

行動擴增實境融入識字教學對聽障學生識字成效之研究
The Effects of Integrating Mobile Augmented Reality into Word Recognition
Instruction on Word Recognition for Students with Hearing Impairment

吳俐蓓 台北市立啟聰學校

摘要

本研究旨在探討使用行動擴增實境融入識字教學對提升聽障學生識字能力之成效，以下就研究背景、目的、方法、結果及建議分別敘述。

一、 研究背景

許多國內外研究皆顯示聽障生的閱讀能力遠低同年齡的一般生（林寶貴、李真賢，1987；林寶貴、黃玉枝，1997；Luckner&Handley, 2008；Mitchell, 2012）。本研究的對象是研究者所任教之啟聰學校的重度聽障學生，在進入句子甚至篇章理解之前，在基礎的詞彙理解上就有了困難，在「識字」部分能力不足。

研究者為了提升聽障學生識字能力，從加強其對字彙的理解著手，故運用免費的手機 APP 軟體 Aurasma(現更名為 HP Reveal)來設計一套擴增實境的多媒體識字教材，此教材可以突破手語傳播的時間與空間限制，將虛擬圖像與真實世界兩者結合；也就是在真實環境中的文字上，增添虛擬的圖片及手語影像資訊，達到能同時呈現文字、圖片、手語等多種表徵的效果，希望能透過擴增實境技術融入教學，以增進學生理解語文的能力。

二、 研究目的

本研究旨在探討行動擴增實境融入識字教學，對二名就讀於啟聰學校之國小低年級聽障學生的識字學習的立即與維持成效。

三、 研究方法

本研究採單一受試實驗設計之跨受試多試探設計（multiple probe technique across subjects），二名受試者分別以行動擴增實境教學方案進行介入與評量。本研

究自變項為行動擴增實境融入識字教學；依變項是指研究參與者在研究者「自編國語識字評量」的立即成效與維持成效所得結果，教學評量以「指認」與「比手語」兩種方式進行，評量的指標為研究者自編國語識字評量的二項分測驗之正確率的百分比，二項分測驗分別為「看字詞指圖」與「看字詞比手語」。本研究之控制變項有教學者與評量者、教學地點、教學時間、教學材料、教學流程、評分者間一致性等項目。實驗程序分為基線期、介入期與維持期。資料分析方式為目視分析及C統計；另輔以質性資料之分析，包含評量觀察資料分析及社會效度調查，以補充量化資料分析之不足。

四、 研究結果及建議

依據目視分析及C統計，行動擴增實境融入識字教學對於二名研究對象具有立即與維持學習成效。經訪談兩名研究對象之家長，對行動擴增實境融入識字教學持肯定態度。

依據本研究結果，建議未來可繼續編輯更多行動擴增實境教材，將每一課課文內的重點詞彙編輯為行動擴增實境教材，融入課堂的識字教學，也方便學生在家複習使用，使識字教學的成效更好。學生在識字能力上若能持續進步，對於句子的理解就能更進一步，可再發展進階的句子理解教材。

關鍵詞：行動擴增實境、聽障學生、識字學習成效

Abstract

The purpose of this study was to investigate the immediate effect and the maintained effect of word recognition on integrating mobile augmented reality into word recognition instruction for students with hearing impairment in the elementary school. A multiple probe design across subjects of single-subject experimental design was used to evaluate the effects. The research subjects were two students in 1st and 2nd grade with severe hearing impairment in the school for the hearing impaired. Mobile augmented reality, including smart phone and the APP "Aurasma", was applied to display the teaching materials of word recognition. Each student was taught for over two weeks with five teaching periods (each for 30 minutes) each week. Learning effectiveness tests of word recognition designed by the researcher were administered during the baseline phase, the intervention phase, and the maintenance phase respectively. Then the data of the two scores from "read to point out the picture" and "read to express in sign language" was analyzed by using visual analysis and the C statistic. Then the subjects' parents were interviewed to explore their attitudes toward the intervention.

The results of the study were summarized as follows:

1. Integrating mobile augmented reality into word recognition instruction had significantly immediate effects on improving the students with hearing impairment word recognition performance.
2. The maintenance effects of integrating mobile augmented reality into word recognition instruction were also found on the students with hearing impairment word recognition performance.
3. The students' parents were accepted and satisfied with the effects of integrating mobile augmented reality into word recognition instruction.

keywords : mobile augmented reality, students with hearing impairment, effects of word recognition.