

Research Paper

Teachers' Perceptions of the Impacts of Technology on Key Stage 2 Students in Fuvahmulah City, Maldives

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Abstract: Technology has changed the world we live in today. Classrooms all over the world have started utilising technological tools in their instruction to improve student's performance. This includes the three primary schools in Fuvahmulah City, Maldives, where this research was conducted. The main aim of this research was to explore the impacts of modern technology on students from teachers' perspectives. The case study design was used in this qualitative research. Data was gathered primarily through semi-structured interviews with six participants. Findings reveal some positive impacts from the implementation of technology, which include positive student engagement, better catering for diverse learners and improved education quality. The negative impacts identified were in terms of health problems, deteriorating writing and speaking skills, misuse of technology, distraction and breach of academic integrity. The pedagogical implications of this study are also discussed.

Keywords: Technology integration, teacher, perception, Maldives

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Introduction

Recently, the whole world including education systems underwent a massive upheaval due to the worldwide outbreak of COVID-19. Educational institutions everywhere shifted to online learning in response to the pandemic. Students went from learning in physical settings that provided them with the much-needed social connections to being situated in front of a screen for hours on end abruptly. Rahman and Lee (2022) contended that education systems were forced to depend on modern online technologies. From little or no usage of technology in education, teachers have had to completely depend on modern technologies to reach students wherever they were (Nambiar, 2020) as a result of movement restrictions and quarantines.

Fuvahmulah city in Maldives, like any other city in the world, was also affected by the pandemic and had to switch to online education or teaching. The city registered its first COVID-19 case in February 2021. Henceforth, all schools and universities were closed, and were instructed to conduct online teaching and learning to contain the rapid spread of the virus. Teachers started using tools such as Google Classroom and Google Meet to conduct remote teaching and learning sessions. Nevertheless, the educational institutions faced major challenges in implementing online education. Given this context, the main purpose of this research is to identify the impacts of modern technologies on students and how negative impacts can be minimised.

Information and Communication Technology (ICT) has been widely adopted as a means of revolutionising educational practices all around the world as well as Maldives. However, this massive transformation is not without major challenges and impacts. In this regard, it is essential to ascertain the challenges that arise from the use of new technologies in schools and their impacts to ensure maximum results and enhanced learning and teaching performance in Maldivian schools. It is crucial to understand both positive and negative impacts and find alternative methods and options to overcome barriers and capitalise on the positive impacts. For instance, teachers must learn how to employ the latest technologies in their teaching to keep up with the times. As a result, the training requirements for instructors come into question (Raja & Nagasubramani, 2018).

While some studies have examined the impact of modern technologies on students, there has been none in the Maldivian context. Although the schools in Maldives have only recently started incorporating modern technologies, it is important to investigate its consequent impacts and challenges among learners. The main purpose of this research is to explore the positive and negative impacts of modern technologies on school students in Fuvahmulah city. This research was guided by the following research questions:

1. What are the positive impacts of modern technologies on students in Fuvahmulah city, Maldives from teachers' perspectives?

2. What are the negative impacts of modern technologies on students in Fuvahmulah city, Maldives from teachers' perspectives?

Literature Review

Modern Technology in Education

Technology has had a significant influence on practically every aspect of our lives, including education. Modern technology in education can be defined as technical instruments and media that aid in the transmission of knowledge, as well as its growth and interchange (Lathan, 2023). The overall aim of incorporating technology is to advance the education system. Educational technology refers to the research and ethical practices of enhancing learning and increasing performance by inventing, employing, and managing suitable technological processes and resources (Kybartaitė, 2010). On the other hand, instructional technology can be thought of as a method of addressing educational issues such as motivation, discipline, dropout rates, school violence, fundamental skills, critical thinking, and a long list of other issues (Eng, 2005). By establishing, utilising, and controlling relevant technical processes and resources, educational technology, both hardware and software, facilitates learning and improves performance. Today, education has evolved from being passive and reactive to participatory and aggressive as a result of technological advancements.

According to Sloan Consortium, online enrolments continue to expand at a faster pace than the general student population, and higher education institutions expect this trend to continue (Stern, 2018). By far, one of the most popular types of instructional technology is online learning. The term online learning refers to education that takes place over the internet (Barr & Miller, 2013). It is also known as “e-learning”. With the sudden outbreak of COVID-19, educators have had to abruptly shift to online teaching instead of physical classes. Online teaching can be defined as the process of educating others through computer-generated platforms. Live courses, video conferencing, webinars, and other internet technologies are all forms of this teaching (Barr & Miller, 2013).

Positive Impacts of Modern Technologies on Student Learning

Technology is a relatively new phenomenon in the educational sector of Maldives. Educational technologies offer many benefits. For instance, educational technologies improve students' active learning. They also make it easier to compute and analyse students' assessment results, as well as performance reports, which can be all digitised and searchable. Technology improves reading comprehension by allowing students to pick what they want to study at their own speed and focus on real-world challenges, as opposed to memorisation or rote learning (Ghory & Ghafory, 2021). This inspires students to be more actively engaged in online learning than physical classes. The students

could also feel more at ease expressing themselves in writing when they participate in online classes as the classes are more dynamic and engaging (Hsu, 2010). Additionally, Bajraktari and Kostoska (2022) contended that technology assists teachers in presenting difficult concepts in an easy and efficient manner to help students understand better.

In examining the impacts of technology on student motivation and achievement, Harris and Al-Bataineh (2015) found that students' test results improved after the introduction of new laptops. Students' attendance and test performance also rose due to the availability of laptops and other related resources. Consistent with Harris and Al-Bataineh (2015), Flanagan's study (2008) demonstrated an increase in the learning ability of a ninth-grade Math class in a urban middle school after using an online graphing calculator. In addition to that, a quantitative study by Murad et al. (2019) showed that educational technology has a strong positive association with student performance.

Using a case study to measure the impacts of using ICT on Individualised Learning Programme (ILP) of students with special educational needs (SEN), Gawhary and Kambouri (2012) found that computer skills training had a positive effect on the students' literacy skills. The findings also highlighted a significant impact of technology as part of the SEN students' learning experience and a possible additional course for overcoming essential learning obstacles among this group of learners.

Negative Impacts of Modern Technologies on Student Learning

However, there are also some major negative impacts of modern technologies on student's academic performances, especially young children. The constant usage of technology can create health issues such as headaches, obesity, heart disease, diabetes, repetitive strain injury or eye strain, incorrect posture/position, neck discomfort, physical and emotional stress as well as other ailments (Bosamia, 2013). Furthermore, Roach (2010) highlighted that educators are unwilling or reluctant to introduce new technologies in their classrooms due to a lack of positive attitude, training and support.

According to Keeley and Little (2017), a report released by UNICEF in 2017 cautioned that digital technology and interaction can pose major hazards to children's safety, privacy, and well-being, amplifying threats and harms that many children already experience offline and making already vulnerable children even more susceptible. Ghavifekr et al. (2016) added that the lack of training for parents and students compounded these hazard risks. Further, parents are neither able to check their children's grades online nor monitor their progress due to their hectic schedule or incompetency in IT skills. A study conducted on eight schools in Nigeria found that ICT consumed important learning time and technologies were misused to convert educational experiences into games for learners. This led to low academic performances as the students were exposed to pornography sites and this diverted them from learning (Mobi et al., 2015).

Methodology

Research Design

Qualitative research is a form of social science research that gathers and analyses non-numerical data to derive meaning from it to better understand social life phenomena via the study of specific people or locations (Crossman, 2020). A qualitative research method was chosen for this study because it allows an open-ended strategy that may be altered and adjusted as the research progresses, resulting in higher-quality data and more robust insights. Moreover, qualitative research uses a variety of methodologies to figure out why individuals think, feel, react, and behave the way they do in regard to the phenomenon being studied (Talbot, 2015). The main purpose of this research is to explore the positive and negative impacts on the students in Fuvahmulah city after the integration of modern technologies. Qualitative research allowed in-depth data to be gathered to understand teachers' perspectives on the impacts of using technology in classrooms on their students.

Participants

Three schools in Fuvahmulah city, Maldives were involved in this study. Two teachers from each of the three schools were selected as participants. Thus, the total amount of participants in this study was six. The intentional selection of informants based on their capacity to explain a given subject, concept, or phenomena is known as purposive sampling (Robinson, 2014). Thus, the researchers used purposive sampling to choose teachers that best fit the study objectives and provide relevant data or perspectives. Furthermore, it is cost effective.

The inclusion criterion for the selection was that each teacher should have a minimum of two years' experience in teaching Key Stage 2 (Grade 4 to Grade 6). The criterion was set for two years to make sure that the participants had enough experience using modern technologies in teaching and learning, given that the pandemic and shift to online teaching started in 2019. Table 1 shows the participants' profiles.

Table 1. Participants' profiles

Participant	Year of Teaching Experience
A	8
B	8
C	3
D	6
E	3
F	5

Data Collection

One-on-one semi-structured interviews were conducted to collect data from the selected participants. Semi-structured interviews are in-depth interviews in which participants must answer pre-determined questions, and they are frequently used in healthcare research (Jamshed, 2014). The semi-structured interview technique was selected because it facilitates a two-way dialogue where both the interviewer and the candidate can ask questions, allowing for a thorough discussion of all relevant issues (Doyle, 2020). The questions of the semi-structured interviews focused on the positive and negative impacts of modern technologies on student learning from teachers' perspectives. The interviews were conducted at the convenience of the participants in a relaxed setting with no interruptions. With the participants' approval, the interviews were recorded.

Data Analysis

The thematic analysis method was selected to analyse the collected data. The main objective of this method is to transform a large amount of data into a more manageable summary of results. The interviews were first transcribed verbatim. Then, the transcripts were read thoroughly and repeatedly so that the coder becomes well familiarised. Next, the coder identified the transcriptions which contained the main points relevant to the research questions. The points were categorised into a few groups while ensuring the core meanings were retained. This step was done using coding units. Coding units are labels which explain what a section or text represents or is about. The next step was to apply the coded units and sort the data into categories. A category is formed by grouping together codes that are similar and related. Next, the codes were combined into themes and presented in a cohesive manner.

Validity and Reliability of the Study

Validity is established when the selected method and measurement technique is of high quality and can measure exactly what the research aims to study. For this study, the interview questions were developed based on existing knowledge, and from other studies to ensure that the questions and instruments were able to collect the necessary and relevant data that can answer the research questions. In addition, to ensure the validity, a skilled moderator was chosen to help overcome any personal bias.

Research Findings

In this section, the themes relating to the positive and negative impacts of modern technologies on student from the perspective of teachers are discussed.

Positive Impacts of Modern Technologies on Students

Three themes related to the positive impacts of modern technologies on student learning emerged from the thematic analysis. Firstly, students were more engaged, interested and motivated in the lessons when technology was integrated in their lessons. Second, teachers were able to cater to different types of learners with the help of technology. The third positive impact was the overall improvement of the quality of education.

Student Engagement and Motivation

All six participants strongly believed and talked about how modern technologies helped students become more interested, engaged, and motivated with their lessons. For example, Participant A said, “*They were more interested in the lessons when we use ICT and, they participate in our lessons when we use ICT in these things. And it’s like more interacting with students*”. Participant C and Participant E shared the same opinion:

They love to explore the internet as well. So, if the students are monitored and they’re able to do such activities, it would be more engaging for them. Also, students are more motivated, rather than doing the paperwork.

(Participant C)

As I said earlier, students are more engaged when we use different technologies. I have noticed in this pandemic while we use this ICT, I have noticed that students are very much engaged in their learning. And they try to finish their work as they are using their tablets instead of using pen and paper.

(Participant E)

The participants highlighted that students became more engaged in their lessons when ICT was integrated and were more eager to complete the works that were assigned to them whenever there was an element of technology. Participant F also explained that students were more enthusiastic about doing class work using tablets, instead of using pen and paper.

Diverse Learners

Some participants contended that using technology helped them cater to different types of learners and students in their classes:

They understand more because in the early days when we just teach to the students for example, we will only explain the things on the board when there will be visual learners and auditor learners. So, what will happen is they might not understand it very well. So nowadays for those who are visual learners or

auditor learners we can show short videos so they will just look at it and they will understand and learn, and they will figure out what we are teaching.

(Participant B)

To help students with different learning styles, one participant explained that she used technologies such as videos and audios to help visual and auditory learners understand and grasp the lesson better. She also believed that unlike traditional methods in the early days, technologies can assist teachers in filling learning gaps in the education system which subsequently, would improve the teaching and learning process.

When we use modern technologies, it helps us to cater to students with different learning styles.

(Participant D)

Participant D also mentioned that she believed that with modern technologies, she can accommodate various students with different learning styles.

Quality of Learning

It was evident that one of the positive impacts of ICT was the enhancement of the quality of teaching and learning. A few participants explained:

It improves quality of education, and it gives a wide platform for the students to explore and to learn right.

(Participant C)

I think there are many positive impacts for instance, I think it improves the quality of education overall. So, if the quality of education is improved, that means that we are delivering the information more effectively, which in turn improves the academic performance of the students.

(Participant E)

Participant C believed that with technological applications, students have infinite access to information which can assist them to learn more effectively using different approaches. Participant E was certain that teachers are able to deliver their lessons more effectively with the help of ICT, leading to better student performance. This would eventually contribute to the overall improvement of the quality of education.

Negative Impacts of Modern Technologies on Students

When the participants were asked about the negative impacts of modern technologies on student learning, most of the responses were similar. These impacts included health issues, deteriorating writing and communicating skills, misuse of technology, distraction and breach of academic integrity.

Health Issues

While technology offers many benefits and is increasingly being integrated into classrooms, not all teachers were enthusiastic about the idea. Some opined that technology has a negative impact on students' health, as described by one participant here:

Yeah, many students in our classes wear specs. It's because of the long screen time. (Participant A)

This teacher believed that due to the increased use of technology and screen time amongst students, it has started to negatively affect their health such as bad eyesight problems.

Students' Writing and Speaking Skills

All the participants agreed that too much usage of technology in class weakened or worsened their students' writing and speaking skills. They believed this would in the end negatively affect their students' performance:

The ability of my students to involve in face-to-face communication is also decreasing nowadays because of the use of technologies. (Participant A)

Some of the negative impacts are, for example, if we are using ICT in all of our lessons, instead of like giving students work where they have to use pens or pencils and write things, what will happen is if we're not choosing it decreases their writing skills and writing performance becomes very poor. Sometimes when we want students to speak in the class for their class audience, that skill decreases, and we can't see that skill if we are using too much ICT in the class. (Participant B)

Misuse of Technology

The participants made it clear that the use of technologies in classrooms also creates a lot of issues, in particular misuse and distraction. Participant C explained:

There are various disadvantages or negative impacts on students. Firstly, I would say that before using the ICT as teachers we must know how to monitor all the students during their work. And the parents also should be aware. So, the internet has all kinds of information, all kinds of pictures, right? So, that is one disadvantage. Sometimes when we ask them to gather information for certain topic some students, I have seen log into Instagram or Facebook, so they're misusing it sometimes if the students are left alone with their devices. Now the government also has given tablets to the students. Right. So, from the parent's comments come very often that due to these tablets, students don't do the

Homeworks that most of the time they maybe chatting with their classmates, they are more advanced than us right.

Participant D highlighted that without supervision from parents, students can access information which is not appropriate for their age:

Most of the time parents at home do not know how to or are unable to monitor students during their online classes and even when they are home during their free time as well the students surf the internet and go on apps and websites which might not be age appropriate. Moreover, the teachers also thought these students also are playing games and chatting with their friends during the classes which are totally distracting the students, and this causes the students to not be able to meet any of the lesson's objectives.

Distraction

Participant E and F were frustrated with the fact that when the students were asked to use their tablets to search for information, they started to play games or do other unnecessary things online which completely distracted them from the ongoing lesson.

That would be firstly, misuse of technology as it is a huge threat for the students. Students have access to many different information, and they can also download content from the internet, which they should not do. I have also witnessed personally; me these kinds of situations have raised. Moreover, it creates extra distractions for the students because sometimes when we are using the tablets, they can open different tabs, they can open games, maybe they can do other things from that tablet, which distracts them from the lesson, meaning that they are not fully participating in the lesson or not doing what we are telling them to do. So, we don't know whether the learning objectives have been met.

(Participant E)

Some of the students use their tablets to play games and chat with their friends online. This makes us very difficult to conduct the lesson as we want.

(Participant F)

Breach of Academic Integrity

With the incorporation of technology in the teaching and learning process, one of the major concerns of teachers was the breach of academic integrity. Their students used the internet to look for information or answers although they were required to complete the tasks given to them without the help of technological devices. Most of

the time, they just copied and pasted the answers from the internet. Participants E and F had this to say:

When we use technological tools to teach students it's easier for them to cheat. So, they are not actually learning what we are teaching them, they are just copying. So, we are kind of not sure if they really understood or not.

(Participant E)

They use tablets and the internet to look for answers so that their work can be done faster. This leads to plagiarism and them not understanding the lesson and not fully fulfilling the objectives of the lesson. This will decrease the students' performance.

(Participant F)

Discussion

From the participants' perspectives, there are both positive and negative impacts on students when technology is incorporated in the teaching and learning process. From a positive point of view, modern technologies have revolutionised the education system and helped improved the quality of education. For example, when modern technologies are integrated into lessons, students become more engaged, interested, and motivated. Students who participate in online classes feel more at ease and express themselves well as become more dynamic and engaging (Bajraktari, 2020).

Another study by Harris and Al-Bataineh (2015) further demonstrated the positive impact of technology on students' motivation and achievement. The study found major improvement in the students' performances and attendance due to the introduction of laptops in their lessons (Harris & Al-Bataineh, 2015). The findings also revealed that students are more excited to work on lessons which require them to explore the internet and gather information. The teachers believed that during the pandemic, the students were more eager to complete work in online classes using tablets, rather than using paper and pencil. This implies that incorporating technology positively affects the student's motivation and makes learning more enjoyable for the students.

Technology also assists teachers in delivering difficult and challenging lessons to students in different ways so that they can understand better (Assistive Technology Industry Association [ATIA], 2012). The current research demonstrated that technologies can help teachers teach the students with different learning styles using different devices such as videos and audios, unlike traditional teaching methods. As technology offers numerous teaching resources for all kinds of lessons, teachers can use them to meet the different needs of students and help them to learn more easily. Teachers should also utilise these different resources to make their teaching more engaging and interesting (Ramasamy & Lee, 2022).

On the other hand, similar to past studies, this study also found several negative implications of modern technologies in the classroom (Bosamia, 2013). For one, the continuous usage of modern technologies for too long is detrimental to eye vision, especially amongst young children. Research also relates long hours of screen time to major health issues such as headaches, obesity, heart disease, diabetes, repetitive strain injury or eyestrain, incorrect posture/position, neck discomfort, physical and emotional stress (Lissak, 2018). Other studies have also shown a rise in posture problems and mental health issues.

A report released by UNICEF in 2017 reported that digital technology use amongst young children needs to be monitored as it poses a major threat to their safety (Keeley & Little, 2017). The findings of the study demonstrate the same as participants shared how their students misused technology such as access to internet while they were attending online classes and physical classes. Even at home, their students were found spending hours chatting with friends or surfing the internet, as well as visiting websites which are not age-appropriate. Another study at a secondary school in Nigeria found out that technology provided avenues for students to cheat in exams, view pornographic sites, and play unhealthy online games (Mobi et al., 2015). In this study, participants shared that their students copied the answers from the internet and thus, jeopardising the learning objectives that need to be attained. In short, despite the many benefits technology offers, its misuse has become more common in today's classrooms. Technologies that have improved many students' academic performance are slowly turning into an addiction trap. Thus, policymakers and educators should pay close attention to the issue of digital distraction in classrooms and devise strategic interventions to address it.

Conclusion and Recommendations for Future Study

The main aim of this study is to explore the impacts of technologies on students in Fuvahmulah city from the teachers' perspectives. The main positive impacts include higher student engagement and better adaptation of lessons to suit different types of learners. At the same time, negative impacts include health issues, worsening writing and speaking skills, misuse of technology, distraction and breach of academic integrity.

The implications of this study can be adopted for future studies. For example, the same study can be expanded to more schools in Maldives with a larger population of teachers and students which can validate the findings further. The findings offer valuable insights on the negative and positive impacts of the use of technology in Key Stage 2 classrooms for stakeholders in the field of education. By understanding the negative implications, school administrators and government agencies can work together to minimise or remove them through evidence-based strategies. They

should also work on improving the readiness of teachers in integrating technology in classrooms.

One of the main limitations of this study is that it was carried out during the pandemic. As a result, many teachers declined to participate in the interviews for fears of safety, it was time-consuming to find experienced participants and some teachers could not be reached as they were in quarantine. Another major limitation is the non-existent or lack of studies done in the Maldivian context for this topic. Therefore, it was challenging to find applicable literature for this study. Future researchers can extend the literature to cover countries with similar educational contexts and systems as Maldives in South Asia. The third limitation is related to the single data collection method. Data was only collected from interviews with teachers, making data triangulation challenging. For future studies, data can be collected from both students and parents to gain a better understanding of the positive and negative impacts of technology on student learning from the perspective of different stakeholders.

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