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**How teachers' roles in teaching and learning are redefined by the emergence of new technologies in education****Johnson Mayaka Monari**  
Aga Khan Academy Mombasa**Abstract**

*The purpose of this study is to examine the perspectives of teachers on how their roles in teaching and learning are influenced by the emergence of new technologies in education. The study is grounded on the anchored instruction theory and constructivist theory both of which identify the need for learning that is contextual. Literature review indicates that the roles of the teachers as organizers and providers of guidance including pastoral care are very critical. This study employed a descriptive research design with a qualitative approach and used the Microsoft survey forms to sample 106 respondents who are passionate about the use of new technologies. 74.5% of the respondents highly agree that with the emergence of new technologies in education, they see their role more as to offer guidance and advice students. A total of 86.8% think that their role is to provide an adult presence to ensure order in learning. Furthermore, 95.5% of the teachers are convinced that their role is more of organizers of learning. Some teachers still believe that they should be transmitters of knowledge to cover the traditional curriculum needs. The study concludes that teachers are convinced that with the emergence of the new technologies in education, they have three key roles to play: organize learning, offer guidance to students, and provide an adult presence to ensure order in learning. Most curriculums demands and standardized tests are blamed for stagnating teachers as transmitters of knowledge. The study recommends that educators be supported through training on their shifting roles and redesigning of curriculums to undergo a transformational pedagogy to meet the students' needs in the information society and further study be conducted on the role of the teachers in taking care of the students' mental health.*

**Key words:** *emergence of new technologies, education, roles of a teacher, redefined teaching*

## **1. Introduction**

### **1.1 Background of the Study**

“We’re almost 17 years into the 21<sup>st</sup> Century but the educational system is not” (Bran, 2017). The education sector is regrettably a rigid environment when it comes to embracing new technologies. Perhaps the quote by Louise Stoll and Dean Fink, “Many of our schools are good schools, if only this were 1965” best describes this situation (Johnson & McElroy, 2012). Of great concern is the irony of educators struggling to cope with change when they are actually expected to implement the change.

It is evident that great teachers are those that are innovative and therefore life-long learners. The continuous professional development for teachers can no longer be wished away. “Preparing teachers in teacher education programmes is an important but not sufficient condition for teaching with technology in secondary schools” (Admiraal et al., 2017). “The teacher will thrive and the students will flourish when the role of the teacher adapts to the needs of culture of today” (Johnson & McElroy, 2012). “In the 21<sup>st</sup> century classroom, teachers are facilitators of student learning and creators of productive classroom environments, in which students can develop the skills they might need at present or in future” (Rai, 2018).

The teacher has that responsibility of helping the student learn to solve not only current but also the future problems. In doing so, the teacher prepares the students for the larger world rather than a limited locality; in other words the teacher also becomes a global teacher and engages students with global issues. The goal of the International Baccalaureate programmes is “to develop an international minded people who, recognizing their common humanity and shared guardianship to their planet help to create a better and more peaceful world (“From Principles to Practice,” 2014).

Even though slow to the changes, the education sector is not immune to the massive technological advancements. The progress will not need so much of our opinion but it seems that technology will unapologetically invade every sector of our lives including education. Musawi (2011) identifies three roles played by technology in education as: a resource, a management, and a delivery/teaching mode. With the technology as a catalyst of the teaching and learning, the role of the teacher in the classroom will never be the same again. Jan (2017) notes that with the rapid change in technology and the students’ change of values make the teacher to be in a transition phase.

### **1.2 Statement of the problem**

“The rapid growth of computing, networks and infrastructure offers increasing and ever changing potentials for technology use in education, and the subsequent impact on practice and roles in education generally is set to be enormous” (Price et al., 2005). There seems to a lot of research done on how technology can enhance learning and influence the teaching methodologies of teachers (Monari, 2018). There is, however, little research done to focus on what teachers who have interacted with technology think about their role in the 21<sup>st</sup> century environment. This study aims to close that gap by capturing the thoughts of the teachers from their experiences. The purpose of this study therefore, is to examine the perspectives of teachers on how their roles in teaching and learning are influenced by the emergence of new technologies in education.

### **1.3 Study Objectives**

- i. To examine how the organizing role of a teacher is redefined with the emergence of new technologies
- ii. To determine how the guidance role of a teacher is redefined with the emergence of new technologies

## 1.4 Purpose of the Study

The purpose of this study is to examine the perspectives of teachers on how their roles in teaching and learning are influenced by the emergence of new technologies in education.

## 2. Literature Review

### 2.1 Theoretical Framework

#### a) Anchored Instruction Theory

“The Anchored Instruction Theory emphasizes on technology-based learning. Students take the technology as the carrier, use the reality of the living world as the main contents to discover problems, generate questions, and ultimately solve the problems” (Ouyang & Stanley, 2014). This clearly positions the learner as an active determinant of the learning process unlike the traditional learning where the teacher was predominantly at the centre of learning. The theory is relevant to this study because it demonstrates a shift of the teachers and students roles in learning which can be attributed to technological advancement. Ouyang and Stanley (2014) further argue that ‘Anchored Instruction Theory is taking the real life of the world as the core contents of teaching through educational’. Clearly, that real world right now is a technology-induced world.

#### b) Constructivist Theory

“Constructivism is a theory of knowledge (epistemology) that argues that humans generate knowledge and meaning from an interaction between their experiences and their ideas” (Bhattacharjee, 2015). The study links with the theory to define the kind of experiences the learners have in the 21<sup>st</sup> century and to investigate how this tech-context is determining who plays what role in the classroom. The theory suggests that through processes of *accommodation* and *assimilation*, learners construct new knowledge from their daily experiences. Learners are active participants and the teacher is only but a facilitator. Students learn better by working with each other and learning from their environment. “Constructivist theory is in favor of letting students to construct their point of view of the world,” (Ouyang & Stanley, 2014). The role of the teacher henceforth shifts to helping students learn how to learn from the already available information (Monari, 2018).

### 2.2 Redefined teaching with emergence of new technologies in Education

“History has proved that the development of educational technology impacts the development of education; the use of educational technology in the classrooms has opened a new page for instruction and learning” (Ouyang & Stanley, 2014). However, “the over-arching implication is that the technology is solely a catalyst for change” (Higgins, Xiao, & Katsipataki, 2012). “It is therefore the pedagogy of the application of technology in the classroom which is important: the *how* rather than the *what*” (Higgins et al., 2012). The teacher is squarely at the centre of absorbing the pressure for innovative teaching and the administration demands of grades. With technology integration, the learning outcomes need to be redefined to include the practical skills and concepts that are not usually tested in paper and pencil.

With technology enhanced learning becoming more popular “Pedagogical Framework noted a shift to a more student centred notion of teaching and learning in which what the student does, not subject coverage, takes centre stage” (Price et al., 2005). “The role of the teacher has traditionally been the gatekeeper of information. She had access to the information that her students needed. This was an important role 30 years ago when the classroom was the focal point of information dissemination” (Johnson & McElroy, 2012). Since teachers are no longer solely in possession of content, the learner can access a wide range of information at any given time. Information has ‘slipped’ from the teacher to the student’s hands. The learners are also creators of the content that they can even publish to a vast audience.

Burke (2014) argues that there is need for educators and learners to learn to use equipment and software quickly. Maybe 'a teacher is not born' actually and if so they must be reborn severally. There is need for the flexibility from the part of the educators knowing not just that the old tricks may not always work but that even the new tricks may fail to work in the future. Although the need for the leaders to train their teachers cannot be challenged, Ndibalema (2014) argues that, "there is a need for teachers to have their personal initiatives towards the available digital learning tools so as to enhance the teaching and learning process and their professional development." "Teachers need to juggle through not only the specific content that students have to learn but also the best methods and tools to be used to ensure learning happens, all while complying to organizational rules and national standards. In order to do this, they have to think differently, be strategic, promote innovation, know the system, accept failure, promote a learning culture, and above all, put the student and their learning needs at the heart of their teaching mission" (Bran, 2017).

"To more accurately reflect teacher roles as empowered leaders, professionals, and instructors, the International Society for Technology in Education (ISTE)... released the new educator standards during its 2017 national conference in San Antonio in June" indicating that teachers should be learners, leaders, citizens, collaborators, facilitators, designers and analysts (Pierce, 2017).

### **2.3 Organizing Role of a teacher**

The science of teaching requires content knowledge, organization, management skills, and detailed planning" (Johnson & McElroy, 2012). Organizing is a managerial function and therefore positioning the teacher as a CEO of their own classes. The teacher as organizer/manager is a teacher who manages all the elements involved in teaching and learning activity (Rindu & Ariyanti, 2017). The organizer is the most difficult and important role the teachers have to play as the success of many activities depends on good organization and the students knowing what they will do next (Adam, 2018).

From the Finding of ISTE, the 21<sup>st</sup> century educators play the role of designing authentic, learner-driven activities and environments that recognize and accommodate learner variability" (Pierce, 2017). In the classroom learning, the teacher prepares inquiry learning activities to prompt the students to learn. "As a prompter, the teacher should encourage students to participate and make suggestions about how students may proceed only when necessary. In fact the teacher is also a participant in the learning. When learners are literally 'lost for words', the prompter can encourage them by discretely nudging students (Adam, 2018). The teacher organizes the learning objectives and ensures that the learners are on track. In this type of role, the learning is student centred during the lesson but teacher centred before the lesson. This means that the teacher has a lot to prepare before conducting the actual lesson.

Part of the planning role of the teacher is also about managing and ensuring the availability of resources. "Technology plays a "resource" role where information is at instructors'/students' fingertips" (Musawi, 2011). Although information is all over in the internet, it is not necessarily organized. "As a resource, the teacher also makes him or herself available so that earners can consult him/her only when necessary. Teachers should also be able to guide the learners in filtering the sources where they will get reliable information (Adam, 2018).

### **2.4 Guidance role of a teacher**

With the huge chunk of information accessible to students, teachers remain the most important tour guides that students have. "The effective teacher has to be the 'thermostat' who controls the environment of the classroom. She is the one who either creates an environment where learning can occur or she creates an environment where

students dread coming to class. The effective teacher creates a safe, and engaging learning environment where learning is deemed valuable to the student” (Johnson & McElroy, 2012).

Research shows that students are still asked to switch off their gadgets like smartphones and work on handouts. The educators are too careful about the risks and have not given good guidance. When students are given opportunity, they can make creative blogs, stories and feel proud to share with others” (Jan, 2017). However, it is clear that teachers have not prepared enough to support students in this technology-induced environment. The future world will be run and driven by ideas and knowledge. Teaching the students to use the current available tools alone is not even enough because today’s technology may not solve the challenges of tomorrow. The content that we have learned today may become obsolete tomorrow. Students need to be prepared as inquirers and lifelong learners; this is a great responsibility for the educators.

“Educators facilitate learning with technology to support student achievement.” (Pierce, 2017). Facilitating is empowering for both the learner and the teacher and frees the teacher from many of the burdens that having to be an ‘expert’ might entail (Adam, 2018). The teachers need to learn how to facilitate and encourage students to take charge of their own learning (Singh & Chan, 2014). “The teacher acts as a coach when students are involved in project work or self-study. The teacher provides guidance and helps students clarify ideas and limit tasks” (Adam, 2018).

While it seems that many people are blaming bad students’ behavioral issues on poor parenting, Johnson and McElroy (2012) argues that teachers need to understand parents and their technological savvy children. This generation gap exists because parents grew up with limited technology, while their children appear to be cyborgs (part human and part computer). The teacher must come between the parents and their children to bridge this gap. An authentic relationship between the teacher and parents ultimately seeks the best interest of the child. “It is critical, for teachers to have thorough training in both pedagogical and practical uses of the technology, consistent and reliable access to that technology, and continuous feedback and support over time” (Pepe, 2016).

The student of the 21<sup>st</sup> century needs support for mental health than any other century students. This is such a great responsibility for the teacher. Mental well-being is becoming a great topic of discussion in school as students are getting more and more depressed from the pressure of what is expected of them. “We need to start unpacking the backpacks of students by creating caring classroom environments first and foremost” (Passera, 2016).

### **3. Research Methodology**

This study employed a descriptive research design with a qualitative approach. The survey sampled 106 respondents. The respondents are teachers from across Kenya and beyond known to the researcher and who are passionate about the use of new technologies to enhance teaching and learning. Microsoft forms were used to collect the real time responses. This digital questionnaire tool proved to be the most cost effective and reliable since most of the teachers responded in real time using their gadgets like smartphones and iPads. Studies show that “if conducted properly, online surveys have significant advantages over other formats...outsourcing of online survey functions is growing in popularity” (Evans & Mathur, 2005).

The questions were designed to be short and straightforward to encourage as many participants as possible and the researcher was able to gather responses beyond the initial target of 100 participants. The questionnaire required the respondents to comment on how they see their role as teachers with the emergence of the new technologies in education. Although the first questionnaire limited them to six options, there was a second open questionnaire which required them to comment on any other role of how they visualize themselves apart from the ones already

stated. One key feature of forms is that the responses analytics are updated timely as the respondents answer back and the researcher is able to disenable any more responses and concentrate on the analysis once enough data has been sampled. The findings were extracted and further represented in the tables of percentages for interpretations.

#### 4. Research Findings and Discussions

Table 4.1 captures the responses the data from the 106 respondents about how they think their role is redefined with the new technologies in education. The teachers were asked the question below and responded as shown in the table. With the emergence of new technologies in education, I see my role more as to:

**Table 4.1 Redefined roles of teachers with emergence to new technologies**

Items	Highly Disagree	Disagree	Neutral	Agree	Highly Agree
1.Manage students' behaviour	23.6%	21.7%	23.6%	21.7%	9.4%
2. Organize Learning	0.9%	0.9%	2.8%	39.6%	55.7%
3. Deliver Knowledge	13.2%	25.5%	34.9%	17.9%	8.5%
4.Provide an adult presence to ensure order in learning	4.7%	4.7%	3.8%	31.1%	55.7%
5.Provide Learning Resources	7.5%	13.2%	34%	29.2%	16%
6.Offer Guidance/Supervise and advise students	2.8%	0%	20.8%	1.9%	74.5%

From the findings of table 4.1, 74.5% of the respondents highly agree that with the emergence of new technologies in education, they see their role more as to offer guidance, supervise and advise students. 31.1 % and 55.7 % agree and highly agree consecutively making a total of 86.8% of those who think that their role is to provide an adult presence to ensure order in learning. Furthermore, 55.7% and 39.6% highly agree and agree respectively totaling to 95.5% of the teachers who are convinced that with the emergence of new technologies in education, their role is more of organizers of teaching and learning.

However, the table shows that teachers are divided on the opinion that their role is to manage students' behaviour. The percentage of those who highly disagree 23.6, disagree 21.7, neutral 23.6 and agree 21.7 are all close to each other. While majority of those who are not sure or disagree that their role is to deliver knowledge, a total of 26.4% think that is their role which is contrary to the literature review findings of what they should be doing. 45.2% also believe that they need to provide learning resources for their students while 34% are neutral about this.

The respondents were also asked to comment on how else they viewed their role apart from the ones listed above. Most of the responses seemed to emphasize on the facilitation role of a teacher but particularly, educators pointed out to the critical role of taking care of the students' mental health. One of the respondents stated that "the role of a teacher will never stop being connected with instilling values and providing emotional support to students". Interestingly, another educator noted that, "Education still mainly involves teachers "data dumping" information to students to cover the curriculum in preparation for a standardized test"

## 5. Conclusions and Recommendations

### 5.1 Conclusions

In conclusion, teachers are convinced that with the emergence of the new technologies in education, they have three key roles to play: organize learning, offer guidance/supervise/advise students, and provide an adult presence to ensure there is order in learning. Although they agree on supervising learning, teachers have varied opinions on the role of managing students' behaviour. Some teachers also believe that they need to provide learning resources for their students. Contrary to the literature review on what their role should involve, some teachers still believe that they have a role to deliver knowledge through data dumping of information to students because they have to cover the curriculum content in preparation for standardized tests.

### 5.2 Recommendations

The study recommends that teachers should adopt their redefined roles of designing learning with the help of technology, guiding students and providing the adult presence to ensure the environment is conducive for learning. The study also recommends that educators be supported through redesigning the curriculums and training them on their shifting roles to undergo a transformational pedagogy to meet the students' needs in the information society. Finally, the study recommends further study on the role of the teachers in taking care of the students' mental health in the 21<sup>st</sup> century.

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