

計畫編號：09

計畫名稱：工程測量儀器輔助學習之建置與數位內容加值應用計畫

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計畫中文摘要：

本計畫為促進產學合作的先導型研究計畫，選擇工程測量儀器的訓練為發展題材，因兼具土木工程教育發展的基礎性與重要性，應具良好之市場性。工程測量是落實國家證照制度中技能檢定的一環，也是大專院校與職業學校土木建築相關科系必修的基礎課程。然而，工程測量在學校教育所面臨的問題為儀器設備不足、設備昂貴、維護不易、易受天候因素影響，使教學成效不佳影響學生學習。本研究團隊針對工程測量儀器訓練的議題已發展一套名為 SimuSurvey 的專業課程創新教學工具雛型。SimuSurvey 目前已在國內職業學校與技術學院的 323 位同學進行教學實證研究，獲得良好的評價，有 91% 的同學在問卷調查中同意 SimuSurvey 對其學習動機有所幫助。透過專家訪談亦發現導入 SimuSurvey 的教學比傳統的訓練方式更能引起學習興趣與動機。同時，有關 SimuSurvey 的初步研究成果已有 4 篇論文發表於國內外工程研討會上，另有 2 篇已投稿 SCI 期刊。因此，本計畫擬以一年的期間，持續研發 SimuSurvey 並將之逐步商品化。目前已有業界廠商表達合作意願，若能結合合作廠商對市場的敏銳度與創意來加以包裝行銷，不僅有助於本計畫成果推廣與永續經營，相信更能夠為我國數位創意產業在工程教育領域的應用立下新的里程碑。

計畫英文摘要：

The proposed project is to develop a computer-based training aid in a virtual environment to support the surveying education. Surveying education is a large market. Only in Taiwan, more than 100 colleges and vocational high schools offer surveying courses in department of civil engineering and architecture engineering. Students who learn well in the surveying course can attend surveyor certificate examination to take the license which provides them privileges in the job market. However, the traditional education method (relying on physical instruments) causes many problems, such as high maintaining cost for the instruments and the constrain of the teaching time and weather. Computer-base training aid is a low-cost solution and at the same time avoid many problems in physical

instruments. The investigators plan to extend SimuSurvey, a prototype of virtual instrument for surveying education to become a commercial-ready package. SimuSurvey was developed from 2006 by our research team. It has been tested in 323 students in two colleges and two vocational high schools. From the post-test questionnaire, we found 91% of the students agree that SimuSurvey benefits their learning motivation. We also interviewed experienced instructors of surveying courses. Most instructors believe that the use of SimuSurvey can help them explain the abstract concepts about the surveying principles more easily.

Previous research results related SimuSurvey has been published as four conference papers and also submitted to two SCI journals. A surveying equipment retailer expresses his interest in supporting and commercializing SimSurvey. By integrating national and international marketing experiences of the retailer, we plan to extendedly develop SimSurvey to fulfill the needs of surveying education in Taiwan in one year. Since the surveying education and instruments are basically universal, SimSurvey can be extended as a multi-language versions and target the global market.