

Using Technology to Educate Women Religious in Africa

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Abstract

The purpose of this survey was to determine the usefulness of MP3 players in the educational experience of women religious in five sub-Saharan countries. The women's ability to implement cellphones led to the assumption that other innovations could be acculturated, consistent with Rogers' (1995) adoption of an innovation theory.

Surveys were sent to 158 women religious who received an MP3 player preloaded with five hours of instruction. Thirty-nine participants responded to the survey that examined the benefits and limitations of the MP3 player. Findings illustrate the effectiveness and efficiency of MP3 players. Benefits included portability, manageability, radio use, and means of sharing information. Frequent power outages, barriers to recharging and reliance on ear plugs were cited as challenges.

Introduction

Although many studies document the use of technology in the West, little has been reported about women and their use of technology in sub-Sahara Africa. A seminal study, published by the GSMA (Groupe Speciale Mobile Association) Cherie Blair Foundation for Women (2010), established that a woman is 21 percent less likely to own a mobile phone than a man in low- and middle-income countries. A myriad of factors are associated with women's use and ownership of technology devices. According to GSMA (2012a) obstacles to women's use and ownership of technology devices include cultural barriers. Women are discouraged from owning devices such as cellphones because they are associated with Information and Communications Technology (ICT) promiscuity, and visiting cyber café may be socially unwelcome. Women may feel intimidated because of low technological expertise that sometimes leads to frustration. Additionally, women without personal earnings may find the affordability daunting.

Since the Internet access has erratically penetrated developing nations with high use of the cellphone, it is important to examine how such diffusion is changing the landscape of learning. According to a 2012 U.S. Department of State report on *Bridging the technology gender divide*, Ann Mei Chang, a Senior Advisor for Women and Technology, states that, "the dramatic difference in access to key technologies results in fewer opportunities for women to reach their full potential and loss of significant economic and social contributions to families and communities ... without exposure to or experience with technology many women can feel intimidated or resistant to interacting with such an impersonal device" (p. 53). Considering that global technology and the Internet are erasing borders that divide regions, it is necessary to provide women in developing countries with such technologies which will not only demystify technology but create learning opportunities. Using mobile technology as a pedagogical tool and integrating it into the classroom can have far reaching effects.

The use of emergent technology for classroom instruction is an intimidating concept and catching up with the newest technologies as well as ascertaining learning can be daunting for instructors. The technology at the heart of this research is mobile learning. Mahruf, Shohel and Powers (2010) define mobile learning as any "educational provision where the sole dominant are handheld or palmtop devices" (p.202). Geddes (2004) adds that the device is available anywhere at any time. Learning mediated through such devices can be available anywhere and can be shared readily by others.

According to Handsfield, Dean and Cielocha (2009), while some instructors view technology as an expensive “toy” in a classroom, many teachers argue that technology not only engages students, but also motivates and supports the student learning process if utilized well. Integrating technology in instruction is a multidimensional process that requires relevant skills for efficient integration by both instructors and learners. Ash (2010) argues that use of technology in the classroom allows an educator to create more engaging and compelling learning opportunities for students as well as personalizing those learning experiences. Knowledge of and skill in the use and application of new technologies has the potential to maximize learning experiences and enhance the integration of technology in instruction.

Although technology advancement is highly developed in the West, use of technology devices is at its infancy in the developing nations. To illustrate the use of technology in the USA, a 2009 research conducted by Pew Internet established that 79% of teens ages 12-17 own an MP3 player, while 43% of adults ages 18 and over possess one (Lenhart, Purcell, Smith & Zickuhr, 2010). The numbers have significantly increased from 11% of adults and 51% of teens who owned MP3 player in 2005 (Ash, 2010). In addition, a study by Kaiser Family Foundation (2005) established users between the ages 8 and 18 spend approximately 6.4 hours a day or 44 hours a week. Levy (2006) reported the benefits of recreation and relaxation related to the use of mobile audio media such as iPod and MP3 players. In the developing countries, studies show that governments are investing in different forms of educational enhanced information and communication technologies (Leach, Ahmed, Makalima, 2005; Powers, T. & Sankale, J.(2009). Wylie (2010) posits that there are millions of free files that can be downloaded for use as educational materials. While it is expensive to purchase, train and use technology in the classroom, the MP3 player is both inexpensive and versatile. MP3 players are easy to learn and use.

An MP3 player is a personal portable electronic device or hard drive used to store both audio or digital files. Audio files are played back in a personalized way. The MP3 player is a mobile audio digital media that is used to store, transfer and listen to audio materials. Studies reveal that MP3 players are used more by teens and young adults as tools for entertainment (Lenhart, Rainie, Lewis, 2001). Unlike other devices such as Walkmans and portable CD players, large files of digital audio and print materials can be stored in an MP3 player and used at will by the individual. The amount of storage is dependent on the memory and space provided by the device. Files such as podcasts can be downloaded and shared via an MP3 player. Given its portability and ease in an MP3 player is an effective tool because it can be used by students at any level. Because technological innovation is on the rise globally, examining the use of MP3 players in the education of women in sub-Saharan Africa is compelling.

The technology revolution with its multiple innovations has significantly changed the global landscape. Cellular phones are now common in sub-Sahara Africa. Additionally, computers with Internet capabilities in cyber cafes make it easy to communicate with people all over the world in a matter of minutes. There continues to be a technology enhanced knowledge explosion but educators are not quite certain of the impact as the new devices provide both distractions and increased learning (Murphery, Miller and Roberts, 2009). Research suggests that many teachers are using digital media for research and instructional purposes (Fernandez and Griffiths, 2007; Demoury and Kukulska-Hulme, 2010). Kukulska-Hulme (2006) suggests that language learning will benefit greatly from the widespread ownership of mobile devices such as cell phones and MP3 players.

Purpose

To test how technology devices may be received and accepted as tools for instruction, MP3 players containing five hours of leadership materials were distributed to 250 women religious, participants in the three-year Sisters Leadership Development Initiative (SLDI) in five sub-Saharan countries – Ghana, Nigeria, Kenya, Uganda and Tanzania. Given that oral learning is the preferred mode of instruction for most sub-Saharan African people (Wakahiu, 2012), the use of an MP3 player for providing leadership materials was considered an appropriate strategy.

The following questions were used to guide this study: a) How did the participants use the device to support learning? b) How did the use of MP3 players influence the way participants learned? c) What were the benefits of using MP3 players among these adult learners in Africa? d) What were limitations in learning while using MP3 players? e) How did the participants use their MP3 players other than for instruction? f) What were some of the challenges associated with using an MP3 player?

Description of Sisters Leadership Development Initiative

The Sisters Leadership Development Initiative (SLDI) is a multi-track program initiated in 2007 and delivered to women religious in five countries in Africa, namely Ghana, Nigeria, Kenya, Uganda, and Tanzania. Since its inception, the program has expanded to Zambia, Cameroon and South Sudan. SLDI was envisioned by Steven Hilton, the CEO of the Conrad N. Hilton Foundation, and is implemented through the collaboration of the African Sisters Education Collaborative (ASEC). This collaborative includes four schools in Pennsylvania: Chestnut Hill College, Marywood University, Neumann College, Rosemont College.

SLDI has several objectives including: a) promoting the ability to transfer the skills and knowledge needed for effective project and financial management, b) encouraging creative and effective leadership, c) increasing abilities to identify and mobilize resources, c) expanding knowledge of development issues that impact the socio-economic and political life of individuals and communities, e) enhancing human relations skills (f) development of a strategic plan, and (g) developing plans to ensure project sustainability (SLDI Handbook, 2007).

The long-term overarching goal of the SLDI is to provide participants with the opportunity to utilize knowledge, skills, and resources to improve the educational, social, and economic conditions and the sustainability of their religious communities and ministries. The curriculum is delivered by faculty from the United States and Africa. Instructors apply a variety of pedagogical strategies. Participants convene for a four-week intensive training after which they create a strategic plan to further the mission of their ministries. To date over 537 women religious have benefited from the program. Outcome studies reveal that over 8000 people have been mentored individually or in groups by the participants. Additionally, \$4.6 million has been raised through grant writing by the sisters to enhance their ministries.

Theoretical Framework

Experience of observing women religious participants in their use of cell phones suggested that they would adapt easily to the use of MP3 players. Their ability to implement the innovation of cell phones within the last decade led the researchers to the assumption that other innovations would be acculturated with little resistance.

According to Rogers (1995), adoption of an innovation assumes gradual use of technology at its inception after which rapid growth diminishes and enculturation ensues. Studies (Matson et al, 2012; Rogers, 1995) reveal that adoption-diffusion theories focus on a need for the particular innovation and its purpose. Additionally, Straub (2009) suggests that analysis of theories of technology adoption indicate that social norms, attitude, perceived control, and adoption behavior offer insights into behavior change and adoption of a particular innovation.

Methodology

Ghana, Nigeria, Kenya, Tanzania and Uganda provided the setting for this study. Two hundred fifty graduates of the SLDI program received an MP3 player preloaded with five hours of instruction. The researchers designed a survey to assess the perceptions of participants on the effectiveness of the MP3 player as an instructional tool. Letters requesting participation in the survey study were sent to 158 graduates for whom email addresses were available. Eighty-eight emails were returned as undeliverable. Seventy-seven emails were successfully delivered; however, only 39 participants responded to the survey. Two reminders were sent to those with active email addresses. After two months the study data collection phase ended.

Findings and Discussions

Demographics

Participants by country. As shown in Figure 1 below, the respondents (women religious) represented five countries. A total of 39 participants (25%) of the 158 who received the survey responded. The percentage of responses for each of the five countries is follows: Ghana (13%), Nigeria (21%), Kenya (31%); Uganda (23%), and Tanzania (13%).

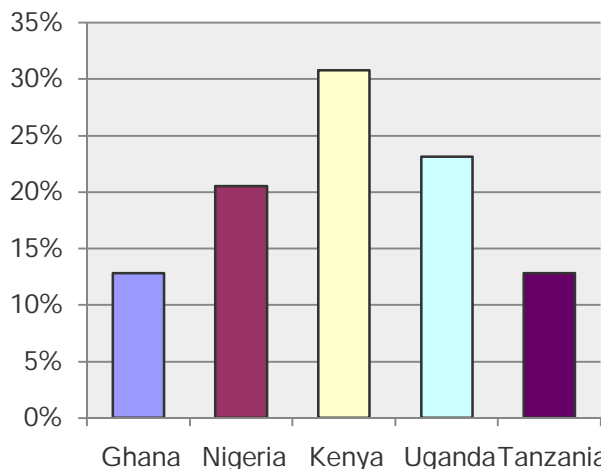


Figure 1: Participants by Country

Since Ghana and Nigeria are situated in West Africa, and Kenya, Uganda and Tanzania in East Africa, respondents may have had differing concerns, challenges and opportunities. For example, those in Tanzania, a country that is more underdeveloped compared to the others, may have had more challenges related to electrical power outages and availability of technical assistance.

SLDI tracks represented.

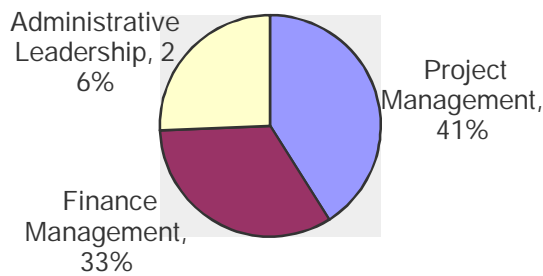


Figure 2: Tracks

Figure 2 reveals that a total of 39 participants responded to the Survey Monkey. Participants represented each of the three program tracks of the SLDI Program: 26% from the Leadership track, 42% in Project Management track and 33% in Finance track. All participants were trained in administration prior to their acceptance into the SLDI programs. Their administrative skills in finance and project management may have predisposed them to readily accept a technical tool.

Level of education. Their level of education, ranging from a high school certificate to a Bachelor and Master degrees as shown in the Figure 3 below, may have influenced their acceptance/rejection of an innovation.

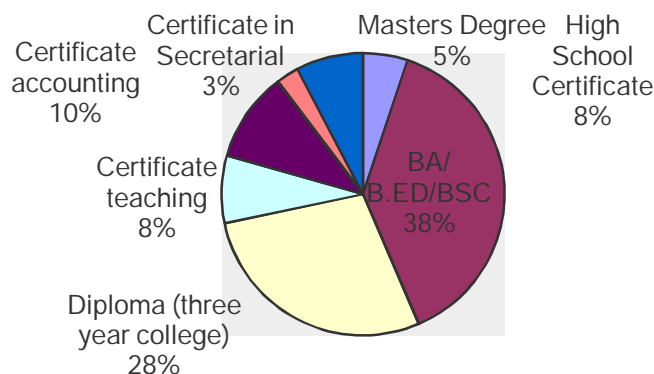


Figure 3: Participants' level of education

Perceptions of use of MP3 players

Question #1: How helpful were the resource materials recorded on the MP3 players?

Participants were asked to rate on a scale of 1-5 how helpful the materials recorded on the MP3 players were in acquiring instructional information. Results revealed that 67% described the MP3 player as very helpful in understanding leadership concepts related to their tracks. Fewer than 8% indicated that the MP3 players were not helpful.

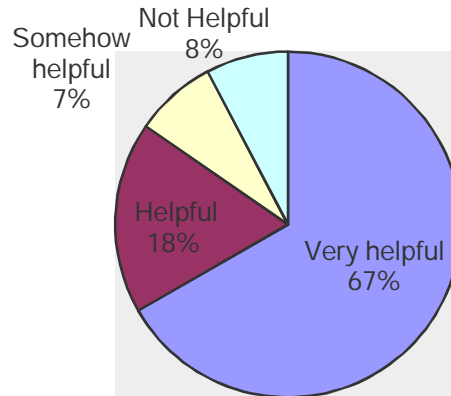


Figure 4: Perceptions of Usefulness of MP3 Players

Question 2: What are the benefits of using MP3 players preloaded with instructional resource materials?

In their open-ended responses the participants' comments supported the usefulness of MP3 players in the following ways: acquisition of information, educating mentees, reinforcing course work. In responding to this question, the sisters offered information on the benefits of using MP3 players and on the benefits of the resource materials recorded on the players. *Regarding the benefits of using the MP3 players*, responses addressed the themes of portability, multitasking, ease in sharing with others, and review of course work.

"It helps me to remember some ideas which can be fading. It is convenient to use and not bulky, and you don't disturb anybody next to you. You can save more information and have it closer when there is need."

"It is easy to replay and get a point clearer. It is very portable. [It] enables one to share the content easily with others."

"I have found it very user friendly, portable, the instructors were very clear and with real life examples. One uses it at her/her convenient time"

"Easy to carry around. One can listen while doing other work."

"Keeps original information stored in it for future references and has no trace of virus. It could be used in PowerPoint presentations and can combine text with music."

Additionally, participants' comments supported the benefits of the *leadership materials recorded on the MP3 players* in the areas of acquisition of information, education of mentees and leadership. All of their comments endorsed the helpfulness or resource materials:

"I was able to learn more about who a good leader is."

"It [resource materials] gives new ideas about leadership and opportunity to learn from the experience of others."

"Being a leader the topics presented has been my point of reference in as far as daily management is concerned.

"It helped me in mentoring the mentees."

"[It] enables me to gain more knowledge and easily to learn and teach others."

"Audio is one of the methods of teaching better than reading, used it to mentor others as I connected it with loud speakers especially the activities."

"I used it to teach the sisters in my congregation as well as the Novices. Also for me it was very helpful in leadership style.

Comments reflected the usefulness of the MP3 player in providing ongoing education and the diffusion of new technology. The resources recorded on the players were found to be of value to the participants academically and personally. The technology and the resources impacted the lives of the mentees, colleagues, and others who were served by the participants.

Additionally, MP3 players provided participants with opportunities to explore and discover other uses for MP3 players as indicated in Figure 5 below. Eighty percent reported using MP3 solely for educational purposes; an additional 36% for music, and another 36% used MP3 players to record other materials.

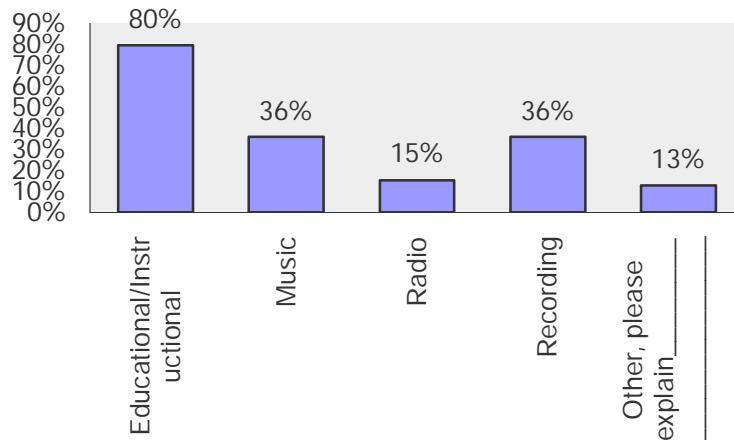


Figure 5: Uses for MP3 players

Diffusion of innovation implementation

Question 3: Have you shared your MP3 player with other persons?

The women religious enrolled in the SLDI program were required to mentor at least three others on what they had learned and ask them to practice the leadership skills in their professional work. Since the use of MP3 players was part of their instruction, they also taught their mentees how to use the device. The chart below indicates the categories of individuals with whom the participants shared the information on ethical leadership and with whom they diffused the use of the technology innovation.

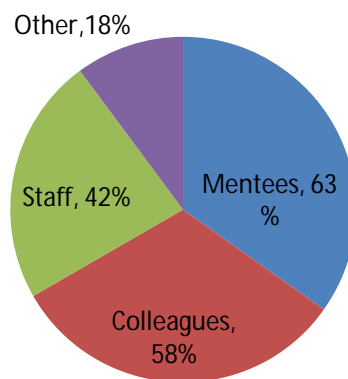


Figure 6: Shared MP3 Player with Others

Participants reported sharing MP3 players with other individuals: 63% shared with their mentees; 58% shared with colleagues in their communities, 48% with staff in their programs, and another 18% percent with friends and families. When asked for the underlying reasons for sharing MP3 players, the majority related that MP3 players helped their mentees to get firsthand information, as expressed in the following comments: “It provided educative materials ... I gave [it] to my mentees, they listened after which we met to talk about ethical leadership ... I think, this [resource and use of MP3 players] has helped to improve effectiveness in our ministry.” Comments regarding the sharing of MP3 players suggest positive outcomes of the use MP3 players in the diffusion of knowledge and technology in the mentoring of colleagues, staff and friends.

Usefulness of innovation in teaching

Question 4: How would you rate using the MP3 player as a tool for teaching?

On a scale of 1-5 participants were asked to rate the usefulness of MP3 players for instruction. Figure #7 below indicates that 82% of the respondents found the MP3 players to be very useful in teaching with an additional 15% finding it somewhat useful.

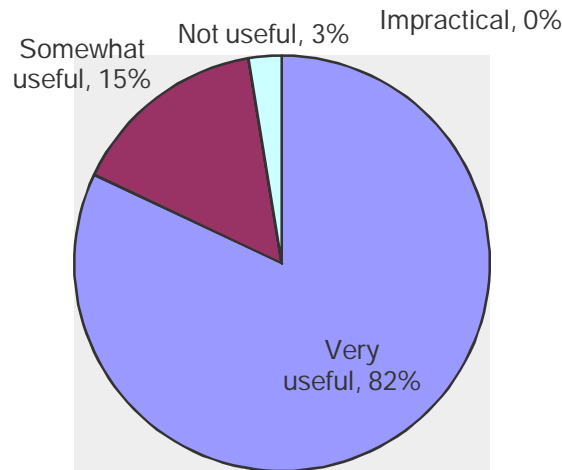


Figure 7: Usefulness of MP3 Player in Teaching

Participants offered numerous comments on the usefulness of MP3 players in teaching: “MP3 player contains educative materials; I also used it to store other useful information such as music, files and photos.” “It helps in acquiring more information from different parts of the world.” “[It] enables one to share the contents easily with others

Findings with regard to the usefulness of the technology innovation suggest that when African women are trained well that they can make the appropriate application using the technology with a relative amount of ease. The innovative use of MP3 players to convey information about ethical leadership and to educate sisters on the use of MP3 players furthered social developments and educational change. These findings support the work of Ash (2010) who suggested that technology provides opportunities for learners to engage with materials in diverse ways and to find encouragement as they discover their preferred learning styles.

The use of MP3 players for educational purposes is not wide-spread in Africa. Those who can afford an MP3 player often use it for music or audio books. However, loading MP3 players with specific materials tailored for educational purposes is uncommon among these women in Africa. MP3 players provided to participants were loaded with specific leadership development materials; individuals were to mentor three or more colleagues to ascertain that they too had experiences similar to what they had had in the training.

Challenges in using MP3 players

Question 5: What technical challenges do you associate with using an MP3 player for professional purposes?

Participants reported a variety of challenges in the use of MP3 players. They cited challenges to include audibility, operational difficulties, the erratic availability of electricity, and lack of access to computers to charge the MP3 players.

Regarding audibility, participants noted the following: “The language was not clear.” Some words were at high speeds so I couldn’t easily understand them.” Several respondents indicated that they were unable to use the MP3 player in a group session without loud speakers.

Operational difficulties were nuanced in a variety of ways: discomfort in use of ear phones, use of functions on the MP3 player, and player malfunction. Respondents offered the following comments on the operational difficulties: “It lacks loud speakers so one has to use the ear phones which are not comfortable.” “I am not conversant with operating the buttons [functions].” “I find it difficult to fast forward to the topic I want.” “It [MP3 player] would stop in between some lessons.”

The challenge of inconsistent availability of electricity was noted by many respondents depending on the geographical area in which they live. This problem made it difficult for participants to recharge the devices. Participants also noted that lack of access to computers also impaired their ability to recharge the MP3 players. Additionally, it was indicated that they incurred a fee when using a computer in a Cyber Café to recharge their players.

Conclusions

The aim of this research was to examine the experiences of women religious in Africa on their use of MP3 players for instruction and for dissemination of teaching and learning materials to their mentees. Findings illustrate that MP3 players with preloaded lessons were beneficial tools for learning and instruction. From the comments provided by respondents in the study, the researchers identified the specific benefits derived from the use of MP3 players to include: portability, capacity for the download of digital files, manageability, opportunity for radio use, as well as a device to share with their colleagues and mentees.

Handsfield, Dean and Cielocha (2009) posit that technology motivates and supports the student learning process if utilized well. Use of MP3 players by these program participants not only motivated them to accommodate a digital tool to learning the prerecorded lessons, but assisted them in transforming their workplaces to a more technological environment. Findings reveal that the participants, who were for the first time using technology for the purpose of learning, were eager to learn and explore additional ways to use the MP3 players. They indicated that the devices provided opportunities to listen to recorded music and other recorded materials and the radio. The results are similar to Ash's (2010) conclusion that the use of technology in a classroom allows an educator to create more engaging and compelling learning opportunities for students and to personalize those learning experiences. Participants indicated that they personalized their learning by listening to the materials during their free time.

One assumption in the design of this study was that these women have lived in a culture where oral narratives are the preferred learning modality to printed materials. Additionally, libraries are not readily available in their localities; therefore, they have not developed a culture of reading. We assumed that they would be more interested in listening to audio materials rather than reading materials provided in a print format. Findings support this assumption.

From a theoretical perspective, Straub (2009) suggests that technology adoption theory indicates that social norms, attitude, perceived control and implementation offer insights into behavioral change and acceptance of a particular innovation. The findings of this study are consistent with the theory. The participants were enthused about using the MP3 players because they could listen to the materials at their convenience.

Additionally, the findings were consistent with theory of diffusion of innovation (Rogers, 1995). Before MP3 players were introduced to the participants, they had no interest in this particular technology. Learning how to use the MP3 players helped change their attitudes. Participants in this study discovered that the MP3 players could be used for listening to the lectures and they could also be used for listening to music and the radio. This increased their desire to use the MP3 players and to get additional MP3 players to use with their colleagues. Prior to this experience they would not have been aware of a need or use for them. Rogers provided a lens with which to understand participants who were engaging in the implementation of an innovation.

Many of the participants began to request MP3 players for their mentees and colleagues. The audio format of the MP3 player accommodated the preferred learning style of most of the participants. This study corroborates Rogers' findings. The adoption of a given technology is gradual at the inception and rapidly grows with time. Initially the participants were reluctant in their acceptance of the MP3 players. Once taught how to use them they did not keep the knowledge for themselves but shared it leading to rapid growth in the use of MP3 players the participants as well as their mentees and colleagues.

Chang (2012) proposed that encouraging women in developing nations to use technology would facilitate their learning and open them to the wider society. Findings suggested that the participants who were not digital natives adapted to the use of the new technology in ways that furthered their own learning and used the MP3 players to enhance the learning of mentees and colleagues. Despite the fact that educational technology is a new phenomenon in Africa, offering learning tools such as MP3 players to more women will provide an opportunity to engage them in a learning process that will be shared with others.

This study established that knowledge and use of technology by women religious in Africa provided professional skills as well as opportunities to develop confidence in the use and application of technology in their ministries. The use of MP3 players proved to be an appropriate educational fit for the preferred learning styles of the participants and to engage them in a meaningful manner. Findings indicated that participants were able to extend learning beyond the classroom.

Participants in this study were women religious who had previous educational training. It would be advantageous to replicate the study with other women who did not have the same educational opportunities to determine the generalizability of these findings to women in Africa. Additionally, it would be helpful to provide for participants in future studies a non-electrical, perhaps solar means of recharging their devices as this was a significant concern for many participants in the study.

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