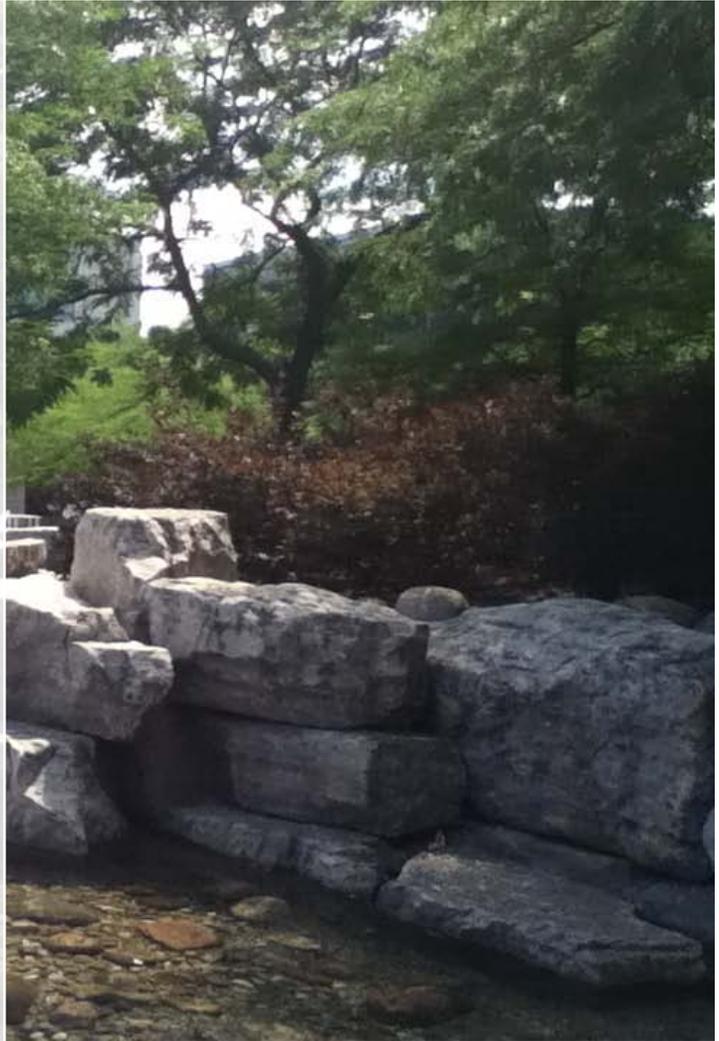


# THEN HiER Visiting Doctoral Student Program Report

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The aim of this report is to provide an overview of the objectives, activities, and outcomes of my visit hosted by Dr. Kevin Kee at the Center for Digital Humanities at Brock University and the Niagara Interactive Media Generator. The visit was funded by the THEN HiER Visiting Doctoral Student Program.

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## Visiting Doctoral Student Program

The aim of this report is to provide an overview of the objectives, activities, and outcomes for my visit to the Center for Digital Humanities at Brock University and the Niagara Interactive Media Generator, hosted by Dr. Kevin Kee. The visit was funded by the Visiting Doctoral Student Program of The History Education Network/Histoire et Éducation en Réseau (THEN/HiER).

The objectives of the visit were three-fold, namely (1) exploring new avenues for implementation of the MetaHistoReasoning tool, a computer-based learning environment designed to teach students how to reason about the causes of historical events, (2) applying the methodological and analytical techniques used in designing and evaluating computer-based applications to investigating the effectiveness of mobile-based augmented reality applications, and (3) to extend collaborative research opportunities between the THEN/HiER community and the Learning Environments Across Disciplines (LEADS), a Research Partnership funded by the Social Sciences and Humanities Research Council of Canada. In the following sections of this report, I will outline the activities that were conducted to meet each objective as well as elaborate on their outcomes.

### Towards the Development of a Mobile-Based Application

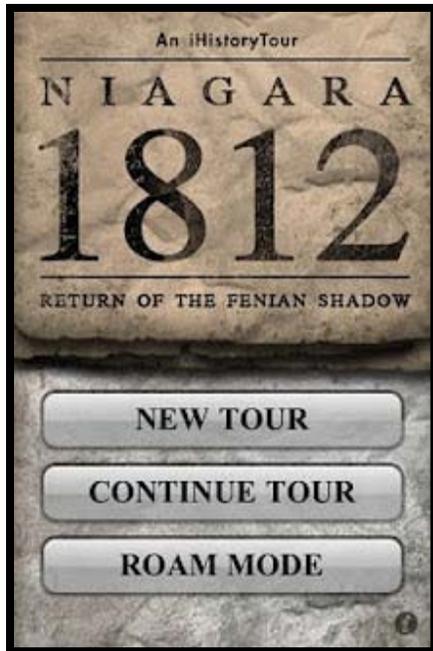
In order to develop a mobile-based version of the MetaHistoReasoning tool application, we visited the Niagara Interactive Media Generator (nGen) and met with Thomas Madej, CEO of Furi Enterprises. Furi Enterprises Inc. is a technology consulting and software development company that provides services in web, internet, and mobile technologies ([www.furi.ca/](http://www.furi.ca/)).



Furi enterprises developed the Locationator development platform workflow, a user-friendly platform for developing location-based augmented-reality applications. It allows app creators without technical knowledge of software development and programming experience to create apps that rely on geographical information systems. Using the design guidelines of the MetaHistoReasoning tool to storyboard a first prototype, I am hopeful to secure funds to advance the new version of the application to a mobile platform.

### Establishing Methodological and Analytical Guidelines for the Design and Evaluation of Mobile-Based Augmented Reality Applications

The visit to the Center for Digital Humanities at Brock University enabled me to work with augmented reality applications called Niagara 1812: Return of the Fenian Shadow (set in the town of Niagara-on-the-Lake) and Queenston 1812: The Bomber's Plot (set in the town of Queenston). The mobile applications were designed and developed by Dr. Kevin Kee and his team in collaboration with nGen-Niagara Interactive Media Generator, and funded by the Ontario Media Development Corporation and the Ontario Trillium Foundation. The applications were designed as a historical and interactive tour in order to provide interesting facts and stories in relation to pivotal moments in shaping our nations' history.



In order to establish methodological and analytical techniques to evaluate these mobile applications in terms of enhancing learning and engagement, we wrote an application to secure funds from the Learning Environments Across Disciplines (LEADS), a Research Partnership funded for 7 years by the Social Sciences and Humanities Research Council of Canada (<http://leads.atlaslab.ca/>). The LEADS partnership features 17 national and international researchers and 12 partner organizations in the areas of education, psychology, computer science, medicine, engineering, and history. The aim of this formal partnership is to advance research in the area of learning, engagement, and assessment across disciplines in the context of digital technologies.

### **Extending Collaborative Research Opportunities**

The LEADS research proposal focuses on the development, evaluation, and improvement of mobile augmented reality applications. The purpose of this research proposal is two-fold. First, we aim to evaluate mobile augmented reality applications

in terms of fostering learning and engagement in both their users and creators. Second, we aim to further promote learning and engagement by embedding dynamic assessment mechanisms within the applications as a means to adaptively modify the content that is provided to the users and improve their experience.

In order to define the core competencies that will guide our evaluation of the mobile applications, we use the Benchmarks of Historical Thinking as outlined by Peter Seixas (2004, 2011; Peck & Seixas, 2008) and the Control-Value Theory of Emotions as described by Reinhard Pekrun (2006). These theoretical frameworks will guide our conceptualization of learning and engagement in the creators and users of mobile augmented reality applications as well as how we plan to assess each theoretical construct and sub-construct as part of our evaluation of these applications. In doing so, the proposed program of research stands to establish formal collaboration agreements between members of the LEADS and THEN/HiER network.