



## **Building Digital Literacy Competencies: Perspectives of Pupils' Play Methods of Learning in Primary Schools in Kenya**

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### **Abstract**

Digital literacy is the ability to acquire knowledge, skills and behaviors which are necessary to effectively and safely use a wide range of digital content and devices for learning. Play with digital devices can help learners develop digital skills. However, there is no many mechanisms and methods to teach and develop digital literacy skills in primary school pupils. The purpose of this paper is to examine primary school pupils' digital literacy competencies demonstrated through play way method of learning. The study is underpinned by Constructivism Learning Theory. The study utilized qualitative research method, case study research design and adopted interpretivism research paradigm. The target population comprised of 30 primary schools. 13,500 pupils and 450 teachers. Data was collected from twelve public primary schools in Chesumei Sub County in Nandi County. 12 head teachers, 12 grade one teachers, 480 learners and one education officer were selected using purposive sampling method. Purposive in that existing grade classes were used, the teachers teaching the grade and schools that received the government donated laptops and tablets. The research instruments that were used were: teacher reflective journals, interviews and observation schedule. The data was analyzed thematically. The study findings revealed that: Competencies that were developed as result of play included: Manipulating the tablet menu, access to digital content and reading on screens, booting up, use of icons and search engine. The paper concludes that, play way method of learning became an enabler towards the development of competencies and digital literacy skills because of its child centered approach and the teacher became a facilitator of the learning process. The following recommendations were made. The digital devices provided by the government needs to be increased to meet the growing number of learners in primary schools. The Ministry of Education needs to increase digital content in the digital devices in order to compel teachers to enhance the use of computers for pupil's digital literacy. The findings of this study are useful in curriculum innovation in Kenya and other parts of the world.

**Key words:** *Digital literacy, Play methods, Child Centered Approach, Curriculum innovation, Digital play, Computer language*

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## **1.0. Introduction**

The Kenya Institute of Curriculum Development (KICD, 2017) explains that the government recognizes digital literacy as an important avenue of improving learning and teaching to begin at a young age. Pupils start developing digital abilities at a very young age, which they utilize more and more to explore and take advantage of the world of information and turn it into knowledge (ROK, 2015). Relatively little is known about the development of digital literacy skills in primary schools (Kennedy et al. 2012; Kerkhoff & Makubuya, 2021). Digital literacy enhances the effectiveness of instruction and learning, as well as learning outcomes, self-efficacy and pupil capabilities (Aslan, 2021; Erwin & Mohammed, 2022). As a result, digital literacy is essential for learning and teaching today. However, there is a lack of knowledge about how Kenyan teachers and institutions are expected to actively incorporate and employ digital literacy. With this in mind, it is clear that for pupils to prosper in the contemporary world, institutions and systems of education need to integrate digital literacy tools and resources into their teaching. In conjunction with that, Kenya envisions facilitating digital literacy as a general method of instruction and training. In order to accomplish that, Ntorukiri et al. (2022) aver that every learning institution, teacher, and learner should be furnished with necessary digital skills and the relevant infrastructure. However, there is a significant challenge in the introduction and integration of digital literacy into the curriculum in Kenyan schools, and only a tiny portion of pupils are exposed to digital skills. This paper explored the use digital play activities as a means to accelerate digital literacy in the competency-based curriculum. The curriculum development process is a combined effort of the school leaders and the teachers (Syomwene et al., 2017). The school leaders take a lead in facilitating and supporting the curriculum development process. The support facilitates the teachers in planning their schemes of work, the lesson plans and delivering the lessons through use of digital literacy leading to abilities on the part of the pupils (Mwaka et al., 2014).

## **2.0. Literature review**

Digital play can be used for pedagogical purposes (Marklund & Dunkels 2016). Pupils digital play process was described by Haugland and Wright (1997) that when a pupil uses computer software for the first time, he or she plays with some of the program's functions and investigates specific aspects of it. Before engaging in actual play, pupils must have time to become accustomed to the hardware of computers and tablets as well as certain games (James et al., 2009). Playing with a computer can give pupils opportunity for rich social relationships. Pupils frequently watch other pupils play, remark on what they're doing, and offer assistance to one another when using a tablet (Chen, 2002). Instead of asking the teacher, pupils are more inclined to ask their classmates who are sitting next to them. Open ended programs encourage pupils to expand their thinking and engage in exploration, problem solving and collaboration (Fischer & Gillespie, 2003). There are many educational games available in computers. These games encourage innovative and creative play. Such computer games can be used by learners to encourage learning, enjoyable play and growth. Pupils also use more deliberate problem-solving techniques and have higher levels of metacognition and self-regulation when they engage in digital play (Whitebread et al., 2010). Learners are likewise inspired by situations that provide control and choice and foster good impact, according to studies that unintentionally generated pupil judgments of digital competence (Selwyn

& Bullon, 2000; Hassinger-Das et al., 2017). Technology-assisted learning has gained widespread attention (Lee, 2021; Yelland, 2005; Siraj-Blatchford & Whitebread, 2003), and there are particular traits that can be encouraged with its use. These qualities include supporting the discovery of passions, collaboration, independence, motivation, sincere praise, patience, and respect, as well as giving choices and fostering decision-making. When used properly, technology gives pupils a new avenue for research and discovery.

Using digital play in small groups of pupils fosters collaboration and teamwork, which helps pupils build healthy peer connections (Hawkrigde, 2022). Pupils feel as though they are emulating grownups when using tablets, especially those who are important to them. They are pleased of themselves when they can show off their successes and receive praise and congratulations for accomplishing something that "the adults can do" (Mudra, 2020). Tablets also "surrender" to pupils by providing them the authority and duty to carry out the play activities on their tablets. Pupils believe they have the "power" to run the device and have control over it as they play (Lee et al, 22; Bolstad, 2004). In this approach, learners' autonomy and independence are increased, and they also get the possibility to practically immediately "inspect" their accomplishments and receive concrete consequences (Astleitner & Leutner, 2000, 497–498). Technology has enormous contribution towards literacy and the ways that pupils interact with their environment through play. Vygotsky scripted, 'The child primarily develops through play activity, according to the author, who also stated that "in play the child is always acting beyond his age and above his regular everyday behaviour; in play he/she is, in a sense, a head above himself" (Vygotsky, 1978, p. 74). Digital tablet technologies can foster reading, writing, and communicating lessons (Hutchison & Reinking, 2011; Saine, 2012). Pupils can develop pedagogical skills and competencies through play (Johnson & Christie, 2009).

Digital literacy is currently regarded as one of the primary basic competences for education and daily living in the twenty-first century. It promotes imaginative, creative, and frequently transformative learning while testing, stimulating thinking and practice (British Council, 2015). The learner gains various advantages from the usage of digital technology in the classroom. They include simple access to digital information and concept comprehension (Lee et al., 2022); and encouraging learner-centered, self-directed learning in which pupils can decide how to arrange and understand knowledge (Kimbell-Lopez et al., 2016). The methods which appear to have the potential to teach digital literacy include play way method with tablets. This paper sought to examine primary school pupils' digital literacy competencies demonstrated through play way method of learning and to answer the question: How does play way methods develop the digital competencies among primary school pupils?

The constructivist theory was used in this investigation. The constructivist method is founded on the idea that pupils can build knowledge from their environment and prior experiences (Kalpana, 2014; Waweru, 2018). Constructivism guided pupils acquire digital literacy competencies in play way method through group learning where a more knowledgeable other guided the learning process. In group learning a more knowledgeable other was either one of the pupil in the group or the teacher who guided the learning process. Lev Vygotsky (1978) and Jean Piaget (1962), the authors of this theory, change the emphasis from the teacher—who was previously seen to be the source of knowledge—to an instructor (Wang, 2008; Waweru, 2018). Group learning was the main

focus of the constructivist theory's methodology. As developed by Jean Piaget, constructivism was approached in a method that targets both individual and group learners (Kalpana, 2014; Wang, 2008) According to the principle, when a learner assimilates new information; the information expands their body of knowledge. Therefore, it is crucial for teachers incorporating digital literacy to comprehend that learning can be focused on person's knowledge extraction and comprehension. The teacher became a facilitator or guide of the learning process (Fyksen, (2011).

In constructivist learning environments, cooperative learning activities were prioritized (Fosnot, 2013), where learning is prioritized over teaching or instruction. Within this study, constructivism implied that: Knowledge is not merely acquired through the senses or through conversation; instead, it is actively acquired by the pupils (Von Glasersfeld, 1995, p. 56). Collaboration is emphasized as opposed to individual learning (Waweru, 2018). In this paper pupils engaged in group work activities on their tablets. Interaction with and input from others was emphasized, including peers and anybody else who has relevant experience (Pritchard, 2005, 2007). Learning took place through social interaction amongst the pupils with the use of digital tools. Collaboration took center stage and learning through peers who are more knowledgeable was encouraged. McGee &Welsch (2020) summarizes the four principles that form the basis of Vygotskian's sociocultural theory: Pupils build their own understanding, social environments are important for growth, learning promotes advancement, and language and thinking skills are intertwined. In this paper pupils were engaging one another to create meaning as they interacted together and with the digital tools. They shared their experiences and sharpened their communication skills.

### **3.0. Materials and methods**

The research approach that was undertaken is qualitative approach because qualitative methods were used to collect data. These methods were interviews, filling of journal reflection sheets and observation. Open ended interviews were done at the end of the play session to find out from the teachers, digital literacy competencies developed through play. Journal reflection sheets were filled every time before the play session began and at the end of the play session. This was to find out the goals set at the beginning and at the end of the play session, to ascertain whether those goals were achieved or not. Observations were carried out in order to see what the pupils were doing on the tablets. The successes they gained and the challenges they encountered. The researcher examined the competencies demonstrated by pupils through play way method of learning and the experiences teachers examined to uncover new teaching methods using the digital devices. The research was done in public primary schools in Mutwot zone, Chesumei constituency, Nandi County-Kenya. Twelve public schools were selected for the study using purposive convenience sampling method. The selected schools illustrated features of interest to the study with the most suitable characteristic, representative of the population. These features served the purpose of the study and purposefully informed an understanding of the research problem. These characteristics were; existing grade one classes, specific teachers teaching those grades and the schools that received the government donated tablets.

According to Sutton and Austin (2015), an ideal study environment should be reachable and allows for quick interaction with the participants. The design that was undertaken in this study is a case study research design. Any empirical work and case study research uses multiple methods for data

collection and analysis (Cohen et al, 2018). Case study research designs describes, interprets events, situations and/or conditions (Yin, 2018). Case studies guide one to “see the situation of the participants” by giving them a chance to express it in their own words (Cohen et al., 2007, p. 57). This resulted to the choice of interpretive paradigm. Interpretive paradigm permits the researcher gather different views from the participants. Due to the potential for investigator subjectivity, case studies as a research method have drawn criticism for having problems with validity (Cohen et al, 2018; Jwan & Ong’ondo, 2011; Denzin & Lincoln, 2011). Investigative partiality was overcome, according to Yin (2014) by using multiple sources of evidence. The data from all the tools were typed. Interviews were captured on tape and written down. These were further coded and the codes were categorized into themes. The codes came using the respondents' or the scientist's precise words who compose phrases (Creswell & Creswell, 2018). Teacher reflective journals were also analyzed and themes developed from them.

Due to the social realities of human beings, social research prioritizes ethics. Privacy and views of the participants was ensured at all times (Struwig & Stead, 2004). The heads of schools and teachers were requested to sign indemnity consent forms. The forms gave an explanation about the role of the pupils during the research process. Parents of the participating pupils were made aware of what the pupils were doing on the digital devices. This is due to the fact that in research they are regarded vulnerable because their knowledge and expressive capacities are limited. The participants (heads of schools, teachers, and pupils) were made aware that their responses were used for purposes of research. The school names and the teachers' names were not mentioned. Pseudo names used so as to safeguard their confidentiality and anonymity. Fairness was upheld at all times. Ethics approval was sought at the National Commission for Science Technology and Innovation (NACOSTI) before data collection process began.

#### **4.0. Results and discussions**

A competence is the capacity to carry out a task successfully or effectively of a learned physical task readily in a performance through the skills learnt. It is the ability to do something competently. Pupils during play way method of learning developed some expertise in handling and using the digital devices. These digital literacy competencies were analysed thematically from the journal reflection sheets, open ended interview and observation. Primary school pupils' digital literacy competencies demonstrated through play way method of learning are: i) Manipulating the tablet menu guided pupils' navigation skills; ii) Finding digital content guided pupils develop search skills and reading attitudes; iii) Booting up guided the pupils develop skills on opening and shutting the computer using the right procedure and use of icons and search engine.

#### **4.1. Digital literacy competencies demonstrated through play way method**

##### *4.1.1. Navigation skills*

The participants in the study were seen to be going through a set of options presented on their tablet applications. Manipulation helped pupils execute play programs on their tablets. According to the participants manipulation involved the development of navigation skills. Navigation as a skill was seen to have developed in the pupils. They were able to explore the digital tablet by using the arrow to search. Pupils could open and move through tablet menus like the start menu, view



files and move the cursor around the screen to access Icons and other features on the tablet. Teachers and pupils' skill on navigation was attributed to the newness of the digital play way strategy, the digital literacy context, the newness of using the tablets and computer language. Personal experience and observation related to skills on the digital play way strategy of teachers and pupils indicated that teachers and pupils struggle immensely with play especially those that deal with technology (Perkins, & Salomon, 2018). Navigation as a skill which is embedded in the play way approach, assisted pupils and teachers develop skills on location of the plays. Pupils were more and more exposed to the tablets and learnt quite easily how to use tablets and related technology with a great deal of assistance from peers and their teachers who were facilitators (Fluck et al, 2020). Teachers should create a more stimulating learning environment (Olakulehin, 2007). Digital literacy skill supports teaching and learning (Misfud et al., 2021) and improves educational outcomes (Piper et al., 2015).

Another competence that emerged was finding of digital content. The learners were seen to have developed search skills and reading attitude

#### ***4.2.1. Search skills and reading attitude***

Finding digital content that is meaningful involved employing various search strategies that helped to source information on the plays. The experiences that were playful in nature created some form of interactivity within the pupils and allowed room for exploration. Digital content was retrieved due to the acquisition of search skills and reading attitude. The responses to the journal sheets indicated the continuous plays became more interesting after the pupils had practiced more and gotten used to the search skills. Pupils were able to find letters, words, files or games. Digital play sessions helped pupils develop reading skills. This was clearly stated by a participant during an interview that; *You realize these pupils have an issue with reading, as they search they must read the different files on the tablet screen to be able to locate the plays and that means that we are supporting their reading ability when they are associated with digital play technology. So it is a good thing to do.* Nevertheless participant 1 suggested that *the digital play sessions had a positive impact on searching for information, restarting and locating information.*

The participants inevitably had to read a lot while looking for information. They had to read the steps to follow and observe the buttons to press. Follow the instructions on the tablets for example grouping of objects. This seems to indicate that looking for information on their tablets enhanced the understanding of what the pupils read on the tablets. Through following the instructions on their digital devices, pupils gained literacy skills: *“When pupils are busy playing, they get more insight and improvement in their reading skill as they will be required to do a lot of reading and also listening because some instructions were given in audio. They get the ability to sequence and analyse the information found* (Participant 7). This notion is followed by those of Brun-Mercer (2019); Mujan et al. (2019); McGee & Welsch (2020) who contend that digital literacy can help cultivate certain literacy abilities while utilizing technology.

Abu Zahra (2020); Brun-Mercer (2019) and McGee and Welsch (2020) all note that the use of digital devices provides the potential to help with the growth of reading abilities, and as a consequence, digital literacy could evolve into a useful tool to help instructors manage reading

challenges. These writers also assert that by providing explicit instructions as games advance, digital literacy could help to enhance reading-related skills. Mifsud (2021) agrees that it's critical to improve digital reading comprehension abilities because digital media are continually evolving. As a result, screen reading needs to be developed because it seems like the number of digital media is growing every day (Abu Zahra, 2020). The skill emphasis was reinforced by the use technology in classrooms and the availability of computer hardware and software (Fykseen, 2011). Pupils' skills resulted in the application of a range of objectives in a more active learning environment and seen as a tool to foster higher order thinking, creativity, and search skills (Langthaler & Bazafkan, 2020; Reeves, 1998). Digital learning helped pupils share difficulties in learning and helped them learn language (Sabiri, 2020). Search skills transformed collaborative learning that was made possible by the instructional environment (Kumar & Tammelin, 2008). Sabiri (2020) emphasizes that digital learning increases mutual interactions between learners as well as learners and the teacher.

The next competence that was developed as a result of digital play way method of learning was, booting of the tablet. Pupils in the digital play were seen to be opening and shutting the tablet using the right procedure

#### ***4.3.1. Opening and shutting the tablet using the right procedure***

The participants were seen to have developed the skills on booting their tablets. Booting is a process of starting the tablet using the power button on the tablets. Booting up encompasses opening and shutting the tablets using the right procedure. Pupils were seen to have gained knowledge on basic computer skills wrote Participant 1 in her journal. *They were able to switch it on* added Participant 7. Once turned on, pupils waited as the tablet takes time before it is ready to use. They could also show their friends the few different displays that flash on the screen, when the tablet is booting up. *They clearly understood that once the tablet has booted up, it is ready to use*, explained Participant 9. Pupils guided their plays using the track pad on their tablets, added participant 3 they could either press or tap the track pad and click. The keyboard also appeared on their tablet screen, this allowed pupils to type letters, numbers, and words into the tablet. Whenever pupils saw flashing vertical line on the screen called the cursor they started typing on that vertical line. They learnt to type the name of the game and the game popped on the screen, narrated participant 8.

Pupils were seen to have developed the skills on typing. Participant 2 stated *at some other time when the learners could not go through the tablet menu. They could type the name of the game for example spider and spider game popped out on the screen*. This skill helped the learners save on time. After developing the skills on search, they also searched on their screens where to type on the search bar. Participant 7 wrote in her journal that I had shown my pupils how to type because some games like those of grouping and sorting objects required some sections typed. The typing was on simple three letter word. If the word was long then the learner was required to type a vowel sound on the word.

Learners progressively were seen to have understood how to shut down the computer following the right procedure. Shutting down was done by the learners when they were done with the day's play activity. Participant 11 said that; *I was able to observe my class shut down their tablets by clicking the start button, then selected from the menu by searching and locating the power symbol. Then clicked on it and the tablet could shut down.*

The next competence that was developed was the use of icons and search engine.

#### ***4.4.1. Use of icons and search engine***

Participants were seen to have gained knowledge and skills on performing fundamental tasks on the tablets like the use of Icons and search engine. The journal data also indicated that participants felt that they became more competent as they progressed with the play activities. Pupils were seen to use their fingers to control the pointer on the screen and be able to click on the games and play. Whenever they moved their finger across the tablet, the pointer moved in a similar manner. They simply dragged their finger across the track pad to move the pointer on the screen. *Learners were able to identify the Icons and their use*, said participant 5. She continued to say, they frequently used Icons that represented different plays on their tablets. The icons in their tablets were small images that gave them an idea at a glance. Participant 3 added that, one of the Icons had all the games in it. Double-clicking the icon opened the file.

Through observation, it was clear that the pupils were able to click on the game and play directly and identify the number of games available in their tablets. Nonetheless, pupils focused on the game that was meant for a particular day, depending on their capability to switch on the games and play. They were able to list the games they had already played and those they had not. Pupils developed the skills on computer language like: scroll, minimize, maximize, search, increasing brightness or darkness on the screen, increasing and reducing volume, click, open and shut. The filling of the entries on the journals on a daily basis helped in the development of the aforementioned sub-theme –use of icons and the search engine- as improvements were observed.

As the pupils created knowledge through mutual understanding they became competent in their communication skills. It was intriguing to observe how engrossed and focused when pupils were watching the play. This seems to indicate that playing needed a lot of attention, which breeds confidence. The research also showed that while using a tablet as a tool, it is the pupil who must do the thinking rather than the tablet. This supports the claim made by Tan and Drew (2019) that a computer can serve as a "mind-extension cognitive tool." Hence, rather than the tablet, it is the pupil who contributes intelligence (Erbaş et al., 2021). When a pupil participates actively in an activity, for instance, use of icons, then learning is happening. Learning also evolves into a process of active construction (Jonassen, 2002; Sailin, & Mahmor, 2018). The participants seemed to like the digital play despite the fact that it seemed to require a lot of concentration and mental effort, which is possibly why there was a drop in the perception of digital play as hard labour.

The experiences that were developed as a result of digital play way strategy had a positive impact on pupils and teachers attitude towards teaching and learning. This became evident in the comments section of the observation which indicated that the teachers became more positive about



their teaching. Throughout the digital play sessions teachers clearly said that: They felt empowered. They felt that they have a sensation of proficiency in using a tablet, it enabled collaboration, it provided new opportunities and new ways of thinking, The pupils improved their creativity, They were able to search, use the icons and locate their plays through the menu or typing the name of the game. They felt they had some control over what they wanted to do.

The participants felt that the role of the teacher was different. Participant 2 wrote, “*The project taught me that gone are the days of banking information on the learners.* The participants frequently made reference to the need to consider their pupils' abilities, especially in language proficiency. In all the schools they cooperated with each other as they played and exhibited high levels of collaboration and team work that led to the development of competencies.

## 5.0. Conclusions and recommendations

Primary school pupils' digital literacy competencies demonstrated through play way method of learning was examined. The sampled schools were connected with electricity, charging points were available and schools had the government donated tablets. Participants were therefore very enthusiastic about the digital play approach. Play way method of learning became an enabler towards the development of competencies and digital literacy skills. The approach was child centered which can be used to acquire digital skills and the teacher became a facilitator of the learning process. There was development of computer language and competencies. Teachers embraced play way approach because play interests pupils.

The paper recommends that the government should continue in its efforts to supply and deliver more tablets to schools due to the growing enrolments in public primary schools and that, the tablets have become valuable teaching resource.

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### Acknowledgements

Sarah Jemutai acknowledges the financial and academic support as a German Academic Exchange Service (DAAD) scholarship holder and a member of the East and South African German Centre of Excellence in Educational Research and Research Management, Moi University (CERMESA).

### Conflict of interest

The authors declare that they have no financial or personal relationship (s) that may have inappropriately influenced them in writing this article.

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