Exploration of the Adoption of Digital Technology in Education among Indigenous People in Guyana

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ABSTRACT

Educational capabilities vary in diverse geographical regions. Training is critical to standardize and optimize educational practices for desired outcomes. In Guyana, indigenous Amerindian preservice teachers need to acquire the skills and overcome the technological barriers to better prepare learners beyond the classroom. Even though internet access would allow indigenous Amerindians in Guyana to develop technology literacy skills and access educational resources, Indigenous pre-service teachers have a low rate of technology adoption in the classroom. The purpose of this basic qualitative study was to discover the perceptions of indigenous Amerindian preservice teachers on the adoption of digital technology in the classroom. Rogers's diffusion of innovation theory and David and Venkatesh's technology of acceptance model were used to understand indigenous Amerindian preservice teacher perceptions about the use of digital technology, in respect of perceived barriers, and the coping and adopting mechanism throughout their pedagogical practices. Ten Indigenous Amerindian preservice teachers participated in this qualitative study. Semi-structured, interviews were the primary data collection tool. Open coding was used to generate themes and analyzed emergent coding. The findings from this study indicated that the rate of adoption of digital technology could accelerate if (a) training is strategic, (b) there is a reduction of institutional barriers, and (c) professional practices are aligned for educational growth. This study potentially contributes knowledge to education and leverage and adoption of digital technology, to advance understanding of learning and pedagogical best practices. The findings may contribute to positive social change in that professional development centers can improve skills that provide flexible learning for improving access to psychological therapies to integrate digital technology beyond the classroom. and serve as a catalyst to promote growth by capacity building.

Introduction to the Study

Education can be a challenge in different environments, as it is limited in understanding this in ethnic groups (Ankiah-Gangadeen, & Nadal, 2018). This concern is experienced in Guyana, among the indigenous population (Menezes, 1988), who are descendants of the first inhabitants who occupied the country before the arrival of the Europeans (Menezes, 1988). Native inhabitants are referred to as the Amerindians and have settlements in some of Guyana's most remote areas. Amerindian preservice teachers serving in these locales are expected to display proficiencies and use the same tools, as those used by other teachers who live close to Georgetown, the capital city, however, face unique challenges.

To increase educational achievements, in these populations, special provisions are provided by the government, in light of the frequent cries of marginalization, especially in the field of education (Granger, 2017a; Ramsey & Deana, 2018). The reasons for the low digital technology adoption rate among Amerindian communities (National Center of Educational Resources Development, 2018a), need greater understanding. There are the perceptions within the education fraternity, that teachers need to master skills that would provide learners in indigenous communities with the

experiences to adopt digital technologies (Chance et al., 2019; Nasruddin, 2018).

Khan (2018) noted, that after Guyana gained independence from Great Britain during the nineteen sixties, the indigenous Amerindians have continued to be marginalized, perhaps reflective of the policies and practices of the precolonial administrators. This study was conducted to inform decision-makers, administrators, and educators, about the challenges indigenous Amerindian preservice teachers face in the adoption of digital technology in the classroom. The outcomes from this study may contribute to knowledge in the formulation of the strategies conducive to indigenous Amerindians expediting embracing digital technology integration. Researchers have emphasized, that the integration of technology initiatives in rural areas must be strategic and practical because of the remoteness and economic status, as would affect how individuals embrace change (Beaton & Carpenter, 2016; Gillan et al., 2017). Adoption is never uniform (Serdyukov, 2017), where there are shades of rejection or acceptance. Embracing change depends on personal experiences, perceptions, attitudes, and embedded beliefs (Balbay & Erkan, 2018; Gamage &

Tanwar, 2017). The acceptance of change is increased with exposure to technological skills (Bates, 2017).

The ability to integrate digital technology has become an essential ingredient for the delivery of education in developing countries (Jawarneh, 2017). Since digital technology is changing globally, there the training institution studied, to create a more robust training plan for indigenous Amerindian preservice teachers to integrate digital technology into their pedagogical competencies (Jeffery, 2019; Tassel-Baska & Hubbard, 2016; Yeh & Wan, 2019). From research undertaken, Bates (2017), noted that teachers in training institutions must act expeditiously to provide adequate technological learning experiences for Indigenous teachers to realize success in a rapidly changing modernized classroom environment.

Training without follow-up for indigenous Amerindian teachers will likely improve digital technology adoption in the classroom (Townsend et al., 2017). Hence, it is reasonable to expect better outcomes if indigenous Amerindian educators are equipped with the resources needed to integrate technology in a modernized classroom. Several studies have also indicated the need for policymakers to sustain the implementation of technological training for all educators beyond college (Haynes & Shelton, 2018; Hughes, 2017a; Showalter et al., 2019). If Indigenous Amerindian preservice teachers use the first teaching method, then the adoption of digital technology would not become a reality (Geng et al., 2019; Lamb & Weiner, 2018). With the rapid evolution of digital technologies, administrators and policymakers understand the imperative need for Indigenous Amerindian preservice teachers to use digital technology in their classrooms to become adopters of digital technology.

Spiteri and Rundgren (2020), stated that many strategies will impart the skills necessary for Indigenous teachers to use digital technology, as is vital to impart quality education to g students and foster achieving their full potential. Experience has further shown that preservice teachers use digital technology while in training in many schools; however, it has been noted that teachers generally lack follow-up support after training.

Exploratory Research Focus

The problem explored in this study was the low adoption of digital technology in the classroom by Indigenous Amerindian preservice teachers. Indigenous pre-service teachers have a low rate of technology adoption in the classroom, according to the Guyana National Development Strategy (NDS, 2017). Education Officers in Guyana have found, that when indigenous Amerindian preservice teachers entered the Professional Development Center, approximately 95% of them lacked the skills needed to utilize digital technology (Ministry of Education, 2018). Preservice teachers have consequently had to undergo intensive training to acquire knowledge to become competent in instructional technology. It was further opined that intensive training could boost Amerindian teachers' confidence when teaching Amerindian students how to use digital technology (Min et al., 2019; Tyler-Wood, 2018).

The Professional Development Center in Guyana was the ideal setting to study, as were tasked with the role to effectively prepare indigenous Amerindian preservice teachers with appropriate teaching methodologies to increase teaching effectiveness in the classroom. Although there is research on digital technology in preservice teachers' education programs in developed and developing countries (Jita, 2018; Sauers & McLeod, 2017), there is an apparent gap in knowledge relating to indigenous Amerindian preservice teachers' acceptance-in implementing digital technology at their indigenous location.

The aim of this qualitative study aimed was to discover the perceptions of Indigenous Amerindian preservice teachers about digital technology integration in the classroom. A basic qualitative approach (Ravitch & Carl, 2016) was chosen to explore the phenomenon of technological adoption in the realm of classroom teaching.

Research Questions
Central Research Question

What are Indigenous Amerindian preservice teachers' perceptions about using digital technology in the classroom?

Principal Supporting Question:

RQ: What are the perceived coping and adapting mechanisms used to overcome the barriers to the integration of digital technology by Indigenous Amerindian preservice teachers?

Conceptual Framework of the Study

Rogers' diffusion of innovations theory (DOI) and the technology acceptance model (TAM) served as the underlying lenses and constituted the conceptual framework. Huang and Liaw (2018) suggested that technology adoption in the classroom was highly linked to teachers' technological lifestyles. The DOI theory is similar to the TAM model in that it is suitable to understand how individuals within specific groups accept and adopt some technologies. Woodside, Augustine, and Giberson (2017) added that the Technology Adoption Life Cycle has elements suitable to study how potential adopters embrace digital technology. Drijvers et al. (2017) posited that new ideas take time to disperse throughout any social group.

Venkatesh and Davis's (2000) predicted human behavior toward accepting or rejecting innovation. To appreciate the process of adoption by potential adopters, Venkatesh and Davis suggested user's motivation and Rogers' five attributes, together with elements such as innovation, communication channels, time, and a social system, used by researchers as outcome predictors for potential adopters to accept or reject an innovation (Gbongli et al., 2019; Liebenberg et al.; Ellis, 2018; Raman et al., 2018; Venkatesh et al., 2016). These concepts were used to identify principle factors associated with Indigenous Amerindian preservice teachers' perceptions toward adopting digital technology in their classrooms.

The lens of the Venkatesh and Davis's (2000) TAM model was also used as an additional theoretical grounding in studying the perception of Indigenous Amerindian preservice teachers toward the integration of digital technology into their classroom.

Methodology
Participant Selection Logic

Careful consideration was given to established participant selection criteria for this study since the indigenous Amerindian teachers were attending the Professional Development Center. This Professional Development Center provided training to in-service and preservice teachers in a two-year program in nursery, primary and secondary education. Indigenous preservice teachers with different perspectives and exposure to digital technology within their disciplines are present in these programs (nursery, primary, secondary education program).

To be reasonable in the process, participant selection for this study included 10 indigenous Amerindian preservice teachers from the inclusion categories: age, gender, tribe, teaching experiences, and educational programs shared

personal experiences. Inclusion categories also comprised of participants who were pursuing nursery, primary, or secondary teacher training programs, at that time, and who had no teaching experience before attending the Professional Development Center. Indigenous Amerindian preservice teachers who previously worked before entering the Professional Development Center and who had never had any exposure to digital technology, and Indigenous Amerindian preservice teachers with some exposure to digital technology before entering the Professional Development Center, were considered.

A combination of unstructured and semi-structured questions to solicit information from the participants was used. Each interview session lasted 45-60 minutes duration. Interviews were conducted at the Professional Development Center campus in the Bain Gray Hall at an appropriate time agreed upon by the participants. The interviewed questions were written, and the video of the session was recorded with permission from the interviewees, using smart video on the android cell phone and video editor from the Microsoft app store. A reflective journal was used to ensure suggestions, comments, and personal interpretation was bracketed to minimize the influences of the data (Vicary et al., 2017).

After transcribing the data, participants were allowed to review the transcripts to verify their accuracy before highlighting the emergent themes regarding the integration of digital technology by Indigenous Amerindian preservice teachers. A comprehensive plan with questions developed to evoke truthful responses was presented to each participant during the interview process (Mohajan, 2017a; Ravitch & Carl, 2016).

Research Question

The principal research question for this project and study was: What are the perceived coping and adapting' mechanisms to overcome obstacles to the integration of digital technology by Indigenous Amerindian preservice teachers? The analysis required the coding of text segments for the research question. Participants were asked to reflect on personally experienced coping and adapting mechanisms to overcome digital technology obstacles. From the analysis of the data, five themes emerged, from a review of the semi-structured interview, notably: teaching preparation, working technology plan, constant professional development, motivational tool, and adopters.

Theme 1: Factors coping mechanism to Indigenous Amerindian preservice teachers' perception to adopt digital technology. The aim was to understand the coping mechanism of indigenous Amerindian preservice teachers' perceptions of digital technology adoption. The figures in this section show the emergent code and sub-codes that were inductively generated from the interviews. All 10 participants described personal coping mechanisms to overcome obstacles for integrating digital technology based on the interview question.

Emergent Code 1: Teaching Preparation. Seventeen text segments with code teaching preparation were coded. All of the segments that were coded aligned with the conceptual framework. The emergent theme and sub-codes were found across all 10 participants (Figure 1).

The emergent pattern occurred within 24.2% (17/70) of the text segments, shared during IQ1 that sought to determine the level of teaching preparation of participants towards the use of digital technology. Participants described training levels based on practice, teaching methods, and teaching strategies. In their interviews, teachers felt the preparation for integrating digital technology into the classroom was inadequate and that their training lacks modern techniques and guidance.

Teachers were open in voicing how they felt about the lack of support towards integrating digital technology in a meaningful way. Three teachers described how the preparation for technology integration is "far from reality" since most lecturers make little technology application. IAPT 1 shared her honesty with the preparation of technology into the classroom as a "slow and insignificant process tainted with the antique teaching method." She emphasized that "training is dynamic" and must stimulate the minds of learners to become dynamic game-changers. Additionally, IAPT 2 described teaching preparation as models that evolved over the years and not sticking to "chalk and talk" as the only approach… don't get me wrong about "chalk and talk." The children cannot learn the same way we did. IAPT 7 shared a similar experience by saying, "preparing teachers for this new body of learners calls for different approaches based on education theorists." She believes that teaching strategies should cater to diverse learners and must manifest during training. Two participants IAPT 9 and 10, described their preparation method as a combination of traditional and modern. "Most of our lectures are using the 'chalk, and talk' method, and the few who are using digital technology focus only on PowerPoint." Three participants, IAPT 4, 5, and 8, indicated that "they were told to prepare PowerPoint and download videos to enhance presentation without any initial guidance." "IAPT 6 replied, "interesting how training is done." IAPT 3 stated that she is coping with the level of preparation since, within the math program, there is a demand for technology use. She still looks for the integration of 'chalk and talks' as a backup for practical activities. On the other hand, all participants described the training they are getting as mediocre for Indigenous Amerindian preservice teachers in training to embrace digital technology. These viewpoints run side-by-side with indigenous Amerindian preservice teachers' perceptions and the use of digital technology.

Emergent Code 2: Working Technology Plan. Fifteen text segments with code working technology plans were coded. The emergent theme and sub-codes were found across all 10 participants (Figure 2).

The emergent pattern occurred within 21.4% (15/70) of the text segments, shared during IQ 2 that sought to find out changes participants would like to see in the teacher training program for Indigenous Amerindian preservice teachers to become adopters of digital technology. All 10 participants responded that they would like to see a sustained technology plan from first to the final year that caters to the novice Indigenous Amerindian preservice teachers. IAPT 3 described the type of changes that would satisfactorily meet Indigenous Amerindian preservice. She believes that Indigenous teachers are treated differently from other ethnic groups when it comes to technology use. "It's like, Indigenous Amerindian preservice teachers are wealthy, have strong knowledge about technology and the necessary resources to sustain digital technology while in training. This stigma must change. I wish to say that Indigenous Amerindian preservice teachers in a cluster would have little knowledge of technology and still have to spend time figuring out how to utilize minimal skills.

Another segment of the teachers, on the other hand, would be very resistant to changes for several reasons. Either way, Indigenous Amerindian preservice teachers need to master appropriate skills to adopt digital technology into the

classroom. IAPT 4 felt that the lack of necessary technical knowledge is still questionable at this tertiary level. He understands that the teaching program should have systemic approaches for Indigenous Amerindian preservice teachers to gather skills and utilize them when called to execute plans. IAPT 6 shared, "if administrators try to understand Indigenous Amerindian preservice teachers' feelings, they would align the curriculum to meet their beliefs and practices." Participant IAPT 10 described instructors as "patience." She is of the view that the Ministry of Education, in collaboration with other stakeholders, should draft policies that would help all preservice teachers to use technology in the classroom. Most participants acknowledge that for the adoption of digital technology to be meaningful, the institution must prepare to adjust the content by adding local Indigenous content. It will help Indigenous Amerindians select diverse paths for adopting digital technology as a teaching tool in the classroom.

Emergent Code 3: Continuous Professional Development. Eight text segments with code ongoing professional development were coded. The emergent theme and sub-codes were found across eight of 10 participants (Figure 3).

The emergent pattern occurred within 20% (14/20) of the text segments, shared during, IQ 13 that sought to find out participants' views of the most significant factors that may hinder or promote the adoption of digital technology. Participants shared their opinions about the influential factors that delay their adoption of digital technology into the classroom. IAPT 1 stated, "it depends on the depth of orientation about the use of technology provided by the institution. My treatment at the institution was nothing less than unfavored, impacting my decision to integrate digital technology. I might come from an area where resources are scarce, but my belief and practices would never change me. I am not interested in technology in my classroom if this is what I have to be exposed to get knowledge about the tools". IAPT 6 felt that digital technology has the potential to be adopted by preservice teachers. She maintained that "poor communication about the pros and cons of digital technology would hinder the rate of adoption." For example, she commented that in "Agriculture Science, most of the teachers use some form of technology as guidance, but that information is not dispersed throughout the class." Despite individual preservice teachers using technology, the teacher noted that everyone needs to be exposed to the same information about the role of technology in education and make comprehensive decisions about the tool. The lecturers need to encourage all learners to try new technology skills and provide guidance where necessary to strengthen the adoption rate.

Participants shared about using digital technology for research, typing individual study reports, assignments, creating short videos using movie makers, and introducing lessons to learners. IAPT 3 mentioned that "I was introduced to Microsoft excel by my Business Studies lecturer, and it has helped me with tabulation and data organization." Additionally, "I am currently using Microsoft excel tool to teach students how to calculate percentages and construct graphs." As an Indigenous Amerindian preservice teacher in the context of training, "I am expected to use Excel software to construct worksheets, create a register, and organize the class list following the weekly work program.

For example, IAPT 2 stated that she is not using any technology because of her limited knowledge of technology,

and she is hoping to become a user in the future. Similarly, IAPT 4 shared, "computers are used in the preparation of assignments, but I'm punished with adapting to the process, since I have no typing skills, I have to use one finger to complete work on the computer." IAPT 5 shared that the phone is used primarily to play songs and video clips for the students. "It makes life easier for the teacher to help the little ones with skills such as reciting, counting, and working together". Participants provided additional examples of how they used digital technology during training. IAPT 2 and10 indicated that they are isolated since digital technology is complicated for them to manage. The participants noted that their "handwriting is impeccable" and don't want to lose their calligraphic skills to digital technology. IAPT 2 shared that it takes a longer time to prepare work using technology, and they find it more difficult than writing by hand, even though they believe that software can assist novice teachers. To build on handwriting skills, IAPT 10 found that there are "speech to text apps for writing assignment and read aloud to the students", but she is of the view that that may not apply to the community. For instance, IAPT 2 shared "the importance for the indigenous teacher to use apps from play store or google will help with the scope of digital technology as it relates to the modification of the delivery of content that will make learning fun." In addition, technology motivates students and benefits students because they can self-pace the work, and it also prepares students for the future. She noted that the technology would most certainly help teachers with the grading of examination scripts. IAPT 1 shared how digital technology can improve planning, writing resource units, and gathering information from textbooks. This approach provides additional time for teachers to work on other areas of teaching practice".

Emergent Code 5: Unique Actions. IQ 5: What actions alter your acceptance of digital technology use as a pedagogical tool? (As shown in figure 5)

Participant responses indicate that digital technology as a pedagogical tool can transform learners into twenty-first-century thinkers. Participant IAPT 8 described different situations that changed her outlook towards using digital technology as a pedagogical tool that supports collaboration, group conversations, and various assessments. The notion of cooperation within the classroom was also reflected by IAPT 10, "I see the students become alive when any practical work is conducted. Using digital technology as a pedagogical tool would foster collaboration among learners and educators. I believe the greater the interaction among learners, the faster the acceptance of digital technology among indigenous teachers, and it would transform into a child-friendly learning environment."

IAPT 7 opined that all student teachers must have an equal opportunity to learn resources that can make an undeniable impact on our journey to be qualified educators. He observed that access to resources would stimulate Indigenous Amerindians to see digital technology as a transformative tool for professional growth. Additionally, IAPT 5 stated, "It is time for the institution to see Indigenous preservice teachers as Guyanese and don't treat us differently so we can be more open to embracing new pedagogical strategies that support the use of digital technology. This notion of openness within the classroom was reflected by IAPT 9."As digital technology becomes mandatory for teachers in training, it would appeal more to my consciousness to accept changes. As an indigenous educator, I want to take risks like my other colleagues, to improve my

teaching style. Probably, the more chances I take during my training tenure, I would be able to make better decisions for my students and colleagues when I return to my community."

IAPT 3 and 6 shared that "their limited exposure to technology has caused them to widen their digital technology approach. IAPT 3 indicated that "the benefits would overcome the negatives," while IAPT 6 shared that technology is expensive for him due to economic constraints. However, it would not deter him from choosing the least expensive one and applying it to the classroom. Participants IAPT 1, 2, and 4 acknowledged that digital technology could be acceptable by Indigenous Amerindian teachers only if the Ministry of Education spends more money on computer labs for all schools to produce better technological learners. IAPT 1 echoed the need for positive leadership while training so the skills can be transcended across the board. Likely, IAPT 2 believes that making smart decisions for the adoption of digital technology is paramount not only for hinterland teachers but also for the heads of the institution and schools. Moreover, it would be mandatory for the institution to provide an atmosphere that supports Indigenous Amerindian preservice teachers' decisions to eliminate resistance and have a holistic approach towards new pedagogical practices.

Interpretation of the Findings

Perceptions to Digital Technology

Upon inquiring about the Indigenous Amerindian preservice teachers' perceptions of the adoption of digital technology in their daily pedagogical practices, the key findings included the admission that IAPTs found that digital technology is a challenge for learners from remote, riverine areas since territorial separation had impinged on their ability to be a part of the mainstream education. The deficiency of research focused on the perceptions of Indigenous Amerindian preservice teachers and the low adoption of technology, especially the integration of digital technology into the classroom.

One conclusion drawn from the data was that indigenous Amerindian preservice teachers found that using digital technology as a teaching tool is useful only if the training is provided for teachers to explore skills and strategies associated with the integration process. A review of the literature on the adoption of digital technology, indicated limited perspectives of indigenous Amerindian preservice teachers, especially in respect of pedagogical approaches and strategies to accelerate this adoption. Indigenous Amerindian preservice teachers were accustomed to the social and cultural make-up of their communities (Lazar et al., 2020; Saritas & Kuzminov, 2017; Tissenbaum & Slotta, 2019). This was the primary practice in their methods in educating remote communities (Asino & Pulay, 2019; Elliot & Lashley, 2017; Huang & Liaw, 2018; Shamir, et al., 2018; Prayaga et al., 2017). In this study, Indigenous Amerindian preservice teachers' perceptions of digital technology are echoed across Rogers (2004b) diffusion of innovation theory, while participation in the training was shared, which fills gaps in the literature. Amerindian preservice teachers reported that in their communities, their classroom setting is not geared for the integration of digital technology.

Three studies that reported on community structure and educational involvement about Indigenous learners' engagement in digital technology to bridge the educational gap at the Professional Development Center were researched (Blanc & Hammer, 2018; Rennie et al., 2018; Trimmer et al., 2018). These findings were concomitant with the findings of this study even though they are not based on the understanding of Indigenous Amerindian' preservice teachers' use of digital technology to develop skills at the individual and societal level (Jeong et al., 2019). This study findings confirmed that Indigenous Amerindian preservice teachers' knowledge of digital technology as a teaching tool depends upon the quality of training from the available resources.

The overarching Research Question for the study was: What is the perceived coping and adapting mechanisms used to overcome obstacles for the integration of digital technology by Indigenous Amerindian preservice teachers?

Several key findings from the data collected confirmed the knowledge that indigenous Amerindian preservice teachers found coping mechanisms to deal with the integration process of digital technology in the classroom (Gavaldon & McGarr, 2019). Participant experiences also confirmed that indigenous Amerindian preservice teachers are satisfied with the increase in the quality of the services for the adoption of digital technology (Mitchell et al., 2019).

Teacher preparation emerged as a major sub-theme, with findings that extended the knowledge in the research study. Indigenous Amerindian preservice teachers shared that once a coping mechanism was established, significant factors could be used to influence the analysis process. Several Indigenous Amerindian preservice teachers connected struggle and confusion to the integration process of technology. IAPT 1 noted, "The depth of orientation provided by the institution impacts my decision about integrating digital technology, not-with-standing my place of origin." When Indigenous Amerindian preservice teachers originate from areas where technology resources are scarce, they learn to modify tools in their instruction according to the unique needs of individual students (Jongen et al., 2019).

The conclusion drawn from the data related to this research question was that Indigenous Amerindian preservice teachers at the Innovator's level found digital technology as being supportive of making instructional changes that have professional impacts when technology is used for the improvement of training.

Limitations of the Study

Some limitations inherent to using a qualitative research and interview approach may have affected this study. A basic qualitative study design serves to collect data from groups of people to understand and interpret their perceptions (Merriam & Tisdell, 2016). There are however limitations in this approach. For this study, the data collected was limited to the perceptions that participants self-reported, instead of their actual behaviors (Yin, 2017). To identify and mitigate researcher bias, feedback from a team is recommended (Rubin & Rubin, 2012). Ongoing feedback from an academic team helped to minimize bias.

The research strategies to increase rigor included hypothetical triangulation, member checks, and journaling. The study entailed interviews of 0 Indigenous Amerindian preservice teachers to confirm and validate the transcriptions of the data analyzed. During data investigation, using triangulation with two conceptual structures, as recommended by Rogers (2004b) DOI and Davis (1986), TAM.

Recommendations

As this study was one of the first to explore indigenous Amerindian preservice teachers' perceptions about the integration of digital technology, additional studies with Indigenous Amerindian preservice teachers are recommended conducted to confirm and/or disconfirm the findings. Further exploring indigenous Amerindian preservice teachers'

viewpoints, is recommended to obtain viewpoints on the adoption of digital technology beyond the classroom.

Another recommendation is related to the key findings linked to the overarching research question. Amerindian preservice teachers' low adoption of digital technology. Based on what was learned during this study, I recommend that additional studies explore Rogers (2004b) DOI and Venkatesh and Davis (1986) TAM separately to get a deeper perspective of Indigenous Amerindian preservice teachers' ability to adopt digital technology as a pedagogical tool. Ostensibly, there is also an urgent need for understanding the low adoption of digital technology, with further research on modified support through digital technology for pedagogical changes.

Conclusion

In this basic qualitative study, a variety of factors were explored to obtain a deeper understanding of the complex process of preparing indigenous Amerindian preservice teachers increasing the rate of adoption of digital technology in the field of teacher training. The key finding for this basic qualitative study was that indigenous Amerindian preservice teachers could be budding adopters of the educational transformation that is needed to fully integrate digital technology into pedagogical practices and beyond the classrooms.

As Scherer et al. (2018) indicated, preservice teachers must be trained to acquire 21st-century skills and strategies for integrating digital technology. The conclusion is that digital technology can no longer be simply viewed as a personal communication tool, or browsing the web, but must be viewed as useful for indigenous Amerindian preservice teachers to attain professional guidance and support for integrating instructional tools and strategies for meaningful training practices, of closing the educational gap. The evidence further revealed that the intensive training, which was posited as a boost to teachers' confidence when teaching preservice indigenous Amerindian learners, provided a platform for positive social change from which policymakers and stakeholders can formulate a much-needed plan of integration. Hence, the growing concern surrounding learning among indigenous populations which existed as the conception of the study and which still exists today in Guyana is a very fertile ground to conduct similar educational research studies. The findings and discoveries of this study have potentially contributed to existing knowledge in respect of indigenous Amerindian preservice teachers utilizing digital technology for educational instruction.
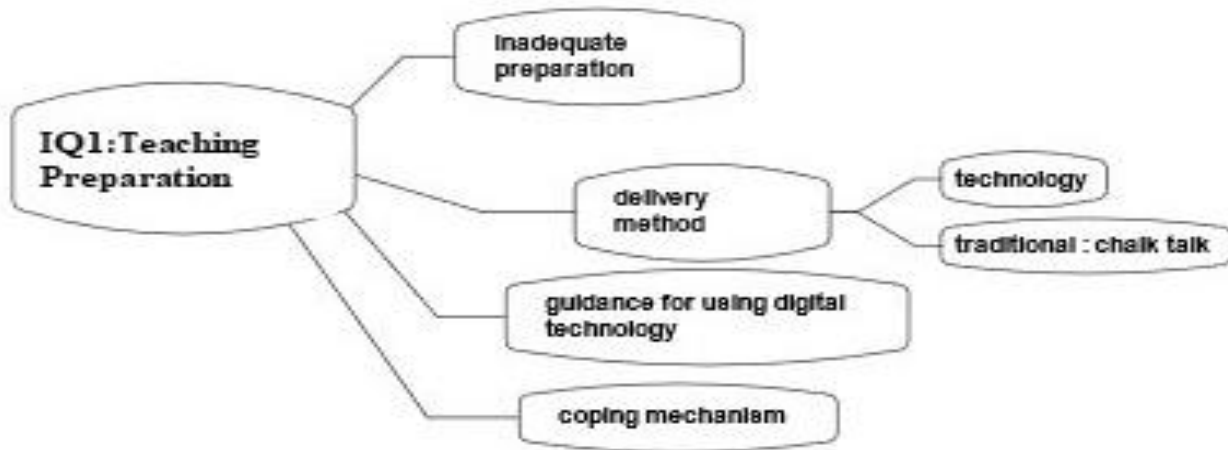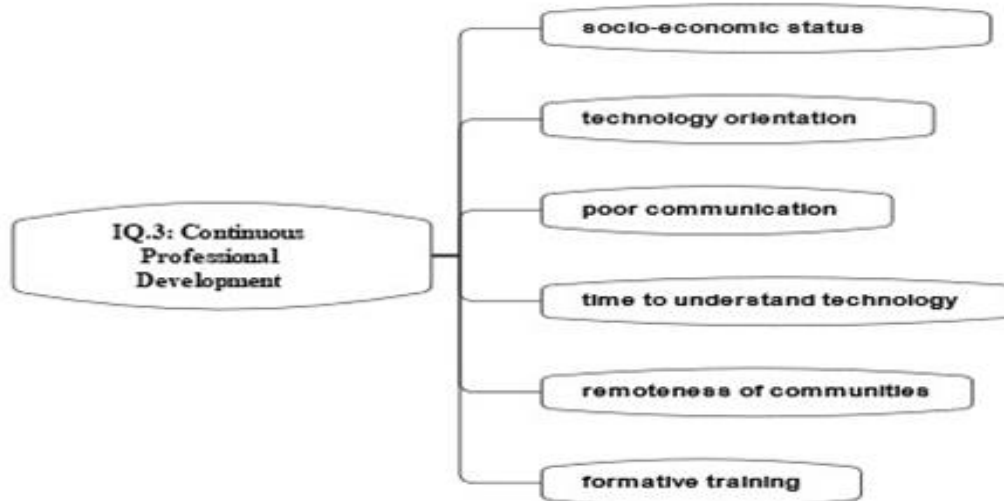

Figure 1. Emergent Code and Sub Code Aligned to RQ and IQ 1

Note: This figure portrays IAPT's perceptions about the depth of teacher preparation for adopting new teaching tools into the classroom. RQ: - What are the perceived coping and adapting mechanisms used to overcome the obstacles for the integration of digital technology by Indigenous Amerindian preservice teachers?
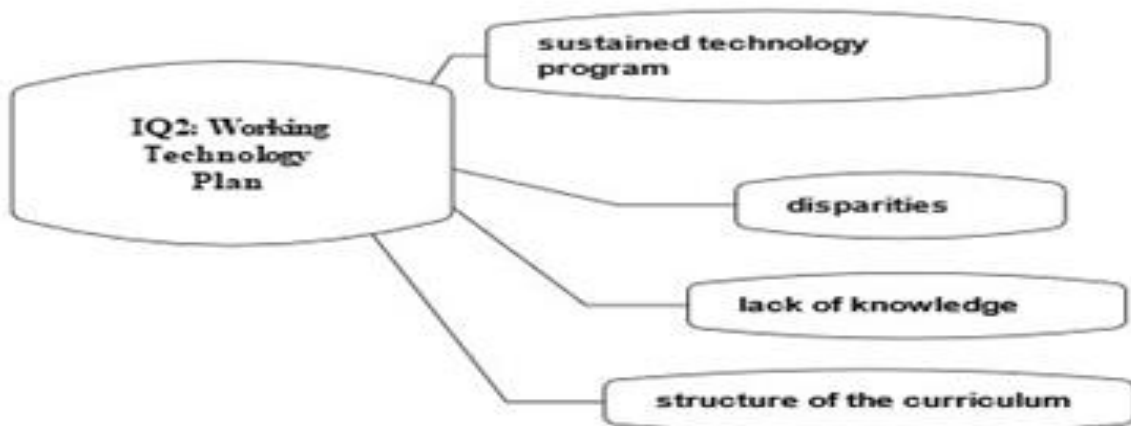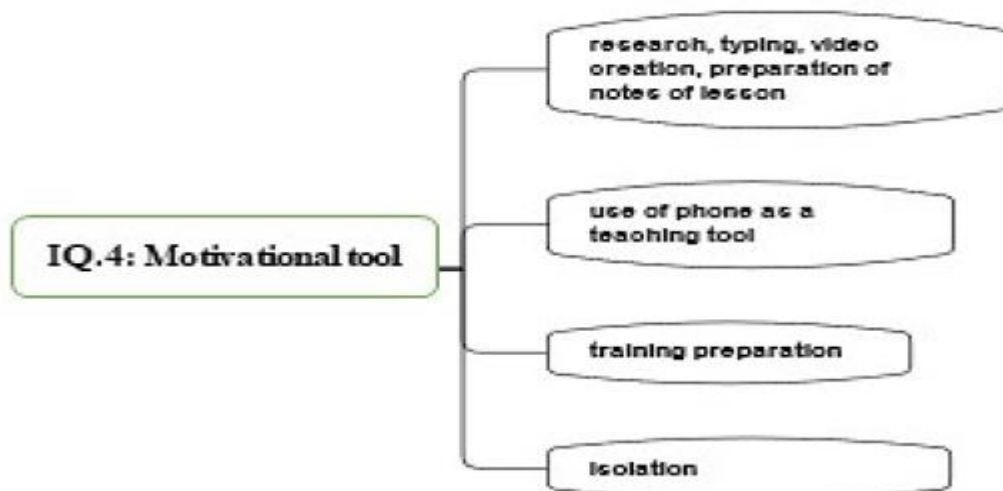

Figure 2. Emergent Code and Sub Code Aligned to RQ and IQ 2

Note: This figure demonstrates IAPT's strategies to adopt digital technology in their pedagogical practices.
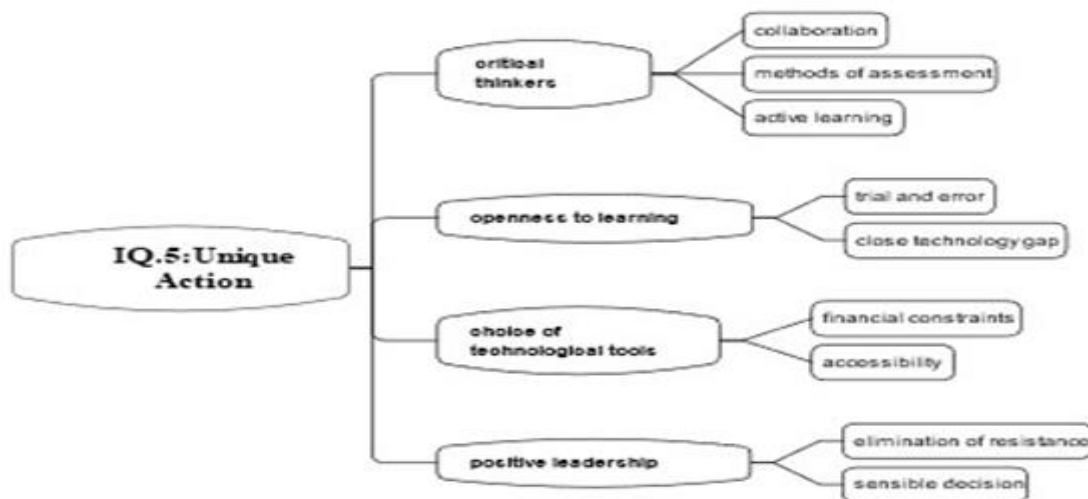
Figure 3. Emergent Code and Sub Code Aligned to RQ and IQ 3

*Note***:** This figure demonstrates the need for training institutions to provide ongoing professional development for IAPTs.

Figure 4. Emergent Code and Sub Codes Aligned to RQ and IQ 4.

Note: This figure demonstrates strategies a training can use to motivate IAPTs. RQ-What are the perceived coping and adapting mechanisms used to overcome the obstacles for the integration of digital technology by Indigenous Amerindian pre-service teachers?

Figure 5. Emergent Code and Subcode Aligned to RQ and IQ5.

Note: This figure demonstrates the action a training institution should take to allow IAPT access to digital technology. RQ-What are the perceived coping and adapting mechanisms used to overcome the obstacles for the integration of digital technology by Indigenous Amerindian preservice teachers?

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