The role of information and communication technology (ICT) at the junior primary phase: A case study of environmental studies in selected grade 2 rural classrooms

ABSTRACT

This study aims to look into how information and communications technology (ICT) is used in a particular area of Namibia in the junior primary phase. It specifically investigates how teachers may use ICT to improve their teaching strategies and how including ICT in the curriculum can raise the engagement of students. The study concentrated on teachers of Grade 2 in the Omusati Region, specifically those who were in charge of teaching Environmental Studies in rural schools. This research question was developed to direct the study: What is the role of ICT in the teaching and learning of Environmental Studies in the Junior Primary Phase. Ten participants, all of whom were teachers in the Etayi Circuit, provided the data. In this study, a qualitative methodology was used to collect data through observation and interviews under the direction of Jean Piaget's constructivism theory. There are a total of 24 combined and primary schools with 34 grade two teachers in the target area. Ten Junior Primary teachers from the Etayi Circuit in the Omusati Educational Region were specifically chosen as the research sample from this pool of participants. Non-participant observation and interviews were the main data gathering techniques used in the study. The study identified a number of roles for ICT in environmental studies lessons. Notably, ICT improved learners’ concentration and encouraged information retention while facilitating the teaching of abstract or distant topics. ICT integration also made it possible for teachers to offer customized learning opportunities. Several recommendations for the Ministry of Education, Arts, and Culture (MoEAC) were made in light of the study’s findings. These include stepping up MoEAC’s involvement in ICT integration at schools by providing necessary ICT equipment and teacher training, giving teachers access to in-service professional development training on the effective use of ICT tools within learner-centered teaching approaches, and working with service providers like MTC, Telecom Namibia, NORED, and other stakeholders to help acquire the necessary ICT facilities for schools.

Keywords: Teachers, learners, roles, ICT, Junior Primary.

INTRODUCTION

The use of ICT in the classroom, according to Lim and Oakley (2013) opens up several possibilities for both educators and learners. Junior Primary schools that promote ICT give learners the hands-on experience and training they need to succeed in today’s global economy (Lim and Oakley, 2013). Sangra and Gonzalez-Sanmmed (2011) agreed with Lim and Oakley, adding that information and communication technology (ICT) is a key factor in the development of knowledge societies. Sangra and Gonzalez-Sanmmed (2011) gave an example of how ICT might be used to reimagine and improve educational processes and outcomes at the K–12 level. It was stated by
Mireku (2016) that "ICT tools in environmental education offer the potential to liberate learners in the classroom while also providing teachers with opportunities to devote greater attention to individual requirements" (p. 12).

The Namibian government’s Ministry of Education, Arts, and Culture (2016) distinguishes between four distinct levels of elementary schooling. These are pre-primary, grades 1-3, grades 4-6, grades 7-8, and grades 9–12. (Grade 10-12). Moreover, learners in grades one through three (about ages 7 to 9) are considered to be at the junior primary level of education in Namibia.

The primary and secondary education systems rely heavily on the junior primary level as their foundation. Grades one through three of schooling in Namibia are required by law to be conducted entirely in the learner’s native language (Mostert et al., 2012). Because of this, most junior primary rural school subjects are not taught in English but rather in the mother tongue, or the most common local language. In addition, learners in the Junior Primary Phase are introduced to computers, where they develop an early awareness of information and communication technology (ICT) as a teaching resource and master the fundamentals of computer operation.

There are three main themes covered in Environmental Studies from grades one through three (Ministry of Education, 2015): the natural environment, the social environment, health, safety, and nutrition. Under the social environment theme, learners interact positively within their social and cultural environment. Under health, safety, and nutrition, learners are expected to learn about the importance of living a healthy lifestyle, personal hygiene, and describing emotions and changes in their bodies. Learners are also expected to identify how to stay safe in dangerous situations. Health, safety, and nutrition also outline methods by which pedestrians, car passengers, and bikers can travel through traffic safely. The natural environment exposes learners to the natural world. The natural environment also describes the basic structure, functions, and life cycle of plants and animals in their immediate environment (Ministry of Education and National Institute for Educational Development (NIED) 2014).

According to Munyengabe et al. (2017), junior primary education is unique and requires specialised methods and knowledge to meet the needs of young learners. According to the National Institute for Educational Development (NIED) and the Ministry of Education (MoE) (2008), the first four years of school are crucial in laying the groundwork for the rest of a learner’s formal education and ultimately preparing them to become contributing members of society as well as for future academic and professional endeavours.

If the groundwork teachers lay in the first four years of school is solid, learners will be ready to take on more advanced coursework in subsequent years (Ministry of Education (MoE) and National Institute for Educational Development (NIED), 2014). As outlined in the Vision 2030 document, the government of Namibia recognises the importance of information and communication technology (ICT) in achieving the goal of a knowledge-based society (Namibia Vision 2030, as cited in the Ministry of Education, Arts, and Culture, 2017). For this reason, the Ministry of Education created the ICT Policy for Education, which states that the incorporation of ICT into the classroom is beneficial for learners of all ages and levels of education (Ministry of Education, 2014). This study therefore aims to explore the role of ICT at the junior primary level and, more specifically, in the Environmental Studies subject.

**Statement of the problem**

Sumardi et al. (2020) evaluated how primary school teaching and learning match 21st-century learning and its elements. The survey found that elementary school teachers did not use 21st-century learning approaches. Due to teacher-centred learning and conventional teaching approaches, pupils' higher-order thinking skills were constrained.

Technology integration in many sectors, including education, has transformed society in the 21st century. Computers have changed traditional teaching methods. Technology and media in environmental education can encourage children to explore, problem-solve, examine, and display their grasp of the world outside the classroom, according to Willis, Weiser, and Kirkwood (2015). These activities let pupils interact with the world. Mireku (2016) also stated that information and communication technology facilitates fresh information discovery and classroom learning. Mireku (2016) added that "ICT helps teachers communicate, analyse information, and solve problems, improving learners' cognitive abilities" (p. 15).

During the school-based activity period, the researcher, who is an early childhood educator visiting schools, observed that a significant number of teachers in the junior primary phase have yet to transition from traditional "chalk and talk" teaching methods to utilising information and communication technologies (ICTs) as a means to foster teacher-learner interaction. It is noteworthy that the integration of ICTs in Namibian rural junior primary schools has been a gradual process, despite the well-documented evidence showcasing its effectiveness in enhancing educational practices.

In a study conducted by Ashrafuzzaman (2014) investigating the influence of in-service training (cluster meetings) on the classroom practice of primary teachers, noteworthy observations surfaced. The study revealed that certain educators tend to depend on traditional didactic tools such as posters, flashcards, and textbooks rather than embrace information and communication technologies (ICTs) to facilitate student engagement. Evidently, within the context of rural junior primary education in Namibia,
the comprehension of ICT deployment remains notably deficient.

Aligning with these findings, Waigandjo (2021) identified a prevalent lack of awareness regarding the pedagogical employment of ICT among teachers instructing subject matter within the Kadjimi Circuit of the Kavango West region. Meanwhile, the research undertaken by Amadhila and Shikalepo (2020) brought to light a significant impediment to technology-driven instruction: the continued scarcity of essential resources such as computers, consequently hindering the seamless integration of technological tools into teaching practices. Correspondingly, Nuuyoma’s investigation in 2012 within the same geographical scope exposed the insufficiency of information and communication technology (ICT) resources across numerous educational institutions. This scarcity has regrettably hindered the accessibility of such resources for the entirety of the teaching staff within these schools.

Given this contextual backdrop, the current study is motivated by the aforementioned circumstances to delve into the specific role played by ICT within the realm of junior primary education, with a particular focus on the Environmental Studies curriculum as applied within the Etayi circuit situated in the Omusati region. This study sought to answer the following research question:

1. What is the role of ICT in the teaching and learning of environmental studies at the junior primary phase in the Etayi circuit?

THEORETICAL FRAMEWORK

The role of information and communication technology (ICT) in the junior primary phase can be linked to the constructivism theory proposed by Jean Piaget. Piaget’s theory emphasises the active construction of knowledge by learners through their interactions with the environment (Piaget, 1985). ICT integration in the Junior Primary Phase aligns with the key principles of Piaget’s constructivism in the following ways: Firstly, Piaget believed in active learning, where learners actively construct their understanding through hands-on activities and interactions with their surroundings (Piaget, 1972). Similarly, the use of ICT in the junior primary phase encourages active learning as students can engage in interactive exercises, digital simulations, and educational games that promote exploration, experimentation, and interaction with digital resources (Laurillard, 2020).

Secondly, Piaget emphasised the importance of scaffolding, which involves providing appropriate support and guidance to learners during their cognitive development (Piaget, 1977). In the context of ICT integration, teachers can act as facilitators, scaffolding students’ learning experiences by guiding them in the effective use of technology, selecting appropriate resources, and promoting critical thinking and problem-solving skills (Kozma, 2019). Thirdly, Piaget recognised the significance of social interaction in the learning process (Piaget, 1972). ICT tools enable students in the junior primary phase to collaborate, share ideas, and engage in meaningful discussions beyond the classroom boundaries. Online platforms, discussion forums, and collaborative projects facilitated by ICT promote social interaction and enhance learning outcomes (Chen, Bastedo, Howard, & McLeod, 2019).

Furthermore, Piaget’s theory emphasises adaptation and accommodation, where learners actively adapt their existing mental structures and accommodate new information to construct knowledge (Piaget, 1985). ICT integration in the Junior Primary Phase provides learners with diverse digital resources, allowing them to explore new ideas, perspectives, and information. This process of encountering and assimilating new information helps students refine their existing mental structures and accommodate new knowledge (Jonassen, 2020).

Finally, Piaget highlighted the importance of authentic learning experiences that connect with students’ prior knowledge and experiences (Piaget, 1985). ICT integration in the Junior Primary Phase enables students to engage in real-world scenarios, simulations, and interactive multimedia content, providing authentic and contextually relevant learning experiences (Reeves, 2019). This approach enhances students’ motivation, engagement, and understanding of concepts.

LITERATURE REVIEW

Role of ICT in environmental studies

Teachers can better prepare their learners for the real world by incorporating media and technology into Environmental Studies through projects that foster curiosity, innovation, problem solving, collaboration, communication, documentation, investigation, and demonstration of knowledge gained from experiences in the natural environment (Willis et al., 2014: 143). The same group of experts went on to say that studying environmental studies helps us make sense of our natural and synthetic surroundings.

Help teachers teach topics that are abstract or distant to the learners.

According to Willis, Weiser, and Kirkwood (2015), technology can help educators bring environmental studies concepts that are foreign or abstract to learners closer to home. According to Sousa et al. (2012), "the use of ICT in Environmental Studies may assist teachers in taking
advantage of the computer integration and multimedia potential to enhance their learners' understanding of various environmental issues" (p. 1345). According to Mireku (2016), the use of ICT has benefited both teaching and learning in the field of environmental studies. Brown (2022) says audiovisual presentations keep students engaged. Brown (2022) also suggested using films to bring the real world into the classroom, making it easier for teachers to create interesting, dynamic, and exciting lessons. Lee (2015) found that multimedia, such as audio and video, helps students focus and stay interested.

The use of ICT raises learner engagement.

Matengu (2016) stated that when learners are exposed to ICT in the classroom while studying environmental studies, they are better able to collaborate and become more invested in the subject and practical skills they are learning. Matengu (2016) further noted that the use of ICT in the subject of environmental studies has resulted in indisputable development in both education and learner engagement. Mireku (2016) emphasised how involving learners in the class via ICT has a positive influence on learners' performance and results in the field of environmental studies. He also stated that because of the usage of technology in education, learners are better able to collaborate on projects and gain the material and skills they require. According to Últanr (2012), Piaget made the observation in 1973 that children gain knowledge and understanding through discovery and, later, through reconstruction through rediscovery. Learners cannot be viewed as passive in any of the stages of development, according to the author (Últanr, 2012), who also noted that comprehension is formed step by step through active participation and interaction.

Learning is facilitated by ICT and learners retain more of what they learn

When compared to traditional teaching methods that do not make use of ICT, those that do allow learners to benefit greatly from the subject at hand. According to Adijatu (2015), using an overhead projector (OHP) in the classroom allows educators to provide learners visual aids rather of having to create them themselves on the black board. Since OHPs are simple to operate, adaptable, and learner-friendly, even the most complex of sources may be brought into any classroom and used for instruction.

Videos engage, teach, and retain learners, according to Alkamel and Chouthaiwale (2018). The same authors emphasised that teaching a topic on a computer or tablet might encourage active learning, which is challenging with traditional methods.

Another study by Fauville et al. (2013) found similar benefits from using ICT in the classroom, including better two-way communication between teachers and learners, higher learner motivation, a wider variety of pedagogical resources, a better understanding of fundamental concepts, and less reliance on teachers for minor matters.

Zweekhorst and Maas's (2015) research study posited that the use of ICT tools can improve and expand learners' opportunities for collaboration and dialogue with one another and with their teachers. Silva (2021) argued that ICT has the potential to rapidly and easily alter the physical configuration of classrooms, hence increasing learners' levels of comfort, connection, and engagement. Furthermore, Henock (2015) shows that ICT can increase and facilitate literacy acquisition, flexibility, and differentiated learning when used and incorporated into best practices.

Incorporate individualized learning into classrooms

In addition to reading and hearing, ICT can benefit the over 87% of learners who learn better through visual and tactile modalities by allowing them to "feel" the knowledge. It has been shown by studies conducted by Henessy et al. (2010) that, the use of ICT can assist learners both become more engaged in their studies and progress at a pace that is more suitable to their individual needs. According to Hasin and Nasir (2021), learner engagement is increased when instruction is supplemented by opportunities for independent exploration rather than lecture. In active learning, the teacher must have faith in the learners' abilities to learn on their own and provide them with materials, situations, and opportunities to make their own discoveries.

METHODOLOGY

This study employed a qualitative research approach, utilising a single-case study design, to examine the role of information and communication technology (ICT) in teaching environmental studies to Grade 2 students in two rural schools located in the Omusati region. Crowe et al. (2011) contend that the case study method provides a
through examination of complicated problems in the context of actual situations. In this instance, the researcher used a case study approach to better comprehend the value of ICT in the junior primary educational environment. Additionally, the examination of teachers' opinions on the integration of ICT in environmental studies within rural junior primary schools was made possible by the use of qualitative methodologies, which allowed the researcher to understand the perspectives of the participating teachers (Lichtman, 2013).

Thirty four (34) Grade Two teachers from 24 combined and primary schools were included in the study. Ten (10) junior primary teachers from the Etayi Circuit of the Omusati Educational Region were chosen as a sample from this pool. These instructors had at least three years of teaching experience in environmental studies. The researcher's accessibility was taken into consideration when choosing the schools.

Two research tools were used to gather the data for this study: an interviewing guide and a non-participant observation schedule. These tools were used to collect information from many sources, ensuring a thorough approach. The researcher observed environmental studies courses in twelve (12) separate classrooms for a total of forty (40) minutes, which matched the time allotted for the subject in the class schedule. With the participating teachers, semi-structured interviews were done using individual interview schedules. Semi-structured interviews were used since they allowed for flexibility and a deeper comprehension of the answers given by the junior primary instructors. With the participants' consent, the researcher utilised a tape recorder to capture their responses. In total, ten interviews were conducted, with one interview per participant.

According to Johnson and Christensen (2012), a pilot study is used as initial work to determine whether a larger research project is feasible. In this investigation, pilot research was carried out at a school in the Oshana Educational Region that had similarities to the Omusati region's schools in terms of environmental factors. Two (2) teachers who complied with the sampling criteria for the main study made up the sample size for the pilot study. Based on the findings of the pilot project, some ambiguous questions in the interview guide were changed to improve their clarity and relevance to the study's goals and the body of literature.

**FINDINGS AND DISCUSSION**

As this study was qualitative in nature, the collected primary data were transcribed and developed into categories and themes of information. The findings are structured in accordance with the themes that emerged from the study findings. The main theme and sub-themes that emerged from the collected data are shown in Table 1.

**Subtheme 1: ICT helps teachers teach topics that are abstract or distant from learners’ everyday lives**

The study's findings showed that learners benefited from ICT since they were exposed to information that was not present in their immediate surroundings. Teachers reported being able to present more materials than they could before the exposure to ICT. Teacher Green said,

> With the help of ICT, I can easily present topics that are far-off from learners, e.g., wild animals and their sounds, and they can grasp it better than when I am using posters and other materials and making the sounds myself. This finding is in line with that of Teacher Blue, who indicated that "some of the environmental topics, like those under the "natural environment" theme, can be very difficult for our junior primary learners to understand, but with the help of ICT, I can present them to my learners better and they can relate better.

"ICTs do play a role, especially in our rural schools; learners learn a lot and better through the use of ICTs; they explore more things that interest them," said Teacher Red.

The above findings are in line with those of Willis, Weiser, and Kirkwood (2015), who argued that teachers should incorporate media and technology into environmental education by having learners engage in activities that inspire curiosity, innovation, critical thinking, problem solving, collaboration, documentation, investigation, and the display of knowledge acquired in the real world. Sousa et al. (2012) agreed with Willis, Weiser, and Kirkwood that incorporating ICT into environmental education is a great way to have learners think critically about environmental issues.

In summary, it' was great to hear from the teachers responses that they recognised the benefits of using videos to help learners visualise abstract concepts. Visual aids, such as videos, can indeed be powerful tools for enhancing understanding and engagement in the classroom. By showcasing real-life weather events, videos can provide a more immersive learning experience, enabling learners to grasp the concepts more effectively. ICT offers various tools and approaches that can bridge the gap between abstract topics and learners' everyday lives.

**Subtheme 2: ICT increases learners involvement**

Participants in this study agreed that learners generally do a good job of building upon one another's ideas when discussing a video. As a bonus, it makes talking in class easier all around. When learners are given the chance to discuss and share their ideas, the use of ICT sparks lively discussions and debates in the classroom. During an
Table 1: Main theme and sub-themes that emerged from the collected data.

<table>
<thead>
<tr>
<th>Main theme</th>
<th>Subthemes</th>
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<tbody>
<tr>
<td>The role of ICT in teaching and learning Environmental Studies in Junior Primary Phase</td>
<td>Subtheme 1.1 Help teachers to teach topics that are abstract or distant from learners’ everyday lives</td>
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<td></td>
<td>Subtheme 1.2 Increases learners’ involvement</td>
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<td>Subtheme 1.3 Increases learners’ concentration</td>
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<td>Subtheme 1.4 Make personalized instruction possible</td>
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<td>Subtheme 1.5 ICT in education promotes learner’s engagement and knowledge retention</td>
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<td>Subtheme 1.6 Timely and better access information</td>
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Interview, Teacher Green indicated that:

“There is always high participation from learners whenever he is using ICT, and every learner would like to say something. The teacher also indicated that the participation of learners differs depending on the type of ICT used”. Furthermore, “on lessons where an overhead project is used, the participation of learners is always because they can clearly see the images in the videos or pictures”.

Teacher Yellow, on the other hand, indicated that,

"ICT motivates learners to learn and helps them to be engaged in the lesson. Additionally, "ICT does not only arouse learners’ curiosity, but sometimes they are curious about how these facilities work," said Teacher Blue.

These findings corroborate Shadrek (2015), who mentioned that with ICT, the amount of time spent on teacher-led lessons is cut down by half because the teaching approach is more learner-centred. During the observation session, Teacher Blue presented a video showcasing various modes of transportation. The learners displayed a sense of curiosity regarding the remarkable buoyancy of water transport, despite its substantial size, prompting them to seek an understanding of this phenomenon. Learners needed this knowledge because they would encounter these devices in their local environment. These results are consistent with Mireku (2016), who remarked on the positive effects that technological advancements have had on the classroom experience of Environmental Studies learners.

Teacher Green’s lessons were more learner-centred, with frequent questions on what they viewed. Adijatu (2015) found that ICT in preschool scientific instruction engages and motivates learners more than teacher-led classrooms. Teacher Red showed learners a personal hygiene film during classroom observation, including brushing and washing. Learners discussed traditional tooth-brushing remedies and how they brush. The video also reminded learners to brush twice a day, which they admit they don’t do. Learners also discussed how they bathe differently from the video.

This study found that the use of information and communication technologies (ICTs) significantly increased student engagement in the classroom. This conclusion was reached through observations made in the classroom, and teacher testimony was also used to support it. For instance, whenever ICTs were used in the session, Teacher Green regularly reported a high degree of learner participation. Teacher Green also mentioned that the type of ICT used has an impact on the level of pupil participation.

The study also found that students’ interactions with teachers and classmates in the classroom environment increased as a result of the inclusion of ICTs. ICTs help to improve overall outcomes and academic achievement by actively engaging students. Additionally, the presence of ICTs in the classroom setting encourages greater levels of student participation and collaboration among the students.

Subtheme 3: ICT Increases Learners’ Concentration

The teachers have indicated that the participation of learners varies depending on how they are using the ICT and the type of ICT they are using. The participant teachers indicated through interviews that there is a difference in learners’ participation when teaching without ICT and when ICT is used.

Teacher Green said:

There is always high participation from learners whenever I am using ICT; everyone wants to say something. Also, if that day I am using an overhead project, the participants are highly engaged because they can all clearly see the images in the videos or pictures; ICT develops their curiosity to learn and also to learn how different ICT functions.

“Learners’ participation differs when I use ICT; when I use ICT, my learners will participate even if only one is taking that day, especially if I make them watch a video and ask them questions later,” said Teacher Blue.
These findings are in agreement with the study conducted by Ghavifekr and Rosdy (2015), which indicated that integrating ICT tools and equipment into the classroom makes for a more engaging lesson and fruitful learning environment for all the learners. This finding is also supported by Winkelmann and Benemann (2017), who noted that "ICT allows learners to digest knowledge more effectively and that using ICT helps to generate a higher enthusiasm for learning" (p. 752). In addition, Mireku (2016) argued that incorporating ICT into the classroom for the purpose of teaching environmental studies promotes a more learner-centred approach, where learners are encouraged to work together and develop a deeper understanding of subject material and applicable skills.

Subtheme 4: ICT makes personalised instruction possible

As this research shows, there is a wide variety of learning styles among learners, and ICT allows teachers to accommodate all of them. Integrating ICT in teaching helps the teacher incorporate different learning styles at once. Participants have this to say about this subtheme.

Teacher Green said,

"Using ICT is more beneficial than teaching without integrating ICT. "ICT integration caters for all the principles of learner-centred teaching, where learners are all more involved in lessons. ICT provides deeper learning to the learners; learners get a chance to learn through healing and seeing, which makes lessons more fun for them".

Teacher Blue said that

"using ICT to show learners a video gives all learners a chance to interpret the video differently. Videos also explain the content better, no matter how complex the topic can be to the learners".

Teacher Red said,

"Teaching through videos enables all learners to enjoy the lesson. They hardly forget the events in the video. Videos engage all the senses, though sometimes I muted them and instructed my learners to focus on the actions".

In line with these findings, Stosic (2015) argued that learners benefit from the use of ICT because it provides more learning opportunities and enhances aural, auditory, and kinaesthetic knowledge acquisition. In addition, Hennessy et al. (2010) also argue that ICT can assist learners in gaining a deeper appreciation for learning and advancing their knowledge to an adequate level. The study of Hasin and Nasir (2021) concurs with it by noting that hands-on experience is preferable to lectures for fostering deep learning in learners. The role of the teacher is to provide the conditions for learners to make their own discoveries in the realm of knowledge. As Ültanr (2012) said, Piaget observed in 1973 that children acquire knowledge and understanding through discovery and reconstruction through rediscovery.

Teacher Yellow said

"It is through ICT that we are able to incorporate the sense of seeing and hearing into our teaching and the different learning styles that our learners possess".

This study finding is supported by Harrison and Wamakote (2010), who agreed that learners benefit from ICT integration because it piques their curiosity and encourages them to learn more. Furthermore, ICT gives learners a good idea of what things are like in practice through watching videos.

Subtheme 5: ICT in education promotes learners’ engagement and knowledge retention

The results of this study confirmed that learners tend to remember and retain well what they have learned during ICT-mediated lessons. This is what the participants have to say. Teacher Green said:

Using ICT helps my learners learn better, though I do not use it every day. They remember well if you ask them questions about the previous lesson topic. I also have those learners who do not participate, but with an ICT-mediated lesson, they are likely to participate in the discussion".

Teacher Orange said:

"If I want learners to understand the content better, I will choose video teaching; they are more likely to recall events in a video than pictures; I have also noticed that they master the content well through video teaching."

Teacher Orange further said,

"If I want learners to understand the content better, I will choose video teaching; they are more likely to recall events in a video than pictures; I have also noticed that they master the content well through video teaching."

Teacher Red answered that

"it helps learners remember what they have learned better. He also added, "Almost every learner will participate; even those that sleep in class will not
sleep. Learners will clearly remember the sequence of events in the video compared to when I just show the pictures about a specific topic."

Teacher Red further added that

"it helps learners remember what they have learned better. He also added, "Almost every learner will participate; even those that sleep in class will not sleep. Learners will clearly remember the sequence of events in the video compared to when I just show the pictures about a specific topic."

Then teacher Yellow indicated,

"ICTs do play a role, especially at our rural schools; learners learn a lot and better through the use of ICTs, especially information on things that are not locally available; they also tend to remember and recall what they have learned."

The teacher Yellow further indicated,

"ICTs do play a role, especially at our rural schools; learners learn a lot and better through the use of ICTs, especially information on things that are not locally available; they also tend to remember and recall what they have learned."

These findings are in agreement with Stosic (2015), who mentioned that the use of educational technology in teaching allows better connection with learners and encourages better receipt of information since learners get knowledge in visual, aural, and kinaesthetic ways. Research by Morrison (2007) and Henock (2015) also supports the claim that learners will supposedly remember what they have learned better and more efficiently as a result of their heightened level of involvement.

According to Shirley and Caruso’s study from 2021, in a Piagetian classroom, children are not given prefabricated knowledge but rather are encouraged to discover who they are through accidental contact with the outside world. The teacher’s main duty in a Piagetian classroom is to facilitate learning by providing learners with access to a variety of information. Alkamel and Chouthaiwale (2018) further observed that integrating ICT into classroom education has been demonstrated to boost learners’ enthusiasm and interest in their studies. This is due to the fact that technical developments have created new opportunities for presenting information in a more captivating manner.

Subtheme 6: Timely and better access to relevant information

Information and communications technology (ICT) refers to any technological means by which relevant data can be made available at the right time, in the right location, and in the appropriate form to the right user.

Teacher Melon said,

"ICT is said to help the teacher and learners access vast sources of environmental studies that can be effectively integrated with the curriculum objectives. He further commented, "Not only has ICT reduced my time to write on the chalkboard and to explain every detail to the learners".

Teacher Blue said,

While the Grade 2 curriculum emphasises the significance of teaching learners about transportation and its many purposes, the available textbooks at the school only feature photos of various modes of transportation rather than any text. Under the communication topic, learners are also tasked with acting out the reading of a television news broadcast; this can only be easily understood by our learners by showing them a video because some of them have never watched a news broadcast”.

Teacher Black said,

"The Internet provides the fastest way to access videos and songs on junior primary content. Information is just at our fingertips."

Teacher Violet said,

"With ICT and the internet, I can search for information fast and easily on the content I want to teach. "ICT also enables me to present a lot of information on a topic compared to when using flip-charts to explain every detail".

This finding is supported by Saravanakumar (2018), who indicated that smart phones and other devices have made it possible to access educational data from virtually anywhere. Today, technology plays an integral part in enhancing the classroom experience, he added. Moreover, Waigandjo (2021) mentioned that the majority of teachers claim to use technology, specifically PowerPoint and a projector, in order to avoid having to spend class time writing out notes and presenting them to learners. This finding can also be supported by the observation findings of this study. Teacher Blue presented a vast amount of information on the type and use of local transport using a laptop and project. The teacher made learners watch the video first and later ask them to mention what type of transport was shown. She further asks how those transports are used. More information is presented in a fun and interesting manner.
CONCLUSION

The study uncovered different roles for information and communication technology in the junior primary phase. These include: ICT helps teachers teach topics that are abstract or distant from learners’ everyday lives; ICT increases learners’ involvement; ICT improves learners’ concentration; ICT makes personalised instruction possible; ICT in education promotes learners’ engagement, knowledge retention, and A more convenient, efficient, and inexpensive means of gaining access to relevant information at the right time.

The findings of this study revealed numerous roles for ICT in the Environmental Studies subject in Grade 2 junior primary school classrooms in Omusati Region. ICT exposes learners to content that is not in their local environment and thus enables them to understand the content better. Furthermore, the use of ICT revealed that learners are more likely to participate in school activities or class activities compared to traditional styles of teaching. Similarly, the study found that the use of ICT in Environmental Studies in Grade 2 rural classrooms in the junior primary phase could make lessons more interactive because learners are motivated and curious to know more. The study also revealed that lessons in which ICT were used, were more learner-centered, which makes learners actively engaged in the lessons as they are constantly asking questions based on what they are learning. This research demonstrated that there is a wide variety of learning styles among learners, and ICT allows teachers to accommodate all of them. Therefore, the use of ICT can improve classroom instruction by offering more options for personalised learning through its dynamic and interactive content. ICT also provides supplementary material on topic matter, some of which may not be included in the provided textbooks. As an added bonus, the use of ICT allows both teachers and learners to get access to a wealth of resources on environmental studies content that can be seamlessly incorporated into lessons.

This study also showed that learners are more likely to discuss what they have seen in class when ICT is used. While many learners’ first language may not be English, they nonetheless benefit from exposure to English vocabulary through the use of videos shown in class because most of them are in English. The study’s findings revealed that learners could benefit from interacting with one another and developing their comprehension based on the comments and thoughts of their classmates through classroom discussion and group discussion centred on videos, pictures, and action songs.

RECOMMENDATIONS

Based on the findings of this study, the researchers made the following recommendations:

- The study recommends that the Ministry of Education, Arts, and Culture fully intensify its involvement in ICT integration at school through the provision of ICT gadgets and teacher training.
- There is a dire need for the school administration to ensure that teachers get the fullest support and backing during the ICT implementation process in schools by giving ICT a place in their budget.
- Effective professional development emphasises collaborative knowledge-building and practitioners exchanging ICT-related situational learning experiences.

REFERENCES


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