行政院國家科學委員會專題研究計畫 期末報告

探討運用個人典藏緬懷數位遊戲模式挽救退化記憶之成效 ~~進行實驗組與控制組之研究

計 畫 類 別 ：個別型
計 畫 編 號 ：NSC 101-2511-S-263-001-
執 行 期 間 ：101 年 08 月 01 日至 102 年 07 月 31 日
執 行 單 位 ：致理技術學院資訊管理系

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報 告 附 件 ：出席國際會議研究心得報告及發表論文

公 開 資 訊 ：本計畫涉及專利或其他智慧財產權，2 年後可公開查詢

中 華 民 國 102 年 10 月 18 日

中 文 摘 要 ： 本研究關心台灣失智患者現況，對於未來可能失智的我或你~這群高度仰賴電腦的人群，開發出創新的且簡便、有效率、有趣味且符合現在電腦高度使用者的治療與復健工具。本研究提出了【e起來運用個人典藏緬懷遊戲模式挽救退化記憶研究】開發『個人典藏緬懷遊戲模式』系統軟體提供失智症患者反覆練習，刺激失智症患者腦細胞活動以喚起腦部記憶，達到延緩失智目的。同時藉遊戲平台紀錄數據結果，掌握患者認知能力情況，提供醫療院所做為持續診治的依據，以期避免患者病情惡化；關懷失智症患者家屬在未來歲月中，參與患者一同進行有趣味有績效的復健治療活動，讓家庭互動與溫暖能使患者大腦延緩失智。

中文關鍵詞： 失智症、緬懷治療、記憶、阿滋海默

英 文 摘 要 ： In ‘The Study of Using the e-Cherish Memorizing Game Model to Rescue the Losing Memory’, the research created a software system ~ ‘Personal Cherish Memory Game Model’ that provides the repetitive practices for the Dementia patients. The research is to stimulate the cells of the patient’s brain to recall the memory and postpones the losing of memory. The digital records of the game model are recorded and used as the references of the medical treatment. The families of the patient can join the treatment programs and use the game model together. The love and care from the families become the major factor for the patients postponing the losing of memory.

英文關鍵詞： Dementia, cherish treatment, memory, Alzheimer’s Disease

行政院國家科學委員會補助專題研究計畫成果報告

探討運用個人典藏緬懷數位遊戲模式挽救退化記憶之成效
~~進行實驗組與控制組之研究
The Exploration of the Effects on Using the e-Cherish Memorizing Game Model to Rescue the Losing Memory
~ A Research on Lab Team and Control Team

計畫類別：個別型計畫
計畫編號：NSC 101-2511-S-263-001
執行期間：2012 年 8 月 1 日至 2013 年 7 月 31 日

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計畫主持人：張慧

中　華　民　國　102 年　10 月　10 日

摘　要

本研究關心台灣失智患者現況，對於未來可能失智的我或你~ 這群高度仰賴電腦的人群，開發出創新的且簡便、有效率、有趣味且符合現在電腦高度使用者的治療與復健工具。本研究提出了【e 起來運用個人典藏緬懷遊戲模式挽救退化記憶研究】開發『個人典藏緬懷遊戲模式』系統軟體提供失智症患者反覆練習，刺激失智症患者腦細胞活動以喚起腦部記憶，達到延緩失智目的。同時藉遊戲平台紀錄數據結果，掌握患者認知能力情況，提供醫療院所做為持續診治的依據，以期避免患者病情惡化；關懷失智症患者家屬在未來歲月中，參與患者一同進行有趣味有績效的復健治療活動，讓家庭互動與溫暖能使患者大腦延緩失智。

關鍵詞：失智症、緬懷治療、記憶、阿滋海默

ABSTRACT

In ‘The Study of Using the e-Cherish Memorizing Game Model to Rescue the Losing Memory’, the research created a software system ~‘Personal Cherish Memory Game Model’ that provides the repetitive practices for the Dementia patients. The research is to stimulate the cells of the patient’s brain to recall the memory and postpones the losing of memory. The digital records of the game model are recorded and used as the references of the medical treatment. The families of the patient can join the treatment programs and use the game model together. The love and care from the families become the major factor for the patients postponing the losing of memory.

Key words: Dementia, cherish treatment, memory, Alzheimer’s Disease.

1 Introduction

In this section, the research background, research motive and research objectives are introduced.

1.1 Research Background

Dementias becomes one of the important disease those threaten the old people's life quality. Many countries have made deep research on this topic and appeared that the numbers of dementias have a positive related ratio of their older people. That means the number of the dementia patients will be increasing accompanied by the increasing tendency of old people [1].

In 2012, the International Alzheimer's Diseases Association pointed that there are about 36 million people who were examined the Dementias at the end of 2010. The numbers grows rapidly. The numbers will be 66 million in 2030, 115 million in 2050.

Also in 2012, the World Health Center announced that there are 7.7 million patients who were examined the Dementia in 2010. Approximately a new Dementia patient is examined every 4 seconds. This number is three times more than the number of cases of HIV/AIDS [2].

The degenerating of human brain caused the Dementia. The type of Alzheimer's Diseases is discovered from most of the Dementia patients' examinations. The Dementias patients can't solve simple issues and even lose the self-care ability. They need to be taken care by others. Today, none of the effective cure methods are found, but there are indeed some prevention methods [3].

1.2 Research Motive

The training of intelligence and capability can decrease the risk of Dementia occurrence. It can improve the Dementia patients' partial intelligence function. The patients' non-intelligence mental behavior can be improved by the stimulating methods of music, memory, sunshine and multimedia [4]. People should have habit in learning that might strengthen the cells efficiency and store the brain's Cognitive function [5].

Many scholars also found that the cherish memory curing method can make the old people gain happiness, decrease loneliness, attend social activities and slow down the physical decreasing [6].

'Cherish Memory Cure Method' help patients to think of old days and reach the cure goals finally. Old photos, old belongings and old music are often used in this method. Dementia patients always have clear memory of their past days. Therefore, using the cherish memory cure may strengthen Dementia patients' confidence and main the communication ability of the older people [7].

1.3 Research Objectives

There are three objectives in this research.

1.3.1 Objective I

The research submitted an 'e-Cherish Memorizing Game Model' It is a computer system for the Dementia patients. Owing to the computer's repeatedly practicing characteristic, the Dementia patients can use the 'e-Cherish Memorizing Game Model' with the assistance of family members and medical assistants. The 'personal life story book' and the 'e-Cherish Memorizing Game Model' can stimulate the activities of the Dementia patients brain cells. The characteristic of the computer's repeatedly practicing helps the patients recall brain memory and postpone the memory losing speed.

1.3.2 Objective II

After the use of the 'e-Cherish Memorizing Game Model', all the data created by the Dementia patient can be recorded in the database. This important data can help the medical specialists control the Dementia patient's Cognitive ability condition and provide this data for the patient's follow-up cure.

1.3.3 Objective III

After the installation, the experiment, the execution and promotion of the 'e-Cherish Memorizing Game Model', the family members of the Dementia patients can have more confidence in accompanying with the Dementia patients in joining the recovery exercises. The family members can realize the family interaction and warm can rescue the patient's memory loss.

2 Literature Review

Multi-aspects of the Dementia are introduced in this section.

2.1 Introduction of Dementias

The Dementia is not a single disease but a combination of various kinds of statuses. These statuses are the cognitive function barriers includes the memory ability, orientation ability, judging ability, calculating ability, imaging ability, focusing ability and language ability [8]. It also has the statuses of the interruption behavior, the change of personality and the various imaginations.

2.1.1 Classifications of Dementias

The classifications of Dementias are two types: decreasing type and vessel type. Some patients have the combination of the two types. Most of the Dementia patients are caused by the decrease of their brain. The major ratio is the Alzheimer's Diseases. The ratio of the occurrence of the Alzheimer's Disease increases with the increase of human ages [9]-[10]。

2.1.2 Appearance of Dementias

The appearances of dementias are listed in Table 1 [9].

Table 1 The Three Stages of the Dementia Status

The Three Stages of the Dementia Status	
Early Stage	In the early 2-3 years of the Dementia status. People forget the things those are happened just now. People lack creativity, hard-working desirous and lack the interesting of daily affairs.
Middle Stage	In the 3-4 years of the Dementia status. The patients lose orientation ability of people issues, places and stuffs. They transfer their attraction often and decrease the realizing ability of general issues.
Final Stage	The Dementia patients become unreasonable. They lose all the intelligence function and become silence. Their faces appear cool and old status.

2.2 Examinations of Dementias

In order to find out if the patient has the Dementia, the clinical examination depends on the patient cure history, cognitive test and mental tests. The examination tools are Cognitive Test and Mental Test. The judgment standards of the intelligence status inspection table are influenced by the cultural background and social environment affection. There are general inspection tables for inspecting the Dementia [11]-[12].

2.3 Prevention of Dementias

To keep a good blood circulation of the human brain becomes the best method in prevention of Dementias. The best method to keep good blood circulation of human brain is to do more exercise, balance food, normal rest and work, good mood, non-smoking and forbid drinking much wine.

Use the brain often is a good method to prevent the decrease of human brain's function. People can read more and calculate more in the daily activities.

2.4 Mental Phase of Dementias

Does the doctor have to tell the result of the patient's Dementia examination report? There two groups with different opinions. On the basis of honest and respect, the patients should know the truth. But on the other hand, in order not to hurt the Dementia patients, and the disease is decreasing functions gradually, then, the Dementia patients don't need to be told [10]. The two aspects are:

- Not to tell the Dementia patients the truth.
  The reason is to forbid the patients from sadness, distortion and committed suicide.
- Tell the Dementia patients the truth.
  The reason is the patients can arrange their life schedule and enjoy good life earlier.

2.5 Cognitive Barriers of Dementias

The human's brain can process, store, query and operate the outer information ability and then become the cognitive function. If one of the steps appears barrier, it appears the multi-barriers of attention ability, memorizing ability, problem-solving ability and time and space orientating ability. That is defined the cognitive barrier [13].

The Dementia is a kind of cognitive function disease that is between the status of old Dementia and the insufficient of intelligence. It might be the temporary intelligence shortage of normal people, or the temporary disease of the early Dementia. Therefore, the light cognitive barrier is the high risk group of the early Dementia.

In order to inspect the curable factors and give the good cure and control, the early Dementia patients should be examined early and followed up often [14]-[15].

2.6 Cure of Dementias

The Cure of Dementias has three methods:

2.6.1 'Cognitive Function Training' of Dementias

The Dementia patients use assisted teaching tools, daily instruments, self-made equipment and posters to design the cognitive activities. It helps the Dementia patients activate their brains and slows down the decrease of the cognitive function. The process usually combines with the sense stimulation and reality introduction activities [9].

2.6.2 'Montessori Education Activities' of Dementias

The memory training course of the Dementia patient uses the Montessori Education Method. It arranges the reality environment and educational tools to encourage the Dementia patients self-learning spirit. It strengthens the training of the patients' sense, intelligence and daily life. It also raises the degree of responsibilities. The Montessori activities shows positive improvement in rescuing the Dementia patients' memory. There are ten activity courses: Sensory Discrimination, Scooping Exercises, Pouring Activities, Squeezing Activities, Fine Motor Activities, Care of The Environment, Care of The Person, Matching Activities, Striation Activities and Group Activities [16].

2.6.3 'Memory Cure' of Dementias

'Memory Cure' is a method that helps the Dementia patients to recall the past days and then reach the cure goals. Individual patient or a team can use it. The stuff includes old photos, old belongings and old music. The Dementia patients own clearer memory of the early issues. Therefore, the recall of past days and issues can strengthen the Dementia patients' self-confidence. It appears the function of encourage and support. It also can improve and maintain the old people's communication ability.

Under the assistance of other people, the Dementia patients can re-realize and re-evaluate the past unhappy experiences. They can face the past failure at a positive point and believe themselves again. The Memory Cure is one of the medical cure methods [17]-[20].

3 Research Methodologies

Three research methods are used in this research.

3.1 Literature Analysis Method

The researcher has read many literatures concerning the Dementias. The related knowledge definition, categories and relationship among the Dementia are the important base in installing the 'e-Cherish Memorizing Game Model'. The literatures include books, journals, research reports and medical publications.

3.2 Interview Method

The Dementia doctors, patients and patients' family members are three interviewers. The patients attended the Mini-Mental Status Examination (MMSE) and evaluated the patient's Dementia status after the examination. Then the researcher designed the interview questionnaire for the family members. The question categories contain the take-care time, the medical care history, the recovery tools and the recovery process. There were close and open questionnaires those collected the primary data for the construction of the 'e-Cherish Memorizing Game Model'.

3.3 Literature Analysis Method

The research included laboratory team and control team. All the experiment designs were worked together with the Dementia medical specialists and the researcher. The Dementia medical specialists set up the Dementia patients' usage efficiency first. Then the Dementia specialists and volunteers help us to implement the usage program of the 'e-Cherish Memorizing Game Model'. Finally, the real efficiency evidence of the 'e-Cherish Memorizing Game Model' is validated by the research group.

The independent variables and dependent variables were designed in the laboratory process. All the resources related to the 'e-Cherish Memorizing Game Model' became the most important dependent variables. The independent variables were the six indexes of the Clinical Dementia Rating (CDR). The detailed introductions are listed in Fig.1.

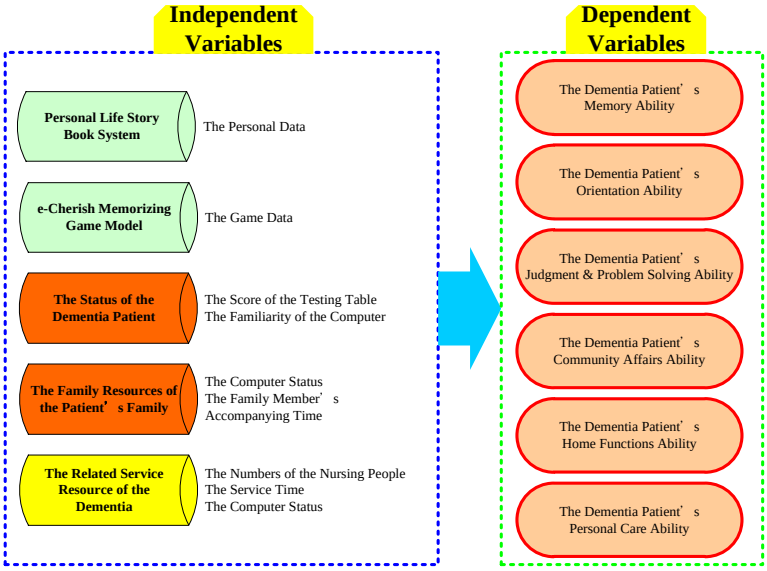

Fig.1 The 'dependent variables' and the 'independent variables' of the research.

4 Practical Research

The 'e-Cherish Memorizing Game Model' includes two functions: Personal Life Story Book System and Memorizing Game Model.

4.1 Design of 'Personal Life Story Book'

The design goal and functional items are introduced in the following:

4.1.1 Design Goal

This research combines the computer with the Dementia medical cure process. First, this research uses the Personal Life Story Book System to store huge digital multimedia data into the computer. The content of the data is about the detailed records of the Dementia patients themselves. Then the personal albums and films are produced then. These materials are used to stimulate the Dementia patients' cognitive function and reach the goal of postpone the memory loss.

4.1.2 Functional Items

i. Access Function: It provides the user to access. The users include 'new user access' and 'old user data verification'. As shown in Fig.2.

ii. Editing Frame: It provides the users to implement the input, edit (as shown in Fig.3), query, print (as shown in Fig.4) and export functions. The sample pages and sample pictures are provides for the users. The users are allowed to import favorite pictures (as shown in Fig.5) to plentiful the page contents.

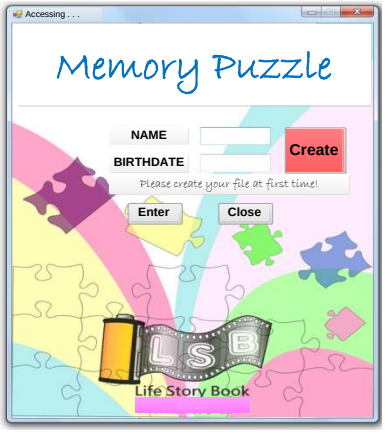

Fig.2 Access Page

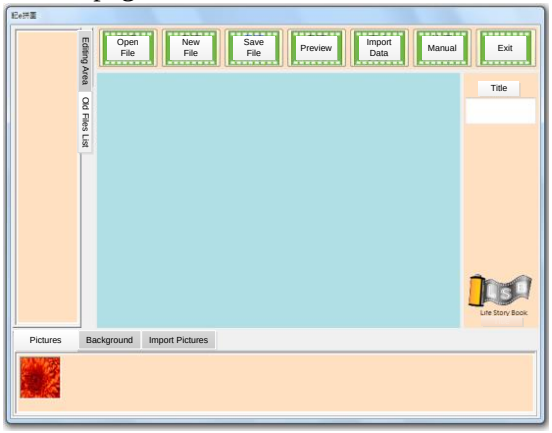

Fig.3 Editing Page

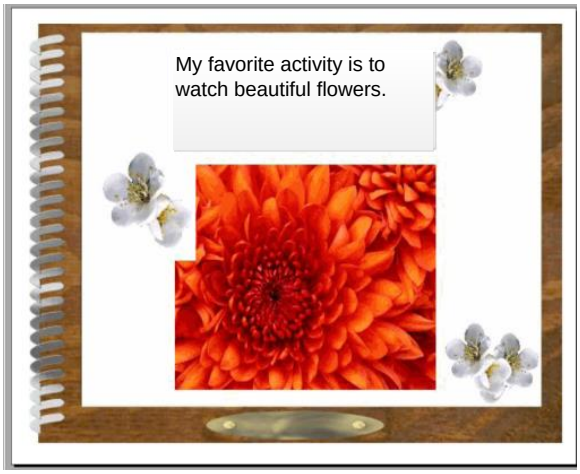

Fig.4 Print Page

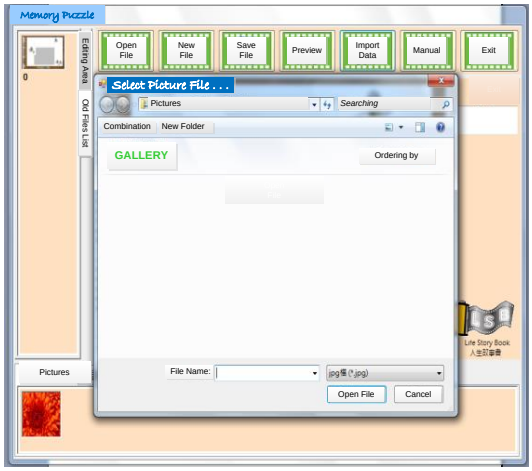

Fig.5 Import Resources

4.2 Design of 'Memory Game Model'

The Design Goal and Functional Items are introduced in the following:

4.2.1 Design Goal

The Montessori Education Method is adopted in the 'e-Cherish Memorizing Game Model'. The design structure of the Game Model catches the attraction of the Dementia patients. And the appliance of the repeatedly practicing characteristic of the computer helps the Dementia patients activate their brains effectively.

The content of the 'e-Cherish Memorizing Game Model' includes many small computer games. The game materials relates to the patients' culture background. The game design principal follows the spirit of the Montessori Activities Type. The Dementia patients' brains are stimulated repeated and reach the goal of rescue losing memory.

4.2.2 Functional Items

i. Access Function: It provides the user to access. The users include 'new user access' and 'old user data verification'.

ii. Memory Games: There a Game List for the users. A couple of game samples are shown in Fig.6 and Fig.7.

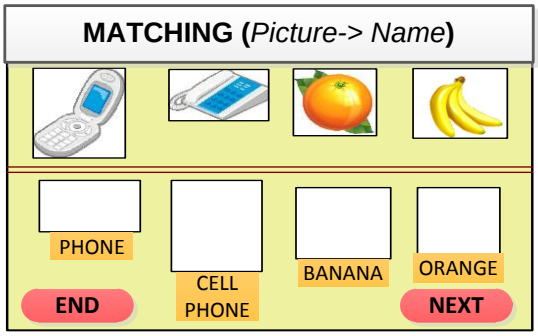

Fig.6 Match Game

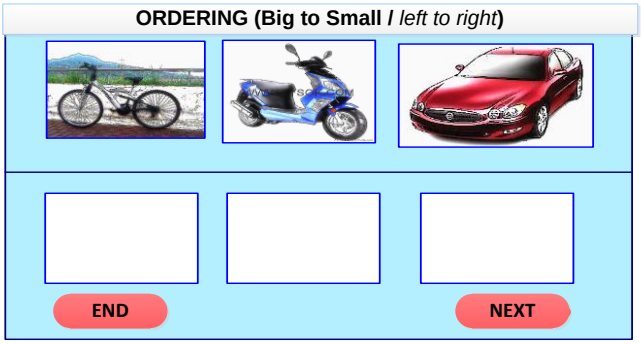

Fig.7 Order by Size

4.3 Research Efficiency

The research efficiency of this research appears in the following three phases:

4.3.1 Happy Factors for the Dementias

i. The 'e-Cherish Memorizing Game Model' strengthens the self-confidence of the Dementia patients.

ii. The 'e-Cherish Memorizing Game Model' encourages the Dementia patients feel the supporting power.

iii. maintains the Dementia patients normal communication ability.

iv. The 'e-Cherish Memorizing Game Model' postpones the loss of the Dementia patients' memory and behavior.

4.3.2 Happy Factors for the Patients' Families

i. The research transits the public support to the Dementia patients' family members whom bear heavy pressure.

ii. The research provides the 'e-Cherish Memorizing Game Model' for the Dementia patients that can activate the patients' brain activities.
iii. The 'e-Cherish Memorizing Game Model' provides free service for the patients and their family members.

4.3.3 Happy Factors for the Society

i. The promotion of the research result make the public understands the Dementia, the prevention cure and the care programs.
ii. The research decreases the occurrence ratio of the Dementia and saves the social medical resources.
iii. The promotion of the research result gathers the Dementia professional medical group to adopt the 'e-Cherish Memorizing Game Model' as the new tool in postponing the memory loss.

5 Conclusion

The research uses the convenience of the computer software system to produce the Personal Life Story Book to store personal data for future reading. Through the producing process and the reading of the Personal Life Story Book, it helps in stimulating the Dementia patient's memory and cognitive function.
The work also employs the corresponding E-learning technique to stimulate the cells of the patient's brain to recall the memory and postpones the losing of memory. There are some special features in this work such as user friendly interface, repeatedly practicing function, specific culture mode and mobile information service. Numerous simulations have been made to demonstrate the efficiency of the proposed 'Personal Cherish Memory Game Model'.
In this research, the 'e-Cherish Memorizing Game Model' is designed on the basis of Montessori Education Activities Game Model. The past records of the Dementia patient stimulate the patient's brain repeatedly. These two models achieve the maximum medical results. The research result toward cases is shown in Fig.8.
The result shows that the overall status of the dementia patient appears a positive increase after the experiment. The experiment dependent variables designed in Section 3.3 also indicates a positive efficiency while applying into the experiments.
Today, the Dementia can't be neglected anymore. The result of the research appears that the dependent variables of the research appear a high positive relationship value. All the resources those are used to postpone the memory loss should be regulated by the related government departments formally and instantly.

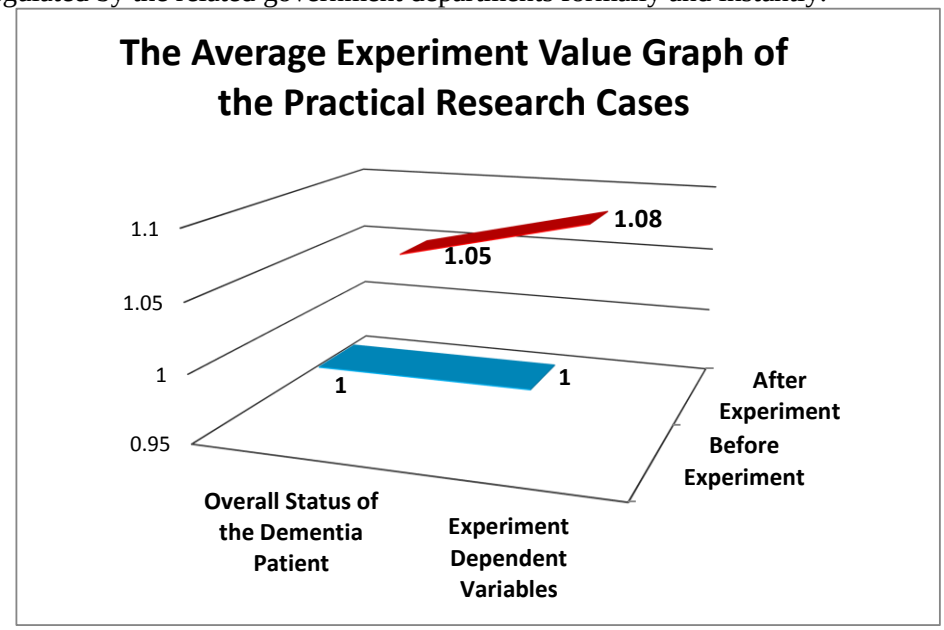

Fig.8 Research Result - The Average Experiment Value Graph of the Practical Research Cases

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2. Huay Chang ‘The Exploration of the e-Cherish Memorizing Game Model to Rescue the Losing Memory’, The 12th International Conference on Education and Educational Technology (EDU' 13), April 23-25, 2013. (ISSN: 2227-4618, ISBN: 978-1-61804-180-7)
3. Huay Chang ‘THE EXPLORATION OF THE EFFECTS ON USING THE E-CHERISH MEMORIZING GAME MODEL TO POSTPONE THE LOSING MEMORY’, 28th International Conference of Alzheimer’s Disease International, April 18-20, 2013.
4. 張慧, ‘使用行動輔具進行活化失智症患者記憶遊戲之技術探討’, 2012 建構綠能科技與智慧節能產學園區研討會, St. John’s University, November 2012.

List of Expo and Competition Records

1. Huay Chang, ‘2013 MACAU International Innovation & Invention Expo, Name of invention--An Innovation of Rescuing Memory Digital Games (**Bronze Medal**), WIIPA World Invention Intellectual Property Associations andMIIA Macao Innovation & Invent, Macau Fishman’ s Wharf & Exhibition Centre, June 28-30, 2013.

Taken in the Expo


The Stand

The Certificate

List of Implementations of the e-Cherish Memorizing Game Model

1. 2012 World Alzheimer’s Month Activity, Taipei, September 18, 2012.

Research Team Taken in The Stand

Participants and the Games


Participants and the Games

附件五

國科會補助專題研究計畫出席國際學術會議心得報告

日期:102 年 7 月 10 日

計畫編號	NSC 101 - 2511 - S - 263 - 001		
計畫名稱	探討運用個人典藏緬懷數位遊戲模式挽救退化記憶之成效~~進行實驗組與控制組之研究		
出國人員姓名	張慧	服務機構及職稱	致理技術學院 副教授
會議時間	2013 年 7 月 6 日 至 2013 年 7 月 7 日	會議地點	香港(Harbour Plaza 8 Degrees)
會議名稱	(中文) 2013 年第二屆知識與教育工程國際研討會 (英文) 2013 2nd International Conference on Knowledge and Education Technology (ICKET 2013)		
發表題目	(中文) 運用數位遊戲進行失智症挽救記憶之研究 (英文) Employing an Interface based Interactive Digital Games to the Dementia Research for Rescuing Memory		

一、參加會議經過

本人於 2013 年 2 月 10 日提出研討會論文申請,於 2013 年 4 月初獲得修改論文通知,本人於 4 月 15 日將修改完畢之論文寄出，並於 2013 年 7 月 6 日與 7 日於香港進行論文發表。

二、與會心得

本人藉此會議與參與人士進行學術交流，本次與會之學者來自印度、韓國、日本、香港、中國、台灣與新加坡等地。大家在教育工程領域之研究成效頗為豐碩，值得本人作為後續研究之參考基礎。

三、發表論文全文或摘要

Employing an Interface based Interactive Digital Games to the Dementia Research for Rescuing Memory

Abstract—This work focuses on the people with dementia for rescuing memory research and designs an e-Learning platform. This work also combines with the characteristics of

assisting function as well as the user interface mode of the information techniques, the digital interactive games are designed and applied in this work to stimulate the cells of the cerebrum of the people with dementia. The internet is employed as a medium that provides those people with dementia who can play the digital interactive games at home. The goals of prevention and unlimited curing are achieved eventually. Numerous tests have been made to demonstrate the efficiency of the proposed approach.
Index Terms—e-Learning, user interface, internet, digital game, dementia.

An Iterative Expert System for Track and Field Teaching Research in the Long Jump
Abstract—This work focuses on the research of track and field sport. An e-Learning platform expert system is constructed as the base to design the track and field network teaching in the long jump. The expert system is applied into the research that constructs the interactive teaching of track and jump by the e-learning platform. Finally, this work employs the network teaching platform to implement the new teaching mode and learning channel. Numerous tests have been made to demonstrate the merits of the proposed issue.
Index Terms—E-learning, track and field teaching, expert system, interactive system.

四、建議

無。感謝國科會的經費補助。

五、攜回資料名稱及內容

參與會議報告證明


International Association of Computer Science and Information Technology (IACSIT)

Certificate of Oral Presentation

Awarded to

Huay Chang

For successfully presenting his/her paper in ICKET 2013 (Hong Kong, July 6-7, 2013)

Paper ID: ET 008

Paper Title: Employing an Interface based Interactive Digital Games to the Dementia Research for Rescuing Memory

Organization: Chihlee Institute of Technology, Taiwan

2013 2nd International Conference on Knowledge and Education Technology

IACSIT Regn.No. 53122865K

Conference Chair

Conference Executive

IACSIT WWW.IACSIT.ORG Engineering&Technology DIGITALLIBRARY IJCEEE crossref

六、其他

無

國科會補助計畫衍生研發成果推廣資料表

日期:2013/10/18

國科會補助計畫	計畫名稱: 探討運用個人典藏緬懷數位遊戲模式挽救退化記憶之成效~~進行實驗組與控制組之研究
	計畫主持人: 張慧
	計畫編號: 101-2511-S-263-001- 學門領域: 應用科學教育

無研發成果推廣資料

101 年度專題研究計畫研究成果彙整表

計畫主持人：張慧	**計畫編號：**101-2511-S-263-001-
計畫名稱：探討運用個人典藏緬懷數位遊戲模式挽救退化記憶之成效~~進行實驗組與控制組之研究	

成果項目			量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）
			實際已達成數（被接受或已發表）	預期總達成數(含實際已達成數)	本計畫實際貢獻百分比		
國內	論文著作	期刊論文	0	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	1	1	100%		本研究成果參與國內研討會論文，推廣研究主題，倡導大眾重視失智症議題。
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	2	2	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	1	1	100%	篇	本研究成果刊載於國外期刊，強調我國運用資訊科技於延緩失智的研究成果。
		研究報告/技術報告	1	0	100%		本研究成果參與國外發明展活動，公開介紹挽救退化記憶的遊戲工具，並藉以宣傳我國運用資訊科技於延緩失智的研究成果。
		研討會論文	3	2	150%		本研究成果參與國外研討會議，公開宣傳我國運用資訊科技於延緩失智的研究成果。
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	100%	件	

		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)	計畫主持人除將研究成果參與國際會議與發表論文外，並達成下列兩項研究成果: 一、技術創新層面 計畫主持人以本專題計畫參與國際發明展’展覽與獲獎’資料..... Huay Chang, ‘2013 MACAU International Innovation & Invention Expo, Name of invention--An Innovation of Rescuing Memory Digital Games (Bronze Medal), WIIPA World Invention Intellectual Property Associations andMIIA Macao Innovation & Invent, Macau Fishman’s Wharf & Exhibition Centre, June 28-30, 2013. 二、社會影響 計畫主持人運用挽救退化記憶的遊戲工具參與社會活動之影響力資料..... 1. 2012 World Alzheimer’s Month Activity, Taipei, September 18, 2012. 2. 2013 World Alzheimer’s Month Activity, Taipei, September 15, 2013. 本專題開使用適合失智症患者使用之遊戲軟體，可以提供給失智症患者使用，藉此可以延緩失智之過程。本專題研究成果可以進行全面性大眾推廣使用計畫，屆時可藉由舉辦公開性活動，除了讓大眾可以認識失智症，更可提供遊戲軟體讓大眾使用。最重可以將取自於政府資源，還諸於社會大眾共同受益。 計畫主持人期望日後能有機會獲得專題計畫經費補助，可以讓研究成果邁向更廣泛的研究，更可讓社會大眾獲得更高品質之資訊服務。

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	本遊戲軟體工具不宜設計測驗工具，而是以正向鼓勵方式讓失智症患者使用。
	課程/模組	15	本遊戲軟體工具設計宗旨是’寓教於樂’，藉由多元遊戲主體協助失智症患者延緩記憶功能。
	電腦及網路系統或工具	2	計畫主持人運用兩大類電腦遊戲軟體工具提供實驗組失智症個案進行研究使用，並將遊戲軟體工具提供相關失智症協會使用。藉以造福更多失智症患者。
	教材	16	本遊戲軟體工具設計宗旨是’寓教於樂’，藉由多元遊戲主體協助失智症患者延緩記憶功能。
	舉辦之活動/競賽		** 本研究計畫主持人運用研究成

			果參與社會活動之影響力資料如下..... 1. 2012 World Alzheimer's Month Activity, Taipei, September 18, 2012. 2. 2013 World Alzheimer's Month Activity, Taipei, September 15, 2013. ** 本研究計畫主持人運用研究果參加澳門國際發明展競賽活動藉以宣傳我國失智症議題研究績效，資料如下... Huay Chang, '2013 MACAU International Innovation & Invention Expo, Name of invention--An Innovation of Rescuing Memory Digital Games (Bronze Medal), WIIPA World Invention Intellectual Property Associations andMIIA Macao Innovation & Invent, Macau Fishman's Wharf & Exhibition Centre, June 28-30, 2013.
	研討會/工作坊	4	本研究計畫主持人運用研究成果參與國內外多場學術活動，資料如下: 1.Huay Chang, 'Employing an Interface based Interactive Digital Games to the Dementia Research for Rescuing Memory', International Journal of e-Education, e-Business, e-Management and e-Learning, Vol. 3, No. 2, April 2013. (ISSN 2010-3654) 2.Huay Chang 'The Exploration of the e-Cherish Memorizing Game Model to Rescue the Losing Memory', The 12th International Conference on Education and Educational Technology (EDU' 13), April 23-25, 2013. (ISSN: 2227-4618, ISBN: 978-1-61804-180-7) 3.Huay Chang 'THE EXPLORATION

			OF THE EFFECTS ON USING THE E-CHERISH MEMORIZING GAME MODEL TO POSTPONE THE LOSING MEMORY', 28th International Conference of Alzheimer's Disease International, April 18-20, 2013. 4.張慧, '使用行動輔具進行活化失智症患者記憶遊戲之技術探討', 2012建構綠能科技與智慧節能產學園區研討會, St. John's University, November 2012.
	電子報、網站	4	本研究計畫主持人之學術研究成果均刊載於學術資源網站。
	計畫成果推廣之參與（閱聽）人數	2500	計畫主持人運用挽救退化記憶的遊戲工具參與社會活動之影響力資料..... 1. 2012 國際失智症月活動；2012 World Alzheimer's Month Activity, Taipei, September 18, 2012. 2. 2013 國際失智症月活動；2013 World Alzheimer's Month Activity, Taipei, September 15, 2013.

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估

■達成目標

□未達成目標（請說明，以 100 字為限）

□實驗失敗

□因故實驗中斷

□其他原因

說明：

2. 研究成果在學術期刊發表或申請專利等情形：

論文：■已發表 □未發表之文稿 □撰寫中 □無

專利：□已獲得 □申請中 ■無

技轉：■已技轉 □洽談中 □無

其他：(以 100 字為限)

*** 技術創新 ********* 以下列出本專題計畫參與國際發明展 '展覽與獲獎' 資料.....

1. Huay Chang, '2013 MACAU International Innovation & Invention Expo, Name of invention--An Innovation of Rescuing Memory Digital Games (Bronze Medal), WIIPA World Invention Intellectual Property Associations andMIIA Macao Innovation & Invent, Macau Fishman's Wharf & Exhibition Centre, June 28-30, 2013.

3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）(以 500 字為限)

本專題計畫在''''學術成就''''、''''技術創新''''與''''社會影響''''等三面均呈現具體之成果，詳述於下：

*** 學術成就 ********* 以下列出本專題計畫發表刊物資料.....

1.Huay Chang, 'Employing an Interface based Interactive Digital Games to the Dementia Research for Rescuing Memory', International Journal of e-Education, e-Business, e-Management and e-Learning, Vol. 3, No. 2, April 2013. (ISSN 2010-3654)

2.Huay Chang 'The Exploration of the e-Cherish Memorizing Game Model to Rescue the Losing Memory', The 12th International Conference on Education and Educational Technology (EDU' 13), April 23-25, 2013. (ISSN: 2227-4618, ISBN: 978-1-61804-180-7)

3.Huay Chang 'THE EXPLORATION OF THE EFFECTS ON USING THE E-CHERISH MEMORIZING

GAME MODEL TO POSTPONE THE LOSING MEMORY', 28th International Conference of Alzheimer's Disease International, April 18-20, 2013.
4.張慧, '使用行動輔具進行活化失智症患者記憶遊戲之技術探討', 2012 建構綠能科技與智慧節能產學園區研討會, St. John's University, November 2012.

*** 技術創新 ********* 以下列出本專題計畫參與國際發明展 '展覽與獲獎' 資料.....
1. Huay Chang, '2013 MACAU International Innovation & Invention Expo, Name of invention--An Innovation of Rescuing Memory Digital Games (Bronze Medal), WIIPA World Invention Intellectual Property Associations andMIIA Macao Innovation & Invent, Macau Fishman's Wharf & Exhibition Centre, June 28-30, 2013.

*** 社會影響 ********* 以下列出本專題參與社會活動之影響力資料.....
1. 2012 World Alzheimer's Month Activity, Taipei, September 18, 2012.
2. 2013 World Alzheimer's Month Activity, Taipei, September 15, 2013.

因本專題開發出適合失智症患者使用之遊戲軟體，可以提供給失智症患者使用，藉此可以延緩失智之過程。本專題研究成果可以進行全面性大眾推廣使用計畫，屆時可藉由舉辦公開性活動，除了讓大眾可以認識失智症，更可提供遊戲軟體讓大眾使用。最重可以將取自於政府資源，還諸於社會大眾共同受益。
計畫主持人期望日後能有機會獲得專題計畫經費補助，可以讓研究成果邁向更廣泛的研究，更可讓社會大眾獲得更高品質之資訊服務。