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Research Article

Teaching and Learning Methods of Information Technology in Kwa-Zulu Natal, South Africa

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ABSTRACT

Information Technology (IT) is taught in all South African secondary schools. IT has four learning outcomes: E-Communication, Social and Ethical Issues, Hardware and Systems Software, and Programming and Software Development. Programming and Software Development enjoy the highest weight as an outcome of IT, and it is believed to be the main cause of the difficulty of the learning process of IT and related concepts. The number of Grade 9 learners willing to offer IT as a compulsory subject in their coursework. On the other hand, the Grade 10 learners are decreasing, and the number of learners pursuing IT until Grade 12 where its application is declining in every school in South Africa annually. This research aims to investigate the methods and techniques that enhance the teaching and learning process of Information Technology at a selected high school focusing on Grade 12 learners in South Africa Kwa-Zulu Natal. Although this work investigated many teaching and learning methods, it has come to be known that the hybrid system or the method is the best to adopt and apply in the teaching and learning of IT in high schools, especially in the relevant target high school. For this purpose, fifteen (15) IT teachers as the participants were sampled through sequential sampling techniques, where a group of teachers of IT have been selected non-randomly. The open-ended informal interview guide has been designed and face-to-face in-depth interviews have been conducted with respondents. The thematic context analysis has been adopted as a data analysis technique. The findings of the study showed that the hybrid system that combines both teacher-centered and learner-centered teaching approaches was able to enhance the teaching and learning of IT. Moreover, the teacher's and learners' attitudes play an important role in enhancing the learning and teaching methods at high school levels. Furthermore, the interest and exposure of the learners also factor to enhance the learning motivation of learners towards IT and related subjects.

Keywords: Information Technology, Information and Communication Technology, Hybrid system, Teacher-centered approach, Learner-centered approach, Infrastructure.

INTRODUCTION

Technology is a powerful tool for change that can bring about a tremendous transformation to the way industries, businesses, educational institutions, and international organizations operate systematically. Information Technology (IT) involves the use of computers to store the data, retrieve, transmit, and manipulate data when required, or information, often in the context of a business or other enterprise. IT can be considered to be a subset of Information and Communications Technology (ICT). Information Technology in education refers to all the various available technological tools that make teaching and learning in the classroom comprehensible, feasible, and interactive (Brynjolfsson, & Hitt, 2000; Davenport, 1993).

The National Curriculum Statement of the South African Department of Education has offered 29 subjects at the secondary school level from Grades 10 to 12 class, with Information Technology being one of them (DoE NCS, 2003 & CAPS,2011). IT includes diagnostic or investigative activities that require reasoning logically, management of information, and communication. Designing, developing, supporting, and managing computer hardware, software, and information networks, including the Internet are the responsibilities of IT professionals. The use of ICT is

essential as it allows the teachers and learners to operate, store, control, and retrieve data other than to promote self-regulated and active learning in classroom teaching and learning (Ali, Haolader & Muhammad, 2013).

Owing to the difficulty learners experience in understanding programming, IT in South African secondary schools has obtained a reputation as a difficult subject, and many students recently opted for this as a subject at their high school levels (Havenga & Mentz, 2009; Jacobs & Sewry, 2009). Learners either avoid the subject of IT or many learners attempt to pursue a different subject, an "easier" subject such as Computer Applications Technology (CAT) before Grade12, (Koorsse, Carlitz & Cillers, 2010). The lack of interest in the subject and the pessimistic impression that can occur among learners affect the number of learners desiring to pursue a career in computer science or Information Technology-related professions (Havenga & Mentz, 2009). This comes after the drastic trend of a decline in interest in computing professions globally over the past 10 years of the period (Babin, Grand & Sawai, 2008; Jacobs & Sewry, 2009).

The current research analyzed the teaching and learning methods in information technology: A case study at some selected High schools in Kwa-Zulu Natal. Moreover, the research seeks to put in place possible measures to improve the effectiveness of the teaching and the learning of Information Technology and boost the interest of learners to pursue IT education from their beginning academic careers. The study is based on the teachers' perception regarding the learning and teaching methods in IT as a subject in Grade 12 in different high schools in South Africa Kwa-Zulu Natal. The study has both practical and theoretical significance at policy levels. This study also adds to existing body of literature regarding the subject of information technology and its application.

Research Question

- What are the teaching and learning methods of Information Technology (IT) in some selected high schools in Kwa-Zulu Natal, South Africa?

LITERATURE REVIEW

According to Piaget (1971), from the cognitive constructivist perspective, learning is not a passive transmission of knowledge from the teacher to the learner in a systematical manner. It is an active building process in which learners gain knowledge, modify it, and associate it with previously assimilated knowledge and make it theirs by constructing their meaning and explanation. Thus, learning is far more widespread than just acquiring knowledge. This view of learning as construction is like Levi-Strauss's concept of "bricolage" or tinkering, a "science of the concrete". Bricoleurs' concepts embrace theories by arranging and rearranging well-known concrete materials (Levi-Strauss, 1962).

Similarly, Okoro and Ekpo (2016) note that there has been an extraordinary call for the use of IT in instructional and learning processes both locally and internationally. Salehi and Salehi (2012) state that the amalgamation of ICT in educational processes is trusted as a medium in which several pedagogical and methodological theories might be executed; however, IT as a subject is more difficult and multifaceted as it needs a positive attitude from the teachers.

Additionally, Jager and Lokman (1999) study the impact of IT education on learners' learning process and future outcomes, where learners learn is determined by the type of education and the level they attained. Education makes learners get ready for the use of IT in schools, and occupations in the future, and socialization them to use information technology in their practical life. The IT as an "assisting tool" – Information Technology is utilized as an instrument, for example, doing assignments, collecting data and documents, and conducting research, and usually, it is applicable depending on the content that is being taught and practiced.

In addition, IT as a medium for teaching and learning refers to IT as an instrument and medium through which teachers can teach and learners can learn the tools and techniques of It and related concepts. It appears in many different forms, such as drills and practical exercises, simulations, and educational networks. It is also an instrument for management and organization in schools (Kommers & Moonen, 1995; Pilot, 1998; & SER, 1998). Furthermore, Jager et al. (1999) concur with the researchers by emphasizing the value of using a variety of teaching methods. Learners, parents, teachers, school administrators, IT experts, and the Government must know these and other influences of IT and its application.

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According to Ganyaupfu (2013), the main goal of teaching is to bring about a basic change in the learners. To allow the procedure of knowledge transmission, teachers should use proper teaching methods that fit the goals and results. Conventionally, teachers generally adopt teacher-centered methods to pass knowledge to learners compared to learner-centered methods. To date, there has been an overwhelming interest in ineffective teaching methods. The desire is to establish the impact of different teaching methods on learners' learning and growth. In the specific realms of information technology, there is a wide gap on what constitutes or represents effective teaching methods given that the field is relatively new. IT is an important educational field in the current world; however, if it is not taught properly because of applying redundant or ineffective teaching methods, it is unlikely for the learners and the country to perceive the potentiality of this specific field.

Similarly, Ganyaupfu (2013) observes that poor learner performance in most learners has always been connected to the adoption of inappropriate teaching methods; these are methods that do not efficiently impart the right knowledge to learners. In this context, Adunola (2011) explains that many studies on the appropriateness of teaching methods point to the fact that teaching quality is often seen by the achievements of learners. Teachers ought to be able to bring about desired impact in learners to bring about particular results. To develop an appropriate teaching approach or method; a teacher is required to evaluate multiple teaching strategies that identify the uniqueness the complexity of the subject to be taught.

Teaching is an endless procedure that is focused on producing the most appropriate results for learners. To achieve this, the methods applied by teachers must be fitting for the subject matter. In cases where effective teaching methods are applied, learners can respond favorably to the subject concepts and answer related questions in a unique manner (Adunola, 2011). Teaching approaches or methods have been categorized or ranked into two: the traditional approach which is referred to as the teacher-centered methods and the contemporary approach to teaching which has been identified as learner-centered teaching methods. Moreover, when concerning the teacher-centered methods, it must be noted that the learners simply obtain the subject content from the teacher without engaging them to build on the subject being taught. This strategy is theoretical and is, instead, focused on the development of the ability of the learners to memorize basic concepts and is more theoretical. The learners are not engaged in different activities that would encourage them to identify different issues in real life and develop specific solutions to these issues. The teacher is in absolute control and determines how knowledge is transmitted or shared in the classroom. To save time and develop a convenient approach, the teacher is likely to maximize the delivery of information while minimizing time and effort. In practice, it is highly unlikely that the teacher would improve the understanding of learners, and instead, it is highly likely that the learner's interest will also diminish. Identifying these weaknesses, it has been identified that a better approach that focuses on more aspects beyond dispensing rules and maximizing memorization should be developed.

To remedy the weaknesses developed or identified with the teacher-centered approach, a learner-centered method was developed. This is or has been identified as a supple learner-centered method that helps maximize practical teaching. The effectiveness of this method is because the teacher can encourage learner interest, analytical research, and critical thinking (Adunola, 2011). Nevertheless, the learner-centered approach is also keen on fostering enjoyment and fun, which is critical in ensuring or retaining an interest in the subject. The biggest support for this approach is because it excludes centralizing the movement of knowledge from the teacher to the learner. The strategy is also favored as it is goal-oriented behaviors driven among learners; thence the method is highly likely to improve learner performance.

Besides the two methods, a hybrid approach has been developed, identified as the teacher-learner interactive method. This method capitalizes on or combines both methods in the teacher-centered and learner-centered approaches (Adunola, 2011). The assumption is that the combination of both methods allows learners to remember better and also gain a practical look at the subject. The method encourages learners to be proactive in searching for information and research as opposed to the teacher developing a monopolistic approach to the teaching exercise. Since the teacher maximizes their experience and determines the most effective way of developing and imparting knowledge, they simultaneously are encouraged to research and develop a personal initiative to research. This method is regarded as the best or the most appropriate method of teaching. It capitalizes on learned experience by the teacher and also encourages practical and research orientation by the learner. The effect of this process is an effective learning process

and approach (Adunola, 2011). However, the debate on what method is best suited for teaching information technology in South Africa is continuing.

The foundation of these teaching methods or approaches is largely based on traditional methods. However, IT cannot be regarded as a traditional subject, in the same class history, sociology, or even mathematics. As a result, likely, the determination of the best approach to teaching the subject is still ongoing (Adunola, 2011). However, it is not one search that should continue forever as there is an immediate need to develop the requisite technology skills among learners. The risk of applying the wrong approach is based on two factors as established in this section; the first risk is diminishing learner interest in the subject of IT. A related risk is poor development of the subject among learners, which means they have the wrong foundation for further pursuance in postgraduate levels or as a career. The other risk is disinterested or demotivated teachers; adopting or using the wrong teaching approach is also likely to demotivate the teacher who will lose interest and then focus on only having the learners pass as opposed to imparting them with critical experience and abilities to critically think through the issue (Lindquist, 1995). This affects the quality of teaching and the motivation of teachers. All these effects combine to lower the standard of information technology studies or contribute to a declining interest in the subject, which should not be the case. This should and can be averted by developing the right teaching approach. This can be either the independent approach or a combined or hybrid teaching approach.

On the other hand, Lindquist (1995) in his research identified that a learner-centered approach is highly effective as this approach enhances great mastery of the content, rather than centralizing the movement of knowledge from teacher to the learner as a one-way channel. This was backed up by related research, which showed that teacher-centered approaches were responsible for poor learner performance. This was compared to the teacher-learner interactive approach, which leads to increased performance of the learners. Other numerous research initiatives as cited by Ganyaupfu (2013) indicate or support the idea that a combination of teacher-centered and learner-centered teaching methods leads to the most effective approach to teaching as can be seen in learner results. This is congruent with additional findings that show that methods that promote the interaction of teachers and learners during a teaching experience end up encouraging an educationally productive environment. This cannot be compared to the result when teachers monopolize the teaching experience by making it or developing a one-way transmission channel as is the case with teacher-oriented approaches.

Similarly, Ganyaupfu (2013) found that the mean score recorded for learner-centered approaches was marginally lower than that recorded in a teacher-learner interactive approach. Based on this research, it is evident that as far as teaching strategies are concerned; teaching learners by involving them is likely to lead to far better results than an approach where the teacher takes absolute control being responsible for all the teaching experiences. In the same vein, a teaching approach that ensures a full involvement of teachers and learners, and not only one party, which in this research has been identified as an interactive teaching approach, is far better than the other two approaches. The effectiveness of this approach is based on learner interest, developing critical thinking capacity, developing a practical approach, and lastly making the education process both fun and enjoyable.

Furthermore, Gide and Wu (2010) researched effective IT teaching approaches for international learners in Australia. This study involved IT teachers with an accumulated experience of 30 years. According to the study, the goal of the teachers is to develop a teaching approach that is aimed at producing a future professional workforce globally. Teaching IT is a challenging activity and to overcome these challenges, the teachers have tended to develop a constructive studying surrounding and adopt fruitful, comprehensive, and experimental teaching strategies. Even though the strategies adopted by these teachers consider the pedagogical differences as the learners are largely from China, the study proposes a workable approach that would be adopted in the South African context. The study identifies that the first step is to always invest in knowing the learner; knowing learners is a relevant step in enhancing the standard of teaching approaches. The introduction involves explaining to learners the teachers' knowledge areas and interests. On the other hand, the teachers may require the learners to introduce themselves and identify their strong points or explain any information or knowledge on the specific field.

In addition, Biggs (2003) asserts that this approach allows the teacher to prepare a course approach that is commensurate with learner needs. This encourages learners to be both physically and mentally present and enhances them to be more connected with their teachers and other learners for class engagement and deliberation. The other

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focus for the teacher is to identify any special needs; the teachers are or should be encouraged to develop unconventional teaching strategies that are promoted by conceptual frameworks on the specific subject. Teachers can motivate and persuade learners by applying an amalgamation of unconventional teaching strategies and nurturing the learners' self-esteem and confidence (Harrington, Flint, & Healey, 2014).

Further, Gide (2009) notes that IT is a practical subject and teachers must not only encourage learners to memorize concepts but also think critically of possible solutions. In this case, it is paramount to improve the learner's critical thinking, active and deep learning as well as problem-solving skills. Equally important to learners is developing an effective teacher-learner relationship or contact to improve the learners' communication skills. The contactor constructive relationship between the teacher and the learners is a critical factor in the learners' learning journey. In this case, teachers who have an open-door policy are seen to bring out the best in their learners. These teachers are seen to be very effective in encouraging problem-solving as learners are willing to reach out to them whenever they have issues or when they are preparing for presentations. This improves the quality of their output. The best teachers are not those who are available from seven to three, but those who are always available to provide the necessary feedback, support, and guidance. Beyond developing open communication and encouraging interaction, a good or effective teacher is also one who can motivate and inspire learners by applying interactive teaching techniques such as the use of DVDs, CDs, and Web-based videos and tutorials (Biggs, 2003).

Safdar, Yousuf, Parveen, and Bethlol (2011) carried out an empirical study to point out the appropriateness of ICT in teaching mathematics at the secondary level and they established that ICT is appropriate in teaching mathematics as juxtaposed to the conventional teaching methods. Ziden, Ismail, Spian, and Kumutha (2011), also carried out an empirical study and concluded that ICT has a constructive consequence on the education achievement of learners in subjects. The study endeavored to determine the excellence of achievement between the male and female respondents. The study pinpointed those male learners performed better than female learners. Carrillo, Onofa, and Ponce (2010) administered an empirical study on IT and learners' academic accomplishment, and they determine that ICT has a constructive consequence on the academic accomplishment scores in mathematics tests but did not improve academic accomplishment scores in language tests.

Sackey (1994) identifies demonstration supported by explanation and answers as the best means of practically oriented subjects like ICT can be taught. Sackey says that allowing questions from learners helps them to focus and clarify points. To ensure the effective use of demonstration as a method of teaching practical-oriented subjects identify five steps as follows:

- Speech should be clear, distinct, slow, and simple.
- Simple language should be used to suit the background of the learners.
- Any unfamiliar terms should be explained to learners.
- New ideas should be explained to learners; and
- Explanations should be repeated very well to suit individual learners.

Talabi (2003) argues that the demonstration teaching method allows the teachers to lay out objects in the class to assist them in teaching a specific topic. In this case, while the teacher is carrying out the demonstration, the learners perceive thoroughly and watch the teacher's actions. From time to time, the teacher halts the lead and directs the learners to do the same things he had done.

Tamakloe, Amedahe, and Atta (1996) explain that activity-based methods of teaching have to do with getting the learner involved in the lesson, and through a variety of activities the teacher helps the learner to apply the necessary skills, knowledge, and abilities acquired to solve problems. This implies that involving learners in teaching and learning helps teachers to transfer skills and expertise in manners that learners will fathom to recall and reflect and allows learners to participate actively in lessons.

Coombs (1995) states that role play is where learners perform a scene, in which is set by the teacher, he or she sets up a situation and learners are given different roles to play. He or she also gives some basic features of this type of teaching method as it must be realistic, precise, and concise. This teaching approach evolves the learners' innovative bodily ability and intellect as well as comprehension and compassion towards other people.

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RESEARCH METHODOLOGY

Research Design

For the present research, the qualitative research approach has been adopted to understand the way of teaching and learning methods in Information Technology (IT). This method included non-numeric data. The views were based on the streets and perceptions of respondents regarding IT, and its teaching and learning process.

Universe of the Study

The location of the study is in South Africa Kwa-Zulu Natal where some selected high schools have been selected to analyze the phenomena.

Sample Size and Techniques

The sample size of the study was limited to fifteen (15) participants. The reason behind the selection of 15 teachers is to reach the point of saturation. The sequential sampling technique has been adopted to reach respondents. The respondents of the study were the IT teachers who were teaching Grade-12 learners at different high schools..

Tools and Techniques of Data Collection

The data was collected through an open-ended questionnaire/interview guide. The face-to-face in-depth interviews were conducted with the respondents. The total time duration for the interviews was between fifteen minutes and twenty minutes.

Data Analysis

To analyze the data the thematic content analysis has been adopted, where the responses have been written /transcribed under the respective theme. Themes were developed after a review of relevant literature in a systematic manner.

RESULTS AND DISCUSSIONS

Teacher–Learner Interactions

Teacher and learner interaction was noted as an important theme for learners. In the 15 questionnaires returned, where 10 learners noted that teacher interaction is the most important aspect of facilitating IT learning in the classroom. Furthermore, all the learners gave an average of 7.5 when asked to rank how important teacher interaction and learner participation were in IT learning. A score of 7.5 was a high score underlining the learners' belief that they would learn better and would be more absorbed in the subject if there was unlimited access to teachers. There were no restrictions on what a learner should contribute to class and the teacher encouraged the learner's ideas while providing insight into the learner's ideas and contributions to their learning process. In terms of teachers, where the respondents; teacher #2 has stated that:

"One of the challenges, when I came here, was that learners were reserved. I had to change this and encourage learners to participate and actively interact with me. The reason is that learners have less likely knowledge regarding the IT".

Similarly, another respondent, teacher # 2 has also found that:

"Learners take time to adjust with the teachers. Once they understand and connect with them, they become very involved and eager to perform well in the IT subject. They share their ideas and communicate more confidently once they get confidence-building with their IT teacher".

The IT subject is more likely dependent on the level of interaction between teachers and learners. In this regard, a teacher # 3 participant has stated that:

"IT learners are mostly extroverts and are willing to know more from their teachers, they enjoy every bit of the lesson and interact frequently with their teachers".

On the other side, the same points have been given by teacher #1 and stated:

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"Learning becomes fun, and teachers teach with enthusiasm and passion when there are good teacher-learner interactions in a class. This way of teaching enhances the student's confidence and interest in the subject matter".

The teachers noted that there was an obvious improvement in material synthesis and general performance among the learners in IT. More so, the learners were more concerned with the practical aspect, always desiring to visit the laboratory as opposed to accessing and revising past exams and the overall assessments to improve their exam scores. In the response, teachers #1 and teacher #3 also identified that the success in the introduction of IT in their respective subjects has been shaped by encouraging the learner's ideas and this has eased the adoption process.

Furthermore, respondent teacher #3 stated that:

"IT learners are mostly extroverts and are willing to know more from their teachers, they enjoy every bit of lesson and interact frequently with their teachers".

In addition, Teacher # 4 commented that:

"Learning process in the classroom becomes easy and fun when teachers give their full enthusiasm and passion".

The teacher noted that there was an obvious improvement in material synthesis and general performance. More so, the learners were more concerned with the practical aspect, always desiring to visit the laboratory as opposed to accessing and revising past exams and assessments to improve their exam scores. Teacher #1, teacher # 4, and teacher

a#3 also identified that the success in introducing IT in their respective subjects has been shaped by encouraging learner ideas and this has eased the adoption process because this subject requires interest and clear concepts.

Learners' Numbers

In the interview with teacher # 6 who oversees teaching IT to Grade 12 learners, has stated that:

"Even though many factors were responsible for dismal learner performance, the resources were strained, especially the teacher's ability to cover all learners, because all 40 learners were in the laboratory at the same time".

Furthermore, teachers # 8, 9, and 10 have similar views and found that:

"*The high number of learners in a class especially during practical prevents teachers from identifying individual problems of learners and thus affects their performance. The subject of IT requires practical knowledge regarding formulas and techniques*".

This information revealed that the teacher's ability to deliver to the learners was constrained by their ability to monitor the progress of each learner during their practical lessons in the computer laboratory. During the researcher's observation and attendance of an in-class session, it was clear that the small learners' numbers allowed the teacher a chance to focus on the progress of each of the learners. This made the learners feel they were participants in the class and not merely recipients of teachers' knowledge. This is because the teacher spent time with each of the learners and listened to the learners' interests and involvement. The response of teacher # 10 found that:

"The practicing in smaller numbers improved their interaction with the teacher. It also allowed the learners a chance to express their thoughts and intentions in a rather personal manner".

When learners communicate with their teachers in a friendly manner, they can also communicate their challenges and problems. This was important in retaining their interest in the subject matter. Therefore, small numbers were seen to encourage teacher-learner contact at high schools.

Teachers' and Learners' Attitude

The learning depends on both teachers' and learners' positive attitudes toward learning IT subjects. One of the participants, teacher # 12 found that:

"It was obvious that the teacher's attitude was important in developing an effective learning environment in the class and that gave learners the ability to share their view in class".

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The majority of the teachers were optimistic regarding the attitude of teachers and learners which are interdependent. Notably, all the teachers besides teacher # 2 doses do not have elaborate training on IT or ICT applications in school. Rather, it was the interest they had in learning and applying IT in their teaching and learning environment that drove them to research, develop materials, and engage their learners in learning about and with technology.

Similarly, teacher # 1 stated that:

"I never went through any form of IT training; however, my interest was in IT and the demands of the school prompted or drove me to enroll in school to teach IT".

Moreover, the majority of teachers have stated that learners who are more likely interested in IT are more enrolled in the course. The IT has more application in all the subjects, where a teacher # 10 has stated that:

"IT has a great interest in applying IT education in improving in-class solutions and in teaching his respective subjects".

Furthermore, teacher # 11 has stated that:

"I have suitable exposure to higher-level education, and I developed a passion for technology and its application in teaching different languages".

Learners' attitudes are very important in other to take the subject IT in their career. In this regard, teacher # 12 found that:

"*At the age of school, I was more interested in IT-related subjects and I have also exposure due to my elder brother was IT engineer*".

The attitude that IT teacher has developed a keen interest in her learners who are currently using the school's IT infrastructure to access notes, pose questions and also interact with a colleague, teachers, and fellow learners.

Based on the interviews and opinions of teachers regarding the concerning learners, the learners have also noted that their present above-average performance has improved in the past year, in the Grade 12 class. This is because they have had the teaching approach altered and the teacher interaction has been changed to and more friendly and application basis with the help of IT. In addition, teacher # 8 found:

"The overall improved interaction, enhanced instruction, and improved participation in class has improved their attitude and this has contributed to improved performance".

As a result, the majority of learners involved in the study cited that they were confident in their skills and were certain of being competitive after living in high school. A similar positivity was shown by the teachers who cited that they were certain the learners had all it takes to compete in the global and technologically oriented world.

FINDINGS

The findings of the study showed that a teaching method is effective in overall facilitating the assimilation of knowledge and methods. Similarly, Adunola (2011) found that it was evident that a hybrid system that capitalizes on or combines both methods in the teacher-centered and learner-centered approach is the most effective method to enhance the learners' skills and ability in the field of IT. The results of the majority of the respondents have stated that combining a method that encourages the learners to participate in classroom activities, which is the case with a learner-centered approach, and a method that focuses on the brilliance and knowledge of the teacher, as is the case with a teacher-centered mechanism, bring the best from both parties. Such methods identified as a hybrid system encourage learners to be proactive in searching for information and research as opposed to the teacher developing a monopolistic approach to the teaching exercise.

At the same time, a hybrid approach also encourages the teacher to maximize their experience and determine the most effective way of developing and imparting IT-related knowledge and skills. Throughout this research, the Grade 12 learners that the change in approach from one where the former teacher had focused on their abilities and relegated the role of learners or students to participants had affected their learning and interest in the subject matter of IT. However, the introduction of teacher # 2 and the new methods that encouraged the learners to participate in

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the class had brought about a change in the manner learners perceived the course and had spurred their interest in the field of IT. Similarly, Adunola (2011) stated that a hybrid system is functional if what the teacher applies, by encouraging input from learners and leveraging his expertise and knowledge in the field brings out the best from both the teacher and the learner.

In teaching and in developing a proper learning environment, the right attitude from both the teachers and the learners is an important factor that facilitates the learning and teaching methods. Additionally, Hart and Laher (2015) identify that teachers in educational situations are critical partners and it is impossible to teach or learn without their full participation and dedication. Studies have further recognized that age is a major issue in the level of IT adoption in schools; the older generation of teachers is unlikely to appreciate or involve IT in their teaching and learning environments. This is because these had no exposure to IT environments and did not receive requisite training thence, they continue to apply traditional teaching and learning methods. However, one aspect has altered the orientation of these teachers, the right attitude. Furthermore, teachers need to develop a need to update their skills and perceive the needs of learners, and want to meet these needs. Attitude is also important in determining the extent to which teachers apply themselves in educating or catering to various learner needs. teachers # 1, 10, and 11 have a similar view that pre-exposure is a very much important factor that enhances the student's motivation towards adopting IT-related subjects. Most of the learners were those who have a background in IT in their circle.

Looking at the case of the target high school, the teachers have developed their instructional materials and are also involved in personal development programs as is the case with teachers # 1, 2, and 11 who are averagely older than the rest of the teachers. Teacher attitude thus emerges as an important aspect in enhancing IT education as it fuels research and curiosity on the needs and demands of the learners and the teacher is dedicated to developing solutions that meet these needs. Similarly, a positive teacher attitude is seen to produce a similar attitude in learners. This has created a desire to learn among learners and each of the learners where they have what it takes to make it in a technologically reliant world. The results of teachers revealed a positive attitude from the learners towards the learning of IT and related subjects. The learners seemed jolly when the time for the practical class in the laboratories came.

Moreover, they were organized, and one could see the smile on their faces which indicated to the researcher that they were glad to be taking part in the class. Another observation was on class participation. There was free teacher-learner communication. The simple coding exercise presented a challenge to several learners; they were not reluctant to ask for teacher # 2 to help the learners learning process. The teacher responded enthusiastically and appeared happy to help. These indicators pointed to a cordial and mutually positive study environment. This would not be the case if either of the parties; the teacher or the learner had a negative attitude that harms the learning of IT, because the important factor is the positive attitude towards learning of IT and its application. The attitude thus emerges as a strong factor in developing or enhancing IT education. IT is a subject that requires constant interaction among the learners especially when it comes to the practical aspect. A poor or negative attitude harbors this connection, and this affects delivery and as a result, some learners lag. The target high concentrating on school interaction of learners and the teacher characterized the way a learning atmosphere should be cultured to capitalize on the teacher's knowledge and the learners' potential. Ultimately, there is a positive correlation between teacher and learner attitude and IT education or improved IT learning process among the Grade 12 learners.

CONCLUSION

It is found that the effective use of the demonstration method, role play, and other methods in the teaching of IT has benefited both the learners and the teachers at the same time. It has improved learners' involvement and interest in IT-related subjects as well as their performance in the subject. Effective teaching and learning do not only depend on good lesson plans, well-presented lessons, and the use of teaching and learning materials but solely depend on the teacher's ability to identify the behaviors of learners that affect the teaching and learning process either positively or negatively. A change in attitude toward the major players above is also necessary for solving the problem under study and encouraging the learners of Information Technology to be independent to increase their general ability.

This study determines the method applied to teach IT in some selected high schools as part of the teaching and learning approaches employed in developing IT education in South African high schools. This study involves the best

approaches to improve the teaching and learning of information technology. The study identified general approaches to imparting knowledge that improve the learning environment. This is where both the learners are encouraged to contribute to class and the teachers also take control of the teaching exercise, delivering and sharing their knowledge and experience with the learners. This is driven by a need to improve the preparedness of learners to compete in the modern job market.

IT knowledge is a must in modern education whether in high schools or tertiary institutions and this has been acknowledged by the Department of Basic Education in South Africa. The challenge is that the IT curriculum is not continually updated to reflect current changes, yet this is required due to the dynamic nature of the subject matter. Therefore, to provide relevant knowledge, a large burden falls on teachers to develop necessary educational materials while pursuing the goals of the government policy documents. This is only possible in certain schools which have been able to develop and elaborate IT infrastructure. These schools have also been able to develop a sound teaching fraternity that has the right knowledge, fosters personal development, and bears the right attitude. As a result, these teachers have invested in a teaching and learning approach that is focused on bringing out the best in their learners.

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