

Challenges and Coping Strategies on Curriculum Digitalization of Educational Leaders

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Abstract

This study explored the challenges and coping strategies in curriculum digitalization among educational leaders. Specifically, it aimed to describe the lived experiences of educational leaders in implementing curriculum digitalization, identify the challenges encountered in managing digital curriculum reforms, and examine the strategies employed to address these challenges. A qualitative research design was utilized, employing semi-structured interviews with selected educational leaders. Data were analyzed using thematic analysis, which resulted in the identification of key themes and subthemes reflecting participants' experiences. Findings revealed that curriculum digitalization is implemented as a context-driven and evolving process shaped by available resources and school conditions. Educational leaders integrate technology in both instructional and administrative practices, often relying on offline and multimedia-based tools due to limited internet access. However, significant challenges were identified, including inadequate infrastructure, limited access to devices, the digital divide among students, and varying levels of teacher readiness. Financial constraints and policy demand further affected implementation. Despite these challenges, educational leaders demonstrated adaptability through various coping strategies such as capacity building, collaborative leadership, resource maximization, and the implementation of equity-focused interventions. These strategies enabled schools to sustain teaching and learning processes in resource-limited environments. The study concludes that effective leadership plays a crucial role in navigating curriculum digitalization.

Keywords: challenges, digital curriculum, leadership, resources, digital learning

1. Introduction

Schools, universities, and other institutions are digitizing and rethinking how they share, analyze, and handle information with the COVID-19 pandemic and the rapidly evolving technology landscape. Curriculum digitalization refers to the employment of digital technology, platforms, and instructional strategies in the design, delivery, and evaluation of classes. That's a big part of this change. Digitalization is not a new instrument. It is a paradigm shift that posits that schools and teachers should move away from paper and face-to-face learning and towards more flexible, engaging, and student-centric learning spaces.

The advantages of digitizing curriculum are well documented: greater availability, increased student participation, and relevance to 21st century skills. But implementation has not been easy. A significant measure of the success of the digital revolution in education will be how the top leaders in schools and universities think about, lead, and make choices about that transformation. Change is made by eliminating people, leaders in the field of education. They're responsible for the nuts and bolts of technology integration and making sure improvements are great for teaching, include everyone, and are

sustainable. In this way, their opinions and experiences provide light on the practical challenges, structural faults, and cultural impediments involved in digitization efforts.

This study explored perceptions and management of digital transition by school leaders. This is explored at the intersection of educational leadership and the digitization of This study examines the lived experiences of leaders to provide a qualitative picture of what it is like to lead digital integration at the organizational level. This is an essential and topical subject, as many school systems are trying to integrate new digital needs with old teaching techniques. This opens up a bigger picture of the concerns of digitization. The study contributes to scholarly conversation and leadership practice in education, with a voice from the front lines of implementation.

Further, this study contributes to the understanding that the digital transformation is not a smooth or straightforward process. It relies on the situation, the culture of the organization, and the nature of leadership. One important but often neglected perspective from education leaders is how decision-makers perceive and respond to the challenges associated with digital learning. These findings can eventually inform policy frameworks, leadership development, and school practices. This will ensure that digitalization of the curriculum is not just a shift in technology, but a movement that changes the way education is done.

Research Questions

This study focuses on describing the challenges and coping strategies of curriculum digitalization of educational leaders.

Specifically, this sought to answer the following questions:

1. What are the lived experiences of curriculum digitalization implementation of educational leaders?
2. What are the challenges that school leaders face in implementing digitalization curricular reforms?
3. What coping strategies do educational leaders use in addressing challenges?

2. Methodology

This study utilized a qualitative hermeneutic phenomenological research design to explore and interpret the lived experiences of educational leaders amidst the continuing changes in the Philippines on the implementation of curriculum digitalization. The phenomenological approach is suitable as it aims to explain and understand the meaning of participants' personal and professional experiences (Moustakas, 1994; van Manen, 1990). Focusing on their voices, the study shows obstacles, leadership practices, and methods that molded their engagement with curricular digitalization.

This study's participants were six (6) educational leaders from elementary and high schools in Mulanay District 2. These executives formally served as master teachers, department heads, and other administrators. The researcher wanted to speak to ten school leaders, but only six could due to being busy and not having the time to speak to all. These six were selected because they are directly responsible for the interpretation, management, and implementation of digitalization activities in their schools' curricula. There were six (6) participants. This is in accordance with the rules of phenomenological investigation that the number of participants should not matter more than the number of insights they provide. Participants were chosen based on their direct experience in curriculum digitization and their function as school administrators. Inclusion requirements included: (a) currently functioning as an educational leader; (b) having at least two years of experience in leadership; and (c) having been actively involved in adopting digitalization methods or adapting to

curriculum reforms. This meant that the people involved were able to contribute important information about what was being investigated. The study was conducted in several public schools in the locality where school leaders are trying to understand how to implement national curriculum reforms like the K-12 program, Most Essential Learning Competencies (MELCs), and the continuing MATATAG Curriculum (now Strengthened K-12 Curriculum).

The research instrument of this research was a semi-structured interview guide made by the researcher. This interview guide focuses on three major areas aligned with the research question: lived experiences of the school leaders, challenges that they faced in implementing curriculum digitalization, and the coping strategies they used to address the challenges.

Data were collected by means of in-depth, semi-structured interviews. This approach allowed participants to relate their stories and for the researcher to examine emergent issues further. Each interview lasted around 45–60 minutes and was conducted face-to-face or online (according to availability and safety requirements).

Focus group discussions also helped to appropriately triangulate findings (FGDs) and document evaluations (school memoranda, DepEd directives, ICT integration plans). All interviews were audio recorded, typed word-for-word, and verified with the participants who took part, save for a handful who just answered the questions the researcher asked them. The researcher had written down these questions ahead of time for transcribing. Qualitative data were analyzed using the thematic analysis approach of Braun and Clarke (2006). We selected this approach because it allows us a systematic and flexible way to search for, cluster and understand relevant patterns in qualitative data.

The comments that were recorded following the interviews were transcribed verbatim to ensure the accuracy of the reporting of the participants' statements. The researchers read the transcripts multiple times to get familiar with the content and to acquire a deeper understanding of participants' experiences and answers.

The transcripts of the interviews were read and re-read carefully at first, and first notes and observations were made. This helps to learn data. This enabled the researchers to define important terms and concepts that were associated with the study and which recurred frequently.

In the second stage, which they termed "generating initial codes," the researchers carefully coded sensible responses from the transcripts. Words, phrases, and sentences that expressed the same feelings or experiences were grouped and given codes that corresponded to them.

The third stage, "searching for themes," is the act of collecting comparable codes to look for possible themes in the participants' answers. They analyzed the relationships between the codes to find patterns and common themes.

The fourth phase of examining topics was concerned with thoroughly checking and refining the themes that had already been found, to ensure that they were accurate representations of the coded data and the answers of participants in general. Themes were grouped together, and themes that didn't fit were deleted.

In the fifth phase, "defining and naming themes", researchers offered a precise explanation and name for each theme based on the core notion that it represented. Subthemes were also formed when it was necessary to explain the facts in more detail.

Finally, in the sixth phase, writing the report, the finished themes were discussed and analyzed in light of the study questions and other work that had already been done. The results were supported by direct quotes from the participants and added further credibility to the investigation.

The researchers examined the coded answers and themes numerous times to ensure the study was reliable. To guarantee the reliability and uniformity of the findings, they were further validated by additional researchers and rigorously scrutinized once again following the interpretation process.

3. Result and Discussion

Research Question 1. How do educational leaders describe their lived experiences in implementing curriculum digitalization?

Theme 1: Enhancement of Instruction Through Alternative Offline Resources

The first theme examines how education leaders employed alternative offline tools to continue teaching and learning in schools with limited internet availability. Participants reported the use of printed modules, USBs, televisions, and other classroom technology which are readily available for the continuity of educational delivery.

The participants stated that the lack of stable internet connectivity meant that schools had to make the best of the offline technology available.

Participant 1 shared:

“Wala talagang internet sa school... gumagamit kami ng USB, TV, printed modules...”

Similarly, Participant 6 explained:

“Naglagay kami ng TV sa bawat classroom... para sa video lessons at presentations...”

This statement describes how educational leaders used the resources in their school to trail with curriculum digitalization. They did not rely mostly on internet-based learning platforms, but on alternative and contextually acceptable technologies to support the execution of the curriculum.

The researcher’s narrative report supported the results of watching classrooms that employed offline instructional materials and other media tools. The survey also indicated that teachers in areas with sluggish internet access relied on TVs, downloaded video lectures, and paper materials to teach their students.

School heads also held meetings to work jointly on the production and use of offline teaching resources, as indicated in the Learning Action Cell (LAC) accomplishment reports. This result is in line with the findings of Reis-Andersson (2024): “Digitalization methods are often utilized by educational leaders in a way that is suitable for the technology at hand and the institution’s readiness for it,” he stated. Similarly, Althubayani (2024) revealed that schools with a lack of digital infrastructure made the best use of alternative digital practices and hybrid approaches to sustain teaching and learning. Data shows that educational leaders are very crucial in keeping lessons flowing through flexible and local digital practices.

Theme 2: Technological Integration Systems

This theme highlights how school administrators are using technology not just in the classroom but also in the running of their schools. As the remarks of the participant’s reveal, digitalization has become an important part of the school’s everyday activities and routines. This affects the way teachers educate, talk, write reports, manage records, and organize school activities. School leaders no longer saw technology as just a means for instruction.

Participant 2 stated:

“Technology is now part of everyday teaching... not only teaching but also school administration.”

Meanwhile, Participant 4 highlighted the role of school support and teacher training:

“We organized trainings and provided support... to make learning more interactive and accessible.”

Educational leaders were the change agents, giving training opportunities, leading teachers to use digital tools, monitoring implementation, and promoting the frequent use of technology in teaching and administrative tasks. They weren't just installing digital tools; they were building a school culture where technology was becoming part of everyday professional practice.

These results were supported by the researcher's narratives and observations. The researcher saw the use of digital platforms for communication, compilation of reports, classroom presentations, and submission of school papers during interviews and school visits. School administrators also looked to be actively involved in overseeing technology-related activities and encouraging teachers to participate in digital learning projects. These observations imply that the use of technology was not only exercised at the classroom level but also built into the administrative operations of the school.

The accomplishment reports of the Learning Action Cell (LAC) also corroborated the statements of the participants. The findings demonstrated that training on Google Workspace, PowerPoint presentations, online classroom management, and the development of digital teaching materials were being implemented consistently. They also recorded peer mentoring, collaborative discussions, and exchange of best practices among teachers. Such school-based initiatives built teachers' confidence and competence in the use of technology and verified that technology integration was supported through structured institutional activities.

The results are in line with the research of Rasdiana et al. (2024), which concluded that the technology leadership of school leaders and instructional e-supervision has a substantial effect on the professional digital competence of teachers and the digital culture of the school. The study highlighted the importance of administrative support, professional development, and technology-driven leadership in sustaining educational digitalization. Zhu et al. (2024) also discovered that digital leadership has a significant impact on teachers' behavior connected to technology and helps educational institutions to successfully undergo digital transformation. They discovered that when administrators are actively involved in supporting digital projects, more effective and sustainable systems of technology integration are created.

The findings suggest that digitalizing the curriculum is more than just using gadgets or online platforms for instruction. It is a wider system of assistance where technology becomes part of instruction, communication, documentation, supervision, and school management. Educational leaders conducted training, monitored, and encouraged the meaningful integration of technology into the daily operation of the school.

Theme 3: Enhancement of Digital Competence

This theme is about the continual training and exposure to digital tools that allow teachers to progressively increase their technological knowledge, skills, and confidence. Educational leaders said teachers initially were not comfortable using technology, but with ongoing support and instruction, they gradually got more comfortable. The participants recognized that the shift to curriculum digitalization was not simple for the teachers, especially for those who have minimal expertise in using educational technologies.

Participants described some initial issues with management of curricula, planning of digital materials, and usage of online or offline resources for the usage of teachers. Teachers, however, participated in trainings and gained hands-on experience with the technology, and through the years, the barriers lessened.

Participant 3 noted:

"Before, the teachers find it hard to manipulate apps and other tools, pero dahil sa training mas naintindihan nila..."

Likewise, Participant 4 reflected:

"At the beginning... it was challenging... but through training... it became smoother."

Participant 6 further emphasized this growth by stating:

"Unti-unting nadagdagan ang kanilang kaalaman at kumpiyansa sa paggamit ng digital tools..."

The answers showed that the development of digital competence is not easy. But it is a constant process, driven by peer-teaching, constant communication, and practice to progress professionally. Some evidence from the answers given by the participants also indicates that the teachers felt more comfortable with the use of technology as they learned more about the digital tools and how they may help them teach better.

These results were also validated by the reports of the researcher. The study also showed a significant increase in the confidence of the teachers and their participation in activities and training linked to technology, the researcher added. Initially, there was some doubt among teachers about adopting digital tools, but they became increasingly interested in making digital slideshows, investigating educational apps, and using technology to help teaching.

These statements were supported by the reports from Learning Action Cell (LAC). The report included teachers participating in workshops, peer mentorship, and collaborative learning activities. The teachers got the opportunity to learn from each other, to tackle obstacles, and to use digital skills in real teaching situations.

These findings are consistent with Tømte et al. (2024), who indicated that teacher digital competence is a gradual process of development through professional learning, institutional support, and practical experiences with technology integration. Their review indicated that ongoing professional development improves teachers' ability to successfully integrate digital tools into the classroom. Similarly, Althubyani (2024) argued that professional development programs had a positive impact on teachers' digital competence and confidence. Ongoing training and support for teachers is more likely to result in meaningful usage of technology in the teaching/learning process.

In general, the findings indicate that the process of developing teachers' digital competence is gradual and continuous. School leaders played a major role in this process, providing training opportunities, technical assistance, mentorship, and encouragement. The findings also relate to the fact that the digitalization of the curriculum is not only about the availability of technology, but is also about the preparation, confidence, and continuing professional growth of instructors. Continuous assistance and capacity development assisted instructors in improving their digital skills and responding better to the demands of technology-enhanced teaching.

Research Question 2: *What are the challenges that school leaders face in implementing digitalization curricular reforms?*

Theme 1: Infrastructure and Technological Barriers

In this issue, the challenges experienced by the educational leaders due to poor internet connectivity and a lack of ICT infrastructure essential for the efficient implementation of the digital curriculum are discussed. The major restrictions that hindered the effective application of technology-based instruction, according to the participants' comments, were the lack of internet connectivity and limited ICT resources. Over and over, participants stated that schools are challenged to maintain digitalization curriculum efforts because of a lack of connectivity and insufficient technology resources. Participant 1 and Participant 3 pointed out that an inconsistent internet connection and a shortage of ICT equipment impeded teachers from integrating technology in the classroom.

Participant 4 added: *"Limited access to devices and stable internet... made learning more challenging."*

The same participant also added:

"Kulang din sa mga gamit sa ICT rooms lalo pag malaki ang section ng mga grade levels."

The response reveals that the shortage of ICT equipment is a more serious challenge in schools with large classes, as the available gadgets may not be sufficient to meet the learners' needs. In such instances, teachers may find it difficult to carry out technology-supported tasks regularly, especially when kids have limited access to gadgets or when ICT rooms cannot accommodate the number of learners.

Participant 5 also stated that the shortage of gadgets and insufficient internet connectivity were major challenges to implementation:

"Gadgets are the main reason... majority of parents can't afford... connectivity is very limited..."

Many parents may not have the ability to give gadgets or stable internet connectivity, that affect students' involvement in digital learning. This further suggests that digital curriculum reform involves not only school-based support but also attention to the socio-economic reality of learners.

Participant 6 also noted that poor internet connection and lack of student devices were ongoing challenges:

"Limitadong access sa internet... kakulangan sa gadget ng mga mag-aaral..."

Participant 6 also suggested that improving digital infrastructure by providing consistent internet, enough equipment and ongoing teacher training:

"Importante ang stable internet connection... sapat na kagamitan... at professional development..."

These comments show that the challenges of digital learning implementation are still faced by educational leaders, such as unreliable internet access, a lack of ICT equipment, and poor technological infrastructure. These constraints limit the effectiveness of technology-based learning and reduce opportunities for digital involvement for teachers and students.

These findings were triangulated through the researcher's narrative. During the school observations and interviews, the researcher saw some schools with intermittent internet connections and insufficient ICT resources. In some classrooms, teachers are sharing available gadgets or working with printed materials because of the absence of technical resources. The researcher also visited the ICT rooms where students were congested, and there was limited access to the operating computers, particularly in schools with a large number of students. These findings confirm participants' comments that infrastructure and resource constraints directly affected the implementation of digital curricular initiatives.

Participants' Learning Action Cell (LAC) accomplishment reports likewise confirmed the findings. The papers talked about connectivity constraints, issues with ICT equipment, and how to maximize scarce technology resources. Some LAC initiatives explored alternative approaches to teaching, such as offline learning aids, downloadable resources, printed modules, and teachers' collaborative sharing of digital instructional materials. Such activities represent the real and localized efforts of schools to solve the issues related to infrastructure.

The findings are consistent with Reis-Andersson (2024), who reported that school administrators typically face challenges in using digital technologies in their schools when there is a lack of adequate technical infrastructure and regular institutional support.

Results reveal that infrastructural and resource difficulties are still among the main issues to tackle in order to manage digital curricular advancements in general. Educational leaders and instructors may want to use technology in the classroom, but they can't accomplish very much if schools do not have dependable internet, enough devices, and working ICT facilities. This means that curriculum digitalization is not just about leadership buy-in and teacher preparation. It asks for ongoing investment in digital infrastructure. To make technology-based education more effective, consistent, and available to all, major

tasks such as expanding digital facilities, strengthening school networks, and providing more people with access to ICT equipment must be taken.

Theme 2: Limited Access to Digital Devices

This theme reveals the difficulties every student encountered in implementing curriculum digitalization.

Participant 2 stated:

“Hindi lahat ng mag-aaral ay may gadgets...”

These discoveries highlight the differences in digital learning options. Participant 5 recommended providing gadgets to each learner and ensuring stable internet connectivity for better implementation of digital curriculum:

“Provide every pupil with laptop or gadget... at internet connection.”

The data showed that a lot of learners do not have personal devices or internet access at home, which stops them from fully participating in digital learning activities. School leaders voiced out the concern about the impact of inequities in access to technology on students' learning opportunities and academic success.

The researcher's stories have also corroborated these findings. The researcher found during the study that some of the pupils used borrowed gadgets or shared gadgets with siblings and classmates. Many participants also mentioned that pupils from poorer homes had difficulties in completing digital activities and online tasks due to a lack of Internet connectivity at home. Moreover, the accomplishment reports of the participants' Learning Action Cell (LAC) indicated that they discussed issues regarding learner accessibility and how to assist students with limited access to technology. Some of the experiences discussed were on educational programs including flexible learning arrangements, modular supplementation, and teacher aid programs for children without gadgets and internet access.

This conclusion is validated by Liu et al. (2024), who argue that the digital gap is widening the educational differences among students. The study found that students from lower-income families face a greater challenge in obtaining digital tools and online learning resources and are therefore less able to participate in digital education.

The study's findings show that digital curricular changes may lead to less equal education for students without gadgets and internet access. Therefore, educational leaders need to come up with measures to support struggling pupils and promote digital equity.

Theme 3: Limitations in Teacher Digital Competence

This issue aligns with the challenges faced by teachers in the effective utilization of digital tools and technologies due to their lack of skills and training. “The teaching and school operations have gone more digital. Participants said, “not all teachers felt fully equipped or confident in using technology.” Some educators, in particular those with limited experience in digital platforms, find it challenging to move to technology-based instruction.

Participant 2 shared:

“honestly not all our teachers especially the older ones are confident with the new technology”

This statement implies that teachers' confidence in the use of technology in their teaching methods might be influenced by their age, experience, and exposure to digital tools. Many teachers were willing to learn, while others still needed to be given additional technical assistance, guidance, and practical training to use digital technology in an effective way.

Participant 5 also emphasized that limited teacher training affected teachers' confidence in technology integration:

“Limited lang ang training ng mga teachers kaya minsan di sila confident magturo.”

The results suggest that the extent of modifications to the digital curriculum depends on teachers' levels of technology understanding. Some teachers, particularly those not as familiar with technology, struggle to integrate digital technologies into their pedagogy. Therefore, the actual use of technology in the classroom can be occasional or restricted.

The findings were triangulated with the researcher's narrative report that documented initial challenges faced by certain teachers in implementing digital applications, online platforms, and multimedia teaching tools. However, there was a progressive improvement among teachers who were part of the training and mentorship. These findings were supported by the researcher's narratives. The researcher saw and interviewed that some of the teachers were reluctant to operate digital applications and technical instruments. Many participants candidly acknowledged that they struggled to navigate online platforms, develop digital instructional materials, and manage instruction with technology. However, the study also mentioned that teachers who participated in training programs were increasingly more confident and more eager to use educational technologies in their teaching.

Moreover, the accomplishment reports of the Learning Action Cell (LAC) served to authenticate the responses of the participants. The reports covered capacity building initiatives in digital literacy, application use, managing online classrooms, and integration of instructional technologies. They also included peer mentorship, collaborative coaching, and follow-up training sessions, all aimed at increasing the teachers' digital competence and confidence. These activities indicate that schools tried to resolve teacher preparedness difficulties via continual professional development and school-based support mechanisms.

These results are in line with the research of Althubyani (2024), which found that the teachers' digital competency is influenced by institutional support, training opportunities, and access to technology. The study pointed out that a lack of professional development hinders teachers from using digital tools in teaching successfully. Likewise, Rasdiana et al. (2024) observed that teachers' professional digital competence improves with effective instructional e-supervision, technology leadership, and a positive digital culture. This shows school leaders have a vital role to play in supporting teachers as they adapt to the digital developments.

These findings are in line with Tømte et al. (2024) in that teachers need to maintain learning to use technology and receive support from their schools to improve their skills. Their deep study revealed that a lot of the teachers who are already working have difficulty incorporating technology since they did not receive enough training or are not comfortable with technology. This is consistent with what Zhu et al. (2024) stated that digital leadership significantly impacts teachers' technology use and facilitates digital transformation in education.

Overall, the results suggest that the teachers' openness to make modifications to the digital curriculum is still a very key cause for their success. School leaders need to ensure teachers have continuing professional development, advice, technical assistance, and buddy support to help them improve their use of technology and feel more competent with it. For digitalization to function, teachers need to be ready and willing to use digital technologies in a meaningful way in the classroom.

Theme 4: Financial and Resource Constraints in Digital Education

This theme discusses how financial challenges, restricted budgets, and access to digital tools prevent schools from effectively implementing digital learning. Schools are expected to have technology-based teaching and digitalization goals, the participants acknowledged that implementation can be challenging in some cases, especially in smaller public schools, because of a lack of money and digital resources.

Participants 2 and 4 said the school budget makes it hard to obtain key digital tools, learning materials, and equipment.

Participant 2 stated:

"Ang budget na binibigay sa school especially small ones is too limited, not enough to acquire the needed digital tools."

The same participant further explained:

"Access to digital resources is a major challenge sa amin due to limited budget constraints. But we are trying to find ways and means that no students should be left behind in learning."

These responses show that financial restrictions are among the most significant obstacles to schools' access to digital tools, infrastructure upgrades, and the sustainability of technology integration projects.

The researcher triangulated the data with his narrative report. The survey said several schools were seeing difficulty in purchasing ICT equipment, maintaining internet subscriptions, and expanding digital learning facilities owing to budget constraints. The participants' responses also indicate the resolve of educational leaders to continue to seek ways to serve learners despite financial restrictions. "Budget constraints have created challenges for school leaders as they try to stretch the resources available to them and find other ways to ensure kids are not left behind." This shows their accountability and creativity in responding to the problems of digital curriculum implementation.

Further support for the conclusions came from triangulating the researcher's tales. Several schools were relying on sharing resources, contributions, and makeshift technology solutions because the funding provided was insufficient for large-scale digital implementation. Some teachers and learners in some schools shared devices. Some schools employed other objects that helped education. The researcher also discovered that educational leaders have difficulty aligning policy goals with the actual financial resources available in their institutions.

The accomplishment reports of the participants' Learning Action Cell (LAC) also confirmed the findings. The reports identified concerns with the lack of funding for programs and activities related to technology. There were reports of calls for more ICT resources, technological upgrades and instructors working collaboratively to optimize the usage of existent school resources. Through these papers, we see that limited funding was not an isolated issue but a chronic challenge that limited the implementation of digital curriculum enhancements.

Moreover, Akhmad (2024) mentioned that budget constraints are a significant issue in digital transformation in education. The school's capacity to buy digital tools, keep up the infrastructure, extend connectivity, and give ongoing teacher training is hampered by funding constraints. The results suggest that financial support is a requirement for meaningful and efficient implementation of the digital curriculum.

This concern calls for the government and the Department of Education to be mindful of the need to ensure enough financing, digital tools, and institutional support for the schools, especially smaller and resource-challenged schools. Enhanced financial and policy support is needed to increase the equality, sustainability, and responsiveness of digital curriculum implementation to the demands of teachers and learners.

Research Question 3: What coping strategies do educational leaders use in addressing challenges?

The results suggested that educational leaders used different coping techniques to successfully navigate digital curriculum modifications.

Theme 1: Professional Development Initiatives

This theme addresses how educational leaders arrange ongoing training and learning activities to increase teachers' technical knowledge, instructional effectiveness, and digital skills.

Participant 2 noted:

"We organize trainings... mentoring... collaboration..."

Participant 3 also highlighted capacity building and coaching to improve teachers' ICT skills.

"Ang school namin ay ngoorganize ng training para sa mga teachers to familiarize themselves with the use of different applications in teaching. Those who are good already sila yng ngmementor sa di pa amsyadong marunong"

Participant 5 noted:

"Teachers should not stop learning, especially in technology."

Participant 6 highlighted the relevance of regular LAC sessions and collaborative sharing of teaching practices:

"Nagsagawa kami ng regular na LAC sessions... nagbabahagi ang mga guro ng strategies..."

These replies indicate that educational leaders understood the role of continual professional development in supporting teachers in adapting to curriculum digitalization. Training, mentorship, peer coaching, and collaborative learning activities became key tools in building teachers' confidence and competence in technology integration. These findings were confirmed via triangulation through the researcher's narratives. In interviews and classroom observations, the researcher saw that schools often held technology-related seminars, peer mentoring activities, and collaborative coaching sessions. Teachers with more advanced computer skills helped other teachers who had less digital experience, fostering a collaborative learning atmosphere within the school.

These results were further reinforced by the supervisory plans of the participants. The supervision plans included planned classroom inspections, monitoring of practices of technology integration, coaching, and follow-up mentoring activities aimed at improving the use of digital instructional materials by instructors. The plans also indicated the commitment of the administrators to upgrade the technological abilities of the teachers through constant technical support and professional help. The LAC accomplishment reports of the participants further showed that they conducted LAC sessions often on digital literacy, applications for online education, presentation tools, and instructional techniques using technology. These studies described active teacher participation in collaborative learning and professional development efforts.

This is supported by the educational technology studies that emphasize the importance of digital abilities of teachers in the efficient integration of technology in classrooms. Althubyani (2024) reported that teachers' digital competency is affected by institutional support, availability of technology, and professional development opportunities. The study emphasized the need for continuous training to boost teachers' confidence and competency in the use of digital tools in teaching.

Similarly, Tømte et al. (2024) underlined the need of in-service teachers for continuous professional learning programs in order to enhance their digital skills and cope up with the changing educational technologies. In their systematic review, teachers' digital teaching practices were improved by training programs, collaborative learning environments, and institutional support. Moreover, Rasdiana et al. (2024) stated that principals' instructional e-supervision and technology leadership are highly critical for teachers' professional digital proficiency. Their research indicated that proactive digital learning environment champions among school leaders equate to more teacher involvement and enhanced educational outcomes.

Theme 2: Supportive and Collaborative Leadership

The emphasis is on the role of supportive and collaborative leadership in leading digital curricular advances. According to participants, digital reforms were not carried out in isolation by educational authorities. Instead, they worked with the teachers through open communication, teamwork, monitoring, and ongoing assistance during the curriculum revision.

The results indicated a wide collaboration among school authorities, teachers, and other stakeholders. Educational leaders realized that the shift to digital practices would require collaboration, patience, and collective problem-solving. They worked in partnership with teachers, rather than instructing teachers on what to do, listening to their difficulties, and helping them to meet the challenges of digital instruction.

Participant 4 explained:

"I focus on communication, collaboration, and continuous support..."

The participant suggests that the effectiveness of digital implementation is not only about the availability of the technology, but also about the quality of leadership in the school. Communication and collaboration within educational leadership contributed to the shared responsibility of teachers for the implementation of digital projects.

Participant 6 talked about a helpful leadership style, highlighting patience, approachability, and guidance:

"Maging supportive at approachable... ginagabayan ko sila lalo na sa mga bagong pagbabago..."

This suggests that teachers want wise school leaders who know what teachers need and are nice. These comments suggest that school leadership provided teachers with guidance and assistance during the shift to digital methods. Through their leadership, they worked to build a sense of teamwork and shared responsibility that was crucial to keeping the changes to the program on track. Teachers who are driven will be more engaged, attempt new things, and feel more comfortable using technology to teach.

These findings were supported by the researcher's collection of anecdotes. The researcher in the study found that instructors and administrators collaborated a lot in designing digital assignments, solving technological problems, and sharing instructional ideas. These data imply that collaborative leadership occurred in the participants' conversation and action at the school.

They also scheduled meetings, exercises to assist with technical issues, monitoring of the classroom, and conferences for feedback in preparation for supervising others. These approaches emphasize the importance of ongoing support and coaching, and of working cooperatively to overcome difficulties and enable teachers to use digital tools more effectively in their teaching. The support for the leadership does not appear to have been spontaneous, but structured and planned. Learning Action Cells (LACs) success stories also revealed that schools were collaborating. The reports included activities such as peer-sharing sessions, team planning, mentoring, and group discussions on how to incorporate technology. The professional development meetings at schools provided teachers with an opportunity to learn from each other, to discuss the issues they were having, and to identify practical strategies to integrate technology in the classroom.

The results are similar to the study of Reis-Andersson (2024), which targeted at how educational leaders might affect digital change through collaborative effort, strategic leadership, and organizational support systems. The study suggested that school leaders who create attractive environments are more successful in steering digitalization efforts in K–12 education. Similarly, Zhu et al. (2024) identified that digital leadership has a pronounced impact on teachers' technology use and their behaviors when using technology. From their study, collaborative leadership encourages teachers' engagement in technology-supported learning and innovative ideas.

Moreover, technological leadership and healthy digital culture enable schools to perform at their best, and so ease the digital transition for everyone involved (Rasdiana et al., 2024). This supports the

premise that school administrators may help make the transition to digital curriculum more feasible by promoting cooperation, shared learning, and continuous professional assistance.

Overall, data imply that supportive and cooperative leadership is especially critical in terms of the successful management of digital education innovations. Educational leaders mentored and collaborated with them to smooth the transition to digital. They urged them to talk to each other, to work as a team, to get mentoring, and to share responsibility, which made them more confident and glad to employ digital practices.

Theme 3: Resource Optimization Practices

This theme emphasizes how educational leaders used available resources to support the adoption of digital curriculum in the face of technological and financial challenges. The results suggest school authorities didn't allow the absence of the necessary tools to stop digital learning altogether. Instead, they resorted to pragmatic and flexible strategies such as maximizing the potential of the ICT tools available to them, sharing learning materials, and employing current technologies to keep teaching and learning going.

Participant 1 discussed the importance of being resourceful by using whatever resources were available in the school:

"Kung ano available na tools, iyon ang ginagamit namin."

Similarly, Participant 3 highlighted the need to approve shared access to ICT facilities for both teachers and learners:

"As much as possible, everybody should have access sa ICT facilities, teachers and students."

The same participant also explained how the school tried to maximize existing resources such as televisions, internet access, and shared equipment to support digital instruction:

"Sinisikap naming gamitin ang available resources... tulad ng TV, internet..."

The statements reveal that educational leaders responded to resource constraints with pragmatism, inventiveness, and inclusivity. They didn't focus on what they didn't have but rather worked with what they had to ensure that technology-supported learning was still a benefit to instructors and students. This is leadership that values justice, access, and continuity of education in the face of poor technological capabilities.

The researcher's reports also verified these findings. The researcher saw in classrooms that they used existing television, shared gadgets, downloadable learning resources, and restricted internet access to support teaching in the classroom. Teachers and administrators were creative, switching up their instructional practices based on what resources were available to them. In some cases, digital materials were downloaded ahead of time, devices were shared across teachers, and offline resources were leveraged to make sure lessons could still be delivered quickly.

This was further supported by participants' plans for the supervision of others. These initiatives included monitoring the usage of ICT facilities, facilitating the sharing of access to tech tools, and guaranteeing the equitable and effective use of digital resources by instructors and students. These measurements show that resource optimization was not a matter of chance but planned and controlled by school leaders.

The accomplishment reports of the Learning Action Cell (LAC) likewise revealed how digital materials were shared collectively, the numerous technology integration approaches that were used, and how to make the most of available ICT resources. These studies show that school officials and teachers collaborated to identify innovative methods to use limited resources better. Schools collaborated and

shared resources to continue digital education, even when there weren't enough resources to serve all of the students and teachers at the same time.

This is in line with Reis-Andersson (2024), arguing that school leaders are of great importance in the organization and management of technology tools in the digitalization of education. As a leader, you should be leveraging the infrastructure that is available to you and building processes that provide fair access to digital tools for all. Althubyani (2024) further discovered that the use of technology tools has a significant impact on teachers' digital skills and their pedagogical practices. Digital integration will be more effective the more developed the system of administrative and technological support is.

Zhu et al. (2024) also showed that digital leadership affects teachers' use of technology and promotes the effective use of educational resources in schools that are undergoing a digital transition. This is in support of the finding that the ability of school leaders to supervise and optimize resources aids in the sustainability of digital curriculum implementation.

In conclusion, the findings indicate that resource optimization is a significant leadership skill for managing changes in digital education. Educational leaders demonstrated creativity, flexibility, and fairness in the allocation and use of restricted ICT resources. There were still issues with technology and money, but the schools' attempts to make the most of the resources they had helped keep digital teaching alive, and made sure that both instructors and students could use technology as a way to help them learn.

Theme 4: Supportive Strategies for Accessible Learning

The theme illustrates how the educational leaders adopted alternative learning approaches to provide opportunities for students with limited access to technology to participate in learning activities. The participants observed that while digitization offers opportunities for better teaching and learning, not all learners have equal access to gadgets, internet connectivity, and digital learning tools. As a result, schools have adopted remedial methods to ensure that children with limited access to computers can still engage in learning activities.

Participants reported the usage of alternate learning resources, modular support, shared devices, and school-based technology access to support learners who struggled to engage in digital education.

Participant 4 stated,

"We provide printed materials and shared devices..."

The response reveals that schools attempted to bridge the gap in access to technology between learners with and without technology. Learners were not excluded from activities facilitated by technology as teachers continued to teach utilizing printed materials and shared gadgets.

Participant 5 also said:

"Teachers have modules prepared in case walang gadgets yung ibang bata, minsan share sa isang device para lahat ay maka-access."

This statement shows that the teachers have developed other teaching materials so as to keep the learning process going. It also emphasizes the work schools have done to expand access to digital learning with limited resources. The use of modules and shared devices helped to guarantee that learners without technology at home were not left behind.

As Participant 6 commented,

"Kahit limitado ang resources sa bahay... nagkakaroon pa rin sila ng pagkakataon na gumamit ng technology sa paaralan."

These results show that educational leaders used inclusive learning initiatives to include kids affected by digital inequality. The learners were able to continue their study despite limited access to gadgets and internet connectivity through printed modules, shared devices, and school-based technology exposure. The findings indicate that the education leaders employed inclusive and learner-centered initiatives to address the issue of digital inequality. They did not let the absence of access be a barrier to learning but found practical solutions that responded to the students' real situations. The initiatives are a strong commitment to the idea of no student left behind in the process of curriculum digitalization.

These findings were also confirmed by the researcher's narratives. During the school visits, the researcher witnessed that printed modules were used, shared devices, and school-based access to technology were provided to learners without gadgets at home. Teachers also adapted instructional activities based on the materials available to learners. Some activities were customized to be done with printed outputs, group work or shared usage digital resources. The observations confirmed the successful implementation of inclusive practices in the schools.

Moreover, the participants' supervisory plans included monitoring the learners' engagement, analyzing the accessibility of instructional resources, and designing intervention programs for students with limited access to digital media. The plans revealed that school administrators intended not just the digital deployment but meaningful participation of all children in the learning process.

The LAC performance reports support similar findings. Discussion included differentiated instruction, accessibility issues for learners, and intervention strategies for students with technological challenges," the papers noted. The professional learning workshops were focused on examining strategies to change lessons and support learners with different levels of access to the digital resources.

These results are similar to the research of Tømte et al. (2024), who highlighted the importance of teachers' digital competency and institutional support systems in creating inclusive digital learning environments. Their review stressed the importance of equal access and flexible teaching approaches in technology-supported education. A strong digital culture and leadership practices contribute to the inclusive and effective adoption of digital learning by providing the appropriate technical and instructional support to instructors and learners (Rasdiana et al., 2024).

Also, Zhu et al. (2024) stated that educational digital transformation demands the existence of technology, but also the support of leadership, teacher competency, and inclusive pedagogical strategies that respond to learners' diverse requirements. This strengthens the premise that the digitalization of curriculum has to be developed considering the different home situations, resources, and capacities of the learners.

In summary, the results suggest the importance of inclusive learning support systems in the management of digital curricular innovations. Educational authorities and teachers recognized that digitalization should not widen learning gaps, but rather generate additional opportunities for interaction. Schools provide alternative pathways for learners with less digital resources through printed materials, shared devices, modular support, tailored instruction and school-based access to technology.

Theme 5: Institutional and Policy Support

The problem underscores the necessity for good standards and institutional systems to support the digitization efforts for the curriculum. The speakers argued that digitization can't be sustained by school-level efforts alone. It needs regular rules, clear instructions on how to execute them, periodic checks, and long-term cooperation of the higher education authorities.

Participant 5 emphasized the importance of stable and consistent policies to govern digitalization efforts:

"DepEd should have stable policies... so that implementation can be monitored and evaluated."

The statement emphasizes the need for a uniform approach that would prevent the digital curriculum from being altered in an inconsistent and ad hoc manner. Well-defined and consistent criteria allow school administrators and teachers to plan, conduct, monitor, and review digital activities. But a lack of clarity in legislation or changing policies could lead to misinterpretation, and schools may not be able to keep up with technology-based projects.

The tales of the researcher further corroborated these conclusions. During the interviews, the participants emphasized the need for clearer implementation instructions, more solid institutional support, and monitoring mechanisms to be more consistent in order to continue curriculum digitalization. Educational leaders also emphasized the significance of policy consistency to ensure teacher engagement, accountability, and long-term efficacy of digital programs. These findings imply that school leaders welcome direction from the Department of Education, particularly when implementing innovations that require resources, training, and continuing transformation.

Moreover, the supervision plans of the participants showed several policy implementation tactics such as frequent monitoring schedules and assessment procedures, reporting systems, and compliance checks linked to technology integration. Such monitoring measures demonstrated how school administrators attempted to connect the implementation at the school level with the institutional goals of digitalization. Monitoring and evaluation allowed supervisors to track progress, identify gaps and support teachers in using digital practices.

These findings were likewise supported by the Learning Action Cell (LAC) accomplishment reports. The reports featured introductory seminars on DepEd digital policy and implementation updates, and collaborative discussions on curriculum digitalization standards. These exercises kept teachers educated, leading and linked with institutional standards. They also provided opportunities for teachers and school leaders to clarify concerns, share experiences and to expand their understanding of digital curriculum implementation. The research showed that schools with well-defined digital plans and policies performed better in developing teachers' skills and technology infusion. Rasdiana et al. (2024) further states that the relationship between instructional e-supervision, technological leadership and digital culture is vital for the successful implementation of digital change in schools. Their findings demonstrate that managers have a crucial place in the long-term success of digital projects, as they ensure that policies are respected and offer leadership support.

Reis-Andersson (2024) also showed that school leaders consider that digitization is much dependent on the organization's structure and the long-term nature of policies. Inconsistent policies can be difficult for teachers, it stated, as it might be hard to keep track of what the digital activities are and what the results are. Institutional support and policy frameworks were also among the most significant elements that contributed to teachers' increased digital competence, according to Tømte et al. (2024).

The study proved the importance of well-defined and uniform digital policies to guide teacher conduct, technology adoption, and sustainable innovation practices in educational institutions. Inconsistent policies can hinder the schools' ability to catch up with digitalization.

In conclusion, the findings highlight the need for institutional and policy support in managing and sustaining digital curricular innovations. Educational leaders at the school level may show excitement, originality, and resourcefulness, but their efforts need to be backed by clear policies, adequate resources, regular monitoring, and ongoing professional development. A clear policy direction from DepEd can guide schools to execute digital reforms more methodically and make curriculum digitalization a sustainable practice not just a short-term response to educational requirements

Recommendations

The study's findings and conclusions are reflected in the recommendations below.

1. The Department of Education, local governments, and school administrators may make technology infrastructure a priority by equipping schools with reliable internet connectivity,

enough ICT equipment, running computer laboratories, and offering easy access to digital learning tools. To successfully and sustainably digitalize their curriculum, schools require more technology support, especially in distant and underprivileged areas.

2. Educational leaders may sustain and improve professional development programs that focus on digital literacy, integration of instructional technology, and technology-enhanced teaching methodologies. Teachers' digital competence, confidence, and preparation for digital instruction should be improved by ongoing implementation of regular training, Learning Action Cell meetings, mentorship, peer coaching, and technical help.
3. Schools may take steps to be inclusive and close the digital divide for learners. On the other hand, educational leaders can supply alternative learning materials to students without access to gadgets and internet connectivity in the form of printed modules, offline resources, and shared devices. The extension of technical help to the impoverished learners can also be facilitated through collaborations with local government units, business groups, and others.
4. The Department of Education and school administrators may develop clear, consistent, and sustainable digitalization policies supported by ongoing monitoring and assessment systems. The development of stable policies can aid the sustainability of digital projects, promote accountability, and boost the long-term efforts of curriculum digitalization.
5. Further investigations with similar studies with a greater number of participants, different educational contexts, as well as mixed-method and quantitative approaches, may validate and broaden the findings of this study.

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