

iBAKERY FOR AUTISTIC CHILDREN

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ABSTRACT

iBakery is an electronic courseware in a form of iBook which helps children with autism to have skills and brighter future. This iBook contains three parts which are Baking Tools and Ingredients, How to Use the Tools, and Steps. A qualitative testing has been done in Special Education Unit in Sekolah Menengah Bukit Katil and the results show positive feedbacks from both teachers and students including the convenience usage and the contents. Through continuous usage of this iBook, children with autism are believed to have basic skills in baking and be able to develop their future career.

Keywords: *iBook, Autism, Autistic Children, iBakery*

1. INTRODUCTION

Autism or known as Autism Spectrum Disorder (ASD) is a disorder related to brain development which affect the presence of social cognition, communication, and imagination (Keen, Reid & Arnone, 2010). The three impairments are considered as the most familiar of the serious developmental disabilities and it could be noticed within the first years of life (Noor, Shahbodin, & Pee, 2012).

Autism could also be characterized by restricted or repetitive behavioural patterns (Zajic et al., 2018). Autistic children tend to play repetitive and more focused on object oriented rather than people (DeFilippis & Wagner, 2016). It makes them to give full attention towards some certain objects or unusual interesting topics. The repetitive behavior can help in learning process – combined with the certain interest subject – Autistic children would tend to gain more information easily including skill development.

iBakery is an electronic courseware in a form of iBook and considered as an interesting application which adapt the step by step instructions for baking. It is developed to help the Autistic students from Sekolah Menengah Bukit Katil to learn about baking in a better learning platform and in an interactive way.

Technology which using natural interfaces involves gestures as the input from the user, it allows user to interact with the system easily (Hachaj & Baraniewicz, 2015). Having an interactive and interesting way of learning is an efficient way to help in memorising which could lead to developing basic skill (Xhemajli, 2016).

Autism could be diagnosed in the early stage of an individual's life (Clark et. al., 2018). However, many of Autistic children would still be facing problems in their life continued up to their adulthood especially in social life and independent living (Anderson et. al., 2018). Based on this case, iBakery is proposed to help the Autistic children to gain the basic knowledge and skills in baking.

2. METHODOLOGY

The methodology used for this project is ADDIE model which has five main phases to be followed; Analysis, Design, Development, Implementation, and Evaluation. ADDIE model has been considered as an essential element in educational development and training programs (Muruganatham, 2015). Hence, this model is suitable for this project including the development of the product.

Analysis; Problem of this study defined as the difficulties faced by the Autistic children in order to learn about activity which involves a series of steps which is baking. Draw their focus and attention is the main objective to be achieved. Followed by requirement analysis which focused on the user and technical part. User part focused on things needed to engage the Autistic children which is by implementing interactive elements such as images and animation videos to deliver the information. Technical part covers the platform and application chosen, which is iBook on iPad platform. It is chosen because it could deliver interactive elements needed.

Design & Development; iBakery in form of iBook consists of three main sections which are Baking Tools and Ingredients, How to Use the Tools, and Steps. The design includes the image, text, audio and animation to describe the information. All of the information collected directly from the school include the recipe and ingredients used.

Implementation; The main purpose of iBook is to attract the students to learn in a fun and interactive way. The teacher takes part in the implementation process by go through the iBook to get the idea of the contents before proceeding to let the students access the iBook themselves. The students required to do a small quiz at the end of the session in the iBook.

Evaluation; The testing phase conducted to get the evaluation of the iBakery system. It measures the effectiveness and efficiency of the iBakery. Data collected from the testers, both teachers and Autistic students. The teachers asked to fill up the questionnaire regarding the product, while the students were asked the questions from questionnaire verbally along with the direct observation to interpret their answers.

iBakery target user falls into two sides which are the teacher and student under Special Education Unit. The testing was conducted in Sekolah Menengah Bukit Katil which involved 2 teachers and 8 autistic students. Questionnaires are used in order to rate the effectiveness of iBakery along with the observation for notifying the direct responds of participants. Data collection conducted in the same day with the testing where a questionnaire was distributed to the teachers and students by the end of the session.

3. RESULTS AND DISCUSSION

iBakery has been tested on the target users which are the Autistic students and special education teachers. Total participants are 10; 8 autistic students and 2 teachers. The instrument used for the testing is questionnaire which distributed to all participants after the testing done.

The following figure 1, 2, and 3 shows the results of the questions given during the conducted testing. The questions given by the tester in a questionnaire form. The results are categorized by three main concern; (i) Content Flow, (ii) Content Comprehension, (iii) Content Interest.

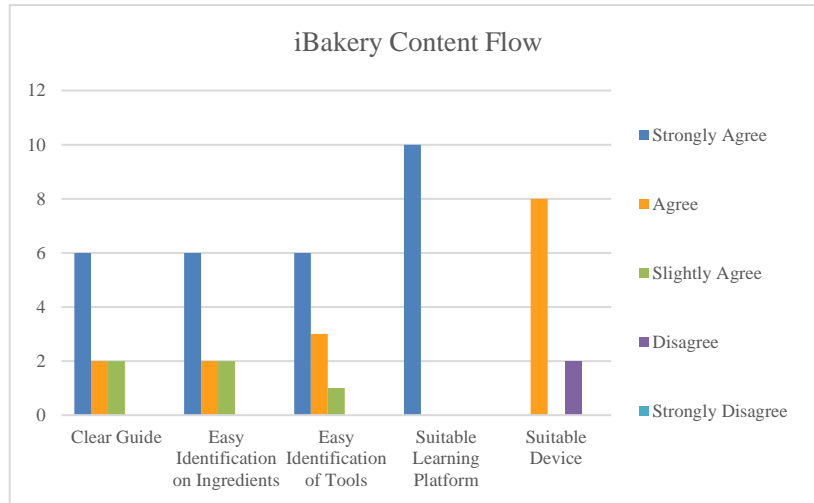


Figure 1: Results on iBakery content flow questions

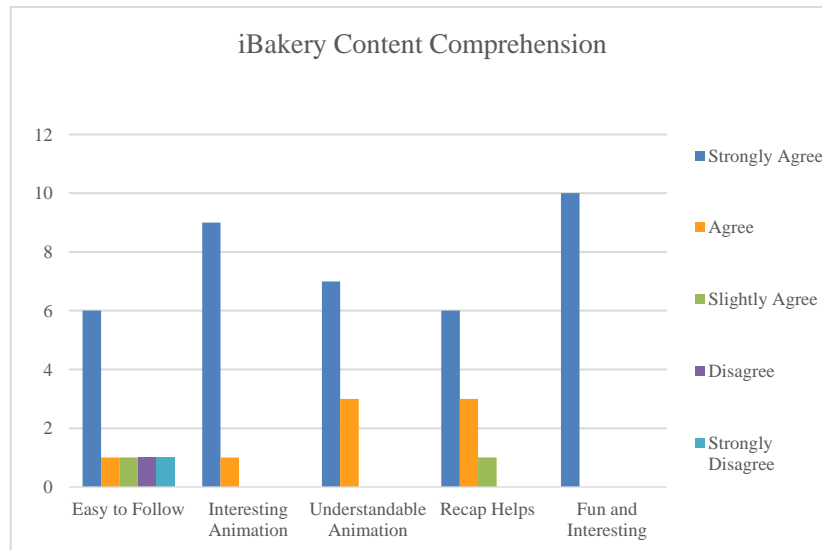


Figure 2: Results on iBakery content comprehension

The finding above shows more than half of the participants are agreed that iBakery is a user-friendly where they did not have any problem in using it. Two participants disagreed that the product is a suitable device because they do not provide any iPad at school, they found it quite hard to access the iBakery if there is no iPad. While result in figure 2 points out the overall understanding of the participants during the use of iBakery. Few of participants could not follow easily while using the iBakery; the reason because they are not quite familiar with the use of iPad.

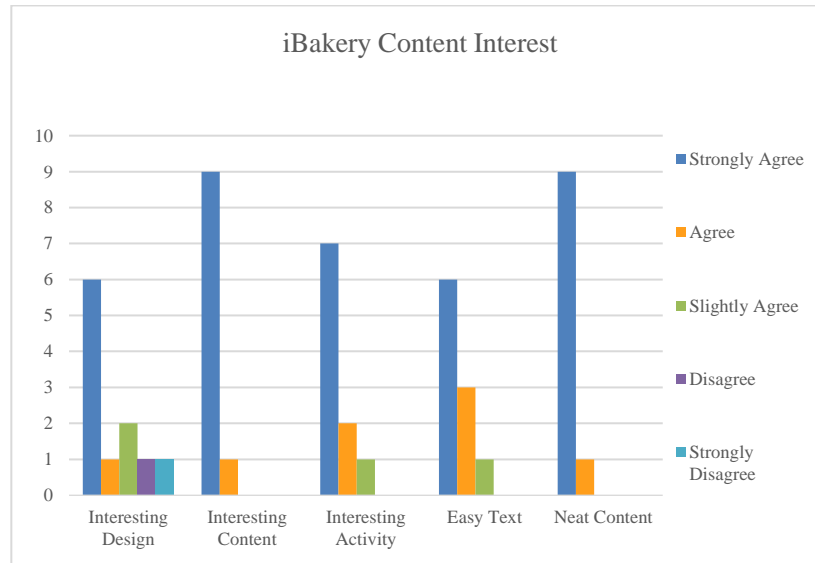


Figure 3: Results on iBakery content interest

The participants interest toward iBakery shown in the results above, where majority agreed that iBakery has interesting design, content, activity, along with the text display and neat content. All the results above indicate that the participants, especially the Autistic students are interested in iBakery. It draws their attention and focus on the content, ease the absorption of knowledge while they are enjoying the process.

4. CONCLUSION

iBakery presents both in animation videos and images which show the step by step instructions. The Autistic students along with their teachers who have tested the iBakery found that it is interesting and fun way to learn on how to bake by looking at the animation videos.

Findings shown that iBakery is a user-friendly application which could draw attention of the Autistic students as the main target and allows them to learn on how to bake in an interactive and fun way. It also helps the Autistic students to grasp the basic knowledge and skill of baking so that they could have a chance in the future to apply it in their real life as an effort to be independent.

However, further work for improvement will always be needed to achieve better results and impact on the actual targets. Changes in the structure and flow of the iBakery modules could help targets to easily follow the instructions. Another improvement could be in terms of the product platform, materials (images, videos, animations), and words of instruction.

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