



TLEF Project – Final Report

Report Completion Date: (2016/12/20)

1. PROJECT OVERVIEW

1.1. General Information

Project Title:	mLearning for Practice Phase 2: using augmented reality to enhance lab and clinical teaching in multidisciplinary health professional education and practice		
Principal Investigator:	Bernie Garrett		
Report Submitted By:	Bernie Garrett		
Project Initiation Date:	March 2014	Project Completion Date:	December 2016
Project Type:	<input type="checkbox"/> Large Transformation <input checked="" type="checkbox"/> Small Innovation <input type="checkbox"/> Flexible Learning <input type="checkbox"/> Other: [please specify]		

1.2. Project Focus Areas – Please select all the areas that describe your project.

- Resource development (e.g. learning materials, media)
- Infrastructure development (e.g. management tools, repositories, learning spaces)
- Pedagogies for student learning and/or engagement (e.g. active learning)
- Innovative assessments (e.g. two-stage exams, student peer-assessment)
- Teaching roles and training (e.g. teaching practice development, TA roles)
- Curriculum (e.g. program development/implementation, learning communities)
- Student experience outside the classroom (e.g. wellbeing, social inclusion)
- Experiential and work-integrated learning (e.g. co-op, community service learning)
- Indigenous-focused curricula and ways of knowing
- Diversity and inclusion in teaching and learning contexts
- Open educational resources
- Other: [please specify]



1.3. Project Summary

We developed and rolled out a number of Augmented Reality (AR) resources in Nursing, Physiotherapy, Occupational Therapy, and for interprofessional student engagement activities at the start of term. Ethical approval from BREB for evaluation was acquired and we are proceeded to evaluate the AR tools and resources with surveys and focus group interviews. An investigation was made of the value of using AR as a tool to support the teaching of clinical practice skills. A series of mobile AR resources were created for use on tablet computers and smartphones to supplement clinical skills teaching in the laboratory (using image recognition), and clinical practice (using geolocation). Undergraduate students in nursing, physiotherapy, and occupational therapy tested these resources in lab sessions, a location-based campus exercise, and during clinical practice experiences. Following this, a post-exposure web survey and focus group interviews were undertaken to appraise the value of these tools. Results demonstrated that the potential for students to use technologies they already possess in AR based m-learning may offer significant advantages, and offer a practical technique to engage learners. However, these technologies remain in an early stage of development and more robust implementations and sustainable platforms are required for mainstream educational use.

1.4. Team Members – Please fill in the following table and include **students**, undergraduate and/or graduate, who participated in your project.

Name	Title/Affiliation	Responsibilities/Roles
Bernie Garrett	Assoc. Professor	Primary Investigator
Joseph Anthony	Clinical Professor	Co-Investigator/ Project Manager
Cathryn Jackson	Senior Instructor	Co-Investigator
Mehrdad Ghomi	Graduate Student	Research Assistant

1.5. Courses Reached – Please fill in the following table with **past**, **current**, and **future** courses and sections (e.g. HIST 101, 002, 2017/2018, Sep) that have been/will be reached by your project, including courses not included in your original proposal (you may adapt this section to the context of your project as necessary).

Course	Academic Year	Term (Summer/Fall/Winter)
NURS 302	2015	F
NURS 303	2015	F
NURS 333	2015	W
PHTH 516	2015	W
PHTH 545	2015	W
RSOT 515	2015	W



2. OUTPUTS AND/OR PRODUCTS

2.1. Please list project outputs and/or products (e.g. resources, infrastructure, new courses/programs). Indicate the current location of such products and provide a URL if applicable.

Product(s)/Achievement(s):	Location:
The software application and server login was handed over to UBC Library (Wendy Trask) for consideration for use in future UBC AR projects and the project source code posted on GitHub	Wendy Trass UBC Library: wendy.traas@ubc.ca GitHub : https://repo.code.ubc.ca/ubc-ar/UBC_AR_app.git
An academic journal paper	https://scholarworks.umb.edu/ciee/vol4/iss1/10/

2.2. Item(s) Not Met – Please list intended project outputs and/or products that were not attained and the reason(s) for this.

Item(s) Not Met:	Reason:
Complete Working Application Development	Due to software provider issues (Metaio was purchased by Apple and ceased trading during the project in 2015) the final application was not fully developed. A beta version was supplied to UBC library for potential use in their ongoing project, but we understand this was not further developed.

3. PROJECT IMPACT

3.1. Project Impact Areas – Please select all the areas where your project made an impact.

- Student learning and knowledge
- Student engagement and attitudes
- Instructional team teaching practice and satisfaction
- Student wellbeing, social inclusion
- Awareness and capacity around strategic areas (indigenous, equity and diversity)
- Unit operations and processes
- Other: [please specify]

3.2. What were you hoping to change or where were you hoping to see an impact with this project? – Please describe the intended benefits of the project for students, TAs, instructors and/or community members.

The aim was to further develop proof of concept of lab and geolocation based AR in a pilot study, and later a set of software application to allow UBC faculty to use AR in their teaching.



3.3. Were these changes/impacts achieved? How do you know they occurred? – *What evaluation strategies were used? How was data collected and analyzed? You are encouraged to include copies of data collection tools (e.g. surveys and interview protocols) as well as graphical representations of data and/or scenarios or quotes to represent and illustrate key themes.*

In part the pilot study was completed (See paper) and a client/server software application was developed, but not adopted further by ubc.

3.4. Dissemination – *Please provide a list of **past** and **upcoming** scholarly activities (e.g. publications, presentations, invited talks, etc.) in which you or anyone from your team have shared information regarding this project.*

Disused at various UBC CTLT & SoTL presentations and an academic paper was published in 2017: <https://scholarworks.umb.edu/ciee/vol4/iss1/10/>

4. TEACHING PRACTICES – *Please indicate if **your** teaching practices or those of **others** have changed as a result of your project. If so, in what ways? Do you see these changes as sustainable over time? Why or why not?*

Project members were already using AR in their teaching. It is unknown if other teachers continued to use these tools, although they now had developed a sense of their value to contribute to their teaching.

5. PROJECT SUSTAINMENT – *Please describe the sustainment strategy for the project components. How will this be sustained and potentially expanded (e.g. over the next five years). What challenges do you foresee for achieving the expected long-term impacts listed above?*

Project was not sustained as UBC adopted a different application.