出國報告（出國類別：國際會議）

出席擴展與選擇性溝通學學會國際研討會並發表論文

摘 要

擴展與選擇性溝通學學會(the International Society for Augmentative and Alternative Communication, ISAAC))是一改善兒童與成人溝通需求的一成員組織，它成立的目標是建立全球性有關於 AAC 如何幫助沒有語言能力認知個體。ISAA 則透過 AAC 將資訊分享與促成研究技術與創新方法，所舉辦活動則包括此次兩年舉辦一次的研討會、贊助計畫以及提供獎項與獎學金。此學會 1983 年成立，含蓋 14 個國家或地區，ISAAC 成員包括使用 AAC、他們家庭成員、語言治療師、教師、學生、醫師、研究者、以及溝通輔助需求的公司與組織，今年在加拿大多倫多舉辦。本出國計畫為本人與研究團隊共同參與，運用國科會計畫結餘款參加，將研究論文於投稿接受後，於研討會時發表，並針對出國期間與所進行學術參訪活動提出心得與建議，此外也進行學術參訪活動，參訪地點包括參訪加拿大多倫多大學、美國匹茲堡大學資工系、卡內基美隆大學資工系以及多倫多大資工系等，藉此增加學術能見度。
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關鍵詞：擴大與替代溝通

目次

壹、計畫緣起與目的

ISAAC 是一有關溝通與認知之國際性組織(經聯合國註冊)，此組織發展重點在於促成有 AAC 需求者，透過研討會分享發展經驗，以解決複雜溝通需求他每兩年會在全球各地舉辦研討會，參加者來在全世界各地包含：學者、使用者等。今年 2016 研討會在加拿大安大略省本次研討會為第十七屆國際輔助溝通會研討，整體會議時間為 8 月 8 日至 8 月 13 日，會議舉辦地點在加拿大安大略省的多倫多市安大略湖畔的 Westin Harbour Castle hotel 會議中心舉行。本人化結款參加此次研討會，發表論文與進行學術交流，論文接受函如附件一，發表論文如附件二。簡言之，本次出國目的如下：

一、 發表學術論文，藉此增進 AAC 發展之專業知能。

二、 參加研討會中所感性取且與研究相關之各 Session，進行學習與學術交流與分　享。

三、 參訪多倫多大學加拿大多倫多大學、美國匹茲堡大學資工系、卡內基美隆大學資工系以及多倫多大資工系等，藉此增加學術能見度。

貳、參加會議經過

目前國際輔助溝通學會(簡稱ISAAC)的總部就在多倫多，因此這一屆的會議地點相對地容易吸引很多北美國家的學者專家，總共今年參加此盛會的國家多達四十幾個國家，會議期間共有兩千多人參加。本人在參加會議的過程入下所述:

ISAAC每兩年前世界主要城市舉辦，由於這個學會總部設置在聯合國的NGO，協會有向聯合國註冊在案，為鼓勵開發中國家中的參與，大會也提供收註冊費減收優惠政策，今年參與的國家除了發展中國家之外，還包括: 羅馬尼亞、烏克蘭、埃及、伊朗、非洲、蘇聯等。大會逐一報告參與國家，大會影片出現中民國國旗，並以台灣名義介紹們，我們台灣全體代表起立致敬，成員情緒激動。大會開幕典禮在8日早上舉行，除了由大會主席進行演講外，安大略省省長也祝賀電並用影片發表祝賀詞。**大會開幕式**Keynote Speaker: John Draper，他是多書與雜誌作者，他雖然本身為一身障者，但他的演講非常幽默，引起很多參與者共鳴。此外

大會也安排一些AAC使用者，現身說法分享他們使經驗，當然ISAAC 為了鼓勵非西方國家也能同步參與輔助溝通的進步，也在會議中規劃一個時段讓這些國家的與會者聚會，一起討論各國目前AAC 的推動情形，並從西方國家或從彼此身上學習到推動的利基點，我們台灣分會對於相關議題的告是由特教系陳明聰老師代表報告，說明自從台灣成立分會以來，所辦理的活動與推動的會務。

這一次研討會除PreConference外，在開幕典禮後同步展開分布在不同會議式的12個議程的論文發表，在論文發表部分，我參與投稿的論文有一篇，也在會議規定期間與議程進行口頭報告，發表後，除了現場發問與問答外，在會場也會與會的學者專家們交流的議題討論，例如:有國外學者會 詢問台灣的輔助溝通服務和設備的制度、學生參與實驗教學後與滿意度的狀況，以及針對研究使用的研究法與應用成果也有做一些交流。這些意見交流對於國內在臨床與研究現況會更有助益。這一次參與ISAAC的台灣學者包括；本校特教系吳雅萍與陳明聰老師、師大吳庭芳老師以及東華楊織康老師外，參與同伴還有台灣的AAC使用者莊馥華與家人。馥華是肢障、語障的極重度多重障礙者，他們一家三人千里迢迢搭乘十五個半小時的飛機到多倫多，其家人協助推著輪椅，精神令人感佩。肢馥華也自製影片紀錄如何使用各種 AAC的經驗，該影片被ISAAC收錄在開幕式播放，影片描述著馥華使用各種AAC的過程，包括:摩斯碼、注音符號拼音等，影片內容令與會者動容，影片一放映完畢，在場許多與會者動容、起立鼓掌，會後很多來賓也都來為馥華鼓勵加油，並嘗試與她使用溝通輔具交流。

由於馥華的參與，讓我們這一次的會議參與經驗變得相當不同，過去會議舉辦時只有單純學者間互動與交流，討論內容會比較專注在學術研究的發展與合作，但這一次狀況稍有不同，尤其增加了與國外的AAC使用者與家人的交流討論空間，可以更加了解與分享AAC使用者與家人的想法和期望，這對研究者如何兼顧學術論文與應用的幫助很大，畢竟AAC的發展目的就是供給使用者更好的生活品質，因此如何採取作法更貼近使用者的想法，對未來實際推動時會更容易掌握成效，我們台灣學者也在會議期間抽空聚餐時一起分享在此領域研究自身推動成果與經驗，發揮集思廣益。

叁、學術參訪活動

此次至美國與加拿大期間至美國匹茲堡參加由該大學Katya教授舉辦之營隊，該應對主要由美國知名業界界贊助，期間來自美國各地殘障者，由Katya教授團隊設計各種情境，吸引AAC使用者參與，使用者與志工互動融洽，這樣營隊在台灣由業者贊助參與不多，值得國內學習，尤其有些重度殘障者都能使用參與，未來國內可場此方向發展。

本人也至匹茲堡大學以及卡內基美隆大學資工系參訪，者兩所學校資工系，尤其是卡內基美隆資工系在美國大學排名第一，者兩所學校在人工智慧、及大數據以及物聯網發展與研究都有創新研究觀念，尤其發展資訊4.0概念。

參與國際研討會，會場離多倫多大學不遠，且該校為世界百大（第17名），因此本人也抽空至多倫多大學 St.Gorge校區觀摩，此校區為總校區校園非常大，該校學生約8萬人，本人也進入該校Computer Science系觀摩，經過該系時發現該系教師在影像處理以及電腦視覺的研究成果，尤其也針對本人科技部計畫的細胞病理影像相關研究駐足較久，研究題目："Blind Stain Decomposition for Histo-pathology images using circular nature of Chroma components"，針對H&E染色影像應用染色正規化，解決細胞影像分割問題，相關研究成果發表在IEEE相關期刊，此外也有與Deep Learning研究相關議題，該系研究成果與能量領我印象深刻與佩服。

肆、心得與建議

目前台灣參與 ISAAC 的學者專家多為特殊教育領域，但國外有許多語言治療領域的學者專家參與，建議未來可以多邀請台灣的語言治療領域專家也能一起參與，以提升台灣 AAC 在醫學臨床和研究上的能見度。針對此現象本人有些發展上的建議：

1.整合資訊與輔具科技，發展本土化的研究

美國的RERC(復健部門)長期以來對AAC研究不遺餘力，年齡分布從學齡前至老年人，都有不同的研究計劃與跨不同領域整合，這一次我們也特別去聆聽RERC如何在此方面，尤其在醫療輔具的研究經驗與發展。反觀國內，目前在基礎軟硬體支援不錯，但是缺乏更多的實驗參與場域與對象，例如；本次論文參與老師分部僅台北、台東以及嘉義等地，如果能夠長期

有合作的場域和研究對象，就能夠有較深入的研究成果，也可以進一步檢驗本土化的評估、合作、成效檢核等完整的研究成果。因此，回國後，本人覺得跨領域合作非常重要，應該要尋求深耕長期合作的夥伴，讓AAC的技術與發展也能有本土化的成果。

2.整合產業界加速開發符合AAC需求與規範的產品

從馥華所使用輪椅及AAC產品經驗的了解，國內在產品開發與設計並未能考慮到使用者使用便利，間接影響到使用者意願，這對於資訊與機械領域已有相當水準的台灣，值得省思，究其原因是國內在此AAC市場過小，但如果能結合學者與業界加速合作，針對使用者需求、設計、設機製造出符合產品，將低產品成本，擴大行銷規模，加強產品在使用者的測試，再行銷至國際，這或許是一解決之道，建議未來科技部可以推動這方分面技術的深耕與產官學合作，尤其整合醫工領域、物理治療復健、特教領域從使用者端與技術端，配合整府制定相關輔導措施，以解決解決這些殘障者問題。尤其在 ISAAC會場或匹茲堡營隊中發現有南韓三星專門針對AAC使用者設計發展出特殊用途AAC產品，使用者使用評價不錯，這部分值得政府重視與注意，國內資訊廠商有不錯技術，建議政府制定政策，鼓勵輔導廠商製造出符合國內使用者習慣之AAC產品，降低弱勢使用者使用障礙。

3.強化AAC培育與訓練活動

有些AAC使用者有重度殘障,台灣有特教學校介入參與,但相關法規仍跟不上時代變化,Katya教授針對AAC參與訓練營隊,在台灣大都由政府提供資源,但他們卻由企業贊助,事實上台灣有愛心企業很多,這部分有賴於政府鼓勵或學校多參與協助,多舉辦些類似活動,鼓勵這些殘障者本身以及家人參與經驗分享,發掘問題,讓更多在社會邊緣角落者能得更多支援。

五、附錄

一、攜回資料名稱及內容

所攜回資料包括：會議手冊、國外溝通輔具與裝置設備的文宣品。圖一及圖二分別為參加

ISAAC 研討會場照片。圖三為卡內基美隆資工系系館拍攝照片，圖四為在多倫多大學資工系針對所感興趣領域論文所拍攝照片。

圖一

圖二

圖三

圖四

二、論文內容及接受函

詳如附錄一及附錄二請參閱。

Tittle

Comparing AAC devices from low to high technology for children with developmental disabilities

1. Aim

Research on the use of high-tech devices, like SGDs, for individuals with developmental disabilities has expanded rapidly and indicated that they may benefit from augmentative and alternative communication (AAC) intervention (Schlosser, Sigafoos & Koul, 2009; van der Meer, et al., 2012a). However, the funding of a systematic reviewed study indicates that there may not be one single mode of AAC that is the best for individuals with developmental disabilities (DD) (van der Meer, Sigafoos, O'Reilly & Lancioni, 2011). In the meanwhile the other one reviewed study indicated that high-tech devices could be effectively implemented as AAC systems (Still, Rehfeldt, Whelan, May & Dymond, 2014). The first purpose of this study was to explore if students with DD could learn to request preferred items using one of three different AAC systems including two high-tech devices (iPad and V-Pen) and one low-tech device (Picture Exchange; PE) and which AAC device is more effective for students with DD. The final purpose was to determine after learning if students with DD would have any preference for using AAC device over the others.

2. METHOD

2.1 Participant

Gary, Ken, and Sam, recruited from an elementary school in the southern of Taiwan, met the following criterion in this study: (a) diagnosis of ASD or DD, (b) age from 7 to 11 years old, (c) very limited or no communication skill as determined by less than age equivalency of 3 years in the Expressive Communication Sub-Domain of the Vineland Adaptive Behavior Scales (VABS; Sparrow, Balla & Cicchetti, 2004), (d) no auditory, visual, or physical impairment that would be reluctant to use AAC, and (e) For operating the AAC device sufficiently, the motor skill of participant was determined by an age level of 2.0 years or more on the Fine Motor Skills Domain of VABS. The consent was acquired for all participants from their parents.

2.2 AAC devices

iPad : Participants were taught to request preferred snacks by using an Apple iPad with VoiceSymbol APP. The iPad with Voice-Symbol was configured to design four page and each page including four pictures, representing three preferred snacks and "*I want to eat* (我要吃)" placed randomly. If the participant would like to request snacks, he had to touch the picture "*I want to eat* " first and then touch another

picture representing preferred snacks (i.e., "*chocolate ball*" or "*QQ gummy*").

V-Pen: V-Pen is a patented speech-generating device to activate the corresponding voice by touching the picture on the printed papers. The trainer had taught participants to request desired snacks by using V-Pen that touched the picture of the communication page activated corresponding voice. *Picture Exchange*: The participants also taught to request by using PE. The size and design of those pictures, taken by the trainer, were as the same as iPad and affixed with Velcro.

2.3 Experimental design

A multiple-probe across participants design was adapted in this study including baseline, Intervention, Modified-Intervention, Follow-Up, and Preference Assessment. To compare students' performance with two SGDs and PE, The study also embedded an alternative design within each phase of the Intervention and Modified-Intervention. Two to four sessions of each device were conducted 5 days per week. Each session lasted approximately 10 minutes and consisted of 10 discrete trials. Each device and all communication pages were counterbalanced across sessions to decrease order effect.

3. RESULT

In baseline, none of participants used three AAC modes (iPad, V-Pen, and PE) for correct requests, but all of them ever used fingers. Only Gary reached criterion of requests for snacks using three AAC modes. Sam reached the criterion only with iPad and Ken reached closely only with iPad, so a modified-intervention was conducted for both of them who finally reached the criterion. After one week, Gray continued to have good performance by using three AAC modes, but Ken and Sam had better performance by using iPad than the other two modes.

4. CONCLUSION

This study employed a multiple probe design across three participants to explore the correct response of three AAC modes. The current study provides more evidence to support the values of high-tech device, such as speech-generated devices, for children with DD to implement communication intervention. However, we find two of three participants could have better correct response with iPad than V-Pen and PE after intervention. Some issues about fine motor skills and preference or such assessment were discussed. In the future, more participants with different abilities are needed to understand the advantage of different AAC modes for individuals.

Declaration of interests

This study has no financial or other interest in objects or entities mentioned in this paper.

Reference

Mirenda, P., (2009). Promising intervention in AAC for individual with autism spectrum disorders. *Perspectives on Augmentative and Alternative Communication, 18*, 112-113.

Schlosser, R. W., Sigafoos, J., & Koul, R. K. (2009). *Speech output and speech-generating devices in autism spectrum disorders*. In P. Mirenda, & T. Iacono (Eds), Autism spectrum disorders and AAC (pp. 141-169). Baltimore: Paul H. Brookes.

Sparrow, S., Balla, D., & Cicchetti, D., (2004). *Vineland Adaptive Behavior Scales (Traditional Chinese ed.)*. Taiwan, Taipei: Psychological Publishing Co., Lt.

Still, K., Rehfeldt, R.A., Whelan, R., May, R. J., & Dymond, S. (2014). Facilitating requesting skills using high-tech augmentative and alternative communication devices with individuals with Autism Spectrum Disorders: A systematic review. *Research in Autism Spectrum Disorders. 8*(9), 1184-1199.

van der Meer, L., Sigafoos, J., O'Reilly, M., & Lancioni, G. (2011). Assessing preferences for AAC options in communication interventions for individuals with developmental disabilities: A review of the literature. *Research in Developmental Disabilities, 32*, 1422-1431.

van der Meer, L., Kagohara, D., Achmadi, D., O'Reilly, M. F., Lancioni, G. E., & Sutherland, D. et. al. (2012a). Speech-generating devices versus manual signing for children with developmental disabilities. *Research in Developmental Disabilities, 33*, 1658-1669.

van der Meer, L., Sutherland, D., O'Reilly, M., Lancioni, G., & Sigafoos, J. (2012b). A further comparison of manual signing, picture exchange, and speech-generating devices as communication modes for children with autism spectrum disorders. Research in Autism Spectrum Disorders, 6, 1247-1257.

附件二 論文接受函

Program Planner/Instructional Personnel Relationship Disclosure Form

In compliance with American Speech-Language Hearing Association's Continuing Education Board's Requirements, ISAAC Conference 2016 requires program planners and instructional personnel to disclose information regarding any relevant financial and non-financial relationships related to course content prior to and during course planning.

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Program Planner/Instructional Personnel's Name: | Chun-Han Chiang , Ya-Ping Wu, Chien-Chuan Ko

Course Title: | Comparing AAC devices from low to high technology for children with developmental disabilities

HIPAA REQUIREMENTS

To comply with the Health Insurance Portability and Accountability Act (HIPAA), we ask that all program planners and instructional personnel insure the privacy of their patients/clients by refraining from using names, photographs, or other patient/client identifiers in course materials without the patient's/client's knowledge and written authorization.

I am in compliance with these policies: Ya-Ping Wu (INITIAL HERE)

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Signature   Date | 12-10 月-2016

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Financial Relationship Disclosure Form

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Non-Financial Relationship Disclosure Form

Copy this page as many times as you need to complete information regarding **each** of your relevant non-financial relationships. Program Planners/instructional personnel have a relevant non-financial relationship if that relationship could influence the information presented in the course and could be perceived as a conflict of interest by learners.

Planner/Presenter name:

Non-financial relationship with (name of Company/Organization/Institution):

Date form completed:

What is the nature of the non-financial relationship? (Check and complete all that apply)

☐ Personal, please describe:

☐ Professional, please describe:

☐ Political, please describe:

☐ Institutional, please describe:

☐ Religious, please describe:

☐ Personal interest, please describe:

☐ Bias, please describe:

☐ Other relationship, please describe:

For what role?

☐ Volunteer employment

☐ Volunteer teaching and speaking

☐ Board membership

☐ Volunteer consulting

☐ Volunteer membership on advisory committee or review panels

☐ Other volunteer activities (please describe):