Educational theories, methodologies and technology integration in the classroom

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ABSTRACT

This paper reports on educational practices in which behavior is shown to be shaped and maintained by its reinforcing consequences rather than elicited as conditioned or unconditioned response to introduction of technology tools to enhance teaching and learning. The paper reflects on the findings of 500 schools’ research project conducted in five provinces of South Africa. This project was conducted to address a South African primary schools’ underperformance in grade 3 and 6 mathematics, home language and first additional Language with the purpose of coming up with an intervention strategy to assist the sampled schools. In the research conducted the implementation of technology tools favored a shift to a more constructivist way of critical thinking about teaching both grade 3 and 6 language and mathematics content. However, results in this study revealed a mixture of many proponents for a blending of the two theories when it comes to technology integration in the teaching of these subjects. For some teachers it remains to be seen how these theories will be centralized as more teacher preparation for better performance of the subject they teach while existing conditions challenge the integration of technology to improve performance in their classrooms.

Keywords: Behaviorism, Constructivism, technology tools, mathematics, home language, first language

INTRODUCTION

The two predominant educational theories that form the basis of many of the present day technologies are behaviorism and constructivism. [4] defines behaviorism as a theory of learning based on the idea that all behaviors are acquired through conditioning. Conditioning refers to interaction with the environment within which the phenomenon takes place. According to the behaviorists, the educational practices of teachers in schools in response to a rural or urban environment are shaped by their actions. For example the use of technology tools in teaching in an urban setting is highly favored than in a rural environment by teachers although it would highly benefit both teachers equally. Teachers in urban settings greatly benefit from the use of technology as it is identified as modern and easy to handle. However an observable reluctance on using technology prevails with the rural community teachers. [4] asserts that it is a belief from behaviorists that any individual can be trained to perform any task, regardless of genetic background, personality traits, and internal thoughts when correctly conditioned. [7] aver that an individual may select one response instead of another because of prior conditioning and psychological drives existing at the moment of the action. For example, teachers have been using chalk and talk in the classroom, writing on worn out chalkboards such that they were conditioned in that action of teaching. Although teachers were aware of the availability of new technology tools in the
school in which this study was carried out, they had never shown interest in acquiring the necessary skills on use of computers and projectors prior to being participants in the project. Consequently, teaching and learning of some subjects like languages and mathematics suffered adverse conditions because of negative enforcements from some teachers. The lack of adequate textbook resources for both languages and mathematics added to this performance injury as learners had no reference material to read and does homework task to substantiate their classroom understanding.

While [10] laid out a vocabulary and theory for functional analysis of verbal behavior, the author took the view that humans could construct linguistic stimuli that would then acquire control over their behavior in the same way that external stimuli could. Behaviorism always takes a functional view of behavior. The lack of training and support system for teachers in schools on how to use computers leaves one wondering whether the department of education as the custodian of computer provision in schools puts a valuable learning investment into their use. Human learning as the acquisition of new behavior which is a new universal learning process, that focuses on objectively observable behaviors as defined by [11] and [10]. The present day’s learners always get motivated when technology is integrated in the classroom. On the contrary the lack of exploitation of available technology in the school in which the study was carried on can be associated with fear of training and support system for the teachers. This kind of behavior confined the teachers to be reliant on a few available textbooks when teaching language as it is practically impossible write comprehensions and massive explanations when teaching language on the chalkboards. Learners in this situation find themselves wanting to own textbooks so that they can extend their learning skills beyond the classroom. This technophobia behavior deprives learners of valuable learning skills that would enhance and retain knowledge while connecting and applying it to their real world situations. The disadvantage of relying on one chalkboard in a classroom is the fact that at the end of each lesson, the chalkboard must be erased in preparation for the next lesson. This usually happens before learners get enough time to copy text written on the chalkboard. Negative behavioral instincts also develop among the learners where they then give up on knowing and understanding taught content since they cannot refer to anything after the available slate has been wiped. However training teachers on using projectors and computers would enhance teaching learning, allow teachers to cover more work in less time, and improve the performance of learners in all subjects.

**LITERATURE REVIEW**

[5] assert that technology is part of teacher’s toolbox and is among the resources that can be used by a teacher to facilitate learning in a classroom. Although technology has even changed dramatically over the recent decades, expanding this toolbox and opportunities to use various forms of technology, some teachers in mostly rural schools still have fear of using technology. Also the installation of computers in schools without accessibility to internet closes innovation on exploring different kinds of knowledge and confines the tool to just a technical quiet device that cannot enhance teaching and learning. Thus as much as the initiative of supplying computers to many schools in South Africa, the department of education must commit to provide training of teachers, support systems and access to internet for maximum exploitation of such a facility. Schools that are not well secured to keep computers also invite the criminal component to disturb the good intention of such an investment into teaching and learning. The beauty of this departmental computer provision initiative can therefore not be exploited to the full if the items cannot be fully secured. The principals as accounting officers to the department develop a personality disorder while trying to secure the computers under lock and key in their offices for
security reasons. Thus innovative able teachers on technology use cannot exploit the use of computers since their security downplays the educational requirement.

While governments, education systems, researchers, school leaders, teachers and parents consider technology to be a critical part of a child’s education [5], technology cannot replace teachers. [2] argue that, although learners might have been born into a technological rich world, they may not be avid and skillful users of technology. It is therefore necessary that meaningful development of technology based knowledge skills are developed amongst both learners and teachers for a positive influence of their participation in society. [5] further suggest that teachers should aim at embedding technology into their pedagogy in the classroom to support the teaching and learning process in spite of all prevailing circumstances. This would then place technology as an integral part and enable a learning experience for teachers to teach and learn together with learners. With teachers being at the front line of designing and delivering the learning experience, the role and expertise of teachers becomes very critical.

THEORETICAL FRAMEWORK

The theoretical underpinnings of this paper lie with the constructivist theory and the behaviorist theory. According to [3] teachers should intervene to help guide learners with the structure of the learning process using learners’ prior knowledge and previous [3] further argues that “Practice in discovering for oneself, teaches one to acquire information in a way that makes that information more readily viable in problem solving” pp 26. [6] distinguishes between (i) readiness where instruction must be concerned with the experiences and contexts that make the learner willing and able to learn, (ii) spiral organization where instruction must be structured so that it can be easily grasped by the student, and (iii) going beyond the information given in which instruction should be designed to facilitate extrapolation and or fill in the gaps in the learners’ knowledge skills. Moreover, [9] asserts that visual activities with computer programs can be an essential component to help learners see how concepts apply to real-world situations. According to [1] the retention of learning is within a pyramid where learners receive, participate, and act on what they have learnt.

On the contrary, learners behave and learn in particular ways. Behaviorists believe that learners’ behavior is driven by external stimuli that interact with previously conditioned patterns of response [8]. Coupled with this behavior is mental-operations, by which the learner perceives and processes information, making associations characterized by prior knowledge, attitudes, and sentiments. This paper reports on educational practices in which behavior is shown to be shaped and maintained by its reinforcing consequences rather than elicited as conditioned or unconditioned response to introduction of technology tools to enhance teaching and learning.

METHODOLOGY

The paper reflects on the findings of 500 schools’ research project conducted in five provinces of South Africa. This project was conducted to address a South African primary schools’ underperformance in grade 3 and 6 mathematics, home language and first additional language with the purpose of coming up with an intervention strategy to assist the sampled schools. This paper reports on the second phase part interventions with five focus groups in a primary school in Bizana district of the Eastern Cape province in South Africa. The first phase was characterized by part engagements with those focus groups on challenges faced by the school in educating the child as a whole. This is a result of ethical clearance granted to all the focus groups involved in the’500 schools project: “Making schools Better” under the jurisdiction of Unisa for five Provincial Education Departments of the following provinces: Limpopo, Eastern Cape,
KwaZulu Natal, Mpumalanga and Free State together with Department of Basic Education (DBE). Data was collected by Unisa lecturers through focus group interventions on reported challenges in the initial phase implemented with the grades three and six learners in the primary school in question, the parents, the teachers, and the school management teams (SMTs). This paper specifically reports on the intervention processes implemented with grade three and six teachers in the school addressing the teaching of language. Educational Technology in the form of a computer as a combination of the processes and tools involved in addressing educational needs and challenges was used to address a specific question from one of the teachers: How can you teach a dialogue to a grade three learner? This paper specifically responds to the research question: How do teachers’ behaviors, methodologies and integration of technology tools in instructional practice in the classroom reflect on the grade 3 and 6 teachers’ language teaching? Semi-structured interviews were conducted with six grade 3 and 6 teachers who were participants in the study.

DISCUSSIONS

In an effort to address the teacher’s question, the researchers probed further questions to the grade 3 and 6 teachers. At first we were of the opinion that the teachers new nothing about ‘What a dialogue was’. But through the interviews, one teacher said: ‘How do you write a dialogue on the chalkboard for the learners? Our chalkboards are not up to standard, they are unusable, broken and the shiny such that information written on them is not clear to learners’.

At this stage, information literacy and visual literacy became the option. Usually in challenging school deficient situations, it helps to demonstrate for the teachers. Also the belief that in learning machines, behavior can be monitored while reinforcements are delivered was a necessary demonstration of a behavioral modification. Figure 1 illustrates the percentage literacy of the teachers in the school.

![Figure 1: % Literacy of the teachers](image-url)

From the above diagram it can be noticed that 70% of the teachers were computer illiterate. They did not believe in “learning machines” (computers). During the researchers’ demonstrations on how to use and create a script on a dialogue, teachers got excited and remarked:

‘Everything done so easily without waste of time….

‘Yhoo….. I wish that I could use this in my classroom daily, Yhoo I can’t wait to learn how to do this it looks so easy’

‘But now how do I get my learners to see all this?’ This was a question from one of the elderly teachers. It was at this instance where one of the younger teachers disappeared from the scene and returned with a dust covered never used projector, wiped it and set it on. This was quite fascinating for all the other teachers. The researcher then explained that projection in the classroom could be done on the wall in the absence of a projection screen.

‘But the screen is always lent to the district circuit office for projections of their discussion meetings I never knew that we could use it in our classrooms.’ So now how can we use this information on the dialogue you created for us in my classroom? It would be nice for my learners to have this information.
The excitement and enthusiasm read out of the illiterate teachers’ faces evidenced the change of anticipated behavior in the classrooms on their learners’ performances together with their learning behavior.

The observed shift from despondency management skills and trust between teachers together with the casual attitude of not paying attention to development strategies for reinforcement of learning has been challenged in this paper. This was replaced by a combination of both constructivist and behavioral actions where teachers’ personality was geared into enabling learners to construct their knowledge. This became evident as the teachers appreciated the knowledge of how they could use technology to simplify and break the difficulty of dependence on non-existing textbooks and downgrading rural conditions under which they worked.

CONCLUSION

The care, safety and accountability to the department of education in any school, is the principal. While the principal in this school was authoritative and reluctant to allow teachers to use the available computers and projectors in the school for learning reinforcements in their classrooms, the integrations of the behavioral and constructivist teacher actions observed, broke the possession without use disorder behavior. Nonetheless, for some teachers it remains to be seen how these theories will be centralized as more teacher preparation for better performance of the subject they teach while existing conditions challenge the integration of technology to improve performance in their classrooms.

REFERENCES


