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Investigating the Extent to which Factors that Contributing to Educator's Attitudes Influence Effective Integration of ICT in Teaching in South Africa

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ABSTRACT

The purpose of this study was to examine factors associated with the attitude of educators in the use of Information and Communication Technology. The sample consisted of 40 educators, from primary and secondary schools. Information was collected through questionnaires. Data collected were analysed using mean and standard deviation. Starting from the technological and pedagogic competencies in ICT, the study obtained educators' consistent competencies profile with four increasing levels: laggards, early adopters, late adopters, and venturesome. Based on the findings the study concluded that educators had a positive attitude towards ICT. However, the study also concluded that despite a positive attitude towards ICT, the use of ICT tools in class is scarce and not being adequately subjected to innovative processes. The study recommended that factors such as competence and skills needs to consider by the department of education by providing compulsory training for educators.

Keywords: *Attitude; Diffusion; Educators; Innovation; Integration; Training*

INTRODUCTION

The prospective of technology to change the classroom is documented by the South African Department of Education (DOE) which provisions the idea of introducing Information and Communication Technology (ICT) in South African schools (Department of Basic Education (DBE). Educators are advised to develop learners with 'relevant modern skills that match the needs of our changing world (DBE). Learners should be able to 'access, analyse, evaluate, integrate, present and communicate information; create knowledge and new information by adapting, applying, designing, inventing and function efficiently in a knowledge society by using appropriate ICT skill's (DOE). The education department states that ICT can restructure a classroom atmosphere while also advancing higher-order thinking skills in learners (DBE). For example, it enables educators and learners to increase the level of comprehension, reasoning, problem-solving, thinking and employability (DOE). The DOE further highlights five targets of the use of ICT which involve entry (basic ICT skills), adoption and adaptation (integration of ICT in teaching and learning), and appropriations and innovation (specialisation and innovation in ICT education) (DOE). These entry levels are not far from those developed by Rogers in his innovation stages which are decision stage, confirmation stage, implementation stage, knowledge stage and persuasion stage [1].

This study addresses the factors associated with the attitude of educators in the integration of ICT. Recent advances in technology have unlocked entirely new directions for education research. This study is trying to make a contribution towards finding out more about the usage of technology. The study also examines the relationship between educator use of technology and their attitudes about the ways in which ICT tools are used in teaching and learning. To date no previous study has focused on these issues. Furthermore, the study looks at some factors that may have a relationship with the use of technology. It is hoped that the knowledge contributed by this study will help the authorities in their planning and provision for educator support in the use of technology. This study will help other researchers identify areas in the use of technology which need more attention.

Attitudes that educators have in the integration of ICT

Attitudes can be defined as an element that guides the behaviour of the individual, the integrity and consistency in the feelings, thoughts and behaviours of an object. In this regard, educator's attitudes towards ICT use are regarded as the driving force behind their ICT use behaviour in many studies. For example, Sánchez, Marcos, González and GuanLin conducted a study to investigate educators 'attitudes towards the use of ICT in the classroom. The study found that teacher's attitude towards ICT are highly positive but the use of them in class is scarce and it is subjected to innovative processes. Investigated secondary education educators' attitudes towards ICT implementation and found that educator's had a positive attitude towards ICT but the computers are still largely underused.The findings indicated that attitudes impact educators' behaviours. Furthermore, educators have a substantial effect on receptiveness to new experiences, as well as on reflecting and implementing change. Positive attitudes towards ICT, though too limited, support their use in classes. The success of ICT investments can be achieved with their effective application in the classroom as a part of the curriculum. By this way, learner- centred environments can be created. Therefore, the goal of this study is to investigate the attitudes of educators in the integration of ICT in their teaching [2].

Theoretical framework rogers theory of innovation

In an attempt to understand how attitude, adapt to technological innovation, the Diffusion of Innovations Theory put forward by Rogers will guide the study. Diffusion of innovations, according to Rogers occurs through a five–step process. These stages through which a technological innovation passes are: Knowledge, Persuasion, Decision, and Implementation. However, in this study we will use decision stage because it focuses on how educator's attitudes influence the effective integration of ICT in teaching and learning. Therefore, decision stage refers to whether or not educators' attitude influences the integration or use of ICT in schools can contribute to learners learning. In order to understand the level of influence the study adopted three levels of Rogers's adoption. Although Rogers used four levels of adoption, this study used only three levels that where found relevant, thus, laggards, majority and venturesome. In this study these levels are explained as follow (Table 1) [3].

Table 1: Study of three levels.

Decision Stage	Laggards	These are educators who don't embrace the integration of ICT can influence effective teaching
	Majority	These are educators who sometimes embrace the integration of ICT can influence effective teaching.
	Venturesome	These are educators who embrace the integration of ICT can influence effective teaching.

MATERIALS AND METHODS

The study employed quantitative research method. Quantitative research method is the systematic empirical investigation of observable phenomena *via* statistical, mathematical, or computational techniques. Polit and Hungler refer to the population as an aggregate or totality of all the objects, subjects or members that conform to a set of specifications. The population of this study comprised of educators in secondary schools in district 14. The records of the District Office (D14) show that the total number of secondary schools is 11 with 401 educators, where 173 (33%) are male educators and 228 (67%) are female educators. The study used purposive sampling in selecting the schools and the participants for inclusion in this study. Babbie defines purposive sampling as a form of nonprobability sampling in which units to be observed are selected on the basis of the researcher's judgment about which ones are the most useful or representative. Sampling is a technique used in eliciting data from the representative group from a larger population. The main reason for sampling is to collect specific data that will explore depth and understanding of the study. The sample size in this case study consisted of forty educators Data is defined as information obtained in a course of a study. The study collected the data in district 14 in South Africa by using structured questionnaire. The questionnaire was distributed to the respondents with teaching background. The complete filled-up questionnaires were gathered and collected for further data analysis to get the output and findings for the study. Data analysis is described as an activity, which involves the synthesis of data in order to come up with conclusions on a research problem. The analysis includes both descriptive and inferential analysis. The researchers used descriptive analysis to analyse the frequency and percentage of the overall population in the demographic background. Besides, it is also used to determine the mean, standard deviation, frequency and percentage to identify the factors associated with the attitudes of educators in the integration of ICT [4].

How does the attitude of educators influence the effective integration of ICT in teaching and learning?

This research question seeks to investigate factors contributing to educator's attitudes in the integration of ICT in teaching.

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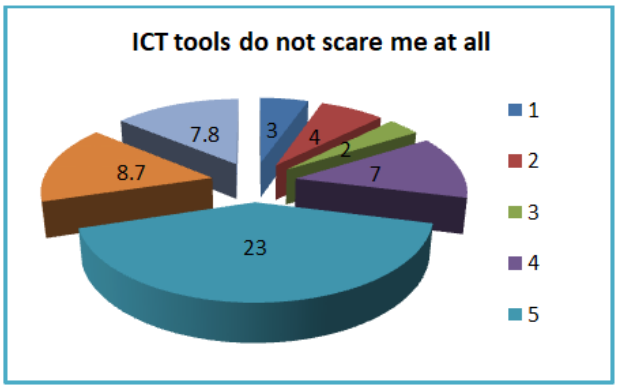
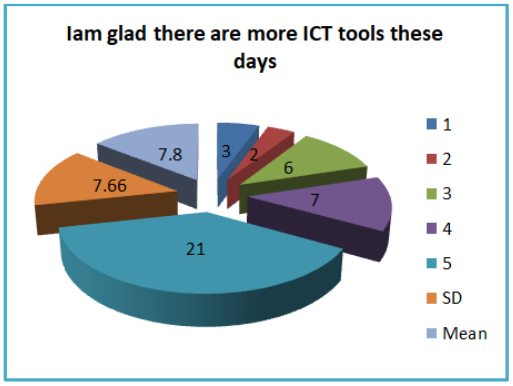
In order to understand their attitudes, (decision stage). This RQ only used 8 questions, thus, Q1-Q8. (Q1) ICT tools do not scare me at all. This question investigates if educators are scared by any ICT tools such as laptops, computer (Figure 1).

Figure 1: Below show their responses.



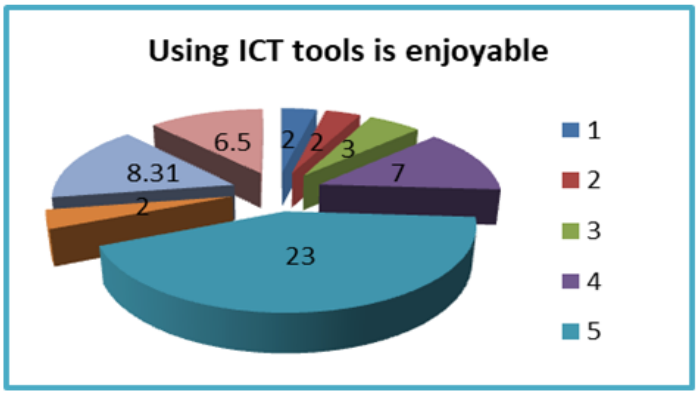
The data indicates that strongly disagreed that ICTs do not scare them at all disagreed, where Neutral (N), strongly agreed with a Standard Deviation (SD) and a Mean (M). The implication is that educators feel comfortable with the use of ICTs. Most of the educators with strongly disagreed that ICTs make them feel uncomfortable. These percentages are positive indicators showing that educators are confident enough to work with technology in the classroom. Therefore, most of the educators were venturesome, since the use ICT tools indirectly reflects their beliefs on the effectiveness of ICT integration in their teaching. This finding was also found to be indicated that educator's attitudes toward the use of digital technology, in primary education were found to be related to educator's confidence, beliefs and self efficacy, and with a significant relation to school culture [5].
(Q2) I am glad there are more ICT these days. This question investigates if educators are positive about the spread of ICT in schools (Figure 2).

Figure 2: Below show their responses.



The data indicate that of participants strongly disagreedwhere neutral, strongly agreed and agreed with Standard Deviation (SD) andMean (M). The analysis above shows that educators are glad that there are more ICTs these days. Only 71.78% educators agreed that they are glad that there are more ICTs these days. These percentages are positive indicators showing that educators are aware about the importance of ICTs in education. Therefore, most of the educators were venturesome, since they reflect a positive attitude towards the availability of ICT tools which can improve their teaching. This finding was also found by who indicated that the Annenberg Public Policy Center has reported that among U.S. households with children aged 8 to 17, 60% had home computers, and children in 61% of households with computers had access to Internet services; in other words, of all households with children had Internet services, more than twice the percentage of that in 1996 [6].
(Q3) Using ICT is enjoyable. This question investigates if educators are enjoying the use of ICT in teaching and learning (Figure 3).

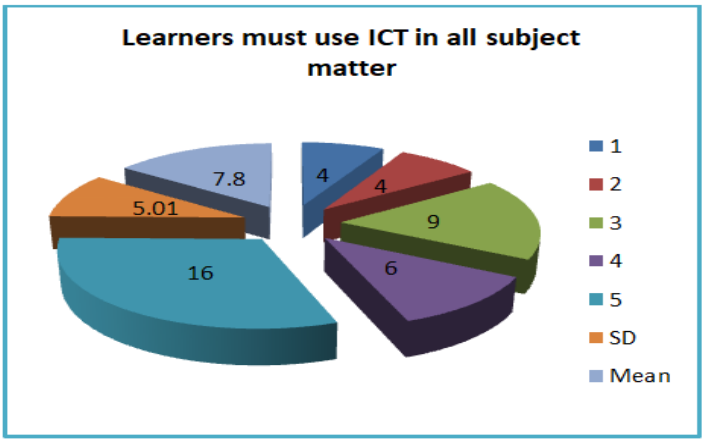
Figure 3: Below shows their responses.



The data indicates that out of 39 participantsstrongly disagreed that using ICTs is enjoyable, disagree, where neutral, strongly agreed, and agreed that using ICTs is enjoyable, withStandard Deviation (SD) and Mean (M). This implies that most educators enjoy using ICTs, agreed that using ICTs is enjoyable. These percentages are positive indicators showing that educators are aware about the importance of ICTs in education and are enjoying using ICT. Therefore, most of the educators were venturesome, since their interest in using ICT reflect their continuous use. This finding was in line with Brunand Hinostroza, findings that educators frequently use ICT for informative, organizational, recreational, lesson planning purposes [7].

(Q4) Learners must use ICTs in all subject matters. This question investigates if educators are agreeing that learners must use ICTs in all subject matters (Figure 4).

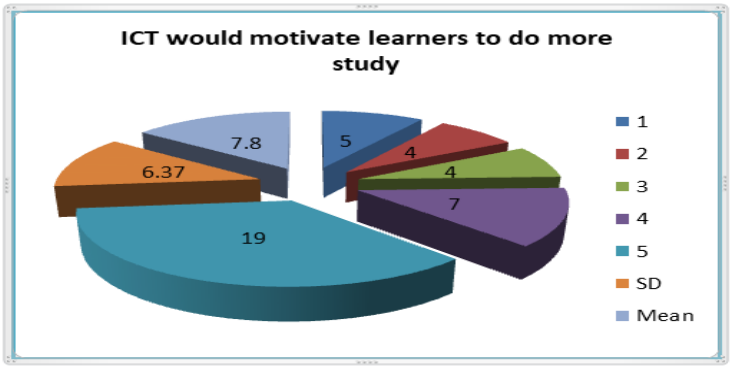
Figure 4: Below show their responses.



The data indicates that out of n39 participants strongly disagreed that learners must use computes in all subjects, disagreed were silent on this issue strongly agreed that learners must use ICTs in all subjects, with Standard Deviation (SD) and Mean (M). This implies that educators feel that learners must use ICTs in all subject matters. These percentages are positive indicators showing that educators are aware of the importance of ICTs in education and that all subjects must be taught using ICTs. Therefore, most of the educators were venturesome, since they believe that learners must use ICT in all their subjects. This finding was in line with Wake and Whittingham findings that technology was looked upon as a tool to help educators deliver a better lesson, but with experience, it was considered for the educational development of the leaner [8].

(Q5) ICT would motivate learners to do more study. This question investigates if educators are agreeing that ICT would motivate learners to do more study (Figure 5).

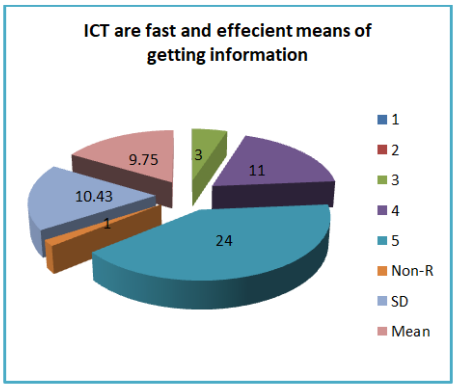
Figure 5: Below shows their responses.



The data indicates that out of n39 participants strongly disagreed that ICTs would motivate learners to do more study, disagreed were silent on this issue strongly agreed that that ICTs would motivate learners to do more study, with Standard Deviation (SD) and Mean (M). The above results indicate that the majority of educators feel that ICTs would motivate learners to do more study. Agreed that ICTs would motivate learners to do more. These percentages are positive indicators showing that ICTs do have an impact on learners learning.Therefore, most of the educators were venturesome, since they believe that ICT will motive learners to do more in their learning. This finding was in line who observed that leaners were more motivated by ICT they worked independently and wrote longer sentences with fewer spelling and grammar mistakes [9].

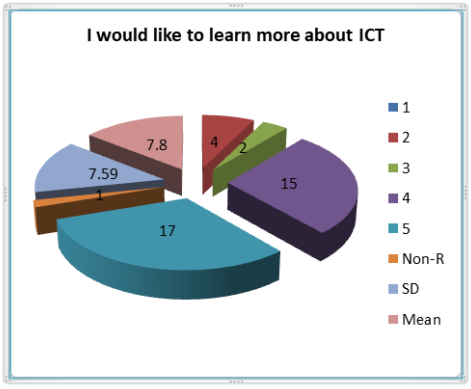
(Q6) ICT are a fast and efficient means of getting information. This question investigates if educators are agreeing that ICT are a fast and efficient means of getting information (Figure 6).

Figure 6: Below shows their responses.



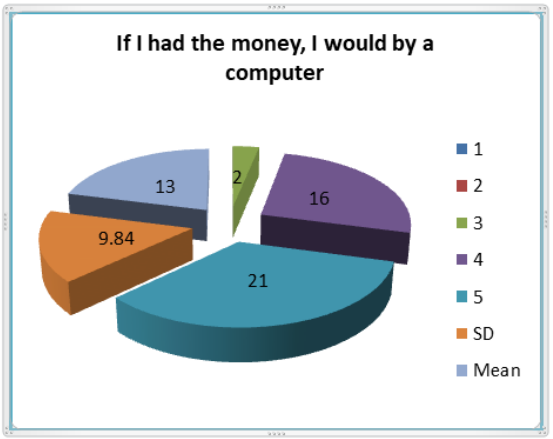
The data indicates that out of n39 participants were silent on this issue, did not respond to the question strongly agreed, that ICTs are a fast and efficient means of getting information, with Standard Deviation (SD) and Mean (M). This shows that the majority of educators are in agreement that ICTs are a fast and efficient means of getting information. Agreed that ICTs are a fast and efficient means of getting information. These percentages are positive indicators showing that educators are aware that ICTs are a fast way of getting information. Therefore, most of the educators were venturesome, since they believe that ICTs are a fast and efficient means of getting information. This finding was in line with Tezci findings who concluded that having a computer and access to the internet were perceived by the educators as influencing factors in enhancing the school culture towards technology integration [10]. (Q7) I would like to learn more about ICT. This question investigates if educators are willing to learn more about ICT (Figure 7).

Figure 7: Below shows their responses.



The data indicates that out of n39 participants disagreed that they would like to learn more about ICTs, were neutral on this issuestrongly agreed,but did not respond to the question that they would like to learn more about ICTs, with Standard Deviation (SD) and Mean (M). The above results indicate that the majority of educators feel that they would like to learn more about ICTs. 82.04% agreed that they would like to learn more about ICTs. These percentages are positive indicators showing that educators have positive attitude they are willing to learn more about ICTs. Therefore, most of the educators were venturesome, since these educators were willing to learn about ICTs. This finding were in line with Hassan, Rosnaini and Su findings that when an educator is self-confident, he or she would possess positive attitudes toward ICT, and would be interested to integrate ICT into teaching [11]. (Q8) If I had the money, I would buy a computer. This question investigates that if educators had money would the buy computers (Figure 8).

Figure 8: Below shows their responses.



The data indicates that out of n39 participants that If they had the money, they would buy a ICT, were silent on this issue, strongly agreed, that If they had the money, they would buy a ICT, with Standard Deviation (SD) and Mean (M). This implies that the majority of educators wished that if they had the money, they would buy an ICT. Agreed and strongly agreed that if they had the money, they would buy an ICT. The above results indicate that educators feel that If they had the money, they would buy a ICT. These percentages are positive indicators showing that educators that If they had the money, they would buy computers Therefore, most of the educators were venturesome, since they were willing to buy their own computers for teaching and learning. This finding was in line with Wake and Whittingham findings that technology was looked upon as a tool to help educators deliver a better lesson [12].

RESULTS AND DISCUSSION

In order to examine whether the educator's attitudes do influence the effective integration of ICT in teaching, this study focused on 1 research questions. RQ1 investigated the factors contributing to educators' attitudes in the integration of ICT in teaching.

In order to understand their attitudes. The findings of the study are therefore presented according to the question. In order to understand educators' attitudes in the effective integration of ICT, the study adopted Rogers theory of innovation and the study

used decision stage as a measuring mode. In order to answer all three research questions, the study use questionnaire which consist of 8 questions which were grouped according to RQ. As indicated earlier the study used a questionnaire to get the responses from the educators which was based on the Likert scale, which showed 1 'Strongly Disagree', 2 'Disagree', 3 'Neutral', 4 'Agree' and 5 'Strongly Agree'[13].

CONCLUSION

The introduction of ICT in schools needs to be celebrated and appreciated. These technologies are electronic devices that have come to redesign the universe in all facets of human undertaking with its stronghold in the provision of education for all. Parallel to changes made to components of educational system due to the emergence of ICT, traditional means of transferring knowledge no longer can meet learners' needs in today's society. As a result, it is crucial that the main element of educations system, especially educator, to be exposed educational developments and changes along with progress made in today's world.

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