Self-directed learning in primary schools in Limpopo province

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ABSTRACT

Self-directed learning is an increasingly important subject in education globally. The purpose of this study was to explore how primary school teachers in Limpopo Province support learners to develop and use self-directed learning in environmental education. A qualitative approach and interpretive paradigm were employed. Rhizomatic learning was used as an approach through which the study was explored because it concurs with self-directed learning that learning is intrinsic while the use of technology is key. Participants were purposively selected. Data were collected through interviews and participant observation. Data were transcribed, processed, and coded to build a theme; thematic analysis was therefore used. Results showed that there were two computers at the school, a free wireless network, and one teacher used Google to search for information. Challenges were that the teachers lacked the skills and knowledge to support learners to develop and use self-directed learning, and there was a shortage of educational technologies for the teachers and the learners. The paper communicated the conclusion and recommendation.

1 INTRODUCTION

Self-directed learning (SDL) is an increasingly important subject in education globally (Michalsky & Schechter, 2013). However, there is a problem. Van Deur and Murray-Harvey (2005) point out that there is insufficient data present to inform the leaders in education and educators on how to successfully support learners' advancement to become "self-directed learners" in South Australia's primary schools. On the other hand, there is limited data on the application of information communication technology (ICT) in the teaching and learning context in South African classrooms to enable engagement with SDL (Padayachee, 2017) and there is a lack of empirical research with the emphasis specifically on supporting students inside the schools' contexts (Merki et al., 2021). It is known that self-directed learning is implemented

in schools because literature indicates that several German schools have adjourned teacher-directed learning (TL) to SDL courses (Schweder & Raufelder, 2022). Also, Song (2021) points out that leaders in the curriculum should be proactive and spell out key aspects, amongst others, technology, and learning processes, to promote self-directed learning. What is not known is how SDL can be enhanced in primary schools since there is a lack of empirical research on supporting learners inside the classroom environment (Merki et al., 2021; Padayachee, 2017). This therefore calls for more empirical research to be conducted at the primary level to inform the primary school teachers on how to assist learners to acquire SDL skills. Primary school teachers should be able to support learners to select, design, conduct, and assess their own work without any assistance from the teachers. This might require the learners to have knowledge and skills in environmental education (EE) and literacy in technology which then brings a concern because there is insufficient research to guide the teachers to assist learners to become self-directed learners.

SDL is associated with many terminologies that make it difficult to define (du Toit-Brits, 2018), including terms such as heutagogy, autonomous learning, independent learning, lifelong learning, self-direction in learning, self-initiated learning, self-plan learning, self-regulated learning and self-teaching (Biggs & Tang, 2011; Chang, 2012; Jagels, 2020). Despite SDL being associated with several terminologies, du Toit-Brits (2015) describes it as a learning approach in which an individual participates in SDL tasks while not within the school premises. This suggests that the learner learns independently while in any place that may not be formal. Commonly, a self-directed learner is one who chooses the content he or she wants to learn (Jagels, 2020). Therefore, SDL affords the learners an opportunity to take part in their education by designing tasks and learning in non-formal schooling contexts, which may include homes, work environments, and/or community halls. The SDL concept was preferred for use in this study. There is insufficient research that has explored how teachers support learners to develop and use SDL skills when teaching EE in primary schools in the Limpopo province. Therefore, the purpose of this study was to explore how primary school teachers in Limpopo province support learners to develop SDL skills when teaching EE. The study sought to answer the following research question:

- How do teachers support learners to develop and use self-directed learning skills in EE in the Intermediate Phase?

2 BACKGROUND

Schweder and Raufelder (2022) point out that several German schools have adjourned TL to SDL courses. Dalland and Klette (2016) mentioned that SDL forms part of educational aims in various national educational policies, including Norway's policies. Padayachee (2017) is of the opinion that integrating ICT in teaching and learning is generally regarded as an answer to the problems faced by South Africa's education system. However, integrating ICT into education was not successful due to inadequate operational, strategic, and pedagogic

problems (Padayachee, 2017). The author further mentioned that resolving strategic and operational problems requires consideration of the present use of ICT in schools while there is limited data on the application of ICT in formal settings. It is worrying that the teachers who are supposed to play a key role to support the learners to develop and use SDL are not well trained themselves. This means learners are disadvantaged because the teachers who are key players in assisting learners to acquire SDL skills are in the dark.

The education system in South Africa showed interest in the use of technologies in schools. It is indicated in the Curriculum and Assessment Policy Statement (CAPS, 2011) for the Natural Sciences and Technology subject that technological methods such as the identification of needs, designing, and planning should be used. This suggests that teachers should know technological methods to support learners to develop and use SDL skills. This is confirmed by Lunyk-Child et al. (2001) and Powerschool (2022), who advocate that educators play a key role to assist students to develop and use SDL skills. However, the situation on the ground does not provide positive evidence. There are scholars that indicate primary school teachers as key role players in assisting learners to develop and use SDL skills by offering assistance to learners more than once (Lunyk-Child et al., 2001; Schweder & Raufelder, 2022) In the case of SDL, the learners should have the capability to design, conduct and assess their own learning activities independently (Gencel & Saracaloğlu, 2018; Guglielmino, 1978; Knowles, 2016). However, that relies on learners' ability to support and monitor their learning (Pressley, 1995; Reeve, 2006), suggesting a concern of whether learners are able to do what is expected of them successfully. This is because it is assumed that learners should have the knowledge and skills to design and manage their learning activities with the assistance of teachers. The issue is that the teachers do not have the capacity to assist the learners. This raises the question: How can learners succeed without being assisted since the teachers are not capacitated?

As for this study, the learners should have the capability to design, conduct and assess their own learning activities in EE independently. What is key in this study is to explore how the teachers supported the learners to develop and use SDL in EE. This research is conducted because in the view of the researcher, as supported by Gencel and Saracaloğlu (2018), educators who were produced by the old education system cannot succeed in bringing up a lifelong cohort of thinking skills of a high level, suggesting skills that should include SDL. On the other hand, as early as 2004, the Department of Basic Education published the White Paper on e-Education "(transforming learning and teaching through information and communication technologies (ICTs)" (Department of Basic Education, 2004, p. 3). The White Paper stipulates objectives that include: ICT professional development for management and the teachers, electronic content resource development and distribution, access to ICT infrastructure, connectivity, community engagement, research, and development. However, the department does not seem to have successfully implemented the White Paper in question. While this disables teachers from assisting the learners to use electronic pedagogy it also disadvantages the learners to catch up with the technological learning trends that are taking place worldwide.

2.1   Role of technology in self-directed learning

Generally, SDL is assumed to enable intrinsic learning that is enabled by technologies. SDL is assumed to be facilitated through technology (Brandt, 2020; Song, 2021). Technology is viewed as a fundamental tool in this world that is experiencing technological expansion (Poromaa, 2013). Brandt (2020) highlights that currently for people to continue in the work environment, they must know ways of being responsible for their learning, which includes planning, developing, adapting, and changing in a digital, interactive, and global society. Geng et al. (2019) suggest that SDL has the tendency to explore online learning platforms to access resources. Their view concurs with Geng et al. (2019) when mentioning that leaders in curriculum might be required to wisely spell out key aspects, amongst others, technology, and learning processes, to promote SDL.

It is subsequently assumed from the above discussion that for SDL to be effective, it should be facilitated through educational technologies. SDL seems to be one of the key skills in this era to address the skills of the 21st century and the Fourth Industrial Revolution (4IR) and to address today's education needs. The outbreak of the coronavirus pandemic (Covid-19) was a wake-up call for the nations that SDL is key in education. Technology should drive education.

2.2   Significance of self-directed learning in education

The outbreak of Covid-19 was a great lesson that in the 21st century and during the 4IR, SDL is significant in education. The discussion in the preceding section shows that technology plays a fundamental role as an enabler of SDL and also for online learning. Worldwide, governments quickly shifted to online learning (Dhawan, 2020) using synchronous and/or asynchronous education technologies that included laptops and mobile devices for learners to learn from home during the lockdown periods. This suggests that SDL could minimise teaching and learning challenges during trying times and even in the future when unprecedented natural hardships might impede face-to-face teaching and learning, suggesting therefore that SDL is significant in the era that we live. Teachers have been playing a key role in guiding learners remotely, especially in countries where learners had such technologies during the Covid-19 lockdown (Putri et al., 2020). This is in agreement with Lunyk-Child et al. (2001) and Powerschool (2022) on the point of primary school teachers' fundamental role in helping the learners to develop and use SDL. This shows that a shift from face-to-face to online teaching and learning was viewed as a solution (Hodges et al., 2020). It is imperative for primary school teachers to be technologically developed in order to be relevant in their current work and to guide learners appropriately.

3   THEORETICAL APPROACH

du Toit-Brits (2018) points out that SDL is characterised by various terminologies that make it difficult to define it. The lack of agreement on its definition and internal consistency in

scholars' views seems to hinder the likelihood of developing a clear theory of self-directed learning.

A rhizomatic learning approach was employed in this study because it is viewed as a heutagogical method (Deleuze, 1995), meaning learning is an intrinsic process and is sometimes referred to as SDL. Chan et al. (2019) highlight that heutagogy heartens SDL while it is assumed to enable intrinsic learning that is facilitated by technologies. This concurs with a study that was conducted in South Australian primary schools that illustrates SDL comprising internal and external inspirations (Van Deur & Murray-Harvey, 2005). Information and communication technologies are key in an intrinsic learning process (Bozkurt, 2019). This means the school in question should have technologies for both the learners and the teachers to enable intrinsic learning and therefore SDL. This would enable the teachers to assist learners to acquire self-directed learning skills hence this paper has used rhizomatic learning because generally SDL is facilitated by technology (Dhawan, 2020; Song, 2021).

The rhizomatic approach is currently fundamental because technology is critical in education, especially in teaching and learning, and assessment. It therefore serves as a central point for intrinsic learning, the heutagogy method, and online learning, and therefore it encourages SDL anywhere at any time. This approach encourages learner autonomy requiring learners to take charge of their learning which again is aligned with SDL. On the other hand, this approach was deemed relevant to this study because it was conducted in the middle of a pandemic which is Covid-19 in which schools required SDL to continue with teaching and learning.

4   METHODOLOGY

A qualitative research approach and interpretive paradigm were employed that guided the way data were collected, analysed, and interpreted to ensure the trustworthiness of the results (Rubin & Babbie, 2013). A single case study was employed. This study is based on a project that was implemented in a rural area of the Limpopo province in a village with one primary school. This is one reason a single case study was chosen. The second reason is that the research emerged from a project that was practical in nature, therefore demanding more time for hands-on activities. The researcher aimed for in-depth research about SDL (Yin, 2018) and to be explicit regarding the participants, situations, and settings (Cohen et al., 2017) so that the results could lead to wider implementation in the province.

4.1   Participants and sampling

A homogeneous purposive sampling method was used to select participants with the same characteristics. These are: they are all teachers, and are Intermediate Phase (IP) teachers, teachers who teach Social Sciences and/or Natural Sciences and Technology, which are the target subjects for the project, and teachers who implement CAPS. The participants were selected to provide data that would answer the research question. The school has two computers

and a free wireless network, which are resources that could enable engagement with SDL. Both the subjects were selected because they have common aspects that relate to the environment and technology method, which are aligned with SDL skills.

Two out of three IP teachers who consented participated in the interviews. The third teacher did not withdraw but was not available when the researcher conducted the interviews after the end of the school programme on the day the interviews were conducted.

4.2 Data collection procedure

The researcher phoned the principal to arrange time frames in terms of when the interviews could be conducted. However, the principal could not be reached due to poor connectivity at the school. The administrator was then called and the principal was reached on that phone. It was agreed that the online interviews would commence at 14:00 after the school programme ended.

As for participant observation, the researcher discussed the intention to visit the school for the data collection on some specific dates. After reaching an agreement with the principal the researcher wrote a memorandum to the university requesting permission to visit the school for data collection. After the memorandum was approved the researcher emailed the school principal to formalise the visit and confirm the dates. Also, it was agreed that social distancing, wearing of masks, and sanitising of hands would be practised to observe Covid-19 protocols during participant observation.

4.3 Data collection instruments and collection

Two instruments were used to collect data namely; online interviews and participant observation. Semi-structured interviews were used to collect data in 2022 while participant observation data was collected in 2021.

The interview data was collected online using Microsoft Teams (MS Teams) and a cell phone. The participants did not have MS Teams on their cell phones. The researcher used MS Teams to call the participants on their cell phones. The lack of MS Teams on the participants' cell phones created a challenge because their responses could not be recorded on MS Teams. A cell phone was used to record the participants' responses. The interviews lasted for thirty-five to forty minutes. Participant observation data were collected during meetings that were held at the school during school visits.

4.4 Ethical issues

Data were gathered after obtaining ethical clearance from the University of South Africa's (UNISA) College of Education (Ref:2019/06/02/90326768/28/MC) and the Limpopo Department of Education in collaboration with the Limpopo Provincial Government and the Premier's office (project number: LPREC/99/2021:PG).

Furthermore, to comply with ethics rules, the purpose of the project was explained to the participants and they were informed that participation is voluntary and that they could withdraw without any penalty. In addition, the participants, who were two teachers, were allocated pseudonyms, namely Lem and Maru, to protect their identities.

5 DATA ANALYSIS AND TRUSTWORTHINESS

Thematic analysis was continually done starting at an informal level during the data collection process, with interviews during the interview process while with observation it was during the participant observation stage. The interview data were transcribed. The transcripts and the observation data were processed to identify similar words that were put together, coded, and clustered to form categories (McMillan & Schumacher, 2009). Interpretation of data was strengthened by the use of an interpretive paradigm leading to the identification of concepts and emergence of a theme (Rubin & Babbie, 2013) that was also guided by the research question. The theme was: supporting learners to develop and apply SDL skills.

Furthermore, trustworthiness was considered by selecting a rhizomatic approach, which is relevant to understanding the study, methodological coherence in selecting relevant participants, and attending a relevant meeting to collect data to address reliability and validity. Observations were also conducted by two project members, who shared and discussed information after the meetings. Similar ideas that were identified from the literature, documents, and observations were triangulated to ensure the trustworthiness of the findings. Furthermore, this study was presented at a self-directed learning conference where it was critiqued by delegates who specialised in this field.

6 FINDINGS AND DISCUSSIONS

Interview and participant observation findings were discussed in an integrated way. Triangulation was done with data collected through the interviews, participant observation, and literature that are referred to in this study. In terms of answering the research question, findings from the interviews and participant observation showed that the two participants, Lem and Maru, did not know the concept of SDL. With EE, Maru indicated that the concept was introduced in one of the workshops by one of the subject advisers. Maru further said:

> Although the concept was introduced during the workshop it was not explained to us and was never mentioned again. I thought it is something that will come later, so I am still waiting. SDL is completely new to me.

The teachers did not develop learners for SDL skills in EE because the two concepts were not well known to them. The teachers were not supported by their department to implement the two concepts at the school. EE was introduced in a workshop and nothing was said anymore. SDL was never heard by the participants; they only heard it from the researcher for

the first time. This shows that the South African schools did not make an effort to engage with SDL issues, in contrast to the situation in Germany where TL was suspended to SDL modules (Schweder & Raufelder, 2022). Again, the findings of this study do not concur with the idea of SDL forming part of educational aims in several national educational policies, including Norway (Dalland & Klette, 2016). Also, the findings do not align with the world's trends in terms of 4IR that is with us. The findings from the interviews did not point to the availability of SDL policies in the school in question; in fact, the teachers did not know what SDL is. Fascinatingly, the South African situation agrees with Gencel and Saracaloğlu (2018), who mentioned that educators who were produced by the old education system could not do well in teaching the learners skills of a high level. The absence of SDL policies shows a lack of commitment from the Department of Basic Education and could be linked to the non-implementation of the White Paper on e-Education as it had not kicked off since its publication in 2004. It makes sense when findings showed that the participants heard of SDL for the first time, because they should have been trained on the application of White Paper on e-Education to know SDL and assist learners to develop SDL skills.

Findings from both the interviews and participant observation revealed that the school had two computers, one cell phone, and a free wireless network. The interview findings revealed that the two computers and one cell phone were provided by the Limpopo Provincial Department of Education. The free wireless network was provided by the school by signing a contract with a service provider that provided unlimited data per month. The provision of computers and a phone without providing data or a wireless network created a gap because there would be no connection. That is one reason for a lack of movement in assisting learners to develop SDL skills. This is partly in alignment with the ideas of the White Paper on e-Education (Department of Basic Education, 2004) that schools should have access to ICT infrastructure and connectivity because the findings from the interview showed that one teacher knew about the White Paper on e-Education from a workshop, but it was just mentioned. It was introduced to the teachers like EE was, but not discussed or implemented; therefore, suggesting that its availability did not assist the teachers to support learners to develop and use SDL. This created a gap between policy and practice on the ground. This finding concurs with Padayachee (2017), who mentioned that despite South Africa's hope that integrating ICT in the classroom would be a solution to its challenges in the education arena, integrating it was not achieved. It is not beneficial to either the learners or the teachers to have to have policies or White Papers in place if they are not implemented.

These resources, namely the two computers, a cellphone as well as a wireless network, are some essentials assumed to facilitate SDL, however, it requires technologies that, in turn, require connectivity (Dhawan, 2020; Geng et al., 2019; Poromaa, 2013; Song, 2021). The findings showed that the teachers and the learners did not have much access to the computers and the cellphone but the administrators did. Lem connected to the wireless network to download information that is used to teach the learners using a personal cellphone because the computers could not be easily accessed. When asked if the learners benefited from the downloaded information Lem had this to say:

> Yes. The information supplement the textbook. Sometimes there is less information in the textbook. I sometimes borrow a computer to show learners how to google information because some learners' parents have smartphones or computers. Learners whose parents have smartphones or computers bring information to school and we share the information with the learners whose parents do not have a computer or smartphone. We benefit from the information as it supplements what is in the textbook.

This shows the will from the side of the teachers to use educational technologies for teaching and learning. Lem went the extra mile by teaching learners how to download information. If well resourced and supported, the teachers would engage in SDL and further guide the learners.

Findings from the interviews showed that during the national lockdown and school closure due to Covid-19, the teachers tried to use their cellphones to send material to the learners through WhatsApp. However, not all learners benefited, because some learners and their parents did not have computers or smartphones. Only a few learners responded to or acknowledge receipt of the material using their parents' cellphones. This discouraged the teachers because it meant when schools re-opened, those that did not have cellphones could not receive the material. So they could not learn remotely when the schools were closed. This situation created a backlog for the teachers, and findings from the participant observation showed that teachers were concerned about content coverage. The teachers needed time to be in the classroom teaching or doing administration rather than attending the project matters. This is because it was difficult for the primary school teachers to keep the learners for a catch-up after school considering their low cognitive level and attention span.

Findings regarding the teachers' views about the use of educational technologies in the classroom were positive. All the teachers indicated that technology would make teaching interesting to them and the learners. On the other hand, they hoped that technology would assist them during trying times such as that of the Covid-19 pandemic and future catastrophes that may occur. Lem further indicated:

> Teaching and learning stopped totally during Covid-19. I tried to teach using WhatsApp but realised that only a few learners were able to respond. I stopped because I was supposed to catch up with those who did not have WhatsApp, so it was not helping. SDL approach and the availability of educational technologies and a wireless network are important these days.

The teachers' attitude towards the use of SDL is positive. This should encourage the Department of Basic Education to conduct professional teacher development and provide the teachers with the necessary resources to implement SDL.

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