

Developing a GIS Mobile Application for Heritage Education in Jamaica

Andrew P. Smith M.A.
University of Technology, Jamaica

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Presentation Outline

- Introduction
- Literature Review
- Research Methodology
- Results
- Conclusion



Figure 1. St. George's Anglican Church in Buff Bay traces its origin to 1802 and the existing structure was completed in 1859.

Introduction

Background

- Research shows that there are gaps in knowledge among Jamaicans about the presence and value of heritage sites. (Planning Institute of Jamaica, 2009, p. 41).
- A Geographic Information System (GIS) – based heritage education mobile application has been developed to address these knowledge gaps.
- Research shows the presence of a digital divide among rural Jamaican students regarding access to the internet at home and school via computers. However, the majority of these students own smart phones. (Smith, 2016)

Introduction

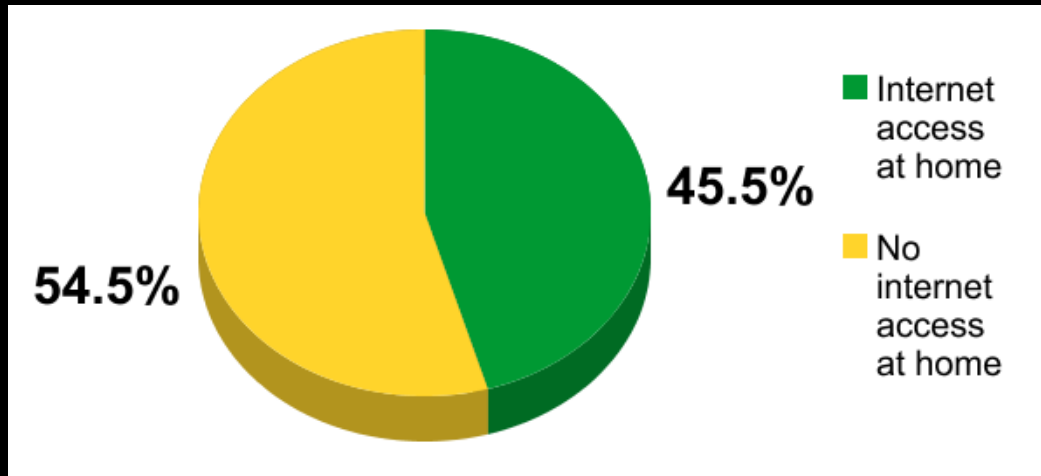


Figure 2. Percentage of Grade Nine students of Buff Bay High School that have internet access at home. (Smith, 2016)

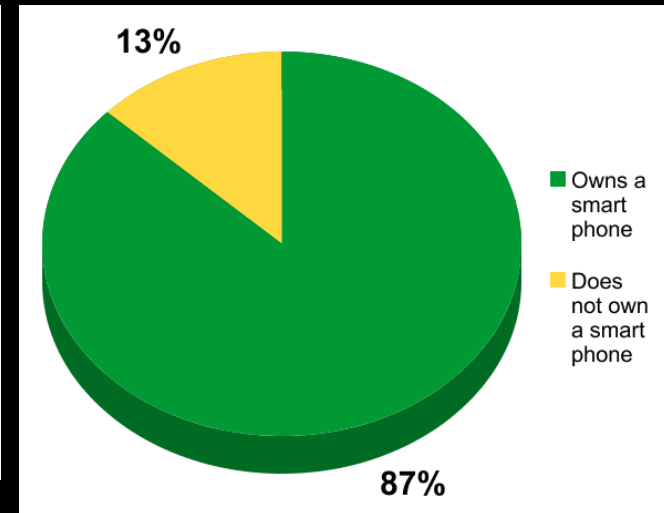


Figure 3. Percentage of Grade Nine students at Buff Bay High School that own smart phones (Smith, 2016)

Introduction

Definitions

- Digital Divide: “the gap between those who have access to technology and those who do not” (Huffman, 2018, p. 239).
- Geographic Information Systems (GIS): “suites of software implemented to manage and analyze geographic data, information correlated to a spatial reference” (Ruoss et al., 2013, p. 42).

Introduction

Research Problem

- To determine a suitable method to fill the gaps in knowledge about Jamaica's cultural heritage sites in the presence of a digital divide.

Research Objective

- To determine if these knowledge gaps can be filled through the use of a Geographic Information System (GIS)– based heritage education mobile application.

Introduction

Research Question

- Is there demand for a Geographic Information System (G.I.S) based heritage education mobile application in Jamaica?



Figure 4. Students of Buff Bay High School document activities at Charles Town, Portland.

Sites to See: Buff Bay Valley

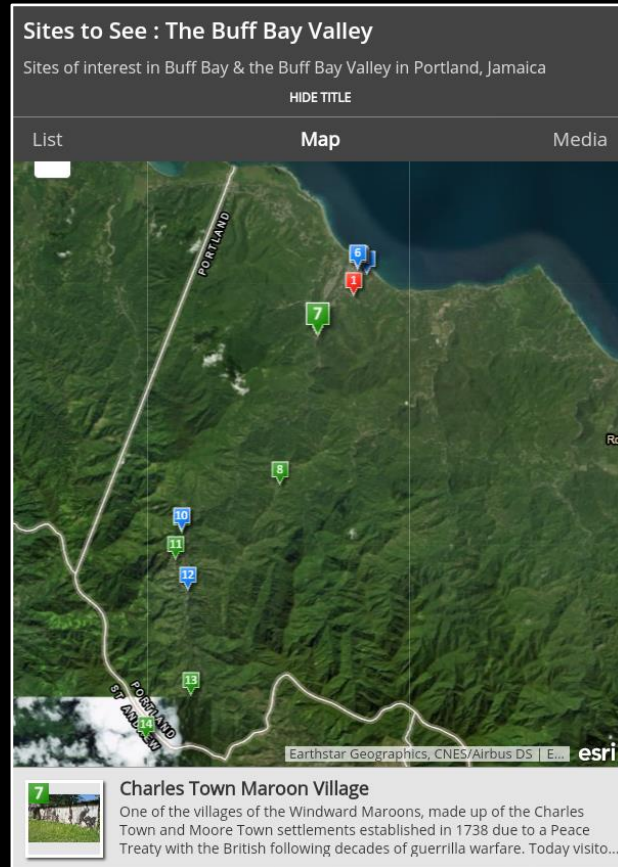


Figure 6. A wide view of the Map screen

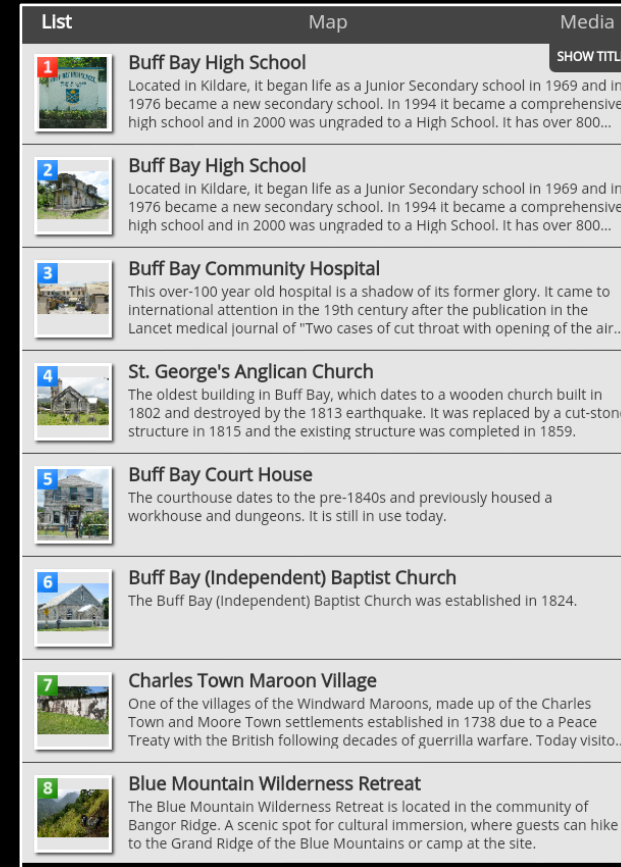


Figure 5. The List Screen

Sites to See: Buff Bay Valley

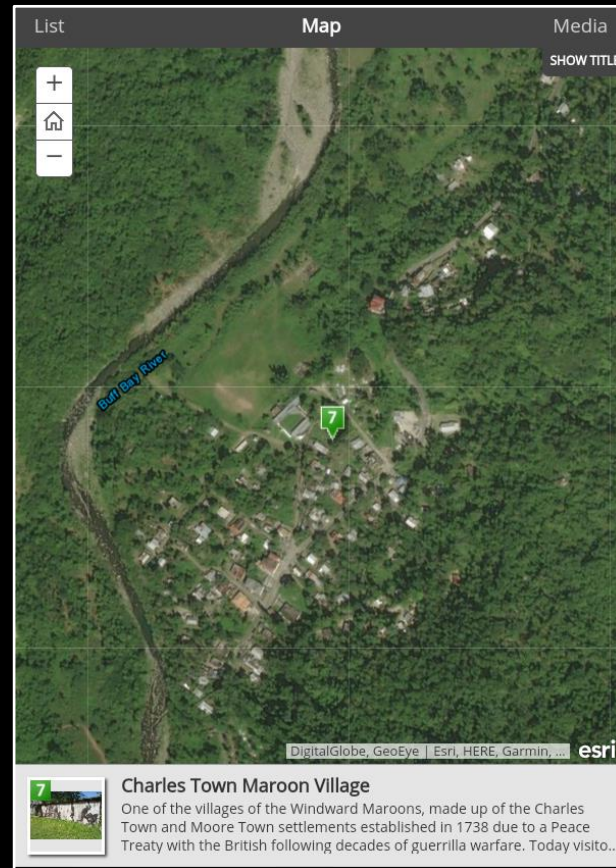


Figure 7. A zoomed-in view of the Map screen

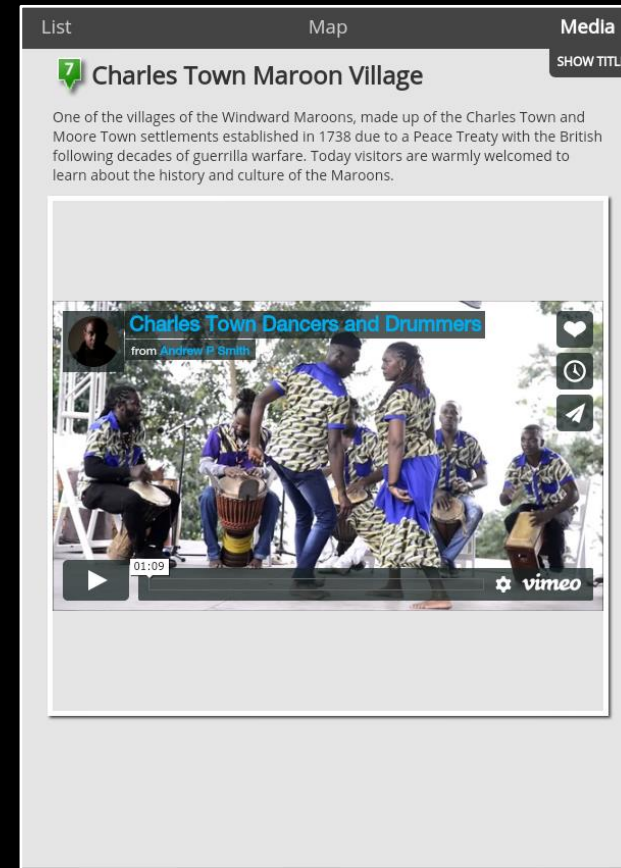


Figure 8. The Media screen

Literature Review

Knowledge Gaps

- In Jamaica there is “limited awareness of cultural and heritage assets on the part of local people” (Planning Institute of Jamaica, 2009, p. 41).
- In rural communities, “some aspects of our heritage are being lost due to lack of interest by youth and inadequate transmission of knowledge/skills by adults (and) community members may not know how to capitalize on cultural heritage” (Planning Institute of Jamaica, 2009, p. 41).

Literature Review

Use of Mobile Apps in Education

- Leinonen, T., Keune, A., Veermans, M., and Toikkanen, T. (2016) observed that “to respond to the changing ways of media use among young people, many progressive schools have aimed to integrate mobile devices to everyday study work” (p. 185).
- Looi et al, 2009 states that “mobile devices may provide students with choices and voices about where learning inside and outside classroom takes place” ” (as cited in Leinonen et al, 2016, p. 188).

Literature Review

Use of GIS in Heritage Sector

- de Almeida Silva, M., da Silva Neves, S. A., Neves, R. J., & Fonseca Arruda, R. (2016) used GIS and photography to create a photographic heritage trail in Cáceres/MT, Brazil because “an interpretive route for tourism and heritage education purposes in the local context transcends the activation of the social memory because it establishes ties, connections, and forgotten, or unknown, affections” (p. 453).
- Such tours “contribute to growth, increase the financial resources of the region, contributes to the inclusion of local communities in the development process, raise awareness for conservation, and they may also offer an opportunity for leisure and heritage education” (de Almeida Silva, et al, 2016, p. 437).

Research Methodology

Research Design

- A Survey Research Design was utilised to collect data from participants that tested a prototype of the *Sites to See: Buff Bay Valley* mobile app.
- Prototype was displayed and utilised at UTech Jamaica's Research Technology & Innovation Day in March 2018.

Research Methodology

Data Collection

- After using the prototypes, 32 users completed a questionnaire consisting of 12 questions.
- Data was collected about participants' experiences and opinions about the use and feasibility of the app to answer the research question: *Is there demand for a Geographic Information System (G.I.S) based heritage education mobile application in Jamaica?*

Research Methodology

Data Analysis

- Biographical data on the participants and data on the smart phone ownership was collected.
- The ease of use, level of enjoyment and quality of information of the app was rated on a Likert Scale.
- One open-ended questions were asked for suggestions to improve the app.
- Data was analysed with descriptive statistics.

Results

Table 1

Biographical data of users of the Buff Bay Valley Mobile app prototype

Age	15-19	20-24	25-29	>30	No Response	TOTAL
	63%	9%	3%	16%	9%	100%
Gender	Male	Female				
	34%	66%				100%
Occupation	Student	Professional				
	69%	31%				100%

Results

Table 2
Characteristics of Smart Phone Owners

Smart Phone Ownership	Yes	No	Total
	97%	3%	100%
Platform	Android	Apple	
	97%	9%	107%

Results

Table 3
Feedback on Mobile App Usage

Rating of App	1	2	3	4	5	TOTAL
Ease of Use	9%	3%	13%	31%	44%	100%
Enjoyment	9%	6%	16%	47%	22%	100%
Level	9%	6%	16%	47%	22%	100%
Quality of Information	6%	6%	28%	22%	34%	96%

Results

Table 4
Suggestions for App Development

	Yes	No	No Response	Total
Was the information about the sites useful?	97%	3%		100%
Interest in apps of other locations	94%	3%	3%	100%

Results

Table 5
Suggestions to Improve the App

Suggestions	Frequency	Percentage
Provide additional information on the sites	9	25
No response	7	19
No suggestions for improvement	4	11
Provide a clearer zoom	4	11
Include additional sites	4	11
Include additional photographs	3	8
Provide information about where the App can be accessed	2	6
Provide a GPS Traffic Assistant	1	3
Provide a search bar	1	3
Include a virtual tours, using contemporary costumes of period	1	3
TOTAL	36	100

Results

Table 6

Suggested Locations for Future Editions of the Mobile Apps according to Parish

Parish	Frequency	Percentage
St. Ann	16	27
St. Catherine	11	18
Portland	9	15
St. Andrew	5	8
St. Thomas	4	7
St. James	3	5
St. Elizabeth	3	5
Westmoreland	2	3
Kingston	2	3
St. Mary	1	2
Clarendon	1	2
Trelawny	1	2
Hanover	1	2
Manchester	1	2
TOTAL	60	100

Results

Table 7
Suggested Locations for Future Editions of the Mobile Apps

Parish	Frequency
Negril	3
Popular Tourism Sites/Locations	2
South Coast	1
Great Houses	1
All of Jamaica	1
Overseas	1
TOTAL	9

Conclusion

Answering of Research Question: *Is there a demand for a G.I.S-based heritage education mobile application in Jamaica?*

Devices to host the app

- 97% of participants own mobile devices in the form of smart phones.
- 97% of participants use the Android platform.

Interest in the app

- 94% of participants indicated an interest in using an app of other locations.
- 97% of users found the information on each heritage site useful.

Conclusion

Advice for improving the app.

- 25% of users requested additional information on the sites
- 11% requested additional sites to be added
- 11% requested a clearer zoom

Rating of the app

- 75% found the app easy to use.
- 69% rate the app with a high enjoyment level.
- 56% found the quality of the information high, 28% found it average

The Way Forward

- Incorporate the suggestions for improvements.
- Develop the app for the Android platform.
- Seek a patent for the *Sites to See* app from the Jamaica Intellectual Property Office (JIPO).
- Develop apps for other locations.

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