

Chapter 6

Teaching Approaches of High School Teachers in the 21st Century: Fostering the Cultivation of Self-Directed Learning for Computer Science Education

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ABSTRACT

Despite social, historical, and cultural diversity, as well as poor educational attainment amongst high school learners, South African higher education is undergoing a digital revolution that fosters the cultivation of self-directed learning. This chapter contends that self-directed learning should not solely prioritize the accomplishment of tasks and the instructor's oversight of task completion. Instead, it should be centered around empowering learners to critically examine established conventions. Studies have demonstrated that learners from underserved regions are at a disadvantage when they enroll in higher education because they lack digital technology skills, which limits their level of critical thinking in problem-solving. The chapter further seeks to assist teachers and education policy makers in South Africa to keep up with the new pedagogical approaches that are suitable for 21st century learners and should enhance self-directed learning.

INTRODUCTION

Literature has witnessed that digital technologies have permeated society to the point where their use in everyday life and education is nearly unavoidable (Meintjes, 2023; Oki, Uleanya, & Mbanga, 2023). This suggests that a re-evaluation of teaching and learning approaches in high schools is necessary,

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with an emphasis on implementing teaching methods that foster self-directed learning. Furthermore, the field of computer science is characterized by continuous growth, making it imperative to conduct an analysis of the potential benefits that these innovations may bring to the educational landscape (van Heerden & Mulumba, 2023). Literature further revealed that numerous research has been undertaken on the educational benefits of online learning technologies for enhancing student learning beyond the classroom (Nuryatin, Rokhmansyah, Hawa, Rahmayanti, & Nugroho, 2023). ICTs and social media for educational purposes is a concept that is not only riddled with difficulties but also possesses enormous unrealised potential globally and, more especially, in South Africa.

As time goes on, classrooms in the 21st century will become more like laboratories. Thus, teachers in South Africa are strongly urged to enrol in additional ICT short courses to meet the growing need for digital technologies among learners. This is essential for both widespread computer science education and international efficiency, and autonomous learning. Moreover, Olivier, Oojorah and Udhin (2022) argued that teachers need to experiment with new teaching and learning approaches which in this case includes: self-directed learning, which will encourage critical thinking amongst learners.

In addition, the study conducted by Widodo, Gustari, and Chandrawaty (2022) posited that teachers' professional competence, perceived advantages of information and communication technology (ICT) utilisation, and teacher collaboration significantly impact teachers' attitudes towards implementing self-directed teaching approaches through the integration of technology. Teachers in South Africa still need more digital technology training from the Department of Education if they are to appropriately educate learners for the digital age (Dlamini & Mbatha, 2018) and if they are to be motivated to adopt more positive perceptions towards self-directed learning. This will assist South African learners who are currently in the process of applying to colleges and universities which are highly characterised by self-directed learning. Hence, will serve to close the gap between urban and rural educational facilities. As a result, most universities in South Africa now refer to their students as digital natives, putting significant pressure on high schools in the country to provide learners with the skills they will need to thrive in the digital age.

The Motivation of the Chapter

There is a need for more authentic critical literature in which the authors produce writing that is beneficial to the context in which the writer is working. This suggests that high school teachers, education stakeholders, learners, and students will not be disadvantaged by their background, ethnicity, or culture, but rather will gain from the project and that it is important to inspire and motivate them as they venture into self-directed learning through the use of digital technology (Pischetola, 2018). On the contrary, a lack of proper teacher training in South Africa for digital technology may also contribute to a decline in self-directed learner motivation. This chapter discusses the teaching approaches of teachers through digital technology that foster the cultivation of self-directed in South African high schools.

Henceforth, it will be necessary to bridge the gap in knowledge for digital technology for high school learners. This will partly be achieved by looking at the holistic development of the learner through the lens of the constructivist theory. Thus, by looking at the personal, social and the professional rationale of teaching. This chapter will discuss the literature in the field of digital technology and how digital technology fosters the cultivation of self-directed learning. Furthermore, explores teaching and learning approaches of matric teachers that foster the cultivation of self-directed learning.

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