PTAS Project Report (for REGULAR PROJECT GRANTS)

Project Title: Making Students Curious: using an app-based walking tour as a pedagogical tool

Project type : **B Innovation Project** (introduction and evaluation of an educational innovation, usually taking a practical approach)

Principal Investigator : Niki Vermeulen
Schools/department : SSPS/STIS

Team members (including Schools and Departments) : Bill Jenkins (STIS, has now started a new position at the history department of the University of St Andrews); Steve Sturdy (STIS); Anna Groundwater (History); Nicola Osborne (EDINA)

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Project teams must submit a report within 4 months of the conclusion of their project.
Copies of dissemination material (eg journals/newsletter articles, conference papers, posters should be listed and attached (separate to the word count). The brief report will be published on the IAD web pages.

Report

Curious Edinburgh (www.curiousedinburgh.org) is a project to develop app-based walking tours of Edinburgh that explore the city's rich heritage in the history of science, technology and medicine. So far we have created general science, geology and physics tours, and we are working on tours on the history of medicine and brewing in the city. We have worked with partners both from within the University of Edinburgh and from a wide range of cultural organisations (e.g. National Museum of Scotland, Surgeons Hall Museum, Royal Society Edinburgh) to develop engaging content that brings the scientific heritage of the city to life.

After the initial development of the Curious Edinburgh website and pilot app, we have used the PTAS grant to 1). develop the technology behind the app further; 2). integrate the app in teaching; 3). add new content; 4). develop dissemination strategies to let students, staff, citizens and tourists know about the app.

1. Technology development

At the start of the PTAS grant we only had an iOS version of the app, and so most importantly we used the funding to also make an Android version, so we could use it in teaching. While most students will have iOS of Android, the material on the app is also visible on the website, guaranteeing accessibility to the app for all. Nicola Osborne of Edina led this technical development, and has also taken care of the various updates as well as media communications (e.g. developing short movies on how to use the app and pr, e.g. via twitter). In addition, we have increased the interactivity of the app, making sure it is possible to place a particular stop on facebook or twitter, which allows people to add their own thoughts and experiences and/or let others know about the stop and our app. At the moment, our most fundamental issue is the maintenance of the app, which needs to be secured before we can develop the design and capabilities further.

2. Integrating Curious Edinburgh in teaching

We have piloted the use of the app in the UG history of science survey course (STIS, 240 students in 2017 and 340 students in 2018), and to add a specific Edinburgh component to this course. Through the development of a four-phase digital learning and assessment process, we optimised the app as a pedagogical tool, contributing to the integration of digital technology in education and enhancing the unique Edinburgh student experience. First, we developed a lecture which introduced the important role of Edinburgh in the history of science, familiarising the students with the app and its connection to subject material. Then we included the app in the short assignment, giving the option to write a 1000 word essay on either an object in the National Museum of Scotland or a place in Edinburgh connected to a figure or event in the history of science from curiousedinburgh.org. The majority of students chose to use Curious Edinburgh as the starting point for their essays. The Curious Edinburgh website and app at that time included tours of the general history of science, technology and medicine, the history of geology and the history of physics. Students were encouraged to explore all three available tours before deciding on a topic for their essay, and places from all three were well represented in the submitted work.

The high quality of much of the work submitted clearly showed that many students had made good use of this opportunity to deepen their knowledge of the rich scientific heritage of Edinburgh and the ways in which important scientific personalities, discoveries and events mapped onto the urban geography of the city. Students were strongly encouraged to use the maps in the website and app to visit a selection of places to help them make their choice, as well as to think about relationships between historical developments and the changing physical and human geography of the city.

This exercise was, in effect, a mini research project, giving students the opportunity to conduct independent research into their chosen place, starting from the information given in the Curious Edinburgh website and app. Links to further information from trusted sources are also provided for most of the sites that are also listed in the website and app, providing students with a firm starting point for their research. The question inspired some excellent answers, and ten of the students who chose to write about a place from Curious Edinburgh achieved A grades. The Oyster Club, a meeting place for the scientists and philosophers of the Scottish Enlightenment, and the grave of Colin Maclaurin, the great Scottish Newtonian mathematician, proved particularly popular and successful choices. Three examples will give a flavour of the high standard of work submitted by many of the students for this assignment. William Bonnett a second year French and History student, wrote an excellent study of the influence of Isaac Newton in Scotland based on the graves

of two of his most important Scottish disciples, Colin Maclaurin and Archibald Pitcairne, both to be found in Greyfriars Kirkyard. Olivia Wollaston, a first year biomedical science student, also wrote a fine essay exploring the role of the Surgeons' Hall Riot of 1870 in the struggle for women's access to medical education at the University of Edinburgh. Finally, Stephan Dalugge, a first year chemistry student, wrote an exceptionally good exploration of Max Born's role in the development of quantum mechanics, using Born's former home in Edinburgh as a starting point.

No major problems were encountered in the use of Curious Edinburgh in the teaching of History of Science in 2017 and most students seem to have found the exercise rewarding, stimulating and challenging without being excessively demanding or difficult. As such we repeated the use of the app in 2018 in the same way. In addition, the app has figured in the course on Edinburgh (school of history), in the course on Social Dimension of Systems and Synthetic Biology (school of biology) and in the introduction of first year's students in the school of medicine. Moreover, Curious Edinburg has been evaluated as part of a course assessment for the MSc Education and Digital Cultures by Daniel Jackson and Alex Dysart[1], while being incorporated in the development of a MOOC on Edinburgh, led by Sian Bayne and Sarah Cunningham-Burley. We aim to continue the integration of the app into teaching, e.g. in history of medicine (STIS) and other relevant courses, and we see opportunities in the context of the Edinburgh Future Institute which we are currently exploring.

3. Developing new content

These tours are currently available on this website and on our app, partly developed in collaboration with other academics and societal organisations and with diverse additional sources of funding:
General Science Tour
History of Geology
History of Physics
History of Medicine
History of Genetics and Biotechnology (in collaboration with Clare Button)
Scottish Enlightenment (in collaboration with Alasdair McLean)
Jewish History (in collaboration with the Research Network in Jewish Studies)
History of Brewing (in collaboration with John Martin of the Scottish Brewing Archive Association)
India and Edinburgh: the Old Town & the New Town (in collaboration with the India Institute).

We have now made a division between academic and community tours, and are at the moment uploading the community tour of granton:hub, while working in collaboration with the Edinburgh Voluntary Organisation (EVOC) on a tour to highlight its 150 years history. In terms of new academic tours we are expecting topics of public health, philosophy and astronomy.

4. Developing communication/dissemination strategies

Next to our twitter and facebook account we have been communicating about our tours through various platforms. We have participated in the preparation of the 2016 Edinburgh International Festival opening event Deep Time and partnered with the Edinburgh, International Science Festival in 2017 through the Moments in Time installation on the Mound and the EISF St Giles Lecture, while in 2018 we gave the Tam Dalyell Prize Lecture. In addition, we have presented our

[1] See: https://www.youtube.com/playlist?list=PL6s-MWcEVkm153fAsiLhVisaHpigrGdab and https://www.youtube.com/playlist?list=PLZ2s6bD9HNdQ7E4z3ypUy7DPHxlJoN5VO

work during the 2017 annual meeting of the British Society of the History of Science, and contributed to blogposts and various articles about the app in newspapers, magazines and online (see the folder attached for a sample). The award of the Tam Dalyell Prize in 2017 has generated a lot of press attention which also led to an increase in the use of the app beyond teaching and also to attract potential students during the Open Day.

We would like to finish this report with a big thank you to the IAD/PTAS team for awarding us with the financial means to develop Curious Edinburgh further, and we are looking forward to take this project into the future.

Financial statement

This project has utilised the funding awarded to it by the PTAS adjudication committee and the Principal Investigator or School Administrator appropriate can provide financial statements showing the funding usage as and when required by the UoE Development Trusts who may require it for auditing purposes.

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