

Online Education: Teachers' Endeavours in Adaptation and Optimization Of Digital Tools and Features for Distance Learning in Sri Lanka During COVID19 Pandemic

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Abstract – *This research contributes to the knowledge of digital tools in the domain of online education. This is an exploratory study done to identify Teachers' endeavours in adapting and optimising familiar digital tools and features for distance learning in Sri Lanka during the Covid19 Pandemic. Identifying and understanding teachers' intentions of using the features and investigating whether those intentions were cohesive with the student expectations can be stated as the main objectives of the research. This study was carried out as a case study consisting of three sample cases from urban, suburban, and rural geographies. Data were collected primarily through non-participant observations where the education methods were observed, and in-depth interviews, interviewing both teachers and students within the cases. Collected data were encoded to analyse and identify themes using the thematic analysis method with an inductive approach. The analysis was done while establishing the connection between the encoded data to identify teachers' intentions in using the features of the tool and to investigate whether the intentions were aligned with the student expectations. The study was concluded with the identification of the base intentions of the teachers in adaptation and teacher's endeavour of mimicking the in-person classroom attributes in the online learning environment using digital tools were cohesive with the student expectations to an extent. The conclusion led towards a vital range of further studies and EdTech application development.*

Keywords: *Online education, familiar digital tools, student expectation, teacher's intention*

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I. Introduction

This study delves into how Sri Lankan teachers adapted digital tools for distance learning during the Covid-19 pandemic. Utilising an exploratory approach, qualitative methods were employed, including observations and interviews with teachers and students from different school settings. The study aims to uncover how local primary educators harnessed digital tools to meet student expectations amidst the pandemic, shedding light on their intentions and efforts in facilitating effective remote education.

The global spread of Covid-19 prompted the rapid closure of educational institutions worldwide, necessitating a swift transition to distance learning. Sri Lanka, with approximately 4 million students, also underwent this transformation, employing familiar digital tools such as Zoom, Microsoft Teams, WhatsApp, Google Meet, and Google Forms for remote teaching. Despite challenges and limited guidance, teachers repurposed these tools to adapt their teaching methods.

In this shift, live video conferencing tools gained prominence, especially in universities and private schools. However, primary schools faced unique challenges due to their interactive teaching methods, such as practical activities and guided play, which were difficult to replicate online. The study highlights how educators grappled with these challenges while striving to adapt their teaching practices to the remote environment.

Teachers leaned on familiar tools for remote teaching, categorised into those repurposed from other tasks and established educational platforms. This research delves into teachers' intentions behind using these tools and assesses their alignment with student expectations in the context of online education. The study provides insights into the dynamic landscape of remote education during unprecedented times.

II. Primary Education and Online Teaching

This study explores how teachers in Sri Lanka adapted digital tools for distance learning during the Covid-19 pandemic. Using an exploratory approach, the research employed qualitative methods, observing teaching, and conducting interviews with teachers and students from urban, suburban, and rural schools. The goal was to understand how local primary teachers optimised digital tools to meet student expectations amid the pandemic. This investigation sheds light on educators' efforts and intentions in utilising these tools for effective remote education.

A. Sudden Change of Educational Landscape due to Covid 19

In 2020, the global COVID-19 pandemic prompted unprecedented challenges, compelling education institutions worldwide to swiftly transition from in-person to emergency remote learning. This abrupt shift affected 1.9 billion students across 190 countries, highlighting the lack of preparation and resulting in compromised curriculum design, teaching methods, and assessment tools. Adaptations led to synchronous and asynchronous methods, with educators persevering despite content reduction. This distinct mode, emerging out of urgent necessity, underscored the significance of adaptability. Amid challenges, this shift also sparked innovative teaching practices, facilitated by technology innovations like startups and digital tools, paving the way for hybrid education.

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B. Primary Education; Theoretical Explanation

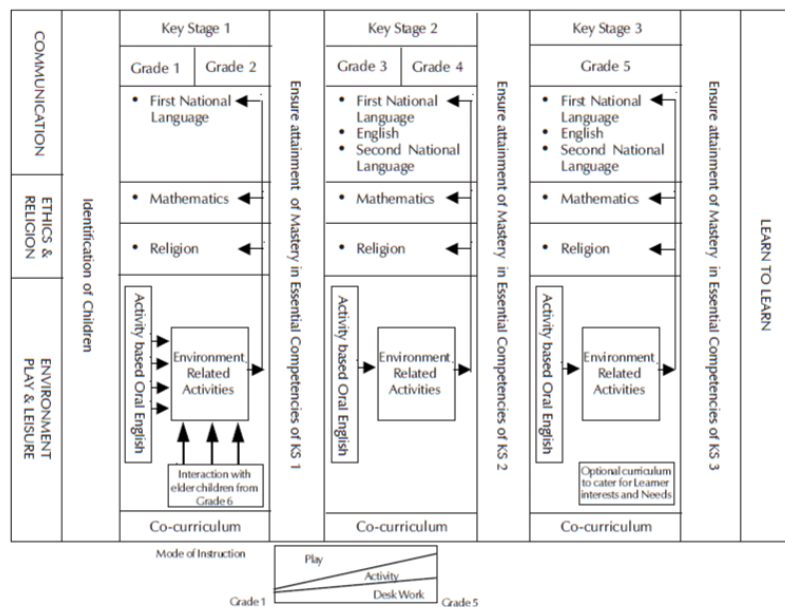
Primary education, typically spanning ages 5 to 10, marks a crucial phase in cognitive, psychomotor, and affective development (Rahman, 2021). Rooted in Piaget's cognitive stages, this stage cultivates logical thinking and problem-solving skills (Khalid, 2015). Vygotsky's socio-cultural perspective underscores language's pivotal role in cognitive skills and problem-solving (Daniels, 2005). Pedagogically, primary education blends behaviourism, cognitivism, and constructivism, emphasising repetition, reinforcement, and learner-centred discovery (Campillo-Ferrer & Miralles-Martínez, 2020). Teachers facilitate self-discovery, harnessing prior knowledge in a social context (Taggart, Melhuish, & Sammons, 2014). This holistic approach aligns with the cognitive, psychomotor, and affective domains (Hoque, 2016). Primary education, as a foundational step, fosters vital cognitive, social, and emotional growth, shaping future learning journeys.

C. Introduction to primary education in Sri Lanka

Primary education, spanning ages 5 to 10, significantly shapes cognitive, psychomotor, and affective domains (Rahman, 2021). Piaget's stages foster logical thinking and problem-solving (Khalid, 2015), while Vygotsky's socio-cultural perspective highlights language's role in cognitive development (Daniels, 2005). Pedagogically, primary education blends behaviourism, cognitivism, and constructivism, promoting self-discovery and prior knowledge integration (Campillo-Ferrer & Miralles-Martínez, 2020; Taggart, Melhuish, & Sammons, 2014). This multifaceted approach is pivotal for holistic child development (Hoque, 2016).

Figure 1

Primary education framework of Sri Lanka



In primary education, methods encompass guided play, activity, and desk work (Samaraweera, 2018). Early stages prioritise guided play and activity, while later stages balance all three (Abeygunawardane et al., 2000). These approaches cater to students' needs through informal assessments, fostering effective learning outcomes (Abeygunawardane et al., 2000).

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D. Key competencies of Sri Lankan primary education

Primary key competencies in Sri Lanka education encompass a wide range of knowledge, skills, and behaviours. These competencies include communication (literacy, numeracy, graphics, and IT), personality development (problem-solving, teamwork, creativity), environmental understanding (social, biological, physical aspects), ethics and values, play and leisure (creative enjoyment), and learning-to-learn (continuous motivation for learning). Literacy involves listening, speaking, reading, and communication skills; numeracy covers numbers, space, time, and measurement; graphics competency involves visual expression; and IT proficiency pertains to computer literacy. These competencies contribute to students' holistic growth, aligning with primary education reform goals.

E. Pre-Covid primary education

Traditional physical classrooms were the norm in Sri Lankan primary education until the COVID-19 pandemic prompted a shift to online learning (Hickam & Santen, 2020). The study focuses on Grades 03 and 04 within the three key stages of Sri Lanka primary education (Abeygunawardane et al., 2000). This student-centred approach emphasises mental, skill, and attitude development through guided play, activity-based learning, and desk work (Samaraweera, 2018). Guided play involves curated activities for informal assessment over two years, fostering peer interaction through art, singing, and role play (Abeygunawardane et al., 2000; Samaraweera, 2018). Desk work integrates academic learning using textbooks, workbooks, and supplementary materials, promoting holistic student growth (Gunasekara, 2018; Abeygunawardane et al., 2000).

F. Online teaching in the global context

Amid the pandemic-induced educational shift, countries embraced various strategies and technology innovations to adapt (Li & Lalani, 2020). Initially, synchronous methods prevailed, involving live web sessions (Pradja, Fadillah, & Nopitasari, 2020). Despite real-time interaction benefits, challenges like fixed schedules and technical issues emerged (Kannan et al., 2020). To address this, educators blended asynchronous and synchronous approaches, offering flexibility and pre-session materials (Heiss & Oxley, 2021; Lehmann, Nowak, & Surdacka, 2021). Pedagogical models like rotation, flex, and enriched virtual were employed, including flipped classrooms and flex models (Powell et al., 2015; Heiss & Oxley, 2021). Different countries tailored approaches to their contexts. Taiwan used a flipped classroom, Italy transitioned to blended learning with reduced screen time (Ching, 2020; Scarpellini et al., 2021). Chile integrated diverse media formats, free books, and initiatives for limited internet access (UNESCO, 2020). These adaptations aimed to ensure equitable primary education experiences globally.

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G. Online teaching in Sri Lanka – Primary Level

Sri Lankan primary schools faced challenges in transitioning to online learning, unlike universities and secondary schools (Hewagamage & Hayashi, 2020). Educators largely replicated face-to-face content with synchronous delivery, occasionally shifting to asynchronous due to technical issues (De Silva, 2021). This approach led to reduced activities and guided play, emphasising desk work due to time constraints (Abayasekara, 2020). The limited online class time, influenced by technical limitations such as Zoom's time restrictions, reflected a compromise in educational content (Abayasekara, 2020). Primary schools in Sri Lanka experienced more than three months of reopening before the second pandemic wave (Hewagamage & Hayashi, 2020), resulting in a continuation of in-person learning with notable content adjustments.

H. Online ICT proficiency of primary school teachers of Sri Lanka

Sri Lankan primary schools faced challenges in transitioning to online learning, unlike universities and secondary schools (Hewagamage & Hayashi, 2020). Educators largely replicated face-to-face content with synchronous delivery, occasionally shifting to asynchronous due to technical issues (De Silva, 2021). This approach led to reduced activities and guided play, emphasising desk work due to time constraints (Abayasekara, 2020). The limited online class time, influenced by technical limitations such as Zoom's time restrictions, reflected a compromise in educational content (Abayasekara, 2020). Primary schools in Sri Lanka experienced more than three months of reopening before the second pandemic wave (Hewagamage & Hayashi, 2020), resulting in a continuation of in-person learning with notable content adjustments.

I. Tools Adapted in Distance Learning

The prolonged closure of schools led to teachers adapting to online teaching, necessitating improved ICT skills and pedagogical innovation (Saboowala & Mishra, 2021). Sri Lankan studies revealed variations in teachers' ICT proficiency, notably influenced by factors like age and work experience (Gunasekera & Balasubramani, 2020). Younger teachers (<40 years) showed more confidence in their ICT skills compared to older colleagues (>41 years). Limited ICT infrastructure, with only 60% of schools having computer labs, contributed to teachers' knowledge gaps due to insufficient practice (Gunasekera & Balasubramani, 2020).

J. Technological and telecommunication availability in Sri Lanka

In 2018, only 52% of households possessed compatible electronic devices for online education, with a mere 40% having internet access. Urban-rural device ownership disparity exists (Abayasekara, 2020). Unequal telecommunication bandwidth forces remote students to travel far or improvise for internet access (Jayawardena, 2021). Sri Lanka lacks equitable technological and telecommunication availability (Jayawardena, 2021).

III. Case study; Page Style Teacher's Endeavours of adaptation and optimization of digital tools for online distance learning

This Research can be defined as pure, exploratory research where the methodology runs with a qualitative research design, which is done as a case study with multiple case study analysis approaches. This study is considered exploratory due to the novelty of online education in Sri Lanka, and the pedagogical approach of online education is distinctive in comparison with the global context when it comes to the usage of digital tools and the method of optimising them to reach learning outcomes. The research is conducted by studying three cases from urban, suburban, and remote schools in Sri Lanka.

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A. Study Design and Instruments

The study is designed as a study consisting of three distinctive cases. Mainly study will be designed to get comprehensive answers to the three questions formulated at the beginning of the research. Instruments selected to collect data will be non-participant observations and in-depth interviews Since the research follows a qualitative research strategy.

Table 1
Study Design and Instruments

No	STUDY DESIGN AND INSTRUMENTS		
	QUESTION	TYPE OF DATA	SOURCE/ INSTRUMENTS
1	WHAT ARE THE TEACHING METHODS ADAPTED TO THE LOCAL PRIMARY DISTANCE LEARNING OPTIMISING THE DIGITAL TOOLS AND FEATURES DURING THE PANDEMIC?	PRIMARY	NON-PARTICIPANT OBSERVATIONS
2	WHAT WERE THE INTENTIONS AND ANTICIPATIONS OF TEACHERS WHEN USING THE ABOVE-MENTIONED METHODS TO CONDUCT DISTANCE TEACHING?	PRIMARY	NON-PARTICIPANT OBSERVATIONS AND IN-DEPTH INTERVIEWS
3	DO THE INTENTIONS OF TEACHERS ALIGN WITH THE STUDENT EXPECTATION WHEN IT COMES TO THE USE OF DIGITAL TOOLS AND FEATURES?	PRIMARY	IN-DEPTH INTERVIEWS

The study's first research question delves into optimising digital tools in remote teaching during the Covid-19 pandemic. Non-participant observation was employed to understand how primary school teachers utilised digital tools for environmental studies. This unstructured observation phase documented tool usage for subsequent analysis. The second research question explored teachers' intentions in leveraging familiar digital tools for desired learning outcomes. Non-participant observation and in-depth interviews were conducted, observing lesson delivery and learning management. Interview structures were derived from observer comments and first-round observations. In-depth interviews with three teachers yielded insights into their tool-use intentions and lesson attributes. The third research question assessed the alignment of teachers' intentions with student expectations. Student interviews were conducted, referencing teachers' interviews and observer notes, with distinct questions tailored for each case. This multi-phase approach sought a comprehensive understanding of online pedagogy.

B. Cases

The study's first research question delves into optimising digital tools in remote teaching during the Covid-19 pandemic. Non-participant observation was employed to understand how primary school teachers utilised digital tools for environmental studies. This unstructured observation phase documented tool usage for subsequent analysis. The second research question explored teachers' intentions in leveraging familiar digital tools for desired learning outcomes. Non-participant observation and in-depth interviews were conducted, observing lesson delivery, and learning management. Interview structures were derived from observer comments and first-round observations. In-depth interviews with three teachers yielded insights into their tool-use intentions and lesson attributes. The third research question assessed the alignment of teachers' intentions with student expectations. Student interviews were conducted, referencing teachers' interviews and observer notes, with distinct questions tailored for each case. This multi-phase approach sought a comprehensive understanding of online pedagogy.

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Table 2
Teaching Methods Given in the Curriculum for the Theme "Safety and Precautions"

No.	TEACHING METHODS GIVEN IN THE CURRICULUM FOR THE THEME "SAFETY AND PRECAUTIONS"			
	SUB THEME	KEY ACTIVITIES	ELEMENTS	PROCEDURE STATED IN THE CURRICULUM
1	NATURAL AND MAN CAUSED DISASTERS	RESEARCH, SORTING INFORMATION, DISCUSSION.	DESK WORK	TEACHERS ASK TO COLLECT INFORMATION AND PICTURES AND INFORMATION ABOUT THE SUB-THEME (INDIVIDUAL) AND SORT THEM IN A TABLE (GROUP)
2	UNSAFE PLACES AND SITUATIONS	DISCUSSIONS AND NOTING DOWN	ACTIVITY	TEACHER LEADS THE DISCUSSION WITH STUDENTS USING EXAMPLES PROVIDED IN THE TEACHER'S GUIDE
3	PRECAUTIONS FROM STRANGERS	DISCUSSIONS	ACTIVITY	TEACHERS LEAD A DISCUSSION WITH STUDENTS USING THE EXAMPLES PROVIDED IN THE TEACHER'S GUIDE. ROLE-PLAYING ACTIVITIES ARE ENCOURAGED
4	PRECAUTIONS WHEN USING EQUIPMENT AND TOOLS	RESEARCH, SORTING INFORMATION AND PICTURES	DESK WORK	TEACHERS ASK TO COLLECT INFORMATION AND PICTURES ABOUT THE SUB-THEME (INDIVIDUAL) AND SORT THEM IN A TABLE.
5	SAFETY EQUIPMENT OF DIFFERENT PROFESSIONS	DISCUSSION, ROLE PLAYING	ACTIVITY	TEACHERS LEAD A DISCUSSION WITH STUDENTS USING THE EXAMPLES PROVIDED IN THE TEACHER'S GUIDE (IMAGES OF VIDEOS CAN BE USED) STUDENTS WILL BE GUIDED TO ROLEPLAY THE DISCUSSED SCENARIOS.
6	CREATING A SAFETY APPARATUS	CRAFTWORK ACTIVITY	ACTIVITY	TEACHER DEMONSTRATE AND GUIDE THE STUDENTS HOW TO MAKE A PIN HOLDER USING SAWING TECHNIQUES
7	SAFETY FROM DISEASES	DISCUSSION, NOTING DOWN	DESK WORK	TEACHER LEAD A DISCUSSION WITH STUDENTS ON CONTAGIOUS DISEASES AND NON-CONTAGIOUS DISEASES
8	SAFETY IN THE ENVIRONMENT	OUTDOOR PLAY ACTIVITY	GUIDED PLAY	TEACHER GUIDES THE STUDENTS WITH PLAY ACTIVITIES USING THE EXAMPLE ACTIVITIES PROVIDED IN THE TEACHER'S GUIDE.
9	PRECAUTIONARY MESSAGES	ROLE PLAYING ACTIVITY	ACTIVITY	THE TEACHER RECITES THE POEM GIVEN IN THE TEACHER'S GUIDE AND ASKS STUDENTS TO ACT OUT THE SCENARIOS

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A. Data analysis through thematic analysis method

Collected data from the observations and semi-structured interviews were analysed using thematic analysis under the qualitative analysis method with inductive analysis approach. The analysis was based on the observer's notes, transcripts of the in-depth interviews done with students and teachers. Collected data were immersed for a detailed understanding of the phenomena under the research. Data were encoded, and codes or data units were linked to identify the themes or patterns of the phenomena. First, data were encoded case by case, then identified final themes were applied across the cases to identify patterns. Based on the identified patterns, arrived at a conclusion discussing Sri Lankan primary teacher's endeavours in adaptation and optimization of digital tools and features for distance learning, and to which extent this adaptation aligned with student expectations.

B. Process of Coding

Collected data from the observations and semi-structured interviews were analysed using thematic analysis under the qualitative analysis method with inductive analysis approach. The analysis was based on the observer's notes, transcripts of the in-depth interviews done with students and teachers. Collected data were immersed for a detailed understanding of the phenomena under the research. Data were encoded, and codes or data units were linked to identify the themes or patterns of the phenomena. First, data were encoded case by case, then identified final themes were applied across the cases to identify patterns. Based on the identified patterns, arrived at a conclusion discussing Sri Lankan primary teacher's endeavours in adaptation and optimization of digital tools and features for distance learning, and to which extent this adaptation aligned with student expectations.

C. Interpretation of Data

Collecting Formulating primary, secondary, and tertiary codes is the most crucial part of the analysis. Data were encoded into initial and final themes. To further elaborate, the identified features of the tools or the primary codes were analysed with in-depth interviews done with the teachers to identify the intentions of using the features. Then the intentions or the secondary codes were analysed and the interviews were done with the students to identify whether their expectations were fulfilled by the online teaching methods.

Features of the digital tools, Teacher's intentions and student expectations are the three main categories where the encoded data were synthesised. Identifying the categories are the main three objectives of the research. Therefore, these three identified themes can be used to generate insights that could be used in further research or EdTech application development in the context of Sri Lanka.

RQ 01. What are the teaching methods adapted to the local primary distance learning optimising the digital tools and features during the pandemic?

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Through thematic analysis, the teachers' strategies in class delivery and learning management were discerned across the cases. The findings reveal the integration of multiple digital tools, each harnessed for specific functionalities, ensuring comprehensive lesson coverage. Observers noted eight key components within the teaching approach, encompassing communication, announcements, learning management, class delivery, submission, feedback, work showcasing, and testing. These components were consistently present across the cases, albeit with variations in intensity. Moreover, a comprehensive analysis of digital tool features was undertaken, resulting in the tabulated representation. This collective exploration underscores teachers' adeptness in leveraging digital resources for diverse pedagogical aspects.

After analysing the data thematically, it's evident that teachers aimed to retain the integral aspects of in-person teaching while embracing digital tools for remote instruction. The intention was to simulate the classroom experience through these tools and features. Notably, voice recordings served as a common method for conveying announcements among the teachers. Additionally, Google Classroom was exclusively used by one teacher for communication. The mode of class delivery varied: some adopted synchronous teaching via video conferencing (Zoom), while others took an asynchronous approach, using tools like WhatsApp for audio sharing. Across all cases, most instructional components were effectively addressed using the chosen tools, although nuanced differences emerged, likely stemming from teachers' individual intentions in utilising these digital resources.

RQ 02. What were the intentions and anticipations of teachers when using the above-mentioned methods to conduct distance teaching?

The transition to online primary education in Sri Lanka was driven by teachers rather than a preset framework. The study underscores the pivotal role of teachers' intentions in shaping this landscape. Common themes surfaced across the cases. "Mimicking classroom" revealed all teachers' use of digital tools to replicate in-person activities, while "Teacher's voice, presence, and interactive" highlighted efforts to recreate live interactions and dynamic student-teacher dialogue, akin to physical classrooms.

A collective focus on maintaining motivation drove feedback, appreciation, and exhibitions, extending the in-person classroom experience. Innovations like replacing star stickers with WhatsApp emojis and boosting confidence through Zoom screen sharing showcased resourcefulness. Visual elements like photographs enriched the experience. Teachers adeptly tailored these strategies, consistently upholding motivation and appreciation through digital tools.

Individually, teachers strategically devised their approaches based on specific factors. One addressed connectivity issues via asynchronous methods using WhatsApp for audio lessons and YouTube videos. Another capitalised on familiarity, using WhatsApp for learning management and Zoom for video conferencing. The third teacher adhered to an in-person routine, opting for synchronous Zoom classes and Google Classroom for learning management.

Additionally, the online context facilitated content revisitation, anticipated by all teachers to enhance comprehension. Amid this dynamic shift, teachers' intentions emerged as the cornerstone for crafting a flexible and effective online teaching environment, adapting to the varied needs and limitations of students.

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RQ 03. Do the intentions of teachers align with the student expectations when it comes to the use of digital tools and features?

The alignment between teachers' intentions and student expectations emerged as a significant finding. These expectations were influenced by prior experiences and encompassed not just academic aspects, but also the holistic school environment, especially within primary education's cognitive development age (Campillo-Ferrer & Miralles-Martínez, 2020). Notably, all three students anticipated familiarity with the digital tools, as the other teacher employed the familiar WhatsApp, while the final teacher strategically adapted the timetable using Zoom. Additionally, students' expectations for compliments were met through various means such as feedback, WhatsApp status, and Zoom screen sharing, with the aim of enhancing self-esteem and fostering healthy competition, pertinent for the Scholarship examination.

Students' concentration and engagement were facilitated by methods implemented by the teacher. The teacher's recitation strategy resonated with past in-person classroom experiences, while visual-rich PowerPoint presentations aimed at increasing engagement. Questioning students in live classes, fulfilled by the teacher through synchronous Zoom sessions, was an expectation met by both students and the teacher. The provision for revisiting study materials, enabled through digital tools like WhatsApp and Google Classroom, aligned with students' familiarity of revising notes before exams.

Students also anticipated teachers' monitoring of their work, mirroring in-person classroom dynamics. These intentions demonstrated the teacher's responsiveness to student needs. The overall alignment of students' expectations with their in-person classroom experiences reinforces the appropriateness of the teacher's digital classroom initiatives in replicating certain facets of the traditional classroom environment across all cases.

Conclusion

A. Discussion

Upon transcribing, encoding, and analysing the collected data, it is evident that teachers endeavoured to fulfil the curriculum requirements during online teaching in Sri Lanka primary education. As the curriculum was designed for in-person classrooms prior to the pandemic, teachers aimed to replicate certain classroom aspects digitally, guided by their intentions and the familiarity of digital tools. Students' expectations, shaped by their previous in-person classroom experiences, further contributed to this initiative.

Teachers, lacking preparation for online instruction, adapted familiar digital tools for teaching. These tools fall into two categories: those repurposed from other tasks (like WhatsApp, YouTube, and PowerPoint) and popular educational tools (such as Google Classroom and Zoom) known through word of mouth, the internet, or mass media. Each teacher employed unique teaching strategies, but all shared seven common components: Teacher-Student Communication, Announcements, Learning Management, Class Delivery, Assignment Submission, Feedback, and Testing of learning outcomes. Two teachers included an additional component, the Exhibition of student work.

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Teachers selected tools based on intentions and planning. For example, one teacher addressed students' connectivity issues through asynchronous WhatsApp lessons, while the second teacher focused on familiarity, using WhatsApp for both teacher and student. The third teacher structured lessons synchronously to emulate the in-person routine. This variety demonstrated teachers' adaptability and creation of a digital learning environment.

The digital shift brought enhancements and compromises. Flexibility and convenience emerged as enhancements, allowing students to access recorded classes and learning materials at their convenience. However, primary-level students often require guidance, seeking assistance from family members. Compromises were apparent in omitting guided play activities and adapting practical tasks online. These compromises, compared to the curriculum's defined methods, suggest potential implications for primary students' cognitive development and competency levels.

B. Outcomes of the findings

The analysis revealed that Sri Lankan primary school teachers strived to replicate the in-person classroom experience using available digital tools, aligning with students' expectations. Strengths and weaknesses of these tools emerged from the research findings, including adaptability, accessibility, familiarity, comfortability, and flexibility. However, a significant disadvantage was the omission of guided play and limited practical activities from the curriculum. This study concludes that the current primary education curriculum, designed for in-person teaching, cannot be fully converted to online teaching. Familiar digital tools could cover some elements but not adequately build essential student competencies. Further research is needed to explore how to develop digital education applications that maintain crucial elements or implement blended and hybrid methods to achieve effective results in Sri Lanka primary education

C. Direction for further research and EdTech development

This exploratory study serves as a foundational platform for extensive future research in both theoretical and practical realms. While the study focused on Sri Lankan primary teachers' efforts in remote online teaching, it highlights potential applied research directions. The identified attributes mimicking in-person classrooms could be individually investigated for creating blended pedagogical strategies or educational technology products. Larger sample groups could yield quantitative insights into links between teacher intentions and student expectations. Additionally, exploring socio-cultural and psychological factors affecting digital tool adaptation is possible. This blueprint can extend to other educational levels, enabling investigations in secondary, undergraduate, and postgraduate education. In essence, this study initiates further exploration of educational digital tools from a phenomenological perspective.

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