

# Designing Mobile First Courses for Senior Citizens in Grenada

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## Abstract

As health standards improve and life expectancy continues to grow, some senior citizens may focus on online courses as a means of personal fulfillment and an opportunity to engage with their peers. However, online courses that may be considered relevant to the Grenadian context were not designed with senior citizens as the target participants. As such, the intent of this proposed study is to find out if mobile first online courses are viable options for senior citizens in Grenada, to enable upskilling and possibly prolong contributions to the work force after age 60, to decrease the dependency ratio.

Furthermore, it has been noted that some senior citizens require more guidance when accessing cluttered content from desktop computers, however, these same users can competently and independently navigate similar content via their mobile phones. Thus, the study will consider the technological and general challenges (e.g. decreasing vision and dexterity) faced by the elderly, and the importance of designing inclusive online courses to suit the needs and interests of senior citizens in Grenada.

A pilot group will be invited to trial the questionnaire that will inform the study. Thereafter, the research will involve interviews and the completion of the edited questionnaire by approximately 85 members of the Grenada Association of Retired Persons (GARP), to find out their interests, technological competence, preferences and needs associated with mobile first intuitive online courses, which use a Personalized Teaching and Learning (PeTAL) approach for senior citizens.

*Key words:* senior citizens; online courses; mobile first

## Introduction

The growth rate of the number of people aged over 60 years (also referred to as senior or elderly citizens) has increased rapidly throughout the world, from 382 million in the year 1980, to 962 million in 2017, and by 2050 older persons are expected to increase to 2.1 billion, outnumbering the number of people age 24 and under (United Nations, 2017). The increase in the number of senior citizens may be challenging or beneficial depending on the steps taken to ensure that all citizens including the elderly are viewed as resources and important contributors to society (World Health Organisation, 2019). Similarly, yet on a smaller scale, on the island of Grenada the number of people aged 60 and over is projected to increase from 18,015 in the year 2015 to 30,091 in the year 2050 (BBL World Actuaries, 2016). The increase in the elderly population in Grenada may contribute to an increase in the dependency ratio, and this is expected to coincide with a decrease in Grenada's National Insurance Funds by the year 2035 (the reserves are expected to drop to zero). Consequently, one of the proposals in the National Insurance Scheme (2019) Sustainability Plan is to gradually increase the normal retirement age from 60 to 65, from the year 2019 to 2032. An increase in the retirement age may require upskilling of middle-age individuals who are expected to remain in the workforce after age 60 and possibly a change in the ageist misconception of senior citizens as dependents or burdens, and instead capitalize on the great human capacity and valuable contributions to family and community that senior citizens represent (World Health Organisation, 2017a; World Health Organisation, 2019).

Thus, the intent of the proposed study is to research the following:

1. If middle-age and elderly citizens, consider mobile learning a viable learning opportunity for people over age 60?
2. The level of comfort and challenges faced by seniors in using mobile devices to access e-courses?
3. The target group's interests and preferred approach to teaching and learning?

The research will be carried out in three parts; the first part with a pilot group, and the second and third components with members of the Grenada Association of Retired Persons (GARP). The study will involve completion of a questionnaire (see Appendix) and testing of the Personalized Teaching and Learning (PeTAL) Seniors course via smartphones, computer tablets, laptops and desktops, to test the accessibility and ease of use of a bespoke mobile first course designed for the elderly.

## Defining mobile first

The origin of the phrase mobile first is debatable; however, Luke Wroblewski is recognized as one of the first to suggest that the mobile experience for a web application or site should be designed and built before the personal computer version (also referred to as the desktop version). He put forward 3 reasons in support of the mobile first approach, which include: the increase in mobile user base; the importance of emphasis on important data and actions in applications; and the extended capabilities such as multi-touch input based on gestures (Wroblewski, 2009). Other advocates of the mobile first design and development approach include Google's [former] Executive Chairman Eric Schmidt and Facebook's [former] Director of Design, Kate Aronowitz (Wroblewski, 2011).

Moreover, mobile first is further supported given that the user base continues to increase and smartphone adoption is predicted to increase from over 5 billion users in 2019 to 7 billion in 2024, becoming the leading handset type globally by 2025, accounting for nearly 80% of connections (Stryjak & Sivakumaran, 2019). Specific to the target group, estimates from the Pew Research Center survey show an increase in the ownership rate from the year 2015 to 2018 in advanced economies such as Poland from 13% to 35%, and South Korea from 74% to 91% of persons age 50 years and over owning smartphones. Similarly, during the period 2015 to 2018, the rate of adaption of smartphones has increased in emerging economies such as Brazil (4% to 32%), India (7% to 8%) and Nigeria (1% to 20%). Albeit, the percentages in the emerging economies are comparatively lower than the advanced economies, most likely due to education and income level (Taylor & Silver, 2019).

In addition to the sequence of design, the mobile first approach to technology in teaching and learning has been linked to a personal and connected approach and is not referring to a mobile only, nor technology first approach (Trucano, 2014).

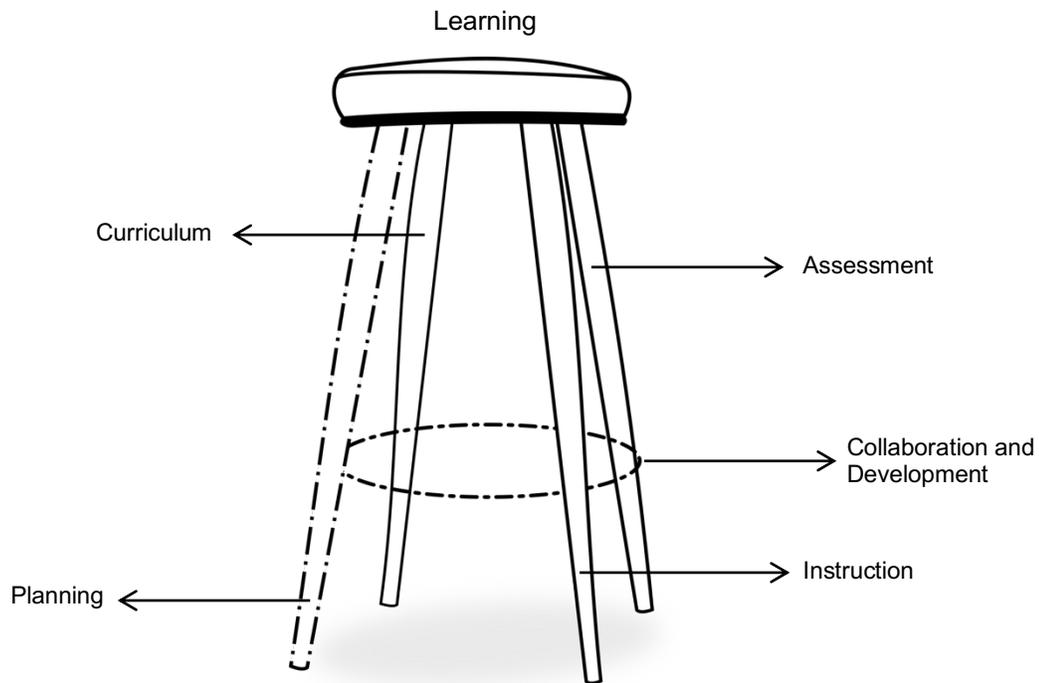
For the purpose of this study a mobile-first course places emphasis on teaching and learning via mobile technologies and devices such as a smartphone or computer tablet. Keeping the needs and interests of learners as a core feature, a mobile first approach to course development for senior citizens can include the design, collation, development and preparation of material for use on a mobile device, followed by emphasis on other electronic devices such as a desktop computer, to enable age-appropriate teaching and learning. Thus, the course design and development can be done on a desktop computer; however, the point of reference and emphasis is on the display, access and ease of use of the course content by learners from mobile electronic devices, to enable teaching and learning.

## Method

The proposed three-part study will use a mixed-method explanatory approach. The first part will involve the testing of one of four (Read, Watch, Listen or Explore) learning paths by a pilot group, via the PeTAL Seniors course site. The learning path will include links to collaborate, play games and review an online questionnaire. All of the questions allow closed-ended responses; however, twelve of the seventeen questions also allow respondents to provide details in a comments area. The data collected from the questionnaire may be collated in real-time and the general findings discussed with the participants. The pilot group will focus on visual design (font size, colour, buttons and images), topics of interest, intuitive steps, ease of navigation, challenges, preferences and suggestions regarding teaching and learning. After navigating the test site and trialling the questionnaire, the pilot group will be invited to provide feedback and inform of the strengths and challenges and put forward suggestions and recommendations for improving user experience. Thereafter, improvements can be made to the questionnaire and PeTAL site, before the research instruments are shared with the target group (GARP).

The second part of the study involves distribution of the edited questionnaire to members of GARP (quantitative part of the study). This survey group should represent approximately 0.50% of persons aged 60 and over in Grenada (BBL World Actuaries, 2016) and the findings should inform of the percentage of adults from within GARP who own and use smartphones as at 2019. The survey can be completed online, from a printed copy or during sessions (individual or small groups) where each question can be read-out-loud and explained, and the participants responses logged. The latter arrangement is proposed given that some participants may have difficulty accessing or responding to the questions. Interviews (qualitative) will take place with some of the participants based on the information provided under the details section of the questionnaire. Thereafter, select GARP members (those who are willing, able and have access to a mobile device) will be invited to take part in the third part of the study.

Part three of the study (testing of the course site by GARP) focuses on the teaching and learning process and enhancing the mobile first approach. A model of teaching and learning as proposed by Gareis and Grant (2015) used the image of a three-legged stool to emphasize the integrated nature and importance of curriculum (what should be taught), instruction (how the content should be shared), assessment (the nature and degree of student learning) as the base of effective student learning. Similarly, the PeTAL for Seniors approach will focus on the 4 components of the model with the suggested addition of a fourth leg in the stool, and involvement of stakeholders throughout (see broken lines in Figure 1).



*Figure 1.* A model of teaching and learning. Adapted from "Teacher-made assessments; how to connect curriculum, instruction and student learning," by Gareis and L. Grant (2015).

Involvement of stakeholders, particularly the senior citizens at the course planning stage and during the course delivery process contributes to the personalized flexible learning options for learners to choose from (Looi & Toh, 2014; Scanlon,

2014). Furthermore, while the course is in progress, learners are involved, collaborate and share, rather than only receive instructions. Emphasis is also placed on learning for leisure, instead of grades (summative assessment).

The PeTAL approach is distinct from a desktop computer initiated responsive approach which may involve a mobile application (see Figure 2). In addition, the PeTAL approach should not be seen as a replication of existing courses on a more convenient device (Brown, Hruska, Johnson & Poltrack, 2014).

The final version of the PeTAL for Seniors experience will be determined by the members of GARP, based on the findings from the survey carried out at the course design and development stage. Thereafter, further enhancements can be made based on feedback from the users of the live site. The aforementioned aligns with the World Health Assembly's Global strategy and action plan on ageing and health which emphasizes the importance of involving senior citizens in all decisions that concern them (World Health Organisation, 2017b).

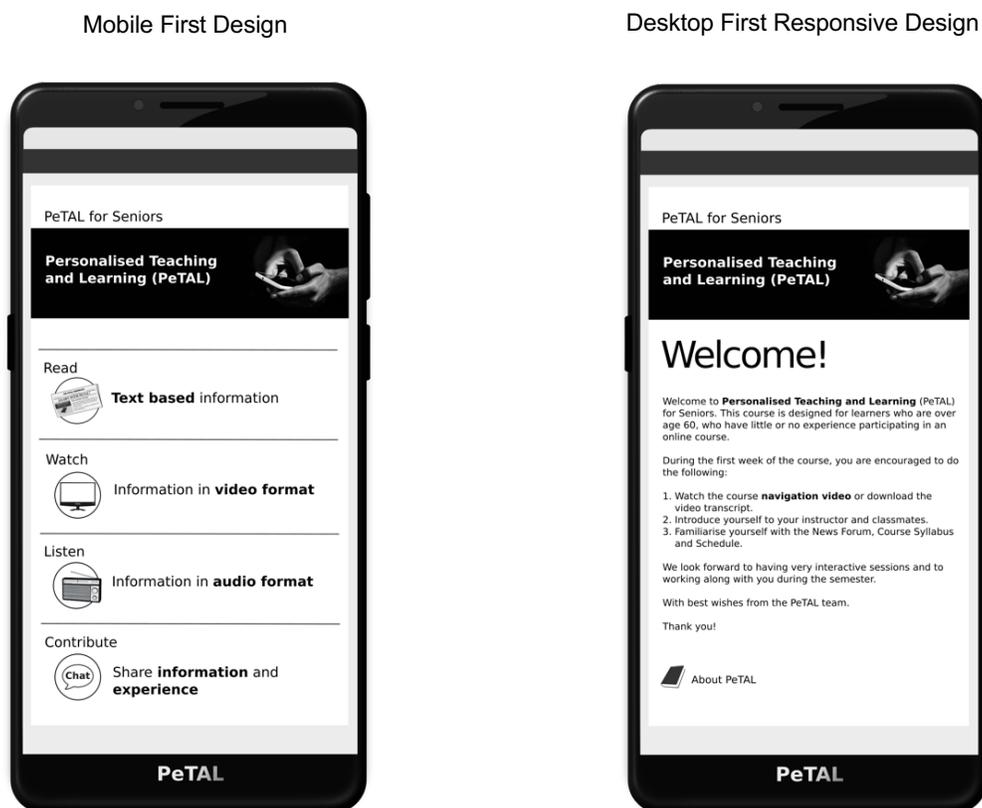


Figure 2. This figure illustrates the difference between the course main page of PeTAL for Seniors mobile first design versus a responsive desktop first version of a course for people over age 60.

PeTAL for Seniors is intended to facilitate the engagement of senior citizens, where they can have an opportunity to independently and intuitively navigate the course site, access topics of interest and contribute to a community of learners. The proposed approach is in keeping with World Health Organisation's (WHO) Global strategy and action plan on ageing and health, specifically, Strategic Objective 2.2 p. 12 (World Health Organisation, 2017b).

### Challenges of PeTAL's mobile first approach

Adopting a mobile first approach may present some challenges for the course designer as well as the intended users. Two of the anticipated drawbacks include:

**Balancing content for diverse groups.** It may be difficult to establish a proper balance between simplicity versus comprehensiveness of information, when catering to diverse groups of learners with different technological experiences, ranging from first-time users, to persons who are very competent in the use of mobile devices. The WHO Fact file misconceptions on ageing and health points out there is no typical older person. For instance, some 80-year-olds may have the mental capacity that compare favourable with 20-year-olds (World Health Organisation, 2019). A possible work around is

to indicate that the focus is persons over age 60 who own, have access to and are able to use a smartphone or computer tablet (have beginner level skills) and are interested in pursuing an e-course. Basic reading skills will also be useful, however will not be mandatory. No prerequisite qualifications are required, and emphasis is on willingness to learn and explore. The PeTAL space is considered an inclusive environment and uses United Nations (2019) Sustainable Development Goal 4 as a guide, therefore, individuals with higher level technology skills may also access the content and participate.

**Small size of some mobile devices.** Determining the size of the display area (screen size) may present a challenge to the designer, given the variety of smartphones available. Wroblewski (2011) suggests that emphasis should be placed on the key tasks' users want to accomplish on a single layout. Hence the initial draft of the PeTAL for Seniors course site has 4 links on the main page for an at-a-glance view of the course directory, and intentionally excludes pull-down menus or a breadcrumb trail on the course main page. Additional links may be inserted, and the topics amended, however these will be based on the feedback from the pilot group, followed by the members of GARP.

### **Benefits of PeTAL Senior mobile first approach**

Alternatively, the mobile first PeTAL approach is suggested for the following reasons:

**Personalised material.** The course design and upgrades will be based on the needs and interests of people over age 60. The focus of the design is on encouraging informal learning, exploration and autonomy by the target users. The course site can be accessed via the address bar or shared as a link via a messaging application on an existing mobile device, therefore no additional costs requiring the purchase of special software or equipment should be incurred. Furthermore, registration and enrollment can be based on a local active telephone number and physical mailing address, instead of an e-mail address. Specific to the Grenadian context, enabling registration based on telephone number assists with ensuring access to the learning platform for those who may not be familiar with the internet or may have difficulty recalling passwords or accessing e-mails. The course buttons are of a minimum pixel size and the fonts are also at a minimum size, with options for the user to further increase the size of the view via touch. Additionally, the size of the touch targets such as the buttons, and the spacing between them are based on the guidelines provided by Wroblewski (2011).

**Open and inclusive material.** The content will be open and available to the target group. However, to ensure security, users who would like to participate in the activities must enroll in a PeTAL Senior course. Given that the course is not focused on summative activities nor academic credentials, minimal typing required, and contributions can be submitted via video or audio or text. The course content will be mainly from original/bespoke content (images, videos and text) prepared by the designer and include mainly Open Educational Resources (OER); non-attribution content and material labeled for reuse. In addition, the images and words used in the course shell will focus on inclusiveness and showcase senior citizens in respectful positions.

**Flexible approach.** While the design emphasizes simplicity and fit on mobile devices, it is also responsive and can be accessed via larger display devices such as desktops. Moreover, users can access course content unrestricted by date and time.

### **Recommendations and conclusions**

The final version of the PeTAL course site will depend on the feedback from the pilot and target user groups. Thereafter, the follow up research may focus on the suitability of the course for persons with limited to no vision and persons who are hearing impaired. Some accessibility features will be available in the pilot site; however, the usefulness can only be determined based on the relevance to persons within the test group. In addition, given the small sample size, sample bias may occur. Therefore, in order to represent the general population, the study could be extended beyond GARP, to other organisations in Grenada, and to GARP's affiliates which exceed 64,000 members and are focused on encouraging active ageing.

Furthermore, although the proposed approach is not focused on summative activities nor academic credentials, the features are available on the learning platform for award of e-badges and certificates. Therefore, perhaps credentialing can be included if interest is expressed by the target users.

As mentioned previously, persons over age 60 have years of experience and skills and can continue making meaningful contributions to society. Thus, while the proposed PeTAL approach may be of interest and of benefit for learning, the target group can also guide and contribute (teach) and assist with ensuring the approach is inclusive, useable, flexible and suited to their learning and development needs.

## References

- BBL World Actuaries. (2016). Eleventh actuarial valuation of the National Insurance Fund of Grenada as at December 2015 [PDF file]. Retrieved from <http://www.nisgrenada.org/resource-center/downloads>
- Brown, J., Hruska, M., Johnson, A., & Poltrack, J. (2014). Educational standards for mobile learning and mobile application development. In M. Ally and A. Tsinakos (Eds.), *Increasing access through mobile learning* (pp. 17-25). Canada: Commonwealth of Learning and Athabasca University.
- Gareis, C. and Grant, L. (2015). *Teacher-made assessments: How to connect curriculum, instruction, and student learning*. Routledge Taylor and Francis Group. Kindle Edition.
- Looi, C., & Toh, Y. (2014). Orchestrating the flexible mobile learning classroom. In M. Ally and A. Tsinakos (Eds.), *Increasing access through mobile learning* (pp. 161-174). Canada: Commonwealth of Learning and Athabasca University.
- National Insurance Scheme Grenada. (2019). NIS sustainability plan. Retrieved from <http://www.nisgrenada.org/press/pensionreform>
- Scanlon, E. (2014). Mobile learning: location, collaboration and scaffolding inquiry. In M. Ally and A. Tsinakos (Eds.), *Increasing access through mobile learning* (pp. 85-95). Canada: Commonwealth of Learning and Athabasca University.
- Stryjak, J., & Sivakumaran, M. (2019). The mobile economy [PDF file]. Retrieved from <https://www.gsmaintelligence.com/research/2019/02/the-mobile-economy-2019/731/>
- Taylor, K., & Silver, L. (2019). Smartphone ownership is growing rapidly around the world, but not always equally. Retrieved from <https://www.pewresearch.org/global/2019/02/05/smartphone-ownership-is-growing-rapidly-around-the-world-but-not-always-equally/>
- Trucano, M., (2014). A mobile first approach to educational technology. Retrieved from <http://blogs.worldbank.org/edutech/mobile-first-edtech>
- United Nations. (2017). World population ageing (highlights). Retrieved from [https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2017\\_Highlights.pdf](https://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2017_Highlights.pdf)
- United Nations. (2019). Sustainable development goal 4. Retrieved from <https://sustainabledevelopment.un.org/sdg4>
- World Health Organisation. (2017a). 10 facts on ageing and health. Retrieved from <https://www.who.int/features/factfiles/ageing/en/>
- World Health Organisation. (2017b). Global strategy and action plan on ageing and health. Retrieved from: <https://www.who.int/ageing/WHO-GSAP-2017.pdf?ua=1>
- World Health Organisation. (2019). Fact file: misconceptions on ageing and health. Retrieved from <https://www.who.int/ageing/features/misconceptions/en/>
- Wroblewski, L. (2009). Mobile first. Retrieved from <https://www.lukew.com/ff/entry.asp?933=>
- Wroblewski, L. (2011). Mobile first. New York, NY: Jeffrey Zeldman.

## Appendix

## Survey on designing mobile first courses for senior citizens in Grenada

Please insert a check mark (✓) in the relevant boxes

1. Age group
  - a. 49 years or under
  - b. 50 – 59 years
  - c. 60 – 69 years
  - d. 70+ years
  
2. Sex
  - a. Female
  - b. Male
  - c. Prefer not to say
  
3. What is your highest education level?
  - a. Primary school
  - b. Secondary school
  - c. College
  - d. University
  - e. Technical school
  - f. Vocational school
  - f. Other (please specify) \_\_\_\_\_
  
4. What motivates you to learn? (Select all that apply)
  - a. To learn a new skill
  - b. To keep active
  - c. To connect with others
  - d. Pursuit of personal interests
  - e. Other (please specify) \_\_\_\_\_

Comments (please provide details if you selected other):

5. Please indicate the devices you own or have access to (you may select more than one)
  - a. Desktop computer
  - b. Laptop computer
  - c. Mobile phone that is not a smartphone
  - d. Smartphone
  - e. Tablet computer
  - f. Other (please specify)
  - g. None of the above

Comments (please provide details if you selected other):

6. Please indicate the frequency with which you use the devices you selected in response to question 5 (you may skip question 6 if you selected 'None of the above' in response to question 5):

	<u>Daily</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Occasionally</u>
a. Desktop computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Laptop computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Mobile phone that is not a smartphone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Smartphone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Tablet computer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments (please provide details if you selected other):

7. Of the devices you've selected, which one is your favourite to use:

- |                                          |                          |
|------------------------------------------|--------------------------|
| a. Desktop computer                      | <input type="checkbox"/> |
| b. Laptop computer                       | <input type="checkbox"/> |
| c. Mobile phone that is not a smartphone | <input type="checkbox"/> |
| d. Smartphone                            | <input type="checkbox"/> |
| e. Tablet computer                       | <input type="checkbox"/> |
| f. Not applicable                        | <input type="checkbox"/> |
| g. I do not have a favourite             | <input type="checkbox"/> |
| g. Other                                 | <input type="checkbox"/> |

Comments (please provide details if you selected other):

8. Please indicate what you use the devices to do:

- |                                   |                          |
|-----------------------------------|--------------------------|
| a. Access News                    | <input type="checkbox"/> |
| b. Access social networking sites | <input type="checkbox"/> |
| c. E-mail others                  | <input type="checkbox"/> |
| d. Online banking (pay bills)     | <input type="checkbox"/> |
| e. Online classes                 | <input type="checkbox"/> |
| f. Online shopping (e.g. Amazon)  | <input type="checkbox"/> |
| g. Play games                     | <input type="checkbox"/> |
| h. Research                       | <input type="checkbox"/> |
| i. Send and receive messages      | <input type="checkbox"/> |
| j. Surf the internet              | <input type="checkbox"/> |
| k. Watch videos                   | <input type="checkbox"/> |
| k. Work                           | <input type="checkbox"/> |
| m. Other                          | <input type="checkbox"/> |

Comments (please provide details if you selected other):

9. Place select the online activities you can complete on your own (independently):

- a. Access News
- b. Access social sites (e.g. Facebook)
- c. E-mail friends, family, associates
- d. Online banking (pay bills)
- e. Online classes
- f. Online shopping (e.g. Amazon)
- g. Play games
- h. Research
- i. Send and receive messages
- j. Surf the internet
- k. Watch videos
- l. Other

Comments (please provide details if you selected other):

10. Please select your topics of interest:

- |                     |                          |                                |                          |
|---------------------|--------------------------|--------------------------------|--------------------------|
| a. Agriculture      | <input type="checkbox"/> | g. Healthy living              | <input type="checkbox"/> |
| b. Botany           | <input type="checkbox"/> | h. Languages (Spanish, French) | <input type="checkbox"/> |
| c. Cooking          | <input type="checkbox"/> | j. Music                       | <input type="checkbox"/> |
| d. Computing        | <input type="checkbox"/> | k. Photography                 | <input type="checkbox"/> |
| e. Creative Writing | <input type="checkbox"/> | l. Yoga                        | <input type="checkbox"/> |
| f. Dancing          | <input type="checkbox"/> | m. Other                       | <input type="checkbox"/> |

Comments (please provide details if you selected other):

11. Please inform of your preference

- a. Self-paced independent study
- b. Facilitated scheduled sessions
- c. Learning with peers
- d. Other

Comments (please provide details if you selected other):

12. Please inform of your preference for learning new content (you may select more than one):

- a. Audio recordings, podcasts
- b. Books, articles, manuals
- c. Demonstrations, practice, roleplay, simulations
- d. Discussions, web-chat
- e. Pictures, graphs, charts, diagrams
- f. Videos, animation, cartoons
- g. Other

Comments (please provide details if you selected other):

13. Inform of the importance of the following to your participation in an online course

- |                           | <u>Very Important</u>    | <u>Important</u>         | <u>Not Important</u>     | <u>Neutral</u>           |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| a. Text (size and colour) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Images and cartoons    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Audio and recordings   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| d. Videos and animation   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Teacher/facilitator    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Other                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Comments (please provide details if you selected other):

14. Please indicate subjects you are interested in teaching or assisting with:

- |                                |                          |                   |                          |
|--------------------------------|--------------------------|-------------------|--------------------------|
| a. Art                         | <input type="checkbox"/> | j. Music          | <input type="checkbox"/> |
| b. Botany                      | <input type="checkbox"/> | k. Photography    | <input type="checkbox"/> |
| c. Cooking                     | <input type="checkbox"/> | l. Sign language  | <input type="checkbox"/> |
| d. Computing                   | <input type="checkbox"/> | m. Sewing         | <input type="checkbox"/> |
| e. Creative Writing            | <input type="checkbox"/> | n. Yoga           | <input type="checkbox"/> |
| f. Danceing                    | <input type="checkbox"/> | o. Not applicable | <input type="checkbox"/> |
| g. Healthy living              | <input type="checkbox"/> | p. Other          | <input type="checkbox"/> |
| h. Languages (Spanish, French) | <input type="checkbox"/> |                   |                          |

Comments (please provide details if you selected other):

15. Please tick the appropriate box with regard to the results of the study on designing mobile first courses for senior citizens in Grenada:

- a. Yes, please send me the results of the study
- b. No, please do not send me the results of the study

16. If you selected "Yes" in response to question 15, then please inform of your e-mail address:

17. Please inform of any general suggestions or comments: