile, this research is a pilot study which was conducted by using observation method. Marks from pop quizzes and assignments given to the students had been analysed as qualitative data. Furthermore, the questionnaires were also being used as a method to obtain quantitative data to evaluate students and to support the findings on the usage of “Fish Bone” diagram as education toolkit in learning process.

Researcher had summarized Chapter 2 (*Build a Frequency Distribution*) in Statistic subject and explained to the students about the learning contents before conducting the pilot study. Mounting board and acrylic had been used as a portable tool. It also can be considered as cost effective. The role of these tools also can be explained as follows:

- a) Mounting board - hardboard thin and lightweight but can accommodate summary of the contents.
- b) Sticker – paper that can be used as an attractive graphic, such as “Fish Bone” diagram.
- c) Acrylic – tool that can accommodate summary of the contents repeatedly (for example, the contents will change if the topic is changed).

Findings

Pop quizzes had been carried out towards 14 students after researcher gave five to ten minutes to memorize five basic steps to build a frequency distribution using “Fish Bone” diagram during the learning process. Then students will be given a time within five to ten minutes again to write back the five steps accordingly.

The pop quiz was being conducted three times in a different situation. First it was in the afternoon, when the researcher had conducted an additional class for the students. Then second and third time had been carried out in the next morning respectively. The results showed that there were slightly increased on the number of students who could list down the accurate answers regarding five steps to build a frequency distribution within five to ten minutes. There were five students who managed to answer accurately on the second and third time afterwards.

Besides pop quiz, students also had been given an assignment which consists of three questions that need to be answered by using a computer (typing manually). Based on the results, researcher concludes that all the students should be provided with a lot of assignments so that they will be able to understand and answer the questions effectively after they had memorized all the steps during the learning process.

Quantitative data have been obtained from the results of questionnaires distributed to the students. The results were used to analyze the evaluation of the students. Based on the findings revealed that all the students agreed that the usage of “Fish Bone” diagram is an attractive graphic that attract them to memorize and understand the summarized contents effectively. It also can be used as education toolkit in learning process.

Conclusion

The usage of mounting board had been upgraded and improved by using Power Point presentation as a medium of teaching aids. Based on the other results with different respondents and area, researcher found that one of selected students can improve their learning process through assignments and quiz scores. While the results were not outstanding, the student was able to pass the quiz that was carried out at the time.

Therefore, introduction of “Fish Bone” diagram as one of education toolkit in learning process might attract children who are having disorders like learning disabilities. It is known that learning disabilities constitute a diverse group of disorders in which children who generally possess at least average intelligence have problems processing information or generating output. Learning to read and write is a complex process that requires active learning.

In conclusion, the usage of “Fish Bone” diagram as education toolkit in learning process was found to be effective if it can be used for the selected summarized chapters in each subject.



Figure 1 - "Fish Bone" diagram on mounting board

References

- Hindri Asmoko (2013), *Teknik Ilustrasi Masalah - Fishbone Diagrams*.
Houghton Mifflin Harcourt Publishing Company, 5th edition Copyright © 2013, *The American Heritage® Dictionary of the English Language*.
Lachman, S. J. (1997). Learning is a process: Toward an improved definition of learning. *Journal of Psychology*, 131,477–480.
Lai Kim Leong, Khaw Ah Hong dan Seah Ai Kuan (2001), *Satu Kajian Mengenai Penggunaan Bahan Bantu Mengajar Dalam Pengajaran Pembelajaran Matematik Di Sekolah Rendah*.