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JUDUL: INTERACTIVE CD LEARNING FOR THE TREATMENT OF AUTISM CHILDREN

SESI PENGAJIAN: 2008/2009

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INTERACTIVE CD LEARNING FOR THE TREATMENT OF AUTISM CHILDREN

SITI IRADAH ISMAIL

This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Interactive Media)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2008

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I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized without citations.

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(DR. BURAIRAH HUSSIN)

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DEDICATION

Specially dedicated to my beloved mother, sisters and family,

For my supervisor, Dr Burairah bin Hussin,
(UTeM)

And lastly to my beloved friends and who have encouraged, guided and inspired me throughout my journey in education

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ABSTRACT

Interactive CD Learning for the Treatment of Autism Children is an educational courseware used for autism children in primary schools. Since the autism disorder qualifies as learning disability, a treatment and therapy progress especially in their educational process is necessary to assist them. There are four modules in this educational courseware prototype that is based on *Huraian Kurikulum Pendidikan Khas Bermasalah Pembelajaran* (PKBP). The topic selected is to identify and naming the living things (human), which are further divided into sub-modules based on Science, Social and Environments Components. By using graphics, animation, voice and sound effects, children's interest, attention, and learning of verbal material increased over a control group who received only a traditional therapeutic learning approach. It is developed to assist teachers and students with autism in primary schools to a life path to normalcy. In particular, this report explains seven main chapters which consist of Introduction, Literature Review and Project Methodology, Analysis, Design, Implementation, Testing and Project Conclusion. The introduction explains what the application is and what their purposes are. While in the literature review and project methodology, it explains the existing similar application and comparison, the methodology approach and project requirement. Analysis is the critical part in this report which all information are captured and recorded properly. In addition, the requirements analysis is also covered in this part. The Design is where the architecture of educational courseware prototype will be defined. The Implementation explains the production and implementation process which encompasses the text, graphic, audio and animation production, and the media integration. Testing was conducted among the special education primary and private school teachers and students. It is carried out in order to retrieve their opinions on this courseware prototype. The respondents consist of 5 special education teachers and 8 autism students from Bukit Cina Primary School, Autism Intervention Centre (NASOM), and Joy Workshop (PKIIM) in Malacca. The findings of this study are useful for autism community in order to assist them to learn. Finally, the Project Conclusion explains the prototype strengths and weaknesses.

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ABSTRAK

CD Pembelajaran Interaktif Untuk Rawatan Kanak-Kanak Autisme adalah merupakan satu CD pembelajaran yang dibangunkan khusus untuk pelajar - pelajar autism di peringkat sekolah rendah. Oleh kerana kanak-kanak autisme mempunyai masalah pembelajaran, kemajuan rawatan dan terapi terutamanya dalam proses pengajaran dan pembelajaran adalah amat diperlukan untuk membantu mereka. Terdapat empat modul pembelajaran dalam CD ini di mana kandungan pembelajaran adalah berdasarkan Huraian Kurikulum Pendidikan Khas Bermasalah Pembelajaran (PKBP). Topik pengajaran ialah mengenal dan menamakan benda hidup iaitu manusia iaitu setiap topik dibahagikan kepada submodul. Dengan penggunaan grafik, animasi, suara latar and kesan bunyi dalam aplikasi ini, minat dan perhatian kanak-kanak autisme untuk belajar dapat ditingkatkan untuk menjadikan mereka sebagai kanak-kanak normal yang lain. Secara khususnya, Pengenalan, Ulasan Kesusasteraan dan Projek Metodologi, Analisis, Reka Bentuk, Perlaksanaan, Pengujian dan Kesimpulan Projek. Bahagian pengenalan menjelaskan apa yang aplikasi ini sepatutunya ada dan tujuan aplikasi ini. Manakala dalam bahagian ulasan kesusateraan dalam projek metodologi, ia mengaitkan aplikasi yang mempunyai ciri-ciri tertentu dengan aplikasi dan perbandingannya, pendekatan metodologi dan keperluan projek. Bahagian analisis merupakan bahagian kritikal dalam laporan ini di mana semua informasi dikumpulkan dan direkodkan dengan teliti. Tambahan pula, bahagian ini turut menyentuh analisis keperluan. Bahagian reka bentuk ialah bahagian di mana struktur aplikasi dibangunkan. Bahagian perlaksanaan menerangkan produksi dan perlaksanan proses di mana mengandungi produksi teks, grafik, audio dan animasi. Pengujian dijalankan di kalangan guru-guru dan pelajar autisme di sekolah pendidikan khas kerajaan dan swasta. Responden terdiri daripada 5 orang guru pendidikan khas dan 8 orang pelajar autisme daripada Sekolah Kebangsaan Bukit Cina, Pusat Intervensi Autisme (NASOM) dan Pusat Kebajikan Insan Istimewa Melaka (Joy Workshop) di negeri Melaka. Hasil daripada pengujian adalah berguna kepada golongan austime untuk membantu mereka belajar. Akhir sekali, bahagian kesimpulan projek menerangkan kekuatan dan kelemahan projek.

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LIST OF ABBREVIATIONS

ASD	-	Autism Spectrum Disorders
CD	-	Compact Disc
CD-ROM	-	Compact Disc Read-Only Memory
HCI	-	Human Computer Interface
ADDIE	-	Analysis, Development, Design, Implementation and Evaluation
PECS	-	Picture Exchange Communication System
CAI	-	Computer-Assisted Instruction
PECS	-	Picture Exchange Communication System
ABA	-	Applied Behavior Analysis
DTT	-	Discrete Trial Training
PKBP	-	Pendidikan Khas Bermasalah Pembelajaran
UTeM	-	Universiti Teknikal Malaysia Melaka
NASOM	-	National Autism Society of Malaysia
PKIIM	-	Pusat Kebajikan Insan Istimewa Melaka

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CHAPTER I

INTRODUCTION

1.1 Project Background

Nowadays, computers are increasingly present at the early stage of education settings. Computer offers the unique advantages in teaching. The unique advantage that form by computers and learning methods could emphasized practical learning, where teachers were trained to use various teaching aids, namely educational courseware, integrate computer-based technology into the educational curriculum in such a way improving the learning process. This could be true for child, which received a normal education.

However, there are no similar educational courseware have been developed for particular learning disabilities such as Autism Spectrum Disorders (ASD). In Malaysia, current practice in schools for children with disabilities uses traditional classroom teaching treatments, manual textbooks, blackboard and pieces of paper for the activities in class. Since the disorder qualifies as learning disability, a treatment and therapy progress especially in their educational process is necessary to assist them. Therefore, this research is carried out to establish an educational courseware prototype which can be a basic electronic teaching and learning tools to help teachers and student with autism disorder in primary schools to a life path to normalcy.

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1.2 Problem Statement

Generally, children with autism have problems in social relationship, communication and behavior. It is reported that between 5 and 15 in every 10,000 birth could suffer autism spectrum disorders and there are no cure for autism (Siegel B. (2003).

According to Liew Yoon Loy (2006), many children suffering from autism syndrome, but not gave an appropriate help because the lacks of awareness of their needs. It is proved that hard for normal people to understand and teach autistic children even their parents. Therefore, a treatment and therapy progress especially in the education process is necessary to assist them.

In current scenario, special schools for children with disabilities especially autism, are still used conventional classroom teaching treatment methods and manual textbooks. These children do not expose with computer-based technology which may attract them to learn. According to Tina R. Goldsmith and Linda A. LeBlanc (2004), computer based instruction typically results in benefits such as increased motivation, decreased inappropriate behavior, and increased attention and sometimes results in increased learning compared to traditional methods.

Moreover, it is very difficult to find a courseware in the market because usually developer only focusing in developing a courseware for normal student. There is no available educational courseware with the suitable specific curriculum for learning disabilities especially for autism spectrum disorder. The educational courseware for normal student are not suitable for them, since they needs different teaching strategies that are specific to how a particular student with autism can best learn things.

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1.3 Objective

- **To carry out a research on autism in order to understand their need in learning**

  Children with autism have problem in social relationships, behavior and communication which often face many deficits and difficulties in learning. Individuals with autism have extremely difficulty in learning language, social skills and in relating to people.

- **To carry a research on learning techniques to be used in the courseware**

  Drill and practice learning techniques are used to help the autism student to master basic skills or knowledge through repetitive work by providing different learning scenarios to encourage prolonged practice and provides reviews of basic contents. Questions are presented in different formats to allow some transfer of learning across different stimuli situations.

- **To design and develop an educational courseware prototype on helping autistic primary school children**

  This courseware teaches autism student in primary school on the topic living things based on Science, Social and Environments Components Subject. The content is integrated with English language skills which enable the autism children to listen, imitate, and understand simple spoken English.

- **To test the effectiveness of new ways of teaching environment for autism children to learn skills on the computer**

  This courseware becomes an alternative way for autism children to learn in and practice inside or outside the classroom to replace the conventional learning treatment methods.

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1.4 Scope

Interactive CD Learning for the Treatment of Autism Children is an educational learning tool especially for autistic children targeted for primary schools based on the Science, Social and Environments Components Subject. It complies fully with the latest integrated curriculum for special needs education. It can be used for autistic children inside or outside the classroom and also to learn at home. Otherwise, it is also can be used for teachers as a learning tools in the teaching and learning process for autism children.

The content of this prototype is integrated with English Language component. It uses simple vocabulary and sentence structure to make learning easier and more effective. The learning is enhanced with multimedia CD-ROM because it can increase motivation, improve reading and language skills, and improve social skills among the autistic student. This engaging computer application was an ideal way to deliver content to children with autism because these children are often uncomfortable with human interaction and enjoy repetition.

1.5 Project Significance

The educational courseware prototype will benefit the children who suffer from autism in primary school. The aim is to motivate autism children to learn about social life and increase their understanding. With its interesting and engaging presentation, this prototype will help autism children acquire a better understanding of scientific concepts learnt and at the same time they can learn to listen, imitate and understand simple English language.

This prototype is used to teach autistic child in approaching them to speak, recognize people, and identify gender of people. They also can learn about parts of human body and the functions of five senses parts of body. Drill and practice learning technique is applied in this courseware prototype whereas it provides different learning scenarios to encourage prolonged practice. Otherwise, the

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questions given in drills do not follow a pattern and presented in different formats to allow some transfer of learning across different stimuli situations. The questions are provided with score, feedback, and prompting to assist learning and correct responding of the autism student.

Otherwise, the educational courseware prototype will expose the computer-based technology into the learning session for autistic children in schools or at home. By using graphics, animation, voice sound effects, children's interest, attention, and learning of verbal material increased over a control group who received only a conventional treatment learning approach. Otherwise, this educational courseware prototype will create a new ways of teaching environment to replace the conventional learning treatment methods for autism children.

1.6 Expected Output

The expected output is to be designed specially for CD-ROM in order to promote the use of computer-based technology into the educational curriculum for children with autism disorder in primary school. This prototype is important in helping autism to improve their learning and communication skills.

1.7 Conclusion

This chapter is the introduction of "Interactive CD Learning for the Treatment of Autism Children". It illustrates and explains the project background, problems of statements, objectives, scope, project significance and expected output. This chapter determines the overall understanding of the project and importance of it. The application has an interesting interactivity which children with autism can easily understand the contents in order to improve their learning and communication skills. In order to ensure that quality education is accessible to all, special attention shall be focused on autism children especially in curriculum educational programs and

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