_____

The Nexus between Class Size and the Integration of Advanced Media Resources in Public Primary Schools in Kenya

Susan M. Onyancha[1], Patrick A. Kafu[2], & Betty J. Cheruyoit[3]

[1&2]Department of Curriculum and Instruction, University of Eldoret, Kenya
E-mail: suonyancha98@gmail.com; Patrickafu3@gmail.com; bettycheruiyot77@gmail.com

Abstract

Educational Media has gained popularity in the instructional process due to academic concepts' abstract nature. Although much has been done to improve Early Childhood Development Education Programme in Kenya, the implementation of effective early childhood development education still faces the challenge of integrating advanced media instruction. Research suggests that the integration of advanced media resources can enhance student engagement and improve learning outcomes by catering to diverse learning styles and preferences. Despite efforts from stakeholders to integrate advanced media as a learning resource, Early Childhood and primary schools in Kenya seem to lag behind. To interrogate this disparity, this paper investigates the influence of class size in the integration of advanced media resources in Ainabkoi Sub-County, Uasin Gishu County, Kenya. This study was anchored on Technology Acceptance Model (TAM) (Davis & Granic, 2024). The study employed the pragmatic research philosophy that set the framework for a convergent mixed methods research design. This research targeted 880 early childhood education teachers handling baby, middle and top class, class 1-3 ECDE levels and 63 head teachers. Stratified and simple random sampling was used to select 267 teachers and 18 teachers. Of the 267 teachers, 236 returned completed questionnaires and of the 18 head teachers 11 were available for interviews. The study employed questionnaires and interviews to collect data. Statistical Package for Social Sciences (SPSS) Ver. 24) was used for data analysis which involved descriptive and inferential statistics embedded with thematic analysis. Descriptive and thematic results revealed that class size influenced media use, affecting engagement and interactions. Majority of the teachers 24.2% strongly agreed that classes were too large to support outdoor advanced edutainment media. Regression results confirmed that class size ($\beta=0.145$, $p<0.05$) was a significant determinant of integration of advanced media resources in public primary schools in Ainabkoi Sub-County. The implications of class size on advanced media adoption underscores the need for strategic class management and resource allocation. Schools with large class sizes should explore innovative strategies to mitigate challenges posed by limited interaction with advanced media and execution of media-related tasks. In addition, adequate allocation of media resources and consideration of class size in instructional planning are imperative to ensure effective engagement and personalized learning experiences.

Keywords: Class Size, Advanced Media, Early Childhood, Primary Education

1.0 Introduction

1.1 *Early childhood Education through time*

Early childhood education has its roots in the early 1500s, as advanced by Martin Luther (1483-1546). According to Luther, education strengthened the family and community at large and needed to be universal. Consequently, children needed to be educated to read independently and access the Bible (Ozment & Witte, 2017). Martin Luther's idea of early childhood development was advanced by John Amos Comenius (1592-1670). In his picture book to promote literacy, Comenius argued that learning for children was rooted in sensory exploitation (Wong & Logan, 2016). The notion of early childhood education and development was next highlighted by John Lock (1632-1704). According to Locke, in their learning endeavors, children start off with a 'blank slate' or *tabula rasa* and require an environment that can fill this metaphorical slate (Gordon & Browne, 2016).

In his contribution, Fredrick Froebel (1782- 1852) introduced the concept of play by postulating that children learn through play. Froebel designed teacher training emphasizing programmes and activities focusing on children's skill level and readiness (Frobel, 2018). Froebel was the father of the formal early childhood setting and founded the first Kindergarten. Taking cognizance of teacher training, Maria Montessori (1870-1952) extended Froebel's concept by viewing the educator as the social engineer of children's knowledge. She argued that the learning environment was as critical as learning itself and was responsible for enhancing children's lives. She therefore, posited that children's senses needed to be educated before their intellect (Bone, 2019).

Interest in early childhood education and development also attracted the likes of scholars like Jean Piaget (1896- 1980), Lev Vygotsky (1896-1934), and John Dewey (1859- 1952). Piaget advocated for children to learn by interacting directly and actively with the environment and that such learning should progress through sensory-motor, preoperational, and concrete operations (Waite-Stupiansky, 2017). Vygotsky, on the contrary, theorized a social-cultural development of children. He argued that children could expedite their cognitive, social and logistics development through social interaction. And to do so, they require scaffolding from a more capable community member (Vygotsky, 2016). Dewey viewed the classroom as a place to foster social consciousness, and that learning should originate from children's interests (Luff, 2018).

High-quality early childhood education is associated with children's brain development, health outcomes, future academic success, and economic growth among nations (Black et al., 2017). According to Diallo and Wangechi (2012), Early Childhood Development Education (ECDE) promotes a stimulating and enabling environment required during the foundation stages of learning. These scholars contend that a shaky foundation for learning is a barrier to opportunities for a child's exposure to holistic growth and learning. The quality of Early Childhood Education, especially when competencies such as communication and collaboration, creativity, imagination, and digital literacy require nurturing, is undoubtedly pegged on the instructional process.

The Early Childhood Development Education journey in Kenya has been long. Early childhood Education in Kenya started in the 1940s with the first preschools tailored to cater to the educational needs of European and Asian children in communities living on plantations on large farms. However, during the Mau Mau struggle, some mothers in the central province were forced to work for Europeans. This necessitated preschool for African children in the province's emergency villages (Kipkorir & Njenga, 1997). The *Harambee* spirit of self-help founded by the then President of Kenya, the Late Jomo Kenyatta, led to the

establishment of several preschools following Kenya's attainment of its independence in 1963 (Koech, 2003). Since independence, a notable growth in preschool programmes has been experienced, as highlighted by the enrollment records of 657,688 children in 1986 and 908,966 children in 1991 (Kipkorir & Njenga, 1997).

Following poor services provided in preschools prior to 1970 ostensibly due to lack of government coordination and intervention that resulted in unsuitable methodology and different curricular content, the government of Kenya put in place a preschool education project at the Kenya Institute of Education (KIE) in 1971 to cater for the training of early childhood educational personnel and to streamline the curriculum (Koech, 2003). A national preschool seminar conducted in 1982 to review the preschool education project recommended a national center for early childhood education together with sub-centers to be hosted at district level. Subsequently, the National Center for Early Childhood Education (NACECE) was established in 1984, while the District Centers for Early Childhood Education (DICECE) were established in 1985 (Mbugua, 2004). Post-independent Kenya has continued to witness rapid growth of Early Childhood Development (ECD) centers and by 1995 there were close to 20,000 centers rising to 23,690 by 1999. In present-day Kenya, Early Childhood Development Education focuses on children's holistic development. Consequently, the ECDE was devolved to county governments when the 2010 Constitution was implemented.

1.2 Background to the problem

Educational media have gained popularity in the instructional process owing to the abstract nature of some concepts in academics. Moreover, the classroom comprises diverse learning styles, including auditory, visual and kinesthetic, requiring the use of educational media to cater for such diversity (Ritakumari, 2019). According to Brown in Sangsawang (2015), media relates to vehicles or things that relay information from the source to the receiver to expedite communication between two parties. From the educational perspective, Brown in Sangsawang (2015) contends that learners' sensory organs can comprehend content through the use of media. Meanwhile, Ritakumari (2019) perceives media as tools through which communication is facilitated. Educational media therefore are print, digital, or electronic material that provide or convey information to the student or contains intellectual content and contribute to the learning process (Webcrawler, 2013).

Educational media have attracted various definitions from different scholars (Collins & Halverson, 2018; Na, 2015; Webcrawler, 2013). However, the commonality in the many definitions is that educational media facilitate the instructional process. Webcrawler (2013) defines educational media as channels of communication through which instructional messages are exchanged. Such channels are solely used for instructional purposes. Na (2015), on the other hand, defines educational media as avenues of communication between the teacher and learner, which facilitate interactions and feedback between the two parties. Collins and Halverson (2018) define educational media as artifacts employed in the classroom to facilitate instruction. These definitions imply that educational media cut across all academic disciplines and cultural divides and are used to enhance learning.

According to Serva and Fuler (2004), media plays an essential role in stimulating learner interest and developing knowledge in the matter being taught. These authorities further advance that through media use, the traditional teacher-centered approach to instruction is replaced with a learner-centered and media-centered approach that enhances the transfer of expert knowledge. Yowell and Rhoten (2009) posit that media resources engage learners and promote active learning strategies such as problem-solving and cooperative learning. Research suggests that educational media allows individuals to grasp new, novel, and

abstract concepts quickly and retain ideas and concepts so learned easily (Rotherham & Willingham, 2009). Therefore, given that most concepts are abstract to children during early childhood education, integrating advanced media in instruction is one way of helping them grasp most of the educational concepts.

Ritakumari (2019) has delineated three media categories that are commonly featured in classroom contexts. They include print media, non-print media, as well as electronic media. Print media are portable and easy-to-use materials, including books, magazines, journals, newspapers, and any written or print materials. Print media have been associated with access to a rich array of information contributed by experts drawn from significant fields of life (Gautam, et al., 2021). Moreover, print media have also been credited with creating awareness of emerging educational changes (Aboglila, 2021). The revolution in print media is attributed to Johannes Gutenberg, who in 1452 invented the moveable printing press, presently known as 'The Gutenberg Bible.' The invention made it easier to produce large numbers of books quickly and cheaply and led to a cultural and social revolution whose impacts are felt to date (Leal, 2020).

Non-print media encompass projected and non-projected media often used during instruction (Ritakumari, 2019). According to Ritakumari (2019), projected media are motion pictures, overhead projections, filmstrips, and slides mainly projected on the wall or screen to synthesize and clarify real-life relationships. Non-projected media, on the other hand, are media such as display boards, three-dimensional models, charts, dioramas, field trips, real objects, etc. According to Olawale (2013), non-projected media are materials that make instruction concrete from verbal representations by authenticating abstractions. This authority contends that these materials do not require projection and encourage visual and kinesthetic learning. Non-projected media have been employed to supplement teaching by capturing learner attention, communicating important concepts, breaking the language barrier, and catering to diversity in learning styles (Kabir & Muhammad, 2020; Kiptum, 2021). Meanwhile, projected media such as opaque projectors and episcopes and internet materials can be employed to teach map reading, geographics, and others (Olawale, 2013). In essence, projected media arouses learner interest and stimulates their attention. Moreover, projected media allows for multimedia that can address divergent learning styles. It is argued that engagement in multimedia lessons maximizes kinesthetic, visual, and auditory learners' strengths (Fajari, 2020). It is, therefore, apparent that early childhood development education programmes in Kenya ought to take cognizance of the diverse learning styles among children by integrating a variety of non-projected media.

Ritakumari (2019) delineated electronic media as the third media category. These are largely projectable media and leverage electromechanical means to transfer content from the source to the audience (Truiltzsch-Wijnen et al., 2017). According to Ritakumari (2019), electronic media encompasses audio, visual, and audio-visual media. Audio media are radio, record players, compact discs, and audiotapes that appeal to the auditory sense (Kaahwa et al., 2019). These scholars contend that audio media enable the teacher to engage learners at various levels. The theory of multiple intelligences postulates that students learn differently (Gardner, 2012). Consequently, audio media enhance the chances of auditory learners' needs to be addressed. This category of learners gets engaged through auditory means, thereby raising their retention of ideas in a learning situation (Padilla Rodriguez et al., 2020).

Visual media that appeal to the sense of sight include media like computers, television, and whiteboards (Ritakumari, 2019). Visual aids arouse learner interest and ease the explanation of complex concepts (Shabiralyani et al., 2015). The use of visual aids enhances communication faculty that, enriches learner experiences, and enhances creativity and innovation for learning. The third category of electronic media identified by Ritakumari (2019) is the audio-visual category which combines the use of the senses of sight and listening. These instructional materials, such as videotapes, television, and closed-circuit television

(CCTV), appeal to the auditory and visual senses (Idris et al., 2018). Audio-visual aids combine auditory media resources with visuals to: capture learner interest, raise retention levels of learners, stimulate students' self-activity, concretize concepts, and develop continuity of thought (Asadi & Berimani, 2015). Early childhood development education programmes have often emphasized the discussed educational media. Yet, emerging technologies have rendered some conventional media obsolete, eliciting paradigm shifts to advanced media use.

Today's technologies have expanded the notion of electronic media to subsume digital media, revolutionizing modern pedagogies in education (Chien, 2012). Learning is becoming more interactive owing to the continuous stream of new technologies and electronic devices that support the distribution of information (Gan, Menkhoff & Smith, 2015). A literature review on digital media therefore, sheds more light on emerging technological revolutions that digitally support learning at the ECDE level.

Digital technology is the branch of scientific engineering knowledge that deals with creating and utilizing computerized or digital systems and methods. Digital technologies are, therefore, electronic devices, systems, tools, and resources that generate and store data. Well-known examples include mobile phones, multimedia, online games, and social media (Lindgren, 2021). Consequently, digital learning relates to any learning that uses technology across all curriculum learning areas. The concept of digital technology is developing fast with the emerging array of technologies. According to Ng (2015), digital technologies such as online games, social media, mobile phones, and multimedia are electronic-reliant and facilitate data generation, storage, and processing. Research shows that digital technology revolutionizes education systems worldwide (Li et al., 2015).

Digital technology has immensely impacted Early childhood development education in several ways. For instance, digital technology has significantly impacted the role of Early Childhood teachers relegating the teacher to the status of facilitator of a play-focused environment (Schriever, 2021). Digital technologies have also proved crucial in introducing play-based pedagogy in various early childhood education contexts (Aldhafeeri et al., 2016). Meanwhile, digital devices such as apps and tablets have been leveraged to promote Science, Technology, Engineering, and Mathematics (STEM) education, subsume mathematics, robotics, and literacy in early childhood education. Evidence indicates that digital technologies positively impact creativity and communication among pre-school children (McPake, Plowman & Stephen, 2013). On the strength of the positive impact of digital technology on various aspects of children learning, including the relegation of teachers to facilitators of instruction, it is feasible that an understanding of factors that determine its integration can inform the development of programmes that target early childhood education amid emerging modern technologies. Most Early Childhood development education centers in Primary schools in Kenya have yet to exploit digital technology. Yet, this technology has the power to make instruction more innovative and enjoyable.

Indeed, interest is fast shifting to another strand of media that promotes innovative and play-based pedagogy (Arnott, Palaiologou & Gray, 2018; Bird & Edwards, 2015; Edwards, 2016). This media strand, known as advanced media, has introduced a new phase in media resources to enhance learning at the ECDE level. It is argued that such advanced media contexts impact children's social interaction (Eagle, 2012), cognitive development (Voog & McKenney, 2017), lifestyles, and daily routines (McPake et al., 2013) positively. In the modern education context, advanced media are technical devices that increase the effectiveness of the learning process by enabling the integration of alternative forms of learning such as E-learning, blended learning and virtual learning, as well as gamification (Krylova-Grek, 2019).

2.0 Literature Review

Class size is another factor that features significantly in the literature concerning students' learning (Harfitt, 2012; Wright et al., 2019). According to the glossary of education reform, class size relates to the total number of students within a particular course or classroom (Ayeni & Olowe, 2016). Class size is perceived explicitly as the average number of students under the tutelage of individual teachers, given by the ratio of students enrolled in the number of classes (De Paola & Scoppa, 2011). Such a ratio is therefore critical to early childhood development education in the sense that a teacher needs to handle a number of children that he/she can develop holistically. Yet, lack of adequate instructional resources, in this case advanced media may hinder such development. It is postulated that the class unit remains the fundamental unit for instructional organization, making class size foundational knowledge for educators (Todd, 2012).

Class size can be deemed an educational tool that describes the number of students per class. Ayeni and Olowe (2016) delineate two types of class size; small and large. They argue that small-sized classes provide opportunities for more interactions between teachers and individual learners. But, large classes present challenges in planning, assessment, classroom management, pupil control, and the use of educational media (Ayeni & Olowe, 2016).

In Kenya, concerns have emerged regarding the large class sizes that do not support optimal learning (Mutisya, 2020; Ndethiu et al., 2017). Scholars contend that quality learning in Kenya remains a mirage due to, among other factors, large class sizes. They argue that for improved learning outcomes, Early Childhood Development Education centres should reduce class size and educationists have decried the current Teacher-Learner ratio in public Primary schools which stands at 1:56 against the recommended Pupils Teacher Ratio (PTR) in Kenya of 1:30 (Mbaka, 2017).

The issue of class size and quality learning outcomes has remained a thorny one worldwide. Evidence from Bolivia, for instance, suggests that test scores in schools with large class sizes in developing countries are negatively impacted by class size (Urquiola, 2006). Meanwhile, from the Tennessee context, it was documented that small classes led to a higher quality of instruction (Mueller, 2013). Monks and Schmidt (2011) also demonstrated the negative impact of class size on student learning outcomes. However, their study was in the higher education context. On the contrary, Shem and Konstantoponlos (2019) used the secondary school's context to demonstrate that small class sizes elicited learner enjoyment. Such evidence suggests, that class size may impact on output.

Some studies have supported the notion that class size impacts media resource integration and have opened up various contextual and theoretical gaps. For instance, Wright et al. (2019) used the US public university context to examine the impact of decreased class size on learning outcomes. They specifically sought to establish the difference in class size using instructional media resources for active learning. Using a public research university, they determined that large class sizes constrained the intended use of active learning strategies. Although Wright et al. (2019) implicitly implicated the inadequacy of media resources; their study was not explicit on the effect of class size on media resources. Moreover, their study was conducted in the US context. Therefore, this study sought to be explicit in examining the effect of class size on the effective integration of advanced media resources in Early Childhood Development Education in Kenya. In another study conducted among curriculum studies and Educational Technology undergraduate students drawn from the University of Port Harcourt, Hope and Cheta (2018) employed a sample of 79 computer science students to show that class size had a significant influence on the effectiveness of infographics as advanced media resources in the media system. Hope and Cheta's (2018) study confirmed that class size was critical in instruction that involved advanced media resources.

On the contrary, the application of advanced media resources, such as social and mobile applications, is seen as an avenue to manage large class sizes. Cheung et al. (2014) conducted a study in the undergraduate context to probe social and mobile learning applications. They confirmed prior research findings indicating that mobile and social applications were supported within and outside classroom instruction that permeates a large student size. Chesire (2020) studied children's classroom environment and academic performance in the ECDE context from the Kenyan perspective. This authority was definite on the role of class size by showing that class size positively impacted children's academic performance. In addition, Chesire (2020) demonstrated that the adequacy of media resources also positively impacted children's performance in school work. Considering that Chesire (2020) did not examine the nexus between class size and adequacy of resource materials, this study will seek to establish the nexus between the two factors. Although studies have attempted to examine the class size and resource factors, most existing studies have focused on higher education.

Besides, studies that have probed the issue of teaching resources and class size in early childhood development education have failed to determine the direct effects of class size on resource use. Moreover, no study has been conducted in Kenya on the relationship between class size and advanced media. Therefore, this study is an attempt to cover this gap by examining the effect of class size on the integration of advanced media resources in Early Childhood Development Education in Kenya.

3.0 Material and Methods

The study employed the pragmatic research philosophy so as to combine quantitative and qualitative approaches. Because of the pragmatic inclination of the study, a convergent mixed methods design was employed (Alexandrie, 2017). Under this design, both quantitative and qualitative strategies was used concurrently to gain a better understanding of how the identified factors impact the integration of advanced media. Both quantitative and qualitative data about the study variables was sourced. Data was collected concurrently, separately analyzed, and then results merged for interpretation.

The study was conducted in public primary schools in the Ainabkoi Sub-County of Uasin Gishu County, Kenya. It targeted Early Childhood Development Education teachers and head teachers. The anticipated sample size was 285 individuals comprising 267 teachers and 18 head teachers. Two instruments were used to collect data as expected by the mixed methods design – questionnaire and interviews. Data collected were edited and coded for accuracy and completeness. Coded data was entered into a SPSS programme version 23 codebook and then cleaned for missing data. Next, data was explored in terms of descriptive statistics. A hierarchical multiple regression analysis model was used to identify determinants of implementing advanced media in Early Childhood Development Education in the Ainabkoi Sub-county while controlling for the intervening variables. The significance of the regression coefficients was tested at the 5% significant level. Interview responses were analyzed by extracting recurrent themes across the head teachers.

4.0 Results and Discussion

4.1 The effect of class size on the integration of advanced media

The study probed the effect of class size on the integration of advanced media resources in public primary schools drawn from the Ainabkoi Sub-County. Class size is a fundamental factor that directly influences the quality and effectiveness of instruction. In larger classes, teachers often struggle to provide individualized attention and cater to diverse learning needs, which can impede the successful integration of advanced media resources. Understanding how class size affects integration is crucial as it can help identify the

optimal class sizes conducive to leveraging technology in education effectively. This knowledge can inform policy decisions and school planning efforts, particularly in resource allocation and staffing, to create more favorable learning environments that facilitate advanced media resource utilization.

Secondly, investigating the impact of class size on the integration of advanced media resources contributes to addressing equity and inclusivity concerns in education. In many educational systems, including Kenya's, there is a significant disparity in class sizes between urban and rural schools. Smaller, more manageable class sizes are often found in urban settings, while rural schools may contend with larger classes due to resource constraints. Consequently, students in rural areas may have limited access to technology-rich learning experiences, exacerbating educational inequalities. By examining how class size affects the successful adoption of advanced media resources, this objective sheds light on the unique challenges faced by schools with larger classes. It can guide policymakers and educational stakeholders in devising strategies to ensure that students in all settings have equitable access to technology-enhanced learning opportunities, thereby contributing to a more inclusive and equitable educational landscape.

Focusing on the influence of class size on the integration of advanced media resources, is a critical component of the broader study on determinants of advanced media resource integration in public primary schools. It addresses key issues related to instructional quality, equity, and inclusivity in education. By exploring the relationship between class size and technology integration, this objective can provide valuable insights for educational policymakers, school administrators, and teachers, enabling them to make informed decisions that optimize the use of advanced media resources in various classroom settings, ultimately benefiting the quality of education for all students in Ainabkoi sub-County and beyond.

4.2 Descriptive statistics of class size and advanced media instruction

Six practices explored class size and advanced media use in instruction. Results of the descriptive statistics (Table 1) indicated that most teachers (24.2%) strongly agreed that the class sizes were too large to support outdoor advanced edutainment media resource use; 23.7% of the teachers agreed, while 22.0% moderately agreed. On the other hand, 12.7% strongly disagreed and 17.4% disagreed. On whether the extensive nature of the class did not allow individual interaction with advanced media, 29.9% agreed, 23.1% moderately agreed, and 19.2% strongly agreed, while 7.3% strongly disagreed and 20.4% disagreed. The finding further indicated that 31.5% strongly agreed, 28.1% agreed and 19.6% moderately agreed while 5.1% strongly disagreed and 15.7% disagreed that despite some classes being small, the allocated time of 35 min for lessons could not accommodate individual learners' interaction with advanced media. Similarly, there was agreement that it gets difficult for advanced media tasks to be executed due to large class sizes as indicated by 30.1% who agreed, 25.4% strongly agreed, and 23.7% moderately agreed while 8.9 strongly disagreed and 11.9% disagreed. Further results indicated that, 16.4% strongly agreed, 32.3% agreed and 19.8% moderately agreed while 16.8% strongly disagreed and 14.7% disagreed that teachers cannot observe all students when participating in outdoor play media. However, teachers tended to disagree that the small sizes of the classes enabled children to achieve learning objectives using advanced media this is demonstrated by 35.2% respondents who strongly disagreed, 26.3% disagreed while 14.4% strongly agreed, 8.1% agreed while 16.1% moderately agreed.

Table 1: Statistics of Class Size and Advanced Media Instruction

Statement on Class Size	SD N	%	D N	%	MA N	%	A N	%	SA N	%
The class is too large to support outdoor advanced edutainment media	30	12.7	41	17.4	52	22.0	56	23.7	57	24.2
The extensive nature of this class does not allow individual interaction with advanced media	17	7.3	48	20.5	54	23.1	70	29.9	45	19.2
Although our classes are small, the time allocated for a lesson is not enough for individual learners to engage advanced media	12	5.1	37	15.7	46	19.6	66	28.1	74	31.5
It becomes difficult for advanced media task for execution due to large class size	21	8.9	28	11.9	56	23.7	71	30.1	60	25.4
The teacher cannot observe all students when participating in outdoor play media	39	16.8	34	14.7	46	19.8	75	32.3	38	16.4
Our small class size enables children to achieve learning objectives using advanced media	83	35.2	62	26.3	38	16.1	8	8.1	34	14.4

The findings regarding class size and advanced media instruction in public primary schools in Ainabkoi Sub-County, Uasin Gishu County, Kenya, reveal a complex relationship between these two factors. Firstly, a significant proportion of teachers expressed concerns about the impact of large class sizes on the effective use of advanced media resources. A substantial percentage strongly agreed that class sizes were too large to support outdoor advanced edutainment media resource use. Additionally, many teachers agreed that the extensive nature of their classes hindered individual interaction with advanced media, and they believed that the allocated time of 35 minutes for lessons was insufficient to accommodate meaningful individual interaction with advanced media. This suggests that teachers perceive large class sizes as a significant impediment to leveraging advanced media resources effectively for instructional purposes, these findings underscore the practical challenges teachers face when trying to integrate technology into their teaching when class sizes are substantial.

Furthermore, the cumulative agreements that it becomes difficult for advanced media tasks to be executed due to large class sizes and that teachers cannot observe all students during outdoor play media activities highlight the constraints imposed by class size on the integration of advanced media in instruction. These challenges include logistical difficulties in managing a large number of students when incorporating technology and limitations in ensuring individualized supervision and engagement during media-based activities, particularly in outdoor settings. These findings imply that the sheer size of the classes can hinder the smooth execution of advanced media tasks and limit teachers' ability to provide personalized support and guidance during such activities.

However, it's noteworthy that teachers tended to disagree that small class sizes enabled children to achieve learning objectives using advanced media. This may suggest that while smaller classes have certain advantages, they may not necessarily guarantee more effective utilization of advanced media resources if other factors, such as teacher skills or resource availability, are not adequately addressed. Overall, these findings underscore the multifaceted nature of the relationship between class size and advanced media instruction, highlighting both challenges and nuances that need to be considered when planning and implementing technology-enhanced learning experiences in primary schools in this context.

4.3 Thematic analysis of the teachers' views on classroom size and media use

Thematic analysis of teachers' views on classroom size and media use is crucial for several reasons. Firstly, it provides a deeper understanding of the qualitative aspects and nuances surrounding the impact of class size on the integration of media resources in instruction. While quantitative data can offer statistical insights, thematic analysis allows us to explore the subjective experiences, perceptions, and attitudes of teachers in greater detail. By examining teachers' narratives and responses, we can uncover the underlying reasons behind their views, challenges they face, and potential opportunities they perceive in relation to class size and media use.

Secondly, thematic analysis helps identify recurring themes and patterns within teachers' responses, which can be instrumental in informing policy decisions and instructional strategies. It allows us to categorize and prioritize key issues raised by teachers, such as the constraints posed by large class sizes, the challenges in ensuring individualized interaction with media resources, and the logistical difficulties in executing media-based tasks. These thematic insights can guide the development of targeted interventions and support mechanisms to address specific concerns and facilitate more effective integration of advanced media in larger class settings.

Moreover, thematic analysis adds a qualitative dimension to the quantitative findings, creating a comprehensive and holistic picture of the challenges and opportunities related to class size and media use in education. It helps bridge the gap between numbers and lived experiences, enabling a richer interpretation of the data. This qualitative lens can unveil unique insights and context-specific factors that may not be apparent through quantitative analysis alone.

In summary, thematic analysis of teachers' views on classroom size and media use is essential for gaining a deeper understanding of the qualitative aspects of this relationship, informing policy decisions, and developing targeted interventions to enhance the integration of media resources in instruction, particularly in the context of varying class sizes.

An analysis of teachers' unstructured questionnaire items revealed two categories of schools in terms of class size and use of media resources. In one category of schools, there are adequate media resources to aid instruction. Yet in the other category, whatever gadgets there are do not adequately serve the children. Another emerging theme was that the large class sizes constrained the use of advanced media resources. Majority of the teachers noted that, the ratio of the pupils to the media resources were 1:1 as indicated in the excerpt, *in this school, almost every learner is issued with a device…the ratio of gadgets to children is, therefore, 1:1.* It was indicated that adequacy is achieved through grouping of students as indicated by the excerpt, *to achieve good management of class control, I allow a few pupils per lesson and distribute the media resources to each of them.*

Regarding how easy classroom interaction has been, most narratives from this category, as cited, suggested a good and smooth interaction. Some of the narratives included the following, *classroom interaction has been very good, especially with fewer learners who each manipulate their own devices*

Teachers from this first category of schools agreed that they could cater to individual learner differences because of the small sizes taught at a time. On the contrary, teachers from the second category of schools had contrasting responses, as evidenced in the following narratives. When asked how proportional advanced media have been to the number of children, these were the recurrent narratives, *quite un-proportional when you match the number of children to the available advanced media resources.*

Splitting students into smaller groups so that whatever media resources are available could be enough for the children was also visible in teachers' responses from the second category of schools. Most teachers gave the following narratives when asked how they managed class control. *...since the gadgets are insufficient, I organize the children in shifts. However, due to time limitations, some shifts are not even reached.*

Teachers from schools with the scarcity of advanced media resources mainly responded to the contrary regarding how easy classroom interaction has been. One teacher commented that, *...it has been very difficult to achieve classroom interaction with media resources since they are not even there.* Similar difficulties in advanced media resources were manifested in narratives from head teachers on catering for individuals among teachers. They noted that: *…the class sizes are large and would require more time to reach individual –learners.*

The descriptive and thematic results on class size and advanced media resource use revealed that most public primary schools in Ainabkoi Sub-County have large classes and lack advanced media resources to cater to learners' differences. Teachers often resort to split classes, teach in shifts, or form groups to share the limited media resources. These findings support findings that have previously pointed to the inadequacy of advanced media resources in public primary schools in Kenya.

For instance, Ayaga (2021) reflected on a study by the Kenya Institute of Curriculum Development (KICD) 2016 that showed most schools lack technological media resources such as storage devices, recording studios, and IPad. Besides, studies have shown that despite play being important to early childhood development education, integration of edutainment media is curtailed by a lack of physical facilities (Ayaga, 2018). Meanwhile, it has also been demonstrated that teacher training and access to computers inhibited the integration of digital literacy in public primary schools in Kisii County (Morara et al., 2020). It has also been demonstrated that large class sizes, power failures, the inadequacy of learning devices, and lack of teacher training were inhibiting the integration of the digital literacy programme in Makueni public primary schools (Kyalo, 2021).

4.4 Categories of class sizes discerned

Using the Exponential Factor Analysis (EFA) with Principal Component Analysis (PCA), two factors were extracted, designating large and small classes. Cumulatively, the two factors accounted for 56.4% of the variance in class size. Large classes explained 37.7% of the variance, while small classes explained 18.7% (Table 2).

Table 2: Rotated Component Matrix[a]

	Component	
	Large class (LC)	Small class (SC)
The extensive nature of this class does not allow individual interaction with advanced media	.803	
The teacher cannot observe all students when participating in outdoor play media	.710	
It becomes difficult for advanced media task for execution due to large size	.698	
The class is too large to support outdoor advanced edutainment media	.624	
Although the class is small, the time allocated for a lesson is not enough for individual learners to engage advanced media		.901
The class size enables children to achieve learning objectives using advanced media		.859
Rotated sums of squared loadings (% of variance)	37.738	18.667
Rotated sums of squared loadings (cumulative %)	37.738	56.405

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

These findings, which show that there are two types of class sizes, large and small, in Ainabkoi Sub-County, are consistent with others. For instance, using the Zimbabwean Secondary schools' context, Chimbi and Jita (2021) delineated two types of class sizes, large and small, with large class sizes resulting in rote pedagogy and higher dropout rates. Murungi (2018) demonstrated that there are two types of class sizes, large and small and that the class size impacts the acquisition of reading skills.

The study investigated the impact of class size on the integration of advanced media resources in public primary schools in the Ainabkoi Sub-County, Uasin Gishu County, Kenya. Six practices related to class size and advanced media use were explored. Descriptive statistics revealed that a significant proportion of teachers expressed concerns about the challenges posed by large class sizes. They strongly agreed or agreed that class sizes were often too large to effectively support outdoor advanced edutainment media resource use, and that the extensive nature of the class hindered individual interaction with advanced media. Furthermore, many teachers believed that the allocated lesson time of 35 minutes was insufficient to accommodate individual learners' interaction with advanced media resources, making it challenging to execute media-based tasks and observe all students during outdoor play media activities. However, there was a tendency for teachers to disagree that small class sizes enabled children to achieve learning objectives using advanced media.

In conclusion, the findings suggest that class size poses significant challenges to the effective integration of advanced media resources in primary school instruction in the Ainabkoi Sub-County. The concerns raised by teachers regarding class size limitations on outdoor edutainment media use, individual interaction with media, and task execution underscore the need for targeted interventions and policy considerations to address these challenges. Balancing class size considerations with the effective integration of advanced media resources is essential for optimizing technology-enhanced learning experiences in primary schools.

5.0 Conclusion and Recommendation

The descriptive statistics illuminated the prevailing perceptions among teachers regarding the impact of class size on the incorporation of advanced media. The results indicated that many teachers believed that class sizes posed challenges to effective media utilization. Many teachers strongly agreed (24.2%) or agreed (23.7%) that large class sizes hindered outdoor advanced edutainment media resource use. Similarly, a

cumulative agreement emerged regarding the limitations of extensive class sizes on individual interaction with advanced media and the constraints imposed by the allocated lesson duration of 35 minutes. Furthermore, teachers collectively acknowledged that executing advanced media tasks and observing students during outdoor play media became challenging due to large class sizes. Contrarily, teachers tended to disagree that small class sizes facilitated the achievement of learning objectives using advanced media.

Thematic analysis of teachers' responses unveiled distinct patterns among schools based on class size and media resource availability. In the first category of schools, where media resources were adequate, teachers reported positive interactions facilitated by the proportional distribution of gadgets. This view was exemplified by allocating one gadget per child, enabling engaged and interactive learning experiences. Teachers in this category emphasized the benefits of manageable class sizes, which allowed for effective classroom control and individualized attention. In contrast, the second category of schools, marked by inadequate media resources, faced challenges in achieving proportional and effective media integration. Teachers expressed concerns over the scarcity of devices relative to the number of learners, leading to difficulties in sharing and utilization. In these schools, class sizes were often larger, impeding meaningful classroom interactions and hindering efforts to cater to individual learner differences.

Regression analysis further substantiated the impact of class size on implementing advanced media resources in instruction. The results indicated that class size significantly influenced the adoption and utilization of advanced media resources in public primary schools within the Ainabkoi Sub-county ($\beta=0.145$, $p<0.05$). This finding underscores the vital role that class size plays in shaping the feasibility and effectiveness of integrating advanced media resources into instructional practices. As such, class size considerations emerge as crucial factors to address to optimize the successful incorporation of advanced media resources and enhance the overall educational experience for students.

As such, this paper concludes that there is a consensus among teachers that large class sizes hinder outdoor edutainment media usage, limit individual interaction with advanced media, and create challenges in executing media-related tasks within the constrained lesson duration. Thematic analysis provided further depth, revealing two distinct categories of schools based on class size and media resource availability. Schools with adequate resources showcased positive interactions enabled by proportional media resource distribution, highlighting the benefits of manageable class sizes in facilitating engaged and interactive learning. Conversely, schools facing resource scarcity encountered difficulties in achieving proportional and effective media utilization, often due to larger class sizes impeding both classroom interactions and individualized attention. The regression analysis substantiated the pivotal role of class size in determining the successful integrationof advanced media resources, emphasizing the need to address class size considerations to optimize the integration of technology and enhance the overall quality of education in Ainabkoi Sub-county public primary schools.

The implications of class size on advanced media adoption underscore the need for strategic class management and resource allocation. Schools with larger class sizes should explore innovative strategies to mitigate challenges posed by limited interaction with advanced media and execution of media-related tasks. Adequate allocation of media resources and consideration of class size in instructional planning are imperative to ensure effective engagement and personalized learning experiences. Policy initiatives that address class size and resource allocation can enhance the feasibility and impact of integrating advanced media resources in the classroom.

References

Aboglila, S. (2021). Impact of Print Media on Students Academic Performance of Varanasi City, India. *Biomedical Journal of Scientific & Technical Research*, *33*(5), 26316-26321.

Aldhafeeri, F., Palaiologou, I., & Folorunsho, A. (2016). Integration of digital technologies into play-based pedagogy in Kuwaiti early childhood development education: Teachers' views, attitudes and aptitudes. *International Journal of Early Years Education*, *24*(3), 342-360.

Alexandrie, G. (2017). Surveillance cameras and crime: A review of randomized and natural experiments. *Journal of Scandinavian Studies in Criminology and Crime Prevention*, *18*(2), 210-222.

Arnott, L., Palaiologou, I., & Gray, C. (2018). Digital devices, internet-enabled toys and digital games: The changing nature of young children's learning ecologies, experiences and pedagogies. *Br. J. Educ. Technol.*, *49*(5), 803-806.

Asadi, F., & Berimani, S. (2015). The effect of audio-visual materials on Iranian second grade high school students' language achievement. *International Journal of Language and Linguistics*, *3*(2), 69-75.

Ayaga, G. (2018). Trends of Education in Kenya: Inherent Inconsistencies & Challenges of Preschool Education in Kisii County, Kenya. *International Journal for Innovative Research in Multidisciplinary Field*, *4* (6).

Ayaga, G. N. (2021). Prospects and challenges of Educational Media and Resources in Early Years Education in Kenya. *Himalayan Journal of Economics and Business Management, 2*(1). https://doi.org/10.47310/Hjel.2021.v02i01.004

Ayeni, O. G., & Olowe, M. O. (2016). The Implication of Large Class Size in the Teaching and Learning of Business Education in Tertiary Institution in Ekiti State. *Journal of Education and Practice*, *7*(34), 65-69.

Bird, J., & Edwards, S. (2015). Children learning to use technologies through play: A Digital Play Framework. *British Journal of Educational Technology*, *46*(6), 1149-1160.

Black, M. M., Walker, S. P., Fernald, L. C. H., Andersen, C. T., DiGirolamo, A. M., Lu, C., . . . the Lancet Early Childhood Development Series Steering Committee. (2017). Early childhood development coming of age: Science through the life course. Lancet, *389*(10064), 77–90. https://doi.org/10.1016/S0140- 6736(16)31389-7

Bone, J. (2019). Maria Montessori as domestic goddess: Iconic early childhood educator and material girl. *Gender and Education*, *31*(6), 673-687.

Chesire, J. J. (2020). *Influence of classroom environment on children's academic performance in public ECDE schools in Keiyo North Subcounty, ElgeyoMarakwet County, Kenya* (Doctoral dissertation, Africa Nazarene University).

Cheung, T., Chi-Wai, R. K., & Mark, K. P. (2014, June). Understanding the usefulness of social and mobile learning applications in a large class-size setting: An empirical analysis. In *EdMedia+ Innovate Learning* (pp. 1251-1262). Association for the Advancement of Computing in Education (AACE).

Chien, J. (2012, October). How digital media and Internet is transforming education. In *E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 69-77). Association for the Advancement of Computing in Education (AACE).

Chimbi, G. T. & Jita, L. C. (2021). Resurgence of Large Class Sizes and Pedagogical Reform in 21st Century Secondary School History Classrooms. Research in Social Sciences and Technology, 6(3), 45-63. https://doi.org/ 10.46303/ressat.2021.24

Collins, A., & Halverson, R. (2018). *Rethinking education in the age of technology: The digital revolution and schooling in America*. Teachers College Press.

De Paola, M., & Scoppa, V. (2011). The effects of class size on the achievement of college students. *The Manchester School*, *79*(6), 1061-1079.

Diallo, B., & Wangeci, C. (2012). AVU Multinational Project II: A collaborative approach to implementing an eLearning project in 21 countries.

Eagle, S. (2012) Learning in the early years: Social interactions around picture books, puzzles and digital technologies. Computers & Education 59: 38-49.

Fajari, L. E. W. (2020). The effect of problem-based learning multimedia and picture media on students' critical-thinking skills viewed from learning motivation and learning styles in elementary school. *Ilkogretim Online*, *19*(3).

Fröbel, F. (2018). *Revival: Autobiography of Friedrich Froebel (1915)*. Routledge.

Gan, B., Menkhoff, T., & Smith, R. (2015). Enhancing students' learning process through interactive digital media: New opportunities for collaborative learning. *Computers in Human Behavior*, *51*, 652-663.

Gardner, H. (2012). The theory of multiple intelligences. *Early Professional Development for Teachers*, *133*.

Gautam, M., Gautam, D., & Bishnoi, I. (2021). Impact of Print Media on Student's Academic Performance of Varanasi City, India. *Advances in Research*, 62-69.

Gordon, A. M., & Browne, K. W. (2016). *Beginnings & beyond: Foundations in early childhood education*. Cengage learning.

Harfitt, G. J. (2012). How class size reduction mediates secondary students' learning: Hearing the pupil voice. *Asia Pacific Education Review*, *13*(2), 299-310.

Hope, N. E., & Cheta, W. (2018). Effect of infographics on academic performance, attitude and class size of undergraduate students on media systems. *American Journal of Educational Research*, *6*(1), 83-87.

Idris, A. T., Shamsuddin, I. M., Arome, A. T., & Aminu, I. (2018). Use of audio-visual materials in teaching and learning of classification of living things among secondary school students in SabonGari LGA of Kaduna State. *Plant*, *6*(2), 33.

Kaahwa, M., Zhu, C., & Muhumuza, M. (2019). Satisfaction of distance education university students with the use of audio media as a medium of instruction. The case of Mountains of the Moon University, Uganda. *Int. J. Educ. Pedagog. Sci*, *13*, 737-750.

Kabir, A. S., & Muhammad, B. (2020). Effectiveness of Non-Projected Audio-Visual Resources In Learning English Language Among Students In Public Senior Secondary Schools In Katsina State. *Fudma Journal of Educational Foundations*, *2*(3), 168-173.

Kipkorir, L. I., & Njenga, A. W. (1997) in Koech, P. K. (2003). Early childhood care and education in Kenya. Retrieved April 5th, 2003 from the World Wide Web: http://www.worldbank.com/children/pdffiles/valeccea.pdf

Kiptum, C. K. (2021). Challenges of Acquiring Non-Projected Media Resources for Teaching in Secondary Schools in Kenya. *Edition Consortium Journal of Educational Management and Leadership*, *2*(1), 129-143.

Koech, P. K. (2003). A comparative analysis of early childhood education in Kenya and the United States of America: Kenya's social and economic constraints.

Krylova-Grek, Y. (2019). Advanced Information Technology Tools for Media and Information Literacy Training. In *ICTERI Workshops* (pp. 229-240).

Kyalo, E. M. (2021). *Integration of Digital Literacy Program in Public Primary Schools: a Case Study of Makueni County, Kenya* (Doctoral dissertation, University of Nairobi).

Leal, C. I. S. (2020). From the Gutenberg Bible to COVID-19. *Revista de AdministraçãoPública*, *54*, 1161-1165.

Li, L., Worch, E., Zhou, Y., & Aguiton, R. (2015). How and why digital generation teachers use technology in the classroom: An explanatory sequential mixed methods study. *International Journal for the Scholarship of Teaching and Learning*, *9*(2), n2.

Lindgren, S. (2021). *Digital media and society*. Sage.

Luff, P. (2018). Early childhood education for sustainability: origins and inspirations in the work of John Dewey. *Education 3-13*, *46*(4), 447-455.

Mbaka, J. (2017). Education: All that parents need to know ahead of 2018. The Star. https://www.the-star.co.ke/news/2017-12-30-education-all-that-parents-need-to-know-ahead-of-2018/

Mbugua, T. J. (2004). Early childhood care and education in Kenya. *Childhood Education*, *80*(4), 191-197.

McPake, J., Plowman, L., & Stephen, C. (2013). Pre‑school children creating and communicating with digital technologies in the home. *British Journal of Educational Technology*, *44*(3), 421-431.

Monks, J., & Schmidt, R. M. (2011). The impact of class size on outcomes in higher education. *The BE Journal of Economic Analysis & Policy*, *11*(1).

Morara, G. N., Makworo, E. O., & Abuya, T. K. (2020). Ranking challenges facing digital literacy programme in primary schools in Kisii County, Kenya. *International Journal of Research in Business and Social Science (2147-4478)*, *9*(5), 302-306.

Mueller, S. (2013). Teacher experience and the class size effect—Experimental evidence. *Journal of Public Economics*, *98*, 44-52.

Murungi, C. G. (2018). Class Size and Acquisition of Reading Skills amongst Grade Iii Pupils in Kenyenya Sub-County, Kenya. *International Researchers*, 6(3): 33-43.

Mutisya, M. (2020). *Some Kenyan schools are dangerously overcrowded*. What must be done. The Conversation Africa, Inc.

Na, N. (2015). *The Encyclopaedia of Educational Media Communications & Technology*. Springer.

Ndethiu, S. M., Masingila, J. O., Miheso-O'Connor, M. K., Khatete, D. W., & Heath, K. L. (2017). Kenyan secondary teachers' and principals' perspectives and strategies on teaching and learning with large classes. *Africa Education Review*, *14*(1), 58-86.

Ng, W. (2015). *New digital technology in education: Conceptualizing professional learning for educators*. Springer.

Olawale, S. K. (2013). The use of instructional materials for effective learning of Islamic studies. *International Journal of Jihat al-Islam*, *6*(2).

Ozment, S., & Witte, J. (2017). Martin Luther. *Published in John Witte, Jr. and Gary S. Hauk, eds., Christianity and Family Law: An Introduction (Cambridge: Cambridge University Press, 2017)*, 195-210.

Padilla Rodriguez, B. C., Armellini, A., & Rodriguez Nieto, M. C. (2020). Learner engagement, retention and success: why size matters in massive open online courses (MOOCs). *Open Learning: The Journal of Open, Distance and e-Learning*, *35*(1), 46-62.

Ritakumari, S. (2019). Educational Media in Teaching/ Learning Process. *Bhartiyam International Journal of Education & Research, 8*(3): 7-14

Rotherham, A. J., & Willingham, D. (2009). 21st century. *Educational leadership*, *67*(1), 16-21.

Sangsawang, T. (2015). Instructional design framework for educational media. *Procedia-Social and Behavioral Sciences*, *176*, 65-80.

Schriever, V. (2021). The impact of digital technologies on the role of the early childhood teacher. In *Young Children's Rights in a Digital World* (pp. 121-132). Springer, Cham.

Serva, M. A., & Fuller, M. A. (2004) Aligning what we do and what we measure in business schools: Incorporating active learning and effective media use in the assessment of instruction. *Journal of Management Education, 28*(1): 19-38.

Shabiralyani, G., Hasan, K. S., Hamad, N., & Iqbal, N. (2015). Impact of Visual Aids in Enhancing the Learning Process Case Research: District Dera Ghazi Khan. *Journal of education and practice*, *6*(19), 226-233.

Shen, T., & Konstantopoulos, S. (2019). Estimating causal effects of class size in secondary education: evidence from TIMSS. *Research Papers in Education*, 1-35.

Todd, R. W. (2012). The effects of class size on English learning at a Thai university. *ELT Research Journal*, *1*(1), 80-88.

Trültzsch-Wijnen, C. W., Murru, M. F., & Papaioannou, T. (2017). Definitions and values of media and information literacy in a historical context. In *Public policies in media and information literacy in Europe* (pp. 91-115). Routledge.

Urquiola, M. (2006). Identifying class size effects in developing countries: Evidence from rural Bolivia. *Review of Economics and Statistics*, *88*(1), 171-177.

Voogt, J., & McKenney, S. (2017). TPACK in teacher education: Are we preparing teachers to use technology for early literacy? Technology, pedagogy and education 26: 69-83.

Vygotsky, L. S. (2016). Play and its role in the mental development of the child. *International Research in Early Childhood Education*, *7*(2), 3-25.

Waite-Stupiansky, S. (2017). Jean Piaget's constructivist theory of learning. In *Theories of Early Childhood Education* (pp. 3-17). Routledge.

Webcrawler, C. (2013). Definition of educational media. California. Retrieved from *http://www. ask. com/question/meaning-ofeducational-media on October 12*, 2021

Wong, S., & Logan, H. (2016). Play in early childhood education: An historical perspective. In *Play: A theory of learning and change* (pp. 7-26). Springer, Cham.

Wright, M. C., Bergom, I., & Bartholomew, T. (2019). Decreased class size, increased active learning? Intended and enacted teaching strategies in smaller classes. *Active Learning in Higher Education*, *20*(1), 51-62.

Yowell, C., & Rhoten, D. (2009). Digital media and learning. In *Forum for the future of higher education* (pp. 13-16).

Conflict of Interest

In accordance with ethical standards, we disclose potential conflicts of interest that may have influenced the research or its interpretation. The authors declare that they have no conflicts of interest related to this study.

About the Authors

*Susan Monyangi Onya*ncha holds a B.Ed degree from Moi University and Master of Philosophy from University of Eldoret, and is currently a continuing Doctorate student at the University of Eldoret. Her areas of specialization is Early Childhood and Primary Education. Susan has many years of teaching experience in the primary school level and ECDE colleges. She has also served as a part-time Lecturer for the University of Eldoret. Susan has written a number of papers on various topic in Education. She is dynamic and has extensive skills in Competency Based Curriculum (CBC) that has enabled her mentor a number of teachers in her capacity as the Deputy Head Teacher, Eldoret Borderfarm School.

Prof Patrick Acleus Kafu holds a degree in Teacher Education from University of East Africa, Master in Educational Technology in Teacher Education from the University of Nairobi and a Doctoral Degree in Educational Technology in Teacher Education from Kenyatta University. Prof Kafu has extensive teaching experience having taught at Mosoriot Teachers College, the University of Nairobi, Moi University, and currently, the University of Eldoret. An avid researcher, he has published extensively in peer-reviewed and refereed journals as well as published books on education. He has taught and supervised 263 masters and 193 doctorate students.

Dr. Betty Cheruiyot is currently a Lecturer in the Department of Curriculum and Instruction in the School of Education, University of Eldoret. She holds a Doctor of Philosophy degree in Early Childhood and Primary Education. She teaches both undergraduate and postgraduate students besides coordinating undergraduate programmes. She also supervises postgraduate students (Masters and Ph.D. students). Dr. Betty t is also responsible for coordinating exams in the department as well as a review of academic programmes. Dr. Betty has teaching experience spanning over 20 years and has published several papers and articles in peer-reviewed and refereed journals both locally and internationally besides researching teacher education. She also participates in the preparation and execution of teaching practice and she is the zone supervisor. She is actively involved in the preparation, design and development of teaching modules. Lastly, Dr. Betty participated in the paper review at the African Journal of Education, Science, and Technology (AJEST).