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# The Effectiveness of In-Service Training for Integration of Computers in Early Grade Classes in Moiben Sub-County, Uasin Gishu County, Kenya

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# Abstract:

The Government of Kenya has provided continuous support to both public primary and secondary schools through the provision of computers aiming to promote the integration of computers in the teaching and learning process under the digital literacy program. Despite all government efforts towards promoting the digital literacy program and the benefits that are attributed to it, there is little empirical evidence on whether teachers in public primary schools, specifically in early grade classes were integrating computers in their teaching processes. Specifically, this study sought to determine if the training needs of teachers were met, duration of training, availability of training materials and the mode of training as factors that affect the effectiveness of the training. It was guided by the Unified Theory of Acceptance and use of Technology (UTAUT) as advanced by Venkatesh (2003). The study was conducted in Chepkoilel Educational Zone of Moiben Sub County among public primary schools based on the fact that they were provided with computers by the government for instruction. It targeted early grade teachers and head teachers in Chepkoilel Zone which had 8 public primary schools. Four head teachers of the selected schools were also purposively selected. An exploratory research design was employed in which qualitative data was collected using structured interviews, document analysis, and observation checklists. The data was coded and analysed thematically using direct response quotations. The findings of the research indicated that the majority of early grade teachers in Moiben Sub County minimally integrated computers when teaching because they lacked requisite skills and knowledge on computer use. The findings will inform the Teachers Service Commission to address the factors discussed on the effectiveness of in-service training as a basis of continuous in-service training on integration of computers.

Keywords: Computer integration, effectiveness of training, technological pedagogical knowledge, early grade classes

# 1. Introduction

Kenya like other developing countries is still in its initial stages of integrating computers in teaching and learning. It is a new phenomenon in the education sector that many teachers have to grapple with. Teachers are an important component in the integration of computers and therefore there is need for them to be equipped with requisite skills that would enable them to use computers with ease when teaching. In-service teacher training refers to all kind of activities and set of training that is required for quality improvement and professional development of teachers (Saiti and Saiti, 2006). Akhter, Alishah, & Nasee (2011) define in-service training as all the activities which are designed for professional development and skill-building of school teachers. In-service training equips teachers with the necessary skills to improve their job efficiency which is a key component in the facilitation of computer integration in schools. In-service training offers one of the most promising avenues to the improvement of instruction (Kalogiannakis 2004). Jahangir, Saheen & Kazm, (2012) noted that in-service training plays a major role to improve the teachers' performance in schools. It is through training that teachers are enabled to be more systematic and logical in their teaching styles. For in-service teachers, effective training is important because it offers them an ideal road map to update their skills, knowledge and improve their instructional methods hence leading to better performance. It is also the expectation of the employers that once training is conducted it will be effective. For training to be considered effective, it should be able to meet the objectives that have been set out for it to achieve (Descy & Westphalen, 1998). Punia & Kant (2013) observed that the degree to which training attains the desired objective or results is referred to as training effectiveness. While Harvey (2020) defined it as the extent to which the training activity fulfills its intended purpose. The effectiveness of training as been known to be affected by various factors but not limited to: the training needs of teachers, duration of the training, training materials, and modes of training

#### 2. Literature Review

#### 2.1. Training Needs of Teachers

Cimer *et al* (2010) stated that an effective training program should be planned carefully based on an accurate need assessment. It is important for training to match the needs of the teachers otherwise; it will be of little value if the learned skills or characteristics are not generalized to the job and maintained over time. During training, the trainers need to understand that professional development courses on ICT should consider the fact that teachers are of divergent needs regarding their knowledge and skills about computer use (Bradshaw, 2002). Gonzalo, Suarez, Belloch, & Bo, (2011) in their study found out that teachers demand higher-level training in personal-professional plane and require more training on the plane with the students in the classroom and the integration of ICT in the classroom. Kalogiannakis (2010) also noted that it was important for the teachers to be trained on how students learn and on how to address student's needs and learning styles. Muriuki (2017) in his study established that most teachers stated that it is important for the training and the skills to be learnt to match to ICT implementation in schools to be supported.

#### 2.2. Duration of Training

Previous studies have shown that continuous training yields better results than training undertaken over a shorter period of time. Gerard, Varma, Corliss, & Linn (2011) in their study noted that ongoing training courses of more than a year brought about significant improvement in the achievement of the teacher-student. Johnson, et al (2016) further stated it was important that the training of teachers was to be continuous for them to keep their skills current due to the countless new technologies that were being developed along with their teaching careers. Higgin and Moseley (2011) noted that the continued professional development of teachers can help to successfully implement ICT in schools. Continuous training provides the requisite support for teachers to remain updated with ICT and its application to subject pedagogy to enhance their teaching (Mbulankende 2007). Computer skills require time during training because of their complexity for teachers to be able to understand the concepts well. Murphy and Huffcutt, (2005) found that if the skills to be trained are complex the duration of training must be long to make it effective. The government of Kenya (2010) reported that the majority of teachers who attended the training during school holidays through in-service courses were given a short period of time to practice with the computers and only a few of them developed the required skills. The duration was considered inadequate for the early grade teachers most of whom were handling computers for the first time and thus were not well acquainted with the technology. Pelgrum (2001) identifies time allocated for training as a hindrance to ICT adoption in curriculum implementation. This was further supported by Omanga (2018) who noted that the training on Digital Literacy Program in Kenya turned out disastrous when the government embarked on training the teachers for only three days.

# 2.3. Training Materials

Training materials are a factor to consider during training. Training materials should be compelling and useful otherwise the training will be ineffective. The most commonly used materials are like a video projector, projection screen, good internet connection, electrical outlets, training manuals, computer, audiovisual aids, interactive whiteboards, flip charts, among others. However, most of these resources and facilities for ICT integration lack in schools (Nzwili, 2016). Therefore, bringing a discrepancy between training materials and resources in training centres and those found in schools. The main objective of using training materials is to involve the participants during the activity and promote active interaction among them during training sessions.

# 2.4. Training Modes

In-service training can take different modes namely; instructor-led training, interactive method, hands-on training, computer-based training, and video conferencing. Instructor-led training is a kind of training that occurs in a training room, classroom, or conference room. In this kind of training one or more instructors are involved in conducting the training. The instructor may enhance his or her presentation through the use of audio-visual media such as overheads, video PowerPoint, and many others. (Myre, 2000) Participants get a chance to engage in interactive conversations with instructors and get their questions answered unlike in other forums.

Interactive training is a type of training method that takes classroom-style lectures to a higher level. Activities can be done in small group discussions, quizzes, question, and answer session (Glorgdze & Dgebuadze, 2017.) Interactive sessions keep trainees engaged in the training, which allows them to be receptive to new information.

Hand on training is a type of training whereby trainees learn a certain task by getting their hands directly on whatever they are learning. This type of training is more practical than theoretical. In this type of training, trainees learn through several techniques such as cross-training, demonstration, coaching, drill, and apprenticeship. Ogundele, Akingbade, & Akinlabi (2012) define apprenticeship as a method in which trainees learn through working with a skilled worker in the profession.

Computer-based training is a kind of instruction whose main means of delivery is a computer. Computer-based training courses can be delivered over the internet. CBT is also known as *e*-learning. It is believed that the retention rate in CBT is higher than in face-face training modes. CBT provides an engaging and immersive content which can also be

accessed through the phone. Each training method or mode has its advantages and disadvantages and its servers to satisfy different kinds of objectives. None of the above listed is complete in itself towards helping in-service teachers to learn skills and knowledge.

#### 3. Methodology

The study used exploratory research design. The exploratory design gives an understanding of what is happening by trying to seek new insight, ask questions, and assess phenomena. The study was conducted in Moiben Sub-County which is one of the sub-counties in Uasin -Gishu County. The participants in the study were early grade teachers in Moiben Sub- County. The target population consisted of 35 head teachers and 1120 teachers. The study was undertaken in four primary schools in Chepkoilel educational zone. The accessible population was 4 head teachers and 13 early grade teachers. Random sampling was used in this study to select the four schools for the study. This was because these schools shared the same characteristics as any other schools in the Sub-County found within Chepkoilel Educational Zone.12 teachers participated in the study and were selected based on their teaching in early grade classes (Grade 1,2 and 3) and having had attended computer training. The instruments used for data collection in this study were separate interview schedules for teachers and head teachers, document analysis of teachers' professional documents, and observation checklists to see how teachers integrated computers when teaching. Data collected for this study was analyzed gualitatively. To ensure the validity of the research findings, the researcher used triangulation and member checking whereby data was collected through different sources like interviews, observation of participants, and analysis of vital documents to facilitate corroboration of the findings. The researcher ensured dependability through multiple uses of data collection and data analysis strategies to corroborate the findings. This was done through the use interview schedule, observation checklist, and document analysis.

#### 4. Results and Discussions

#### 4.1. Training Needs of Teachers

Most of the participants who had attended the in-service training on computer use that was sponsored by the government said that it was not effective because their technological pedagogical needs were not met even after the training. These sentiments were captured by the responses below.

"I feel I didn't learn much, the only thing I can remember from that training is how to switch on and off the computer, and we were also taught on how to use computers to enter learners' marks. We were not taken through the process of how to teach using computers." (1B) This was reiterated by other participants who stated that,

" I attended a training on digital literacy. We were taught on how to use the computer basically. I think I now know how to start the computer and switch it off. I did not get much on how to teach

using the computer." (2A)

The common theme that emerged from the responses above was that the government training was not effective because the needs of teachers during training were not met. They also admitted that most of what they were being taught was basically on computer application and not on how to link these skills to daily teaching. This agrees with a study conducted by Kalogiannakis (2010) who noted that it was important for the teachers to be trained on how students learn and on how to address student's needs and learning styles. They stated to have been trained on the following skills; how to boot and shut down the computer, excel, word processing, information storage, and web browsing. They also said they were many during the training and the computers were not enough to allow them to practice the skills taught. For any training to meet its objectives, it has to meet the needs of the training, provide ample time for the participants to learn and practice the skills learnt among other factors. Otherwise, the entire process would be of little value to both the teachers and the learners. After training is important for the teachers to exude confidence in the use of computers and an improvement in the related vocabulary. However, From the responses given during the interview, it would be right to deduce that the participants had not learnt the necessary skills and the right terminologies related to computers. For instance, most of them were saying, switching on- to refer to booting, switching off-to refer to shutting down the computer, how to enter learners' marks - to refer to excel as a package. Muriuki (2017) established that training was important if the skills to be learnt matched the ICT needs of schools. Omar (2014) also indicated that in-service training is very important to assist the teachers to be able to apply the knowledge acquired in teaching and learning. However, the study observed that factors like administrators, teachers' attitude, training needs, and strategies in conducting in-service training contributed to the effectiveness of training

# 4.2. Training Period

Most of the participants who had attended the in-service training on computer use stated that the time given for training in terms of days was not adequate to allow them to learn the requisite skills that would enable them to integrate computers when teaching comfortably and with ease. These sentiments were captured by the responses below.

"It was during holiday when my head teacher called to let me know that I was to attend a computer training that was to be done for three days. I went for those three days but I feel I didn't learn much." (1B)

This was reiterated by other participants who stated that,

"I attended a training on digital literacy for three days. We were taught on how to operate the computer basically. Three days were not enough especially for those of us who were coming into contact with computers for the first time. They should have given us more time." (2A)

The common theme that emerged from the responses above, was that the government training was not effective because the duration for training was not adequate. The participants said the in-service training on computer use was done for three days and most of them had no prior knowledge. They felt the days allocated for the training were not enough for them to grasp the concepts of computer integration when teaching. This agrees with a report done by the government of Kenya (2010) that the majority of teachers who attended the training during school holidays through inservice courses were given a short time to practice with the computers and only a few of them developed the required skills. Therefore, in-service training on computer use should be done continuously over a period of time to give teachers ample time to acquire the skills well. Johnson, *et al* (2016) stated it was important that the training of teachers was to be continuous for them to keep their skills current due to the countless new technologies that were being developed along with their teaching careers. Higgin and Moseley (2011) further noted that the continued professional development of teachers can help to successfully implement ICT in schools. Otherwise, since the training was done hurriedly major and necessary concepts were missed that would help teachers integrate computers when teaching

#### 4.3. Training Materials

All twelve participants stated to have been trained using computers. They also said they were given notebooks to jot anything they found to be important during the training for future reference. The theme that seemed common among the participants was that computers were used during training. It, therefore, means training was computer-based. Computer-based training requires the adequate provision of computers for the trainees to have an equal chance to practice. Otherwise, some may leave the training without having learnt much. Based on the responses from the participants it emerged that computers were few to accommodate and allow all the participants to practice the skills thoroughly

"Apart from the computers we were also given notebooks to jot anything we found important during training. But it would have been better if they gave us modules to refer to after the training is over." (1A) ". In our groups we had desktop computers to practice with although the computers were few in relation to the number of participants in every given group. For instance, in my group we were seven participants. Not all of us got the opportunity to practice with the computer. Besides the trainers were three. So, one trainer would move from one group to another guiding, by the time they get back to us time has gone" (1D)

From the responses given it true to state that some participants may have left the training without having got the opportunity to interact with the computers because of their limited number or get an opportunity to ask questions related to computer use and get appropriate feedback. This is the same scenario in most of the public primary schools. The computers that are available are few in relation to the number of learners, making it impossible for all the learners to get an opportunity to practice with them in a given lesson. This is in line with Nwana, Ofoegbu, & Egbe (2017) who found out that many of the ICT resources required for the teaching of computer education were not available in schools. This posed a challenge to the participants when they got back to their respective schools more especially when it comes to integrating computers when teaching.

#### 4.4. Mode of Training

The common theme that emerged as a mode of training was computer-based training. The entire participants stated to have been trained using computers. The demonstration, interactive discussions in groups, practical training were also mentioned as ways that trainers used to pass content. The demonstration is a technique under instructor-led training. Participants were shown how to operate computers by their trainers before they were put in groups to interact and discuss what they had learnt. Group discussion is also a technique in an interactive method of training. In groups, participants discussed what they had learnt and it allowed those participants who had not mastered certain concepts and skills to understand them better. Hands-on training which participants refer to as practical training allowed them to try the skills by getting their hands on what they had learnt. Below are some of the responses captured by different participants.

"The trainers demonstrated to us what they expected us to do, and then in groups we were given tasks to attempt. But the trainers were three and the groups were ten. By the time the trainer comes back to give more direction the time is over." (3A)

Another participant said that

"The facilitators used computers to train us. After explaining and demonstrating certain skills to be learnt, they would allow us to be in groups to try the skills using the computer. Much of what we learnt was how to operate the computer." (2C)

"We used computers. The trainer would demonstrate to us steps to follow then in our groups we would practice. For example, we would be asked to enter individual marks of pupils and get total marks. Then the trainer would go round checking which group managed the task. However, what we learnt was not how to teach with computers but how to use the computer to perform certain tasks." (2B)

This implies that trainers incorporated different modes of training to explain concepts to participants. The strategies used by the trainers were effective to meet the needs of every individual participant. Sedega, Mishiwo, Seddoh, & Darkenoo, (2019) found out that majority of the teachers who attended the INSET program stated to be effective.

However, they thought if organizers of in-service training programs would ask for trainers to focus on the needs of teachers in various subjects because even after the training teachers were still unable to perform as expected in their work. This could be related to the discrepancy in training and training needs. The trainers were also few and this brought a challenge when instructing the participants. This had been observed by Wambugu, (2017) who stated that the inadequate number of trainers in modern technology, mismatch of skills learnt, and demands of the labour market were weaknesses that impeded the use of computers as identified in the e-Government strategy.

# 5. Discussion of Findings

The study sought to establish the effectiveness of computer training for in-service teachers for instruction in early grade classes. From the findings, the majority of the participants stated to have acquired the skills on how to use computers through government-sponsored training. The training was conducted over the holiday for three days. The participants said they felt the training was not effective because of varied reasons. The participants said three days were not enough to allow them to learn the requisite skills that would enable them to integrate computers comfortably and with ease when teaching. They continued to state that they did not get ample time to practice and familiarize themselves with computers because the computers were few in relation to the number of participants who were present during the training. Due to that, they still face numerous challenges when integrating computers owing to the fact that most of them had no prior knowledge. They further stated that their training needs were on how to integrate computers when teaching but instead, the training focused on skills like how to operate the computer such as booting, shutting down the computer, word processing, excel among others. So, at the end of training the needs of the teachers and the school as a whole had not been met. The participants were also of the opinion if the trainers would have given them computer integration was not effective because it did not help them acquire the requisite skills and knowledge that would have encouraged and motivated them to integrate computers when teaching.

# 6. Conclusion and Recommendation

The study sought to assess the effectiveness of in-service training on computer integration in early grade classes in public primary schools in Moiben sub-county, Uasin Gishu County. The findings revealed that the in-service training that the participants attended was not effective due to numerous factors as discussed earlier. The needs of the teachers during training were not met, the time provided for training was not adequate to allow them learn, practice and master requisite skills that relate to computer integration. Training materials were not adequate too. Therefore, the findings agreed with the theory of Venkatesh under the first three constructs: performance expectancy, effort expectancy, and Social influence if are met under the facilitating conditions then the teacher's attitude is more likely to change which will lead to positive behavior change towards the integration of computers when teaching and vice versa. Most of the teachers were not integrating computers in teaching because of minimal technological pedagogical knowledge. The study, therefore, recommends that the Kenya Institute of Curriculum Development, Teachers Service Commission, and The Ministry of Education to collaborate and see into it that computer is infused in the teachers training curriculum. The computer training that was meant to equip teachers with requisite skills to enable them to integrate computers when teaching was not effective owing to the days it was carried out Therefore the study recommends continuous computer training for the early grade teachers. Most of the administrators acknowledged having given early-grade teachers opportunities to attend computer training although it was done twice. They also admit that most of the computers had stalled, the servers that were meant to provide internet connectivity were not working and no efforts had been made by the ICT personnel within the county to repair them. The study, therefore, recommends that policy be put in place on the maintenance and repair of computers in schools and more specifically in primary schools.

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