

## SUPPORTING AUTISTIC CHILDREN REACHING THEIR FULL POTENTIAL THROUGH ICT: THE USE OF COURSEWARE IN ENGLISH LANGUAGE LEARNING IN MALAYSIA

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**Abstract:** Parallel to the effort by the Ministry of Education Malaysia in providing support for Special Education Program in Malaysian Schools and promoting ICT skills among Special Educational Need (SEN) learners in Malaysia (MDEC, 2009), this study explored the use of courseware among autistic children which is known as *Let's Learn English (L2E)*. The study focus on the design, development and evaluation of the effectiveness of this courseware which is tailored for mild autistic children. The courseware was developed based on ADDIE model and topics covered in the courseware are based on the curriculum of Year 1 in primary school. Learning through play was applied in the courseware to support the children learning basic knowledge about animals, fruits and numbers. In addition, elements of entertainment are also included in the courseware to increase the children's engagement. The research design of this study is qualitative and based on case study methodology. Research data were obtained from triangulation concept which is based on observation, interview and field notes with the respondents from primary schools in the states of Penang and Sarawak. The findings showed that the respondents are positive towards this courseware. The lessons introduced in this courseware were successfully mastered by the respondents. As there is a gap in the development of courseware for special need children in Malaysia, therefore, it is envisaged that this courseware will be regarded as a groundbreaking effort in the development of learning tool tailored for autistic children in Malaysian context.

**Keywords:** Autism; Special needs children; ICT; courseware; Malaysia

### INTRODUCTION

The issue of autism has become a hot topic in Malaysia and there are growing studies related to autism. Special classes and special schools have been provided for children with autism using teaching methods based on textbooks, blackboards, whiteboards and paper as well as special therapies. It can be said that the subject of English in Malaysia might be quite difficult for autistic children to understand. Therefore, this study was conducted to explore the use of courseware as an additional therapy for children with autism. In a study by LeBlanc, L.A., Coates, A. M., Daneshvar, S., Charlop-Christy, M.H., Morris, C. and Lancaster, B.M.

(2003), it was identified that the use of multimedia learning has the possibility to attract the interest and attention of children with autism to learn. However, there are some children with autism who are less interested in using courseware as they are not ready to learn to use a computer. This is because they lack of attitude in learning and have difficulty in understanding certain things. Before courseware was introduced, they were familiar with learning through blackboard, whiteboard, paper and books. Thus, this study is conducted to explore the effectiveness of courseware in teaching and learning process of these autistic children.

In order to educate autistic children, cognitive approach with visual support is suggested to be used as a medium of learning. Hayes, G., Hirano, R., Marcu, S., Monibi, G., Nguyen, M. and Yeganyan, M. (2010). Visual approach can help support their communication process Hodges, S., Williams, L., Berry, E., Izadi, S., Srinivasan, J., Butler, A. and Wood, K. (2006). This is because autistic children have a high visual abilities compared to ordinary people Ameli, R., Courchesne, E., Lincoln, A., Kaufman, A.S. and Grillon, C. (2005). Therefore this study was conducted to establish and develop a courseware that can be used as an educational tool for autistic children in elementary schools. This courseware could be used by teachers and parents in the learning process of children with mild autism. The study was conducted for 6 months. In this study, a courseware entitled 'Let's Learn English' was built to support children with autism to learn. The courseware was built as simple and as easy it can be to ensure that children can understand the content and also to attract them. There are three levels of autism; mild autism, moderate autism and severe autism. In this study, the respondents are mild autistic children with high IQ. The participants in this study were known as MA who was 7 years old from the state of Penang and another participant known as ES who was 8 years old from the state of Sarawak.

## RESEARCH METHODOLOGY

The research methodology is qualitative in nature Bowen (2005). This study was conducted through qualitative approach to enable the researchers to observe and examine the problem in a real environment. According to Bogdan and Biklen (1998), qualitative study is usually conducted to collect comprehensive data. In the study, data was collected through interview, observation and record. In addition, things that need to be addressed by a researcher in conducting research is the validity of the sample data Yahaya (2007). With regard to the validity of the respondents in this study, the respondents selected were confirmed by doctors to be categorized as having mild autistic syndrome with high level of IQ. The concept of triangulation was applied in this study through observation, interview and record.

A pilot study is a pre-test or trial run to test the instrument in preparation for the study and research Polit, D.F., Beck, C.T. and Hungler, B.P. (2001). This will help researchers to obtain clues on issues that will emerge. In this study, pilot study was conducted to determine the validity of the questionnaire in addition to testing the respondents' perception about the instrument. It is to ensure the accuracy of the statement from the

point of grammar and sentence structure to make it easier to comprehend. Expert validation was also conducted to ensure that the courseware fulfill the criteria of the study. Feedback were obtain from two experts, Mr. HR who is an educational software designer and Ms. HM who is a special need education (SEN) teacher.

With regard to data analysis, Streubert and Carpenter (1999) states that data analysis in qualitative research began when collecting data in addition to the analysis made during this period. Data analysis is divided into 2 types: inductive analysis and deductive analysis. Data analysis in the form of inductive analysis was collected and recorded without selecting or assuming their relative importance. All of these facts are analyzed, compared and classified without using hypothesis. Based on the analysis of the data, researchers used specific words to formulate a general conclusion. The validity of general conclusions are subject to further testing. The more example supports and confirms the conclusion that were built, the higher the level of authenticity and integrity of the conclusions. Deductive analysis focus on the temporary idea that generate one or more conclusion based on the conclusions that have been obtained. If the data meets the standards, conclusions were made by gathering appropriate data. Otherwise, the theory gained will be rejected. Theory which are approved and supported are the theory that fits and is appropriate to the data obtained.

In this study, the courseware to teach English entitled 'Let's Learn English' was developed for mild autistic children with high IQ. The courseware consisted of 3 modules and was developed using ADDIE model. The first module is a module that contains studies on animals, fruit and numbers. The second module is a module that consist of activities to test children's knowledge after using the software. It contains puzzle, right or wrong test and IQ. Entertainment module contains a children's song. Children can have fun and at the same time can learn English. The courseware was developed using multimedia elements. The environmental impact on student learning and behavior should also be emphasized when teaching students with Autism Spectrum Disorders (ASD). The learning environment includes physical, sensory environment and the surrounding area. Researchers need to select an appropriate strategy with autistic children because not all strategies will be relevant to them. Researchers used storyboard technique to develop the courseware. The following figure illustrates the interface included in the courseware:

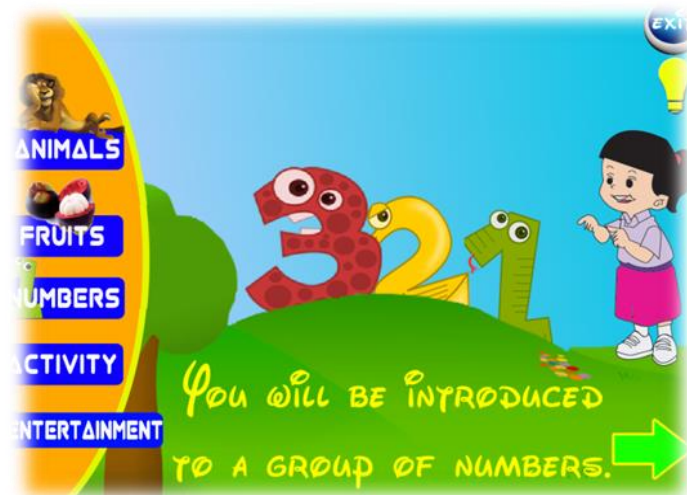
This is the main interface in “Let’s Learn English” courseware. The screen displayed beautiful scenery and attractive pictures to grab children’s attention. Buttons are provided to enter the main menu of the courseware.



This is the main interface for the menu known as Animals. A button was provided on the screen to enter the module. The screen displayed a lake with 6 animals; owl, elephant, cow, deer, frog and duck. Audio sound to support explanation was also provided. For example, when the children see the picture of the elephant, there is a voice over, “This is an elephant. E-L-E-P-H-A-N-T. Elephant”



This is the main interface for the menu known as Numbers. A button was provided on the screen to enter the module. Numbers introduced are from 1 to 10. Audio sound to support explanation was also provided. For example, when the children see number 1, there is a voice over, “This is number 1. O-N-E. One.”



This is the main interface for the menu known as Fruits. A button was provided on the screen to enter the module. Fruits introduced are apple fruit, durian, banana grape, orange, papaya, watermelon, pear, strawberry and pineapple. Audio sound to support explanation was also provided. For example, when the children see the picture of apple, there is a voice over, ““This is an apple. A-P-P-L-E. Apple””



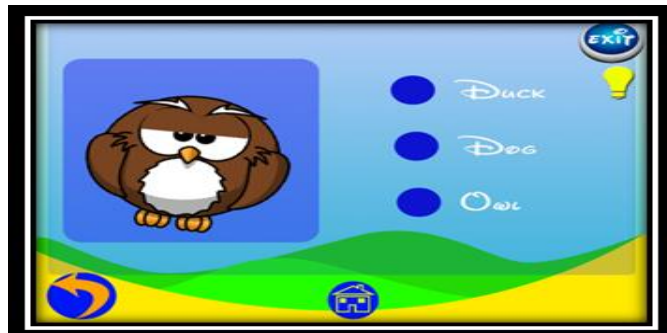
This is the main interface for the activities part in the courseware. There are 3 types of activities available namely Puzzles, Right Or Wrong and IQ test. Children can select any activity by pressing the button provided.



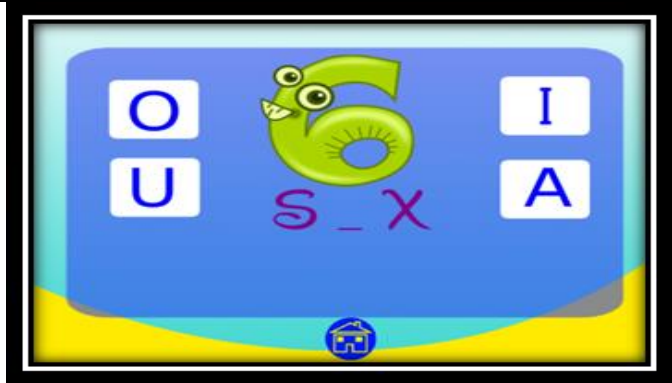
This is a form of interface for activities known as Puzzles. There are 2 types of puzzles that children need to complete. The first puzzle is about Animals. When the puzzles are completed, children can click the navigation button to solve the second puzzle about Fruits.



This is a form of interface for activities known as Right or Wrong. There are 5 questions that are included in this activity. In this activity, children have to choose the correct answer based on the images that have been given.



This is the interface of IQ test, which is the last menu in the module activities. There are four questions that are included in this activity. In this activity students have to fill in the blanks for the spelling of the name of the objects displayed on the screen.



This is the main interface for the entertainment part in the courseware. There is a song entitled “Let's Sing Animals Sound”. It is a song in which introduced animal sound.



This is the main interface to exit the application.

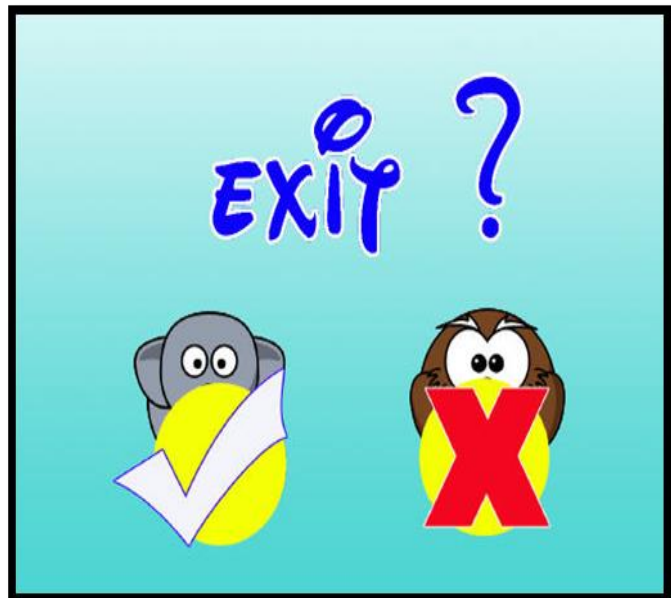


Figure 1 - The main interface in “Let’s Learn English” courseware



## FINDINGS AND DISCUSSION

In the interview, researchers used a method of voice recording to ensure that the data is not missed and so that it can be played repeatedly to understand what was conveyed by the respondents' parents. Based on the conversation, it was identified that the respondents' parents were initially quite skeptical whether the respondent known as MA can learn through educational courseware that has been provided. However, after four weeks, the respondents showed interest and respond positively.

"Yes there is. Usually on Saturday he will be busy playing with his rabbit. Now when he wakes up on Saturday, he excitedly started to learn using the courseware. He enjoyed watching the graphics in the courseware, especially those related to animal. Many times he repeated the module. "

Based on the interview with MA's mother, she mentioned that MA began to show interest in learning after being shown the interactive part in the courseware. This suggest that multimedia is an effective technique for teaching children with autism. The interview below demonstrates that interactive multimedia courseware is a learning tool that is suitable to be used by autistic children.

"Usually, he will only able to stay still for a while. However, it was a surprise when learning through the courseware, he managed to stay still for 5 hours, although he took his break every 10 minutes. Thank God this really pleases me. Although he could not recall all the contents that he has learned in the courseware, somehow he managed to grab some of the contents that he has learned. For example, yesterday I brought him to the grocery store. When he saw a watermelon and then he said 'melon...melon'" whereas before this it was hard for him to say the word "melon". This to me means a considerable improvement. Only the mother of the autistic person will understand this feeling. "

At the end of the interview the respondents' mother highlighted that she supported the use of this courseware which she believed have the potential to support autistic children. On the other hand, based on interviews that were conducted with respondents' mother known as ES, she believed that the courseware has helped raise the respondents' enthusiasm and interest to learn English.

"He's actually very smart but too laid back. Maybe it is because he has become familiar playing with the games. Teachers in school often complained that he does not want to learn. However, since using the courseware he was excited about learning although at first he was a bit reluctant. But now I see that he is very excited every time he used this courseware. He can also imitate animal noises. Thanks."

Previously the respondent would prefer to watch only video games and cartoons. However, after being

given this courseware, the respondent showed interest. He started to recite words introduced in the courseware for example the words; 'one', 'two', and 'three'. The respondent's mother agreed that the use of this courseware can help in raising children's interest; especially as an additional instrument that can help to raise interest in learning among children with autism. This indicates that with the presence of interactive elements, it could attract the interest of these autistic children to use it.

## CONCLUSION

In this study, respondents showed positive improvements after undergoing sessions with the researchers for 8 weeks, 5 hours per day. Due to this positive effect, the parents also provided positive feedbacks that the use of this courseware can be used as additional therapy or additional tool in the learning process for their children. This is because the children are more inclined toward visual learning and they are very attracted to visual and animation.

In addition, it was found that in the first week, the second week and the third week, the respondents are somewhat not interested in using the courseware. The duration of three weeks to be familiar with the courseware might be considered as a relatively long period. This may be due to inherent factors such as the weakness in the courseware; lack of animation included or the possibility of background music which might interfere with the respondents' concentration. Even though the respondents had to undergo three weeks of sessions to get accustomed to the courseware, eventually it helped them in their learning process. As the conclusion, this study has established that the use of courseware with multimedia elements can be used as an additional tool to support autistic children as it has the potential to increase the interest and attention of children with autism to learn.

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