EXAMINING IP STUDENTS' VIEWS ON ADAPTIVE TECHNOLOGICAL TRANSITION IN LEARNING: AN EXPLORATORY SEQUENTIAL DESIGN

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ABSTRACT

This research employed an exploratory sequential design to examine dimensions of adaptive technological transition for Indigenous students. Findings underscore technology's role in learning, emphasizing cultural relevance and equitable opportunities for enhanced educational experiences. Seventeen respondents were purposively chosen, with ten participating in in-depth interviews and seven in focus group discussions. Additionally, three hundred participants underwent random selection for Exploratory Factor Analysis (EFA). Thematic analysis revealed seven key themes, encompassing technology's role for IP's learning, significance of technology, technology-enhanced learning, IP learning transformation, access & connectivity challenges, cultural enrichment technology, educational technology empowerment. EFA identified five dimensions: Tech-Culture Learning, Digitalized Learning Environments, Technological Equity in Learning, Culturally Inclusive Technology, and Technological Learning Diversity. This highlights the imperative integration of culturally sensitive technology solutions for Indigenous communities. The final instrument, exhibiting high reliability (97.3%), comprises 58 items across five dimensions, ensuring face validity. In conclusion, technology's impact on Indigenous students necessitates prioritizing accessibility, cultural relevance, and equitable opportunities.

Keywords: *Tech-Culture Learning, Digitalized Learning Environments, Technological Equity in Learning, Culturally Inclusive Technology, and Technological Learning Diversity Design, Exploratory Approach Arakan District, North Cotabato.*

INTRODUCTION

Globally, seventy eight percent (78%) of indigenous pupils have their cultural values and customs diminished when they were taught using modern educational technology and adapt technology as a tool in learning. Indigenous worldviews, languages, and methods of knowing are not reflected in the utilization of mainstream curricula and internet resources. It might be difficult for indigenous pupils to access computers and the internet if they live in rural or isolated places. The disparity in education opportunities between Indigenous and non-Indigenous pupils may widen because of the digital divide (Adit, A. 2020).

In the Philippine settings, because of the prevalence of racist and discriminatory remarks and information online, the technology adaptation in the transition in learning poses a risk of undermining Indigenous pupils' sense of cultural safety. Their emotional

health may suffer as a result of their perception of being on the outside looking in. Indigenous learners may struggle to adapt to the modern classroom since its emphasis on technology is sometimes at odds with their traditional values. This might cause them to lose touch with their heritage and their cultural heritage, as well as their knowledge and values (Bakia, M., Shear, L., Toyama, Y., & Lasseter, A. 2021).

In the contrary, indigenous learners could have varying learning styles that don't work well with technological education. For instance, Indigenous knowledge transfer could depend on non-technological means, such as oral and hands-on experience. This might do irreparable harm to the collective memory and history (Bogdan-Martin, D. 2019).

Locally, IP students at selected schools in Arakan District, North Cotabato are mostly Manobo-Kulamanon, Manobo-Tinananon, and Blaan. The potential for adaptive learning technology to improve educational effectiveness and efficiency is important. New adaptive learning technology could help instructors meet students' specific learning demands. This may improve student motivation, engagement, and classroom satisfaction. However, several problems are needed to address such as accessibility, digital literacy, information availability, social connection, and engagement that hamper adaptive learning for all IP students.

Thus, the emphasis in the studies has often been on the negative impacts on technological adaptation in learning amongst the views of IP learners (Roy, A. 2019). Yet, there is insufficient study on IP students' views on adaptive technological transition in learning. Although there are studies on adaptive technological transition of learning in general, the majority of them concentrate on undergraduate students, professors, or community members as opposed to IP students' views (Woodworth, P., & Applin, A. 2020).

The goal of this study was to determine the IP students' views on adaptive technological transition in learning in the selected schools in Arakan District, North Cotabato Division, North Cotabato.

Research Questions

This study examined the IP students' views on adaptive technological transition in learning in selected schools in Arakan District, North Cotabato. This study sought to answer the following questions:

1. What are the themes that emerged from the views of IP students regarding the adaptive technological transition in learning?

2. What are the underlying dimensions of IP students' views on Adaptive technological transition in learning?

3. What is the reliability of the constructed questionnaire on IP students' views on adaptive technological transition in learning scale?
4. Based on the results of analysis, what measurement tool is suitable for evaluation of IP students' views on adaptive technological transition in learning?

METHODS

Research Design

The exploratory sequential mixed method was used in this study. This plan starts with a phase of collecting and analyzing qualitative data through rigid interviews, then moves on to a phase of collecting and analyzing quantitative data through survey questionnaires (Cresswell, 2003).

Also, the goal of this design is to investigate a situation where this was often helpful when making a questionnaire (Plano Clark, 2005). Qualitative data can be used when variables haven't been found or a theory hasn't been made (Morrow, 2007). It includes content analysis, which assumes that people have beliefs or opinions about something and that these can be reliably inferred from what they say (Wilkinson, 2004). So, one goal of content analysis is to find out what people think about something. Content analysis is the process of putting what people have said into groups of opinions that make sense. It can be very organized. With this design, the first parts of work ethics are based on the stories of the participants.

Research Participants

A total of ten (10) IP students were invited for an in-depth interview and seven (7) IP students for the focus group discussion. The results of the interview were used in drafting the initial items of IP students' views on adaptive technological transition in learning questionnaires.

The constructed survey questionnaire from the qualitative interviews were disseminated to 300 IP students in Arakan District, North Cotabato**.** The respondents were selected using the stratified randomized sampling technique. This necessitates knowing the characteristics of the population members so that the population can be stratified before the sample is chosen (Fowler, 2009). After which, the final tool was distributed to 30 respondents for pilot testing.

Research Instruments

In the qualitative phase, the researcher formulated interview guide questions that gave the insights of IP students on adaptive technological transition in learning. The items of the questionnaire were constructed based on the frequency of occurrence as result of interview and focus group discussions. The construction of the tool from the qualitative phase revealed the IP students' views on adaptive technological transition in learning. This tool is subjected to dimension reduction to look for the factors that constitute the IP students' views on adaptive technological transition in learning. The researcher also invited five experts to perform content validity of the interview questions and check the suitability of the items that capture the IP students' views on adaptive technological transition in learning. This is to ensure the readability and comprehensibility of the questionnaire.

Data Collection

The following are steps in gathering data: First, the researcher asked permission through a letter noted by the National Commission on Indigenous People or NCIP. Next a letter to conduct research addressed to the Dean of Graduate School. Then, the distribution of permission letters to the DepEd personnel, namely: Schools Division Superintendent, Public School District Supervisors, and School Principal/School Head. After the approval is obtained, the researcher personally approaches the competent

participants for this study and elaborately explains the informed consent and the purpose and objective of the study. Upon the approval of the participants, the researcher proposed a venue, date, and time for interview proper or in responding survey questionnaires.

On the day of data collection, the participants were requested to sign the letter of consent which specify in the instrument for voluntary participation in the study. Only those who signed the consent letter will consider as part of this study.

Data Analysis

The notes that are obtained from in-depth interviews are analyzed using thematic analysis. This method emphasizes pinpointing, examining, and recording patterns (or "themes") within the data. Patterns in data sets that are significant to the description of a phenomenon and are linked to specific research topics are called themes (Boyatzis, 1998).

In quantitative data, the exploratory factor analysis is used in the study. It determines empirically how many constructs, or latent variables, or factors underlie a set of items. Factor analysis is a type of multivariate analysis that seeks to explain the relationship between many variables (items) in terms of a set of independent underlying factors. This statistical method can serve as an important tool for validating the structure of instruments (Nunnally, 1978; Carpenter, 2006) pointed out that factor analysis is not a simply defined statistical method, but a broad category of methods for conceptualizing groupings of variables that includes mathematical procedures for assigning variables to certain groups.

RESULTS AND DISCUSSION

Emerging Themes on IP Students' Views on Adaptive technological transition in Learning.

This section presents an analysis of the seven (7) primary themes that emerged from the comprehensive interviews and focus group discussions conducted with the participants. Table 1 illustrates the main themes identified by the respondents in relation to the evaluation of IP students' views on the transition to adaptive technology in the context of learning namely: Technology's Role for IP's Learning, Significance of Technology, Technology-Enhanced Learning, IP Learning Transformation, Access & Connectivity Challenges, Cultural Enrichment Technology, Educational Technology Empowerment

Technology's Role for IP's Learning. Most of the participants underscores the transformative impact of technology in enhancing the educational experiences of indigenous people (IP). This theme highlights the profound influence of technology in improving access to education and knowledge for indigenous communities, breaking down barriers related to geographical remoteness and limited resources. Meanwhile, it reflects their responses below.

"*In my perspective, when it comes to utilizing technology for education, it is a significant help, much like my personal experience (Ang akong panglantaw kalabot sa pagpahiangay sa teknolohiya sa pagkat-on kay dako nga tabang nga sama nako nga IP (IDI_P1).*"

"For me, technology is immensely beneficial for learning because we live in a rural area with no library, making research quite challenging. However, things are different now as I can borrow a cellphone to conduct research, so it is extremely helpful (Para sa akoa dako gyud kaayo'g tabang and teknolohiya sa pagkat-on kay bukid man amoa dire, walay library lisud kayo maka research peru lahi naman karon pwedi naman ko makahulam og cellphone para maka research, so dako gyud kayo og tabang) (IDI_P2)."
"In my view, technology can really help in my education, especially regarding the research we have in our school (Sa akong panglantaw makatabang gyud ang teknolohiya sa akong pag-eskwela manhitungod sa naa mi mga research sa among eskwelahan) (IDI_P6)."
"For me, it can be useful if there are important matters to attend to. It can help with research so it doesn't become difficult (Para sa akoa magamit ni siya sa ato kung nay mga importante. Makatabang sa research aron dili maglisud) (FGD_P1)."
"For me, technology is of great help in learning because it helps me understand what I wouldn't otherwise grasp in my research (Para sa akoa dako kaayo'g tabang ang teknolohiya sa pagkat-on kay katong dili nako angay masabtan ma research nako) (FGD_P2)."
"For my part, technology is indeed a significant aid in our education, and it's also a significant help to our students (Para pod sa akong kabahin, ang teknolohiya dako jud kaayo'h tabang sa among pagkat-on og dako pod kaayo ning tabang sa amo nga mga estudyante) (FGD_P7)."

Correspondingly, the significant responses of the participants implied that the utilization of technology in education not only promotes academic progress but also facilitates the preservation and dissemination of traditional knowledge and cultural practices within these communities. It encourages a more inclusive and equitable learning environment, enabling indigenous students to engage with contemporary educational resources and connect with a broader world of information and ideas.

These statements are supported in the study of Murati, R., & Ceka, A. 2019). They gave lighted that technology can help bridge the educational gap by providing resources and online platforms for remote learning, allowing indigenous students to access a wide range of educational content. Studies also suggest that technology can help preserve indigenous languages and cultures by providing tools for language documentation and cultural preservation.

Furthermore, technology has been found to empower indigenous communities by offering opportunities for digital storytelling, which enables them to share their stories, traditions, and experiences with a global audience. Overall, the adoption of technology in indigenous education not only enriches the learning experiences of IP students but also promotes cultural preservation and community empowerment (Rice, K. 2020).

Similarly, **Significance of Technology** was the theme emerged from IP students transition learning in technology. It was revealed that most of the participants believed that Technology serves as a powerful tool to bridge the educational gap for indigenous communities by providing digital resources and online platforms. It empowers indigenous students to access diverse educational content, fosters cultural preservation through language documentation, and encourages digital storytelling, thereby enriching

learning experiences and community empowerment. Hence, the significant remarks of the participants highlighted below:

"Right now, I am using a cellphone (Sa karon akong ginagamit kay Cellphone) (IDI_P1)."
"I just borrow my mom's cellphone for research. So, I'm really trying my best to finish my education so I can work and support my family (Mang hulam lang ko sa akong mama og cellphone para pang research. So maningkamot gyud ko na maka human og eskwela para makatrabaho ko ug maka tabang ko sa akong pamilya) (IDI_P2)."
"The gadgets I use are smartphones, and these are really helpful to me, especially now that it's very difficult because you really need to use a smartphone (Ang mga matang nga akong gigamit kay smartphone kay kini makatabang gyud sa ako, ilabi na karon nga lisud na kaayo kay kailangan na gyud mo gamit og smartphone) (IDI_P3)."
"The computers, tablets, smartphones, and online platforms (Ang mga computer, tablet, smartphone, online na platform) (IDI_P4)."
"What I use right now is a cellphone, and for me, it's really a big help because I can use when I need to do research on Google and more (Ang ginagamit nako karon kay cellphone, para sa ako dako jud ni siya og tabang sa akoa kay magamit nako siya kung naa koy e-research sa google ug uban pa) (FGD_P3)."

The implications of this theme are profound, as they underscore the potential for technology to revolutionize indigenous education. By leveraging digital tools and resources, indigenous students can overcome geographical and resource limitations to access a broader spectrum of educational content. Additionally, the preservation of indigenous languages and cultural practices is facilitated through technology, strengthening the cultural identity of these communities. Furthermore, digital storytelling and online engagement foster global connections, enabling indigenous people to share their unique narratives and experiences with a broader audience, further enriching their education and reinforcing their sense of belonging.

Also, study by Chickering, A.W., & Gamson, Z.F. 2020 demonstrated how the integration of technology in indigenous education improved access to educational materials, leading to increased academic achievement among indigenous students. The research highlighted the importance of digital platforms in enhancing learning outcomes for these communities.

In addition, technology's role in preserving indigenous languages was explored. The research showcased how digital tools and platforms allowed for the recording and documentation of endangered indigenous languages, contributing to their revitalization and cultural preservation (Senn, G.J. 2021).

Technology-Enhanced Learning. The ideas and experiences of the participants revealed that Technology-Enhanced Learning has revolutionized education, offering a dynamic and flexible approach that accommodates the diverse needs and learning styles of students. It provides an interactive platform for educators to engage learners in a more immersive and personalized way, fostering deeper understanding and knowledge retention. The integration of digital tools and resources in the learning process enhances collaboration, critical thinking, and problem-solving skills, preparing students for the demands of the digital age. Thus, the remarks of the participants highlighted below:

"Whether in the past or today, there have been significant changes because I can learn faster now compared to before when I solely relied on the teacher's instruction from the textbook. Now, I can research to find answers to my questions (Kung itandi karon ug sa una,dako na kaayo ang

kabag-ohan kay mas paspas ko makatuon og sa una masalig ra ko sa itudlo sa teacher basi sa libro. Karon makahimo kung maka research sa akong mga pangutana nga kinahanglan og katubagan) (IDI_P1). “

“For me, it is really important. It has been a great help because I used to struggle without a cellphone. Now, with a cellphone, it's very convenient for doing research (Para sa ako kay importante gyod kaayo. Dako og tabang kay sa una wala pa koy cellphone maglisud gyud ko. Karon, kay naa nay cellphone nindot kaayo kay maka research na ka) (IDI_P4).”

"The difference is that in the past, there were no TVs or cellphones in school. But now, I use them because I am in high school (Ang nabag -o kay dati wa pay mga TV o cellphone sa eskwelahan karon mao na jud akong ginagamit kay high school naman ko) (IDI_P6).”

“I*n the past, when there was no technology or cell phone, if I didn't understand the topic our teacher discussed, I couldn't comprehend it at all. But when there is a cell phone or technology, I can come up with examples (Sa una katong wala pay teknolohiya or cp kung unsay topic ni mam pag-dili nako masabtan dili na gyud masabtan pero katong naa nay cp o teknolohiya makaisip nakog mga halimbawa (FGD_P2).”*

“I have observed the use of technology last year and this year. The change I have seen is that this year, it's much easier for us to learn compared to the previous year (Aduna akoy nakit-an sa paggamit sa teknolohiya s ani-aging tuig og karong tuig, ang akong Nakita na kausaban katong tuiga mas dali nami makakat-on kumpara sa niaging tuig (FGD_P5).”

Moreover, the significant remarks of the participants address the evolving landscape of education. It creates an inclusive environment, allowing access to education for diverse groups of students, irrespective of geographical location or physical limitations. Furthermore, it offers an opportunity for educators to adapt their teaching methodologies to cater to individual learning preferences, fostering student engagement and academic success. Technology-Enhanced Learning also has the potential to bridge educational disparities by providing equal access to quality education, offering a more equitable and accessible learning experience for all.

Correspondingly, Technology-Enhanced Learning, with its emphasis on digital tools and online resources, has been the subject of numerous studies that explore its effectiveness and impact on education. A study by Bernard et al. (2014) examined the outcomes of technology-enhanced learning in higher education. The research found that technology-enhanced instruction improved student learning outcomes, and students in technology-enhanced courses performed better than those in traditional face-to-face courses. This study highlighted the potential of technology to enhance educational experience, especially in higher education settings (Conrad, D. 2019).

Also, another relevant study by South, J., & Stevens, K. (2021) delved into the effectiveness of online learning in K-12 education. The research emphasized the advantages of technology-enhanced learning for students in the K-12 sector, such as increased flexibility, access to a wide range of resources, and personalized learning experiences. The findings suggested that well-designed online learning programs could significantly benefit K-12 students.

IP Learning Transformation. Most of the participants believed that the concept of IP Learning Transformation highlights the power of technology in enriching the educational experiences of indigenous people. It signifies a shift from traditional learning methods towards a more inclusive, accessible, and culturally sensitive approach. Furthermore, IP Learning Transformation not only fosters academic growth but also

plays a crucial role in preserving and revitalizing indigenous languages, cultural traditions, and stories, promoting a sense of cultural pride and identity among indigenous communities. This transformation underscores the importance of harnessing technology as a tool to empower indigenous learners and strengthen their connection to their heritage while preparing them for the challenges of the modern world. Thus, the participants significant remarks revealed below:

> "*Regarding the use of technology, it provides significant help or benefits to us indigenous people (IP) so that we can become more skilled and keep up with the advancements in this modern era (Kabahin aning paggamit sa teknolohiya, dako kaayong tabang o benipisyo naming mga IP aron mas mahanas pa kami og makasabay sa kabag-ohan niining moderno nga panahon) (IDI_P1)"*
>
> *"You can gain great benefits from technology because you can just load and do research. Unlike before, it was very difficult to do research because our place is in the mountains, and we frequently experience power outages with slow signal. You can even make calls to your family and teacher from a distance (Dako kay kag makuha na benipisyo sa teknolohiya kay magpa-load nalang ka maka-research naka dili pareha sa una lisud kaayo mag research kay bukid man amoa dire sige pagyud og brownout hinay pag-gyud ang signal. Makatawag ka bisag layo imong pamilya og teacher) (IDI_P2)."*
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> *"For me, technology is really helpful because it greatly assists me in my education and communication with my teachers (Para sa akoa makatabang jud ang teknolohiya sa akoa kay dako siyag tabang sa akong pag eskwela og pag-communicate sa akong mga teacher) (FGD_P6)."*

Besides, the implications of IP Learning Transformation are multifaceted and profound. By leveraging technology, indigenous learners can overcome geographical and infrastructural barriers that have historically limited their access to education. This transformation has the potential to bridge the educational gap between indigenous and non-indigenous populations, promoting inclusivity and equality in educational opportunities.

Moreover, the preservation of indigenous languages, traditions, and stories through digital platforms not only safeguards cultural heritage but also ensures that future generations of indigenous people can continue to celebrate their identity. Technology also facilitates global outreach, enabling indigenous communities to share their unique narratives with a broader audience and garner support for their cultural preservation efforts.

In a study conducted by Savvidis, P. (2022), the transformative role of technology in indigenous education was explored, aligning with the theme of IP Learning Transformation. The research investigated the impact of incorporating digital storytelling and multimedia content into indigenous curricula. Findings indicated that technology not only enriched the learning experiences of indigenous students but also empowered them to become knowledge producers, using digital platforms to share their unique cultural narratives. This study underscored how technology-enhanced learning can foster cultural preservation and promote a sense of agency among indigenous learners, ultimately contributing to a more inclusive and culturally sensitive education.

Access & Connectivity Challenges. Most of the participants believed that Access and connectivity challenges are pervasive issues that hinder equitable digital inclusion worldwide. These challenges encompass a lack of affordable and reliable internet access, particularly in rural and underserved areas, as well as barriers related to device ownership and digital literacy. These disparities not only limit individuals' ability

to access essential services, education, and employment opportunities but also exacerbate existing societal inequalities. Thus, it reflects their statements below.

> *"The use of technology presents many challenges because we have limited access to it at home since we only have one cellphone (Daghan kaayo og babag ang paggamit og teknolohiya kay sa balay limitado kami nga makagamit kay isa ra man gud ang among cellphone) (IDI_P1)."*
> *"This one doesn't have a signal or load. It's very difficult to find a signal and load because the load costs 50 pesos and only lasts for 3 days (Kini gyung walay signal og walay load. Lisud gyud kaayo mangita og signal og load kay 50 pesos kaayo ang load 3 days ra pa gyud) (IDI_P2)."*
> *"In my opinion, what I experience while using technology is sometimes there's no signal and no load (Para sa akong kabhin, ang akong nasinati samtang ako mogamit sa teknolohiya usahay walay signal og wala poy load) (IDI_P4)."*
> *"I experience the use of technology when doing research; the internet is often slow (Maranasan kung magamit ang pag-research sa teknolohiya ay mahina ang internet) (FGD_P1)."*
> *"In my experience with technology, sometimes I can do e-research, but there's no load, so I can't do much. Sometimes I have load, but there's no signal, and sometimes there are power outages, so I can't do anything (Sa akong nasinati pod sa teknolohiya kay usahay naay e- research tapos walay load so wala gud pod koy mahimo , mangayo nalang kog answer. Usahay naay load peru wala kaayo signal tapos usahay mo brownout so wala koy mahimo) (FGD_P4)."*
> *"My challenges are that I can't research immediately because the battery is low, there's no electricity, and I don't have any load (Challenges nako kay dili dayon ko maka research kay ma lowbatt walay kuryente tapos wala pagyud pang load) (FGD_P7)."*

It was noted that significant remarks of the participants implied that the access and connectivity challenges are far-reaching. They hinder economic development by limiting participation in the digital economy, exacerbate educational disparities, and hinder healthcare delivery through telemedicine. Additionally, they have implications for social and political inclusion, as the digital divide can reinforce inequalities and limit access to information and democratic processes. Bridging these gaps is crucial for sustainable development, social cohesion, and the realization of the benefits of the information age.

It is worth noting that the extent to which students' access to reliable internet connections influences their learning outcomes when using online education platforms. The study underscores the disparities in internet access, particularly in low-resource regions, and how these limitations impact students' ability to effectively engage with IP learning technology. It offers insights into strategies for bridging the digital divide to enhance the educational benefits of online learning platforms (Pionke, R. 2019).

While, McMichael, M. (2021), emphasized that technology has not only made education more accessible but also allows for personalized learning experiences, adaptive content delivery, and the integration of multimedia resources. It empowers learners to engage with interactive materials, collaborate with peers worldwide, and access a wealth of information, thereby promoting self-directed learning and lifelong education.

Cultural Enrichment Technology. Most of the participants believed that cultural Enrichment Technology encompasses the use of digital tools and platforms to promote cultural preservation, exchange, and appreciation. It allows for the digitization of cultural artifacts and heritage, making them more accessible to a global audience. Furthermore, it facilitates cross-cultural interactions, fostering a deeper understanding and

appreciation of diverse traditions and customs. Thus, it revealed their significant remarks below.

"It has a significant impact on changing culture because it can alter some cultural practices. In our culture, we might not have been exposed to others' cultures, but due to technology, we can learn a lot (Dako siya og tabang sa pagbag-o sa kultura kay mabag-o ang uban na pamatasan sa kultura. Kay sa among kultura wala kaayo mailhan sa uban na culture peru tungod sa teknolohiya daghan na og makat-unan) IDI_P4)."

"In my opinion, this is a great support to my fellow indigenous people, like me, who are half-indigenous. You can't only know your own culture; with technology, you can learn about other cultures as well. It adds to the knowledge of those who go to school, making their lives even more colorful (Sa akong hunahuna, dako ni siya og masuporta sa akong mga katutubo nga lumad sama sa akoa nga half lumad na dili lang na kultura nimu na imong mahibaloan kon dili ang kultura sab sa uban aton makabaton pa og dugang samot na sa mga nag eskwela na dakopa kaayo og lakwunon sa kinabuhi) (FGD_P4)."

"Technology is a big help to indigenous people so they can learn more about other cultures, and it greatly supports students in easily understanding what else needs to be learned in school (Dako gyud pud ug tabang ang teknolohiya sa mga lumad aron naa pa silay mahibaw-an sa uban na kultura og dako ni og masuporta sa estudyante aron dali lang makabalo sa mga unsa pa ang dapat na matun-an sa sulod sa eskwelahan og mas dali na makasabot) (FGD_P5)."

"Technology greatly supports my education, especially when we encounter difficulties and challenges. You can conduct research, and it's very helpful for me (Ang teknolohiya dako kaayo og pagsuporta sa akong pag-eskwela labina kung aduna kita nalisudan ug nalibugan, Pwedi kaayo ka mag research ug dko kaayo tabang Kanako) (FGD_P7). "

The remarks of the participants implied that Cultural Enrichment Technology enables people from different parts of the world to engage with and learn about various cultures, promoting tolerance and cross-cultural understanding.

Thus, the statement is supported by Mardiana, H. (2020). She gave lighted that this technology aids in the preservation of cultural heritage by digitizing historical artifacts, documents, and traditions, safeguarding them for future generations The digitization and sharing of culture can also create economic opportunities, such as cultural tourism and the sale of cultural products, benefiting local communities and the broader learning potentials of IP Students.

Educational Technology Empowerment. The majority of the participants believed that Cultural Enrichment Technology plays a pivotal role in preserving and safeguarding cultural heritage in digital formats. Museums, archives, and cultural institutions worldwide have adopted digitization techniques to protect and share invaluable artifacts, manuscripts, and artworks. This not only ensures the longevity of these cultural treasures but also makes them accessible to a global audience, transcending geographical boundaries. Thus, the participants' remarks are highlighted below.

"What I want to see is that we indigenous people (IP) can finish college due to the use of this technology. Because now, it's easier for us to understand thanks to this modern way of learning (Ang gusto nako makita nga kaming mga IP nako og eskwela taman sa college tungod sa paggamit aning teknolohiya.Kay sa karon, mas dali naming makasabot tungod niining makabag-o nga pamaagi sa pagkat-on) (IDI_P1)."

"I really want to learn more, especially about computers. I want to learn that because I can see how our teachers can easily edit and research. So I won't be ignorant when I see a computer (Gusto pa gyud ko makakat-on pag daghan labi na aning computer gusto gyud ko makakat-on

ana kay makita nako ang among teacher na dali kaayo maka edit og dali kaayo maka-research og para dili nako ignorante kung makakita og computer) (IDI_P5).”

“For me, technology really helps because it can bring joy to your family (Para sa ako makatabang gyud ang teknolohiya kay para matawaan nimu ang imong pamilya) (FGD_P3).”

The statements of the participants implied that Cultural Enrichment Technology are profound for preserving cultural legacies. By digitizing cultural artifacts, documents, and practices, it ensures their long-term survival and facilitates widespread accessibility, reducing the risk of loss due to natural disasters or decay. Moreover, it enables research and educational opportunities, benefiting scholars, students, and enthusiasts.

Meanwhile, the study of McMichael, M. (2021) emphasized that Cultural Enrichment Technology has the potential to become a potent tool in cultural diplomacy and soft power. Governments and organizations can use digital initiatives to showcase their cultural heritage, promote tourism, and engage in cultural exchanges, thereby enhancing their global image and fostering international relations. These initiatives can have economic implications by attracting tourists and investors interested in experiencing and supporting these cultural offerings.

Also, digital platforms and social media, Cultural Enrichment Technology fosters cross-cultural exchange and understanding. It allows people to engage with diverse cultures, traditions, and customs, enabling them to explore the world's rich tapestry of traditions, art, and knowledge. This exposure can break down stereotypes, promote empathy, and bridge cultural gaps, contributing to a more interconnected and harmonious global society (Mardiana, H. 2020).

Table 1
IP students' views on Adaptive technological transition in learning.

Issues Probed	Core Ideas/ Statements	Themes
Views pertaining to technology adaptation transition in learning	In my perspective, when it comes to utilizing technology for education, it is a significant help, much like my personal *experience (Ang akong panglantaw kalabot sa pagpahiangay sa teknolohiya sa pagkat-on kay dako nga tabang nga sama nako nga IP (IDI_P1).* For me, technology is immensely beneficial for learning because we live in a rural area with no library, making research quite challenging. However, things are different now as I can borrow a cellphone to conduct research, so it is extremely helpful *(Para sa akoa dako gyud kaayo’g tabang and teknolohiya sa pagkat-on kay bukid man amoa dire, walay library lisud kayo maka research peru lahi naman karon pwedi naman ko makahulam og cellphone para maka research, so dako gyud kayo og tabang) (IDI_P2).* In my view, technology can really help in my education, especially regarding the research	**Technology's Role for IP’s Learning**

	we have in our school *(Sa akong panglantaw makatabang gyud ang teknolohiya sa akong pag-eskwela manhitungod sa naa mi mga research sa among eskwelahan)* (IDI_P6). For me, it can be useful if there are important matters to attend to. It can help with research so it doesn't become difficult (*Para sa akoa magamit ni siya sa ato kung nay mga importante. Makatabang sa research aron dili maglisud) (FGD_P1).* For me, technology is of great help in learning because it helps me understand what I wouldn't otherwise grasp in my research *(Para sa akoa dako kaayo'g tabang ang teknolohiya sa pagkat-on kay katong dili nako angay masabtan ma research nako)* (FGD_P2). For my part, technology is indeed a significant aid in our education, and it's also a significant help to our students *(Para pod sa akong kabahin, ang teknolohiya dako jud kaayo'h tabang sa among pagkat-on og dako pod kaayo ning tabang sa amo nga mga estudyante) (FGD_P7).*	
	Right now, I am using a cellphone (*Sa karon akong ginagamit kay Cellphone)* (IDI_P1). I just borrow my mom's cellphone for research. So, I'm really trying my best to finish my education so I can work and support my family *(Mang hulam lang ko sa akong mama og cellphone para pang research. So maningkamot gyud ko na maka human og eskwela para makatrabaho ko ug maka tabang ko sa akong pamilya)* (IDI_P2). The gadgets I use are smartphones, and these are really helpful to me, especially now that it's very difficult because you really need to use a smartphone *(Ang mga matang nga akong gigamit kay smartphone kay kini makatabang gyud sa ako, ilabi na karon nga lisud na kaayo kay kailangan na gyud mo gamit og smartphone)* (IDI_P3). The computers, tablets, smartphones, and online platforms *(Ang mga computer, tablet, smartphone, online na platform) (IDI_P4).* What I use right now is a cellphone, and for me, it's really a big help because I can use it when I need to do research on Google and more *(Ang ginagamit nako karon kay cellphone, para sa ako dako jud ni siya og tabang sa akoa kay magamit nako siya kung naa koy e-research sa google ug uban pa)* (FGD_P3).	**Significance Of Technology**
	Whether in the past or today, there have been significant changes because I can	**Technology-Enhanced Learning**

	learn faster now compared to before when I solely relied on the teacher's instruction from the textbook. Now, I can research to find answers to my questions (Kung itandi karon ug sa una,dako na kaayo ang kabag-ohan kay mas paspas ko makatuon og sa una masalig ra ko sa itudlo sa teacher basi sa libro. Karon makahimo kung maka research sa akong mga pangutana nga kinahanglan og katubagan) (IDI_P1). For me, it is really important. It has been a great help because I used to struggle without a cellphone. Now, with a cellphone, it's very convenient for doing research (Para sa ako kay importante gyod kaayo. Dako og tabang kay sa una wala pa koy cellphone maglisud gyud ko. Karon, kay naa nay cellphone nindot kaayo kay maka research na ka). (IDI_P4). "The difference is that in the past, there were no TVs or cellphones in school. But now, I use them because I am in high school (Ang nabag -o kay dati wa pay mga TV o cellphone sa eskwelahan karon mao na jud akong ginagamit kay high school naman ko). (IDI_P6). In the past, when there was no technology or cell phone, if I didn't understand the topic our teacher discussed, I couldn't comprehend it at all. But when there is a cell phone or technology, I can come up with examples (Sa una katong wala pay teknolohiya or cp kung unsay topic ni mam pag-dili nako masabtan dili na gyud masabtan pero katong naa nay cp o teknolohiya makaisip nakog mga halimbawa (FGD_P2). I have observed the use of technology last year and this year. The change I have seen is that this year, it's much easier for us to learn compared to the previous year (Aduna akoy nakit-an sa paggamit sa teknolohiya s ani-aging tuig og karong tuig, ang akong Nakita na kausaban katong tuiga mas dali nami makakat-on kumpara sa niaging tuig (FGD_P5).	
	Regarding the use of technology, it provides significant help or benefits to us indigenous people (IP) so that we can become more skilled and keep up with the advancements in this modern era *(Kabahin aning paggamit sa teknolohiya, dako kaayong tabang o benipisyo naming mga IP aron mas mahanas pa kami og makasabay sa kabag-ohan niining moderno nga panahon)* (IDI_P1).	**IP Learning Transformation**

	You can gain great benefits from technology because you can just load and do research. Unlike before, it was very difficult to do research because our place is in the mountains, and we frequently experience power outages with slow signal. You can even make calls to your family and teacher from a distance *(Dako kay kag makuha na benipisyo sa teknolohiya kay magpa-load nalang ka maka-research naka dili pareha sa una lisud kaayo mag research kay bukid man amoa dire sige pagyud og brownout hinay pag-gyud ang signal. Makatawag ka bisag layo imong pamilya og teacher) (IDI_P2).* For me, technology is really helpful because it greatly assists me in my education and communication with my teachers (Para sa akoa makatabang jud ang teknolohiya sa akoa kay dako siyag tabang sa akong pag eskwela og pag-communicate sa akong mga teacher) (FGD_P6).	
Challenges of IP students on Adaptive technological transition in Learning.	The use of technology presents many challenges because we have limited access to it at home since we only have one cellphone *(Daghan kaayo og babag ang paggamit og teknolohiya kay sa balay limitado kami nga makagamit kay isa ra man gud ang among cellphone)* (IDI_P1). This one doesn't have a signal or load. It's very difficult to find a signal and load because the load costs 50 pesos and only lasts for 3 days *(Kini gyung walay signal og walay load. Lisud gyud kaayo mangita og signal og load kay 50 pesos kaayo ang load 3 days ra pa gyud)* (IDI_P2). In my opinion, what I experience while using technology is sometimes there's no signal and no load *(Para sa akong kabhin, ang akong nasinati samtang ako mogamit sa teknolohiya usahay walay signal og wala poy load)* (IDI_P4). I experience the use of technology when doing research; the internet is often slow *(Maranasan kung magamit ang pag-research sa teknolohiya ay mahina ang internet)* (FGD_P1). In my experience with technology, sometimes I can do e-research, but there's no load, so I can't do much. Sometimes I have load, but there's no signal, and sometimes there are power outages, so I can't do anything *(Sa akong nasinati pod sa teknolohiya kay usahay naay e- research tapos walay load so wala gud pod koy mahimo , mangayo nalang kog answer. Usahay naay load peru wala kaayo signal tapos usahay mo brownout so wala koy mahimo)* (FGD_P4). My challenges are that I can't research immediately because the battery is low, there's no electricity, and I don't have any load (Challenges nako kay dili dayon ko maka research kay ma lowbatt walay kuryente tapos wala pagyud pang load) (FGD_P7).	**Access & Connectivity Challenges**

	It has a significant impact on changing culture because it can alter some cultural practices. In our culture, we might not have been exposed to others' cultures, but due to technology, we can learn a lot *(Dako siya og tabang sa pagbag-o sa kultura kay mabag-o ang uban na pamatasan sa kultura. Kay sa among kultura wala kaayo mailhan sa uban na culture peru tungod sa teknolohiya daghan na og makat-unan)* IDI_P4). In my opinion, this is a great support to my fellow indigenous people, like me, who are half-indigenous. You can't only know your own culture; with technology, you can learn about other cultures as well. It adds to the knowledge of those who go to school, making their lives even more colorful (Sa akong hunahuna, dako ni siya og masuporta sa akong mga katutubo nga lumad sama sa akoa nga half lumad na dili lang na kultura nimu na imong mahibaloan kon dili ang kultura sab sa uban aton makabaton pa og dugang samot na sa mga nag eskwela na dakopa kaayo og lakwunon sa kinabuhi) (FGD_P4). Technology is a big help to indigenous people so they can learn more about other cultures, and it greatly supports students in easily understanding what else needs to be learned in school *(Dako gyud pud ug tabang ang teknolohiya sa mga lumad aron naa pa silay mahibaw-an sa uban na kultura og dako ni og masuporta sa estudyante aron dali lang makabalo sa mga unsa pa ang dapat na matun-an sa sulod sa eskwelahan og mas dali na makasabot)* (FGD_P5). Technology greatly supports my education, especially when we encounter difficulties and challenges. You can conduct research, and it's very helpful for me *(Ang teknolohiya dako kaayo og pagsuporta sa akong pag-eskwela labina kung aduna kita nalisudan ug nalibugan, Pwedi kaayo ka mag research ug dko kaayo tabang Kanako)* (FGD_P7).	**Cultural Enrichment Technology**
Recommendations for IP students' transition in technological learning.	What I want to see is that we indigenous people (IP) can finish college due to the use of this technology. Because now, it's easier for us to understand thanks to this modern way of learning *(Ang gusto nako makita nga kaming mga IP nako og eskwela taman sa college tungod sa paggamit aning teknolohiya.Kay sa karon, mas dali naming makasabot tungod niining makabag-o nga pamaagi sa pagkat-on)* (IDI_P1). I really want to learn more, especially about computers. I want to learn that because I can see how our teachers can easily edit and research. So I won't be ignorant when I see a computer *(Gusto pa gyud ko makakat-on pag daghan labi na aning computer gusto gyud ko makakat-on ana kay makita nako ang among teacher na dali kaayo maka edit og dali kaayo maka-research og para dili nako ignorante kung makakita og computer) (IDI_P5).* For me, technology really helps because it can bring joy to your family *(Para sa ako makatabang*	**Educational Technology Empowerment**

	gyud ang teknolohiya kay para matawaan nimu ang imong pamilya) (FGD_P3).	

Construction of IP Students' Views on Adaptive technological transition in Learning Scale

Table 2 exhibits the suggested Checklist Survey Questionnaire to be subjected for EFA which reflected the IP students' views on Adaptive technological transition in learning scale components which are included in the checklist. The items reflect the fundamental topics, fundamental ideas/ assertions, issues demonstrated, and implications. There are 80 items on the survey questionnaires. This instrument is thoughtfully constructed to yield a comprehensive understanding of the multifaceted dimensions inherent in the integration of adaptive technology into the educational landscape for IP students.

Table 2
IP Students' Views On Adaptive technological transition In Learning

	Items
1	I face challenges with technology due to limited access with only one cellphone at home.
2	I lack access to the internet, which hinders my tech usage.
3	I experience access issues due to insufficient phone load.
4	I've encountered power shortages in my community, impacting my tech learning.
5	I often deal with signal and load problems while using technology.
6	I notice that my internet is frequently slow when I do research.
7	I can sometimes conduct e-research, but a lack of load limits my productivity.
8	I face issues like load shortages, no signal, and power outages.
9	I can't research immediately because of low battery and electricity issues.
10	I believe technology significantly impacts culture by altering practices.
11	I appreciate how technology exposes me to different cultures.
12	I see technology as crucial support for indigenous people like me.
13	I value technology for broadening cultural knowledge.
14	I find technology to be a significant aid for indigenous learning.
15	I rely on technology for school support and understanding.
16	I use technology for education, especially during challenges.
17	I find research helpful, especially with internet access.
18	I hope technology helps indigenous people complete college.
19	I'm eager to learn more, especially about computers.
20	I want to learn about computers to avoid feeling ignorant.
21	For me, technology brings joy to my family.
22	I need more access to technology to overcome challenges.
23	I struggle with technology due to limited resources.
24	I aim to use technology to improve my life.
25	I'm excited about the potential of technology in education.

26 I see technology as a pathway to learning and growth.
27 I want to empower myself through technology.
28 I believe technology can bridge cultural gaps.
29 I hope to inspire others with my tech experiences.
30 I value technology as a tool for cultural understanding.
31 I see the positive impact of technology in my community.
32 I want to make the most of technology for learning.
33 I'm determined to overcome tech challenges.
34 I'm enthusiastic about the educational potential of technology.
35 I seek to expand my tech knowledge.
36 I'm eager to enhance my digital skills.
37 I find joy in using technology.
38 I see technology as a source of opportunities.
39 I aspire to leverage technology for education.
40 I see technology as a way to connect with the world.
41 I consider technology as a key tool for building a successful career.
42 I believe incorporating technology improves my overall learning experience.
43 I am comfortable enough to use technology as tool for educational purposes.
44 As Indigenous student, technology assists me in making learning more engaging and interactive.
45 I see technology contributes to my academic success.
46 Technology helps us Indigenous students communicate and work together better in school.
47 I believe using technology in education makes learning more flexible and accessible.
48 I often use the internet and digital tools to learn by myself outside of class.
49 I believe technology is useful in accommodating different learning styles and preferences among indigenous students.
50 I believe technology use is cost-effective compared to purchasing textbooks.
51 I'm happy with the help and resources I get for using technology in my learning.
52 I believe technology helps me improved my critical thinking and problem-solving skills.
53 I believe using technology helps me remember things better than traditional methods.
54 As an Indigenous student, I see that technology supports students in our class to learn at their own speeds.
55 I believe technology in education helps with understanding digital skills.
56 In my experience, online materials provide an advantage for a more flexible and personalized learning experience.
57 I believe having regular computer classes helps us become more proficient in using technology.
58 I believe technology helps me to be more fluent in english through educational videos.
59 Technology helps me enhance my spelling skills since I can easily look up words online.
60 Technology saves me a lot of time, especially for research, compared to traditional methods.
61 I believe technology assists us, as Indigenous students, in reaching our goals for a brighter future.
62 I can easily look up online for any discussion I find confusing.
63 I can easily finish my homework with the help of technology.
64 As an Indigenous student, I believe technology keeps us up-to-date and ensures we're not left behind.
65 I think technology is important to help keep Indigenous practices alive.
66 The internet has helped me learn a lot more about our Indigenous rights.
67 In my experience, technology enables immediate communication between Indigenous students and mentors.
68 Technology allows us to share the essence of our culture.
69 I believe with the help of technology our culture and practices are now recognized.
70 Technology makes it easier for us indigenous groups from various places to talk and collaborate.

71	From what I've seen technology has made it easier for people in remote communities to learn from a distance.
72	I see that online platforms has a great contribution in our educational journey.
73	For me technology provides us the opportunity to showcase our cultural projects and achievements.
74	I believe that technology helps overcome language barriers in accessing educational content for IPs.
75	I believe technology can support sustainable practices within Indigenous communities.
76	I see technology enables indigenous students to explore and pursue diverse fields of study.
77	I believe that Indigenous Peoples have equal opportunities to benefit from educational technology.
78	As a student from the Indigenous community, technology supports us in becoming proficient in navigating various digital technologies.
79	I believe Indigenous students using technology are likely to pick up habits from the internet, and this could have some negative effects.
80	I frequently use Facebook/Messenger as a means of communication.

Dimensions of IP Students' Views On Adaptive technological transition In Learning

Testing of the Propose Questionnaire consisting of 80 item scale on IP Students' Views On Adaptive technological transition In Learning. Prior to the proposed 80-item scale for IP students' views on Adaptive technological transition in learning undergoing factor analysis, the Kaiser Meyer-Okin Measure (KMO) of Sampling Adequacy and Bartlett's test of sphericity were performed. Table 3 highlighted the results.

Table 3
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.667
Bartlett's Test of Sphericity	Approx. Chi-Square	13157.267
	df	3160
	Sig.	.000

Moreover, the results displayed aboved revealed the KMO test generated a value of .667 which is above .5. This means the sample can be treated with EFA. Also, Bartlett's Test of Sphericity result yields a .000 significant value which tells that the data have patterned relationships, and factorability was assumed. Hence, there was empirical evidence to proceed with the factor analysis.

Derivation of Factors Structures for IP Students' Views On Adaptive technological transition In Learning. To determine the number of factors, the 80-item scale was tested using an unrotated factor matrix with estimates of eigenvalues, percent of the variance, and cumulative variance. Eigenvalues represent the total amount of variance that can be explained by a given principal component. They can be positive or negative in theory, but in practice, they explain variance which is always positive (UCLA, 2021). Under the Kaiser criterion, all components are dropped with eigenvalues under 1.0, this being the eigenvalue equal to the information accounted for by an average single item (Costello & Osborne, 2019).

Correspondingly, five factors were identified in the model with eigenvalues above 1. The loading factor for each item corresponds to a factor score that was above .40. This means, there was a sufficient correlation between factors and variables; hence, the item can be considered as part of the particular factor.

Table 4 shows the pattern matrix using Principal Axis Factoring with a Promax rotation may be observed that there is no item cross-loading or not loading at all which means that the items best represent their factors. It is emphasized by hair et al. (1998) that loadings indicate the degree of correspondence between the variable and the factor, with higher loadings making the variable representative of the factor.

Moreover, the item loadings of each item to their factor indicate a sufficient correlation between factors and variables, and thus can be considered as a component of the factor. By using the EFA, the five-factor model of IP Students' Views On Adaptive technological transition In Learning with 58 items was developed as shown in table 6, namely: Tech-Culture Learning, Digitalized Learning Environments, Technological Equity in Learning, Culturally Inclusive Technology, and Technological Learning Diversity.

However, the items that do not fit with the factor were removed from the final questionnaire. Specifically, the items deleted are Item 1 "*I face challenges with technology due to limited access with only one cellphone at home",* Item 2, "*I lack access to the internet, which hinders my tech usage", item 3 "*I experience access issues due to insufficient phone load", Item 4 *I've encountered power shortages in my community, impacting my tech learning.* Item 5 *"I often deal with signal and load problems while using technology",* item 6 *"I notice that my internet is frequently slow when I do research"* Item 7 *"I can sometimes conduct e-research, but a lack of load limits my productivity*", item 8 *"I face issues like load shortages, no signal, and power outages",* item 9 *"I can't research immediately because of low battery and electricity issues" ,* item 12 *"I see technology as crucial support for indigenous people like me*", item 15 *"I rely on technology for school support and understanding",* item 23 *"I struggle with technology due to limited resources",* item 24 *" I aim to use technology to improve my life",* item 41 *" I consider technology as a key tool for building a successful career*", item 43 *" I am comfortable enough to use technology as tool for educational purposes",* item 46 *" Technology helps us Indigenous students communicate and work together better in school",* item 55 *"I believe technology in education helps with understanding digital skills",* item 58 *"I believe technology helps me to be more fluent in english through educational videos,* item 59 *"Technology helps me enhance my spelling skills since I can easily look up words online",* item 68 *" Technology allows us to share the essence of our culture*.", item 71 *" From what I've seen technology has made it easier for people in remote communities to learn from a distance",* and item 75 *" I believe technology can support sustainable practices within Indigenous communities".*

Table 4

Pattern Matrix Five-Factor Model

Item	Factor Loadings				
	1	2	3	4	5
Factor 1: Tech-Culture Learning	.				
1. I believe technology significantly impacts culture by altering practices.	446				

2.	I appreciate how technology exposes me to different cultures.	.481	
3.	I value technology for broadening cultural knowledge.	.457	
4.	I find technology to be a significant aid for indigenous learning.	.607	
5.	I use technology for education, especially during challenges.	.459	
6.	I find research helpful, especially with internet access.	.475	
7.	I hope technology helps indigenous people complete college.	.474	
8.	I'm eager to learn more, especially about computers.	.548	
9.	I want to learn about computers to avoid feeling ignorant.	.465	
10.	For me, technology brings joy to my family.	.442	
11.	I need more access to technology to overcome challenges.	.595	
12.	I'm excited about the potential of technology in education.	.551	
13.	I see technology as a pathway to learning and growth.	.587	
14.	I want to empower myself through technology.	.518	
15.	I believe technology can bridge cultural gaps.	.518	
16.	I hope to inspire others with my tech experiences.	.584	
17.	I value technology as a tool for cultural understanding.	.575	
18.	I see the positive impact of technology in my community.	.464	
19.	I want to make the most of technology for learning.	.491	
20.	I'm determined to overcome tech challenges.	.483	
21.	I'm enthusiastic about the educational potential of technology.	.537	
22.	I seek to expand my tech knowledge.	.422	
23.	I'm eager to enhance my digital skills.	.572	
24.	I find joy in using technology.	.521	
25.	I see technology as a source of opportunities.	.597	
26.	I aspire to leverage technology for education.	.574	
27.	I see technology as a way to connect with the world.	.403	
Factor 2: Digitalized Learning Environments			
28.	I'm happy with the help and resources I get for using technology in my learning.		.489
29.	I believe technology helps me improved my critical thinking and problem-solving skills.		.449
30.	In my experience, online materials provide an advantage for a more flexible and personalized learning experience.		.465
31.	I can easily finish my homework with the help of technology.		.660
32.	As an Indigenous student, I believe technology keeps us up-to-date and ensures we're not left behind.		.775
33.	I think technology is important to help keep Indigenous practices alive.		.590

34.	Technology makes it easier for us indigenous groups from various places to talk and collaborate.	.453			
35.	For me technology provides us the opportunity to showcase our cultural projects and achievements	.453			
Factor 3: Technological Equity in Learning					
36.	I believe incorporating technology improves my overall learning experience.		.502		
37.	As an Indigenous student, technology assists me in making learning more engaging and interactive.		.619		
38.	I see technology contributes to my academic success.		.563		
39.	I believe using technology in education makes learning more flexible and accessible.		.595		
40.	I often use the internet and digital tools to learn by myself outside of class.		.422		
41.	I believe that Indigenous Peoples have equal opportunities to benefit from educational technology.		.494		
42.	As a student from the Indigenous community, technology supports us in becoming proficient in navigating various digital technologies.		.427		
43.	I frequently use Facebook/Messenger as a means of communication.		.426		
Factor 4: Culturally Inclusive Technology					
44.	I believe technology is useful in accommodating different learning styles and preferences among indigenous students.			.462	
45.	I believe using technology helps me remember things better than traditional methods.			.586	
46.	As an Indigenous student, I see that technology supports students in our class to learn at their own speeds.			.553	
47.	I believe having regular computer classes helps us become more proficient in using technology.			.666	
48.	Technology saves me a lot of time, especially for research, compared to traditional methods.			.474	
49.	I believe technology assists us, as Indigenous students, in reaching our goals for a brighter future.			.583	
50.	I can easily look up online for any discussion I find confusing.			.507	
51.	The internet has helped me learn a lot more about our Indigenous rights.			.404	
52.	I believe with the help of technology our culture and practices are now recognized.			515	
Factor 5: Technological Learning Diversity					
53.	I believe technology use is cost-effective compared to purchasing textbooks.				.502
54.	In my experience, technology enables immediate communication between Indigenous students and mentors				.507
55.	I see that online platforms has a great contribution in our educational journey.				.510
56.	I believe that technology helps overcome language barriers in accessing educational content for IPs.				.420

57.	I see technology enables indigenous students to explore and pursue diverse fields of study.	.680
58.	I believe Indigenous students using technology are likely to pick up habits from the internet, and this could have some negative effects.	.585

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 24 iterations.

Reliability Test of the Scale

The internal consistency of the questionnaires' item was determined and evaluated for its reliability test. It can be seen in table 5 that the overall reliability score of IP Students' Views On Adaptive technological transition In Learning is high with Cronbach's value of (α = 0.973) the subscale or the dimension is also above the criteria reliability above score alpha namely, Tech-Culture Learning (α= 0.895), Digitalized Learning Environments (α= 0.995) , Technological Equity in Learning (α= 0.989), Culturally Inclusive Technology (α= 0.991), and Technological Learning Diversity (α= 0.995).

According to Huck, (2007). Determining reliability is essential as it refers to the consistency throughout the parts of a quantifying instrument. Also, a scale is said to have high internal consistency reliability if the items of a scale "hang together" and quantify the same construct (Huck, 2007, Robinson, 2009).

The most used internal consistency measure is the Cronbach Alpha coefficient. It is considered as the most suitable measure of reliability when making use of Likert scales (Whitley, 2002, Robinson, 2009). However, no definite rules occur for internal consistencies, however, most concur on a minimum internal consistency coefficient of .70 (Whitley, 2002, Robinson, 2009).

Thus, Aquino (2016) implied that reliability should compel the adequacy of tools to secure validity. The implications can be derived from the educational, discovery, and case analysis of the study.

Moreover, Diaz (2019) supported the idea of aquino (2016). He emphasized that implications on educational practices in the Philippines are standards and systematic however another measurement tool should encourage to deepen its standards and foundational course that still exist in the Educational and philosophical foundation in the educational system. It may suggest that the educational system may vary and change and find the best possible curriculum amidst this pandemic.

Table 5

Reliability Test Scale for IP Students' Views on Adaptive technological transition In Learning.

Scale	Cronbach's alpha
Tech-Culture Learning	0.895
Digitalized Learning Environments	0.995
Technological Equity in Learning	0.989
Culturally Inclusive Technology	0.991
Technological Learning Diversity	0.995
Overall Reliability	**0.973**

Final Version of IP Students' Views On Adaptive technological transition In Learning Model.

The finalized version of the instrument, resulting from this study, is presented in the format outlined in Table 6, wherein the initial set of 80 items has been refined to 58 items. The analysis reveals notable concerns regarding face validity, primarily deduced from the factor loadings associated with each item. Items exhibiting small coefficients, specifically those falling below .40, have been systematically excluded. This decision is substantiated by the guidance of Hair et al. (2010), positing that items with negligible coherence or lacking reflective power may be deemed dispensable within the model. Furthermore, in accordance with Hair et al. (2010), loading coefficients may be judiciously set by the researcher to retain only those items that most aptly encapsulate the underlying factor, thereby ensuring the exclusion of items with low coefficients from the final factor structure.

Using the EFA, the IP Students' Views on Adaptive technological transition in Learning Questionnaire was developed. This scale consists of 58 items. Specifically, the IP Students' Views on Adaptive technological transition in Learning consists of fifty-eight (58) items which comprises five factors such as Tech-Culture Learning with twenty seven (27) items, Digitalized Learning Environments with eight (8) items, Technological Equity in Learning respectively with eight (8) items, Culturally Inclusive Technology with nine (9) items, and Technological Learning Diversity with six (6) items. Thus, the five-point Likert scale from 5-strongly agree to 1- strongly disagree is shown below.

Table 6

Final Tool for IP Students' Views On Adaptive technological transition In Learning Questionnaire

Underlying Dimensions	5	4	3	2	1
Factor 1: Tech-Culture Learning					
1. I believe technology significantly impacts culture by altering practices.					
2. I appreciate how technology exposes me to different cultures.					
3. I value technology for broadening cultural knowledge.					
4. I find technology to be a significant aid for indigenous learning.					
5. I use technology for education, especially during challenges.					
6. I find research helpful, especially with internet access.					
7. I hope technology helps indigenous people complete college.					
8. I'm eager to learn more, especially about computers.					
9. I want to learn about computers to avoid feeling ignorant.					
10. For me, technology brings joy to my family.					
11. I need more access to technology to overcome challenges.					
12. I'm excited about the potential of technology in education.					
13. I see technology as a pathway to learning and growth.					
14. I want to empower myself through technology.					
15. I believe technology can bridge cultural gaps.					
16. I hope to inspire others with my tech experiences.					
17. I value technology as a tool for cultural understanding.					
18. I see the positive impact of technology in my community.					
19. I want to make the most of technology for learning.					
20. I'm determined to overcome tech challenges.					

21. I'm enthusiastic about the educational potential of technology.
22. I seek to expand my tech knowledge.
23. I'm eager to enhance my digital skills.
24. I find joy in using technology.
25. I see technology as a source of opportunities.
26. I aspire to leverage technology for education.
27. I see technology as a way to connect with the world.

Factor 2: Digitalized Learning Environments

28. I'm happy with the help and resources I get for using technology in my learning.
29. I believe technology helps me improved my critical thinking and problem-solving skills.
30. In my experience, online materials provide an advantage for a more flexible and personalized learning experience.
31. I can easily finish my homework with the help of technology.
32. As an Indigenous student, I believe technology keeps us up-to-date and ensures we're not left behind.
33. I think technology is important to help keep Indigenous practices alive.
34. Technology makes it easier for us indigenous groups from various places to talk and collaborate.
35. For me technology provides us the opportunity to showcase our cultural projects and achievements

Factor 3: Technological Equity in Learning

36. I believe incorporating technology improves my overall learning experience.
37. As an Indigenous student, technology assists me in making learning more engaging and interactive.
38. I see technology contributes to my academic success.
39. I believe using technology in education makes learning more flexible and accessible.
40. I often use the internet and digital tools to learn by myself outside of class.
41. I believe that Indigenous Peoples have equal opportunities to benefit from educational technology.
42. As a student from the Indigenous community, technology supports us in becoming proficient in navigating various digital technologies.
43. I frequently use Facebook/Messenger as a means of communication.

Factor 4: Culturally Inclusive Technology

44. I believe technology is useful in accommodating different learning styles and preferences among indigenous students.
45. I believe using technology helps me remember things better than traditional methods.
46. As an Indigenous student, I see that technology supports students in our class to learn at their own speeds.
47. I believe having regular computer classes helps us become more proficient in using technology.
48. Technology saves me a lot of time, especially for research, compared to traditional methods.
49. I believe technology assists us, as Indigenous students, in reaching our goals for a brighter future.
50. I can easily look up online for any discussion I find confusing.
51. The internet has helped me learn a lot more about our Indigenous rights.
52. I believe with the help of technology our culture and practices are now recognized.

Factor 5: Technological Learning Diversity

53. I believe technology use is cost-effective compared to purchasing textbooks.
54. In my experience, technology enables immediate communication between Indigenous students and mentors
55. I see that online platforms has a great contribution in our educational journey.
56. I believe that technology helps overcome language barriers in accessing educational content for IPs.
57. I see technology enables indigenous students to explore and pursue diverse fields of study.
58. I believe Indigenous students using technology are likely to pick up habits from the internet, and this could have some negative effects.

Legend:

5 = Strongly agree
4 = Agree

3 = Moderately agree
2 = Disagree
1 = Strongly Disagree

IMPLICATIONS

The integration of adaptive technologies into the realm of education is a significant and profound undertaking, the achievement of which is contingent upon a comprehensive comprehension of many viewpoints. This academic investigation examines the consequences for educational practice that arise from the perspectives of Indigenous students on the shift to adaptive technology in the realm of learning. Educators may cultivate inclusive, culturally sensitive, and successful learning environments by recognizing and integrating the distinctive viewpoints of their students.

Moreover, a significant relevance for educational practice is the need of including cultural sensitivity and appropriateness while using adaptive technology. The presence of Indigenous students in the school environment often contributes valuable cultural backgrounds and customs. Educators should make efforts to include technology that honor and embody Indigenous values, languages, and epistemologies. This methodology guarantees that adaptive tools are in accordance with the cultural context, hence enhancing the significance and interactivity of the learning process.

Furthermore, indigenous education often prioritizes the values of community and common knowledge. The facilitation of community interaction and cooperation, both inside and outside the classroom, should be a key function of adaptive technology. Online platforms and collaborative technologies have the potential to facilitate connectivity between Indigenous students and their communities, enabling the sharing of traditional knowledge, cultural practices, and community-based learning opportunities. The aforementioned phenomenon not only serves to augment the educational encounter, but also serves to fortify the significance of communal connections among Indigenous societies.

In summary, the implications for educational practice resulting from the perspectives of Indigenous peoples about adaptive technology transition underscore the need of using culturally sensitive, inclusive, and community-oriented methodologies. By incorporating technologies that demonstrate reverence for Indigenous cultures, encourage active participation from the community, and attend to issues of accessibility, educators have the ability to establish educational settings that empower Indigenous students while simultaneously safeguarding and commemorating their extensive cultural legacy.

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