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The relationship between the teaching experience of South African geography teachers and their involvement in self-directed professional development activities

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Abstract

This study explores the relationship between teaching experience of geography teachers and their involvement in self-directed professional development (SDPD) activities to enhance their geography knowledge, skills and attitudes, understanding and development in the geography curriculum areas, as well as teaching and learning practices. A non-experimental survey design was employed in the study. Grade 10 to 12 geography teachers (n = 130) from the Dr Kenneth Kaunda and Bojanala Platinum districts in the North West province in South Africa with different amounts of teaching experience in geography education who attended the scheduled geography meeting with their respective subject advisors, completed a questionnaire on SDPD activities in geography education, developed by the researcher. The analysis of the results did not establish any relationship between geography teachers' teaching experience and their involvement in SDPD activities. In this study the practical significance was calculated to indicate whether the difference between the geography teachers with different teaching experiences and their involvement in SDPD activities is large enough to have an effect in practice. Medium to small *practically significant differences between early-, mid- and late-career geography teachers'*

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involvement in reading articles and books, watching videos, consulting role-players and experimentation were reported. Interestingly, medium practically significant differences were reported between mid-career and late-career geography teachers in conducting self-directed research in geomorphology, development geography and geographical information systems.

Keywords: Geography teachers; teaching experience; self-directed learning; self-directed professional development activities.

Introduction

This article is one in a series of articles and chapters that seek to gain insight into geography teachers' involvement in SDPD activities. As geography teachers' competence plays a vital role in learners' learning, they need to be involved in continuous formal and self-directed professional learning opportunities throughout their teaching careers to keep up with new developments in geography education (Gerber, 2002; Hill & Jones, 2017; Schell, Roth & Mohan, 2013; Thenga, Goldschagg, Ferguson & Mandikonza, 2020; Wuam & Bulus, 2022). SDPD allows geography teachers to explore practice-related questions that are generated and to pursue the learning and mastery of skills that are relevant to their positions (Slavit & McDuffie, 2013; Steinke, 2012). Geography teachers need in-depth knowledge of the content they teach, how geography learners learn the geography content, an understanding of classroom environments that optimise learning, advances in technology, renewed and revised curricula and active teaching and learning strategies to remain current in knowledge and pedagogy (Brooks, 2010; Hill & Jones, 2017; Weir, 2017). It is necessary for geography teachers to be active agents in their own professional development processes and continuously shape their learning and practice through self-directed learning (SDL) activities, genuine dialogue and collaboration with geography teachers and other colleagues to improve their geography knowledge and pedagogical content knowledge (Hill & Jones, 2017; Wuam & Bulus, 2022).

In the South African context, geography teachers are expected to pursue learning through continuous professional development that includes formal and self-directed professional development. With reference to SDPD, the geography teacher takes the lead role in facilitating his or her own professional

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growth. Therefore, geography teachers, as lifelong learners, need to be actively involved in SDPD activities throughout their careers (SACE, 2018). It is significant that, in the literature review, no studies on geography education dealing with the relationship between the teaching experience of geography teachers and their involvement in SDPD activities were found. Against this background, the purpose of this study was to explore the relationship between the teaching experience of geography teachers in two districts of the North West province of South Africa, and their involvement in SDPD activities, as well as their self-directed research in the various school geography disciplines and themes.

Literature review

Geography knowledge, pedagogical content knowledge and the geography school curriculum are constantly changing, which necessitates international and South African geography teachers to act as self-directed learners on a continual basis to keep up with the latest developments in geography education. With reference to South Africa, the guidelines of the South African Department of Basic Education (2011, p. 107), Goal 16 of the *Action Plan 2014 – Realisation of Schooling 2025* requires geography teachers in South Africa to remain lifelong self-directed learners, as it regards teaching as a continuous learning process and demands that geography teachers' professionalism, teaching skills and subject knowledge be improved upon throughout their careers so that they can equip their learners with the knowledge and skills required for their respective learning levels (Department of Higher Education and Training, 2015:10).

The geography teacher as a self-directed learner

For geography teachers to improve their own geography knowledge and teaching and learning skills, they also need to become highly self-directed learners – equipped to effectively continue to address their learning needs throughout their teaching careers (Guglielmino, 2013). In this regard, Slavit and McDuffie (2013) state that SDL, as practised by teachers, is a way of exploring questions, challenges and problems as generated because of their teaching practices in the classroom and then

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deciding on the best solutions to those specific problems or challenges. This is also in line with the most common definition of SDL by Knowles (1975, p. 18), namely that it is "a process in which individuals take the initiative, with or without the help of others, to diagnose their learning needs, formulate learning goals, identify human and material resources for learning, choose and implement appropriate learning strategies, and evaluate learning outcomes". In a SDL environment, the learners have to take the initiative and manage their own learning process (Anshu, Gupta & Singh, 2022; Karatas, 2017). Therefore, a basic tenet of SDL is that geography teachers, through their teaching practice, can identify and achieve learning goals by means of the effective use of learning strategies to understand, monitor, manage, evaluate and reflect on their own learning and locate appropriate resources (Francom, 2010). Consequently, geography teachers regularly must assess their own learning needs and plan their own learning (Smith, 2017), whereafter they will engage in self-designed professional development learning projects. In this regard, Kirk, Shih, Smeltzer, Holt and Brockett (2012) highlight that teachers with the required SDL skills will transform their teaching and learning in the classroom to help develop their learners' SDL skills. The ability to reflect on one's geography knowledge and pedagogy and to act on that reflection indicates growth as a geography teacher. Porter and Freeman (2020) are of the opinion that self-directed teacher learning leads to greater changes in actual teaching and learning practices in the classroom.

Geography teachers' involvement in self-directed professional development

SDPD allows for individualised professional development that gives teachers responsibility, choice and involvement in the planning of their own professional learning (Steinke, 2012). This type of professional development is internally motivated and arises from the geography teacher's own initiative and will to learn (Mushayikwa & Lubben, 2009; Lopes & Cunha, 2017; Weir, 2017). Kolnik (2010) is of the opinion that self-motivated and self-directed learning, through continuous professional development, remains the best way of improving educational

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quality in geography. She further states that SDPD can be an important source of innovation in teaching and learning geography. Also, there is evidence that the more teachers are involved in selecting their own professional development activities, the more they report improvements in their subject knowledge, their commitment to teaching, their teaching practice, and the learning of their students (White, Lim & Chiew, 2006).

In geography education, a relatively small body of literature exists that is concerned with SDPD and the lack of theoretical understanding of geography teachers' involvement in SDPD activities. With reference to geography education, Gerber (2002) and Hill and Jones (2017) refer to SDPD as all types of self-initiated learning experiences that geography teachers undertake during their professional careers. According to Gerber (2002), the main ways in which geography teachers learn with SDPD activities include making mistakes, self-education in and out of the geography classroom, problem-solving, interacting with others and offering leadership to others. In this regard, Hill and Jones (2017) emphasise that SDPD can include geography teachers using available resources, such as teacher magazines, journals, internet sources and watching videos of others struggling with- and resolving dilemmas, to encourage them as they face the difficult task of modifying their practice.

In studies pertaining to geography education and other disciplines, researchers identify and discuss various individual and collaborative SDPD activities. These include community engagement, conducting independent research, asking advice from colleagues, leading a school project, researching and experimenting with new or alternative teaching and learning strategies (SACE, 2018), co-planning and co-teaching (Hill & Jones, 2017), involvement in action research (Bednarz, 2007; Mondal, 2014), collaborating with colleagues (Govender, 2015; Grosemans, Boon, Verclairen, Dochy & Kyndt, 2015; Hill & Jones, 2017), video-based professional development (Boehm et al., 2012), peer classroom observations (Hamilton, 2013; Hill & Jones, 2017), web-based professional development that includes visiting education-focused blogs, wikis and podcasts (Brysch, 2020), communities of practice (Chalmers & Keown, 2006)

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and professional geography learning groups (Goldschagg & Wilmot, 2020).

Teaching experience of teachers and their involvement in self-directed professional development

Geography teachers must be lifelong learners who are actively involved in SDPD activities throughout their teaching careers (Hill & Jones, 2017). In the literature review, no studies in geography education dealing with the relationship between geography teachers' teaching experience and their involvement in SDPD activities could be found. In the literature review, keywords from the title of the study were researched through computer-accessible databases such as google scholar, EBSCOHost, ERIC and Sabinet. Hence, it is necessary to refer to studies in other disciplines dealing with this theme. In this regard, Schulz and Roßnagel (2010) point out that although research on the influence of teaching experience on teachers' self-directed professional learning is rather scarce, it is clear from the few existing studies that teachers' teaching experience can play a role in their involvement in self-directed professional learning.

In the literature on teachers' professional learning, early-career teachers are often distinguished from more experienced teachers, including mid- and late-career teachers (e.g. Richter et al., 2011). Researchers attach various years of teaching experience to early-, mid- and late-career teachers (Day & Gu, 2009; Richter et al., 2011). Studies comparing early-career teachers to more experienced teachers report overall that early-career teachers demonstrate a greater need for professional development and higher motivation and eagerness for learning than more experienced teachers (Appova, 2009; Cameron, Mulholland & Branson et al., 2013; Flores, 2005; Richter et al., 2011). More experienced teachers have less need for professional development to improve their knowledge and skills because they feel that they have already acquired the necessary skills (Appova, 2009; Cameron et al., 2013; Nawab, 2011; Richter et al., 2011). Nawab (2011) also reports that some experienced teachers in Pakistan believe that they have mastered the required teaching skills and, therefore, do not feel the need for further improvement. However, in Hutton's (2011) study, no significant

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relationship was found between teaching experience and teachers' preference for SDPD. Interestingly, Rolls and Plauborg (2009) report that mid-career teachers either commit to the teaching profession or explore other career possibilities. Those who continue teaching usually strive for greater responsibilities or promotion that is often reached by the end of the mid-career. In general, the mid-career of teachers is described as the time period when their energy, commitment, ambition and self-confidence are at their highest (Richter et al., 2011).

With reference to the influence of teaching experience on teachers' involvement in SDPD activities, in the literature more experienced teachers report less learning through experimenting, including trial and error (Flores, 2005; Louws, Meiring, Van Veen & Van Driel et al., 2017; Van Daal, Donche & De Maeyer et al., 2014). Experienced teachers are more in favour of sharing and collaborative initiatives (Louws et al., 2017), as well as engaging more often in reading professional literature (Flores, 2005; Louws et al., 2017; Richter et al., 2011), in comparison with early-career teachers. Early-career teachers learn more by observing colleagues (Flores, 2005) and interacting with their mentors (Mawhinney, 2010; Patrick, Elliot, Hulme & McPhee et al., 2010). Grosemans et al. (2015), Patrick et al. (2010) and Richter et al. (2011) all acknowledge that more experienced teachers also learn from engaging with novice teachers while mentoring them. Krečič and Grmek (2008), on the other hand, found that teachers' perceptions of the importance of collaborative learning with other teachers did not differ according to their varying levels of experience. Richter et al. (2011) found a negative relationship between teaching experience and teachers' collaboration with colleagues, which would indicate that experienced teachers collaborated less often. In the study of Louws et al. (2017), it was found that the teaching experience of teachers had no influence on their preferred learning about subject-specific domains, which was contrary to the expectation that mainly early-career teachers would be interested in classroom-related learning domains. Against this background it is necessary to investigate the relationship between the teaching experience of geography teachers and their involvement in SDPD in a South African context.

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Empirical investigation

Research design

A non-experimental survey design was chosen as the most appropriate design for this study. It entailed administering a survey, the 'Self-directed professional development in geography education' (SDPDGE) questionnaire, developed by the researcher, to geography teachers in the North West province of South Africa. The empirical investigation followed a quantitative methodology that was embedded in the post-positivist paradigm.

Participants

Grade 10 to 12 geography teachers (n=130) from quintiles 1 to 5 public schools in the Dr Kenneth Kaunda and Bojanala Platinum districts of the North West Province (one of the nine provinces of South Africa) formed part of this study. These teachers, who attended the scheduled geography meetings with their geography subject advisors in their respective districts, were invited to complete the SDPDGE questionnaire. In line with Richter et al. (2011) and Day and Gu (2009), the study distinguished between early-career (five years' and less teaching experience), mid-career (between six and 20 years' teaching experience) and late-career (21 years' and longer teaching experience) teachers.

Data collection and analysis

The SDPDGE questionnaire is self-rating and organised into two categories. The first category, 'geography teachers' involvement in SDPD activities', is subdivided into two subcategories, namely 'reading articles or books and watching online videos' and 'consulting different role players and experimentation'. The second category refers to self-directed research in the geography subdisciplines and learning domains. The responses to the items are rated by using a five-point Likert-type scale (1 = never; 2 = seldom; 3 = sometimes; 4 = often; 5 = always).

The researcher employed the following quantitative data analysis techniques:

- The internal reliability for the SDPDGE questionnaire was measured by the Cronbach alpha reliability coefficient. The Cronbach alpha values for the one

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category and subcategories of SDPD were at an acceptable level (see Table 1).

- Descriptive statistical techniques, such as the mean and standard deviation for the items in the one category and subcategories of the SDPDGE questionnaire, were applied to organise, analyse, interpret and compare the quantitative data for the early-career, mid-career and late-career geography teachers.
- Spearman's correlation coefficients were calculated to determine the strength of the relationship between the geography teachers' geography teaching experience and their involvement in SDPD activities in the two subcategories 'reading articles or books and watching online videos' and 'consulting different role-players and experimentation' and in the category 'self-directed research in the different geography disciplines and learning domains'. According to Cohen's (1988) guidelines, a correlation coefficient for social sciences of 0.1 is indicative of a small relationship between the variables, while 0.3 is indicative of a medium relationship between variables, and 0.5 or larger is indicative of a large and practically significant relationship between variables.
- The statistical procedure involved the calculation of the practical significance (effect size) of the differences with reference to the relationship between the teaching experience of the geography teachers and their involvement in

Table 1: Cronbach alpha values for the categories and subcategories of the self-directed professional development instrument

Categories of self-directed professional development activities	Subcategories	Cronbach alpha
Geography teachers' involvement in self-directed professional development activities	Reading articles, books and watching videos	0.807
	Consulting different role players and experimentation	0.835
Self-directed research in the geography subdisciplines and learning domains		0.928

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the two SDPD subcategories and their self-directed research in geography subdisciplines and learning domains. Practical significance indicates whether the difference is large enough to have an effect in practice (Ellis & Steyn, 2003). The researcher used the following guidelines for the interpretation of the practical significance of the results (d-value): small effect: d≈0.2; medium effect: d≈0.5; and d≈0.8 large effect (Cohen, 1988).

Ethical considerations

The SDL project complied with all the ethical regulations of the university under the auspices of which it was conducted and was approved by the ethics committee of the university. The respondents gave written consent for the information they provided to be used in this study. Their participation was voluntary.

Results

It was decided to report the relationship between the three teaching experience groups of geography teachers and their involvement in the two subcategories of the SDPD activities that formed part of the category 'Geography teachers' involvement in SDPD activities, as well as the category of their self-directed research in geography subdisciplines and learning domains.

The relationship between the geography teachers' teaching experience and their reading of articles and books and watching of videos

In this study, it was found that geography teachers' teaching experience had no significant correlation with the subcategory 'reading articles or books and watching online videos' (r=-0.115; p= 0.192). However, early-career geography teachers responded that they were slightly more involved in this subcategory ($\overline{X}$=3.75), with small practically significant differences compared to the mid-career and late-career geography teachers (d=0.31 and 0.30 respectively).

The early-career geography teachers also received the highest mean score (x=4.12) for watching online videos to enhance their geography knowledge and teaching, with medium (d=0.50) and small

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Table 2: Differences between the geography teachers in the different groups of teaching experience in the subcategory 'reading articles or books and watching online videos'

c	Teaching experience	N	$\bar{X}$	SD	d-value	
					Early-career	Mid-career
Reading articles in magazines and newspapers	Early-career	49	3.43	1.22		
	Mid-career	45	3.29	1.01	0.11	
	Late-career	36	3.78	0.87	0.29	0.48*
	Total	130	3.48	1.07		
Consulting geography books and geography-specific academic journals	Early-career	49	3.88	1.05		
	Mid-career	45	3.51	1.08	0.34	
	Late-career	36	3.78	0.93	0.09	0.25
	Total	130	3.72	1.03		
Independent searching on the internet (website) for geography information	Early-career	49	4.00	0.94		
	Mid-career	45	3.98	1.01	0.02	
	Late-career	36	3.58	1.05	0.40*	0.37*
	Total	130	3.88	1.00		
Watching online videos to enhance my geography knowledge and improve my teaching and learning skills	Early-career	49	4.12	0.93		
	Mid-career	45	3.78	1.17	0.30	
	Late-career	36	3.61	1.02	0.50*	0.14
	Total	130	3.86	1.05		
Visiting blogs, Twitter, wikis, podcasts, Google and YouTube	Early-career	49	3.61	1.37		
	Mid-career	45	3.24	1.28	0.27	
	Late-career	36	3.19	1.09	0.31	0.04
	Total	130	3.37	1.27		
Visiting professional educational sites on the internet	Early-career	49	3.43	1.24		
	Mid-career	45	3.22	1.08	0.17	
	Late-career	36	3.06	1.07	0.30	0.15
	Total	130	3.25	1.14		
Total	Early-career	49	3.75	0.78		
	Mid-career	45	3.50	0.81	0.30	
	Late-career	36	3.50	0.74	0.31	0.00
	Total	130	3.59	0.78		

(d-value: small effect: d≈0.2; medium effect: d≈0.5*; and large effect: d≈0.8**)

(d=0.30) practically significant differences in comparison to the late-career and mid-career geography teachers. Interestingly, the late-career geography teachers received the highest mean score of 3.78 for reading articles in magazines and books, with a medium practically significant

difference (d=0.48) compared to the mid-career geography teachers and a small practically significant difference (d=0.29) compared to the early-career geography teachers. However, the early- and mid-career geography teachers responded more positively to their involvement in doing independent research on the internet for geography information compared to the late-career geography teachers, with medium practically significant differences of 0.40 and 0.37 respectively. The early-career geography teachers also received the highest mean score of 3.88 for consulting geography books and geography-specific academic journals, with a small practically significant difference compared to the mid-career geography teachers (d=0.34) (see Table 2). For the items 'visiting blogs, Twitter, wikis, podcasts, Google and YouTube' and 'visiting professional educational sites on the internet', the early-career geography teachers once again received the highest mean scores, with only small practically significant differences in comparison to the late- and mid-career geography teachers with respective d-values of 0.31 and 0.27 (see Table 2).

The relationship between geography teachers' teaching experience and the consulting role-players and the conducting experimentation

It is clear from the results that the geography teachers' teaching experience also had no significant correlation with the subcategory 'consulting role players and experimentation in classrooms' (r=0.086; p=0.329). No practically significant differences were observed between the various groups of geography teachers in terms of teaching experience and this subcategory (see Table 3).

With reference to the individual items in this subcategory, the mid-career geography teachers received a higher mean score and medium and small practically significant differences in the item 'asking geography learners for feedback to improve their geography lessons' compared to the early- and late-career geography teachers (d=0.38 and d=0.21 respectively). The early- and mid-career geography teachers held a more positive view of their involvement in trying and experimenting with teaching and learning strategies and methods in their classrooms,

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Table 3: Differences between the geography teachers in the different groups of teaching experience in the subcategory of consulting role players and experimentation

Items	Teaching experience	N	$\overline{X}$	SD	d-value	
					Early-career	Mid-career
Trying and experimenting with teaching and learning strategies and methods in my geography classroom	Early-career	49	3.45	1.06		
	Mid-career	45	3.42	0.99	0.03	
	Late-career	36	3.14	1.13	0.28	0.25
	Total	130	3.35	1.06		
Interacting with other geography teachers to learn more about geography knowledge and how to teach geography	Early-career	49	3.92	1.02		
	Mid-career	45	3.67	1.09	0.23	
	Late-career	36	3.67	1.24	0.20	0.00
	Total	130	3.76	1.11		
Preparing geography lessons with colleagues in my school or neighbouring schools	Early-career	49	3.00	1.15		
	Mid-career	45	3.29	1.25	0.23	
	Late-career	36	3.08	1.52	0.05	0.14
	Total	130	3.12	1.29		
Volunteering to attend university or college workshops, seminars or symposiums on teaching and learning	Early-career	49	2.98	1.45		
	Mid-career	45	2.89	1.40	0.06	
	Late-career	36	3.11	1.39	0.09	0.16
	Total	130	2.98	1.41		
Asking geography learners for feedback to improve my geography lessons	Early-career	49	3.10	1.36		
	Mid-career	45	3.62	1.25	0.38*	
	Late-career	36	3.39	1.23	0.21	0.19
	Total	130	3.36	1.29		
Observing fellow geography and other teachers' lesson presentations	Early-career	49	2.92	1.20		
	Mid-career	45	3.33	1.28	0.32	
	Late-career	36	3.28	1.16	0.30	0.04
	Total	130	3.16	1.23		
Sharing teaching and learning materials and resources with fellow geography teachers	Early-career	49	4.08	0.86		
	Mid-career	45	4.20	0.87	0.14	
	Late-career	36	4.17	1.03	0.08	0.03
	Total	130	4.15	0.91		
Total	Early-career	49	3.35	0.73		
	Mid-career	45	3.49	0.86	0.16	
	Late-career	36	3.40	0.98	0.06	0.09
	Total	130	3.41	0.85		

(d-value: small effect: d≈0.2; medium effect: d≈0.5*; and large effect: d≈0.8**)

compared to the late-career geography teachers with small practically significant differences.

With reference to observing fellow geography and other teachers' lesson presentations, the early-career geography teachers received a lower mean score ($\overline{X}$=2.92) for observing fellow geography and other teachers' lesson presentations, compared to the mid-career ($\overline{X}$=3.33) and late-career ($\overline{X}$=3.28) teachers, with small practically significant differences of 0.32 and 0.30.

The relationship between geography teachers' teaching experience and their self-directed research in the different geography subdisciplines and learning domains

It was found that the teaching experience of the geography teachers had no significant correlation with doing self-directed research in the geography subdisciplines and learning domains (r=-0.006; p=0.945). In this category, the mid-career geography teachers received the highest mean score ($\overline{X}$=3.71) and the late-career geography teachers the lowest mean score ($\overline{X}$=3.40), with only small practical significant differences between the groups (see Table 4). However, the mid-career geography teachers had medium practically significant differences compared to the late-career geography teachers in doing self-directed research in geomorphology (d=0.52), development geography (d=0.48), geographical information systems (d=0.36) and geography teaching and learning aids (d=0.37), and small practically significant differences compared to the early-career geography teachers for the same subdisciplines and learning domains. The early-career geography teachers responded more positively regarding doing research in geographical information systems and geomorphology compared to the late-career geography teachers, with a medium practically significant difference (d=0.36) and a small practically significant difference (d=0.33) for the two subdisciplines respectively.

Discussion

As the first step, this study addressed the lack of research in geography education regarding the influence of geography teachers' teaching experience in their involvement in

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SDPD activities. Most of the participating early-, mid- and late-career geography teachers in the study indicated that they were involved in SDPD activities. However, no significant relationship was found between the teaching experience of the geography teachers and their involvement in SDPD categories and subcategories. These results concur with those of Hutton (2011), who also found that there was no significant relationship between teaching experience and teachers from Atlanta USA's preference for self-directed or required professional learning. With reference to the influence of the teaching experience of geography teachers in their involvement in SDPD categories and subcategories, small practically significant differences were observed. In this study, the late-career teachers reported that they were less involved in SDPD activities in

Table 4: The influence of teaching experience on geography teachers' self-directed research in geography subdisciplines and learning domains

Geography subdisciplines and learning domains	Teaching experience	N	$\overline{X}$	SD	d-value	
					Early-career	Mid-career
Climatology	Early-career	49	3.65	1.18		
	Mid-career	45	3.87	0.99	0.18	
	Late-career	36	3.47	1.25	0.14	0.31
	Total	130	3.68	1.15		
Geomorphology	Early-career	49	3.71	1.12		
	Mid-career	45	3.93	0.89	0.20	
	Late-career	36	3.33	1.15	0.33	0.52
	Total	130	3.68	1.07		
Population geography	Early-career	49	3.65	1.35		
	Mid-career	45	3.44	1.10	0.15	
	Late-career	36	3.58	1.18	0.05	0.12
	Total	130	3.56	1.21		
Economic geography	Early-career	49	3.57	1.17		
	Mid-career	45	3.76	1.00	0.16	
	Late-career	36	3.56	1.25	0.01	0.16
	Total	130	3.63	1.14		
Rural and urban settlements	Early-career	49	3.73	1.22		
	Mid-career	45	3.71	0.99	0.02	
	Late-career	36	3.50	1.23	0.19	0.17
	Total	130	3.66	1.14		

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Development geography	Early-career	49	3.57	1.31		
	Mid-career	45	3.87	0.92	0.23	
	Late-career	36	3.25	1.30	0.25	0.48
	Total	130	3.58	1.20		
Water resources, resources and sustainability	Early-career	49	3.57	1.19		
	Mid-career	45	3.71	0.96	0.12	
	Late-career	36	3.39	1.27	0.14	0.25
	Total	130	3.57	1.14		
Map work and aerial photographs	Early-career	49	3.65	1.16		
	Mid-career	45	3.80	1.04	0.13	
	Late-career	36	3.64	1.17	0.01	0.14
	Total	130	3.70	1.12		
Geographical information systems	Early-career	49	3.73	1.04		
	Mid-career	45	3.76	1.26	0.02	
	Late-career	36	3.31	1.17	0.36	0.37
	Total	130	3.62	1.16		
Geography teaching and learning strategies and methods	Early-career	49	3.43	1.15		
	Mid-career	45	3.40	1.10	0.02	
	Late-career	36	3.11	1.09	0.27	0.26
	Total	130	3.33	1.12		
Assessment in geography education	Early-career	49	3.55	0.98		
	Mid-career	45	3.64	1.07	0.09	
	Late-career	36	3.36	1.20	0.16	0.24
	Total	130	3.53	1.07		
Geography classroom management	Early-career	49	3.43	1.06		
	Mid-career	45	3.71	1.10	0.26	
	Late-career	36	3.39	1.27	0.03	0.25
	Total	130	3.52	1.14		
Geography teaching and learning aids	Early-career	49	3.53	0.94		
	Mid-career	45	3.69	0.95	0.17	
	Late-career	36	3.31	1.06	0.21	0.36
	Total	130	3.52	0.98		
Total	Early-career	49	3.60	0.78		
	Mid-career	45	3.71	0.70	0.15	
	Late-career	36	3.40	1.01	0.20	0.31
	Total	130	3.58	0.83		

(d-value: small effect: d≈0.2; medium effect: d≈0.5*; and large effect: d≈0.8**)

comparison with the mid- and early-career geography teachers. This result concurs with other international studies that also report that more experienced teachers have less need for professional development because

they feel that they have already acquired the necessary skills (Appova, 2009; Cameron et al., 2013; Flores, 2005; Nawab, 2011). Noteworthy, Rueschhoff and Palma (2021) point out that more experienced geography teachers will logically have had more SDPD than early-career teachers.

The relationship between geography teachers' teaching experience and reading articles and books and watching videos

In the subcategory 'Reading articles or books and watching online videos', it emerged that the early-career geography teachers were more involved in these activities, compared to mid-career and late-career geography teachers. The finding concurs with that of Pedder and Opfer (2011) that early-career teachers are more likely to participate in continuous professional development activities than their colleagues with more years of experience. A possible reason, as highlighted by Cameron et al. (2013), can be that beginner teachers demonstrate a greater need for professional development and are more motivated and eager for learning than more experienced teachers. In contrast, Masuda, Ebersole and Barrett (2013) state that novice and early-career teachers often feel overwhelmed at the beginning stages of their teaching careers and are therefore not so involved in SDP learning. In Bakhshi's (2019) study, no differences are reported between interviewed teachers with different amounts of teaching experience in their use of online resources for self-study about a topic of their interest.

With reference to the individual items, the late-career geography teachers held the perception that they were reading more articles in magazines and books, compared to mid-career and early-career geography teachers. This finding concurs with findings in the studies of Richter et al. (2011) and Flores (2011) in which more experienced teachers were found to spend more time reading professional literature than their inexperienced colleagues. Several early-career teachers in the study of Grosemans et al. (2015) also reported that they tended to read and seek less for information than their more experienced colleagues.

In the current study, the early-career geography teachers were found to be more willing to consult academic geography books and geography journals than the mid-career and late-

career geography teachers. A possible reason for this, according to Kyndt, Gijbels, Grosemans and Donche et al. (2016), can be that mid- and late-career teachers are often characterised as confident in their teaching abilities and knowledge of the subject. In contrast, Krille (2020) report that early-career teachers in her study had just entered the teaching profession and were of the opinion that they still had deep knowledge from their pre-service teacher training.

More early and mid-career geography teachers held the perception that they were doing more independent searches on the internet for geography information in comparison to the late-career teachers. In this regard, Grosemans et al. (2015) and Richter et al. (2011) point out that from a teacher's mid-career onwards, there is reduced involvement in professional learning due to a reduced need for information and knowledge. Furthermore, Grosemans et al. (2015) reported that novice teachers in their study searched the internet for information and resources on a regular basis. Likewise, Nawab (2011) found that some experienced teachers in Pakistan believed that they had mastered the required skills and, therefore, did not feel the need for further improvement.

Significantly, in this study, the mid-career geography teachers indicated that they asked geography learners more for feedback to help improve their geography lessons, in comparison to the early and late-career geography teachers. A possible reason for the difference between the mid-career geography teachers and the early- and late-career teachers, as explained by Masuda et al. (2013), may be that early-career novice teachers often feel overwhelmed at the beginning stages of their teaching careers and do not have to self-confidence to ask the learners for feedback on their lesson presentation. In addition, Brekelmans, Wubbles and Van Tartwijk (2005) highlight that late-career teachers have been found to become more distant from learners due to the increasing age difference between the teacher and the learners.

The relationship between geography teachers' teaching experience and consulting role-players and conducting experimentation

In the subcategory 'Consulting role-players and experimentation', no practically significant differences

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between the early-, mid- and late-career geography teachers were observed. With reference to trying and experimenting with different teaching and learning strategies and methods in the geography class, the early- and mid-career teachers had slightly higher means and small practically significant differences compared to the late-career teachers. In the studies of Flores (2005), Van Daal et al. (2013) and Grosemans et al. (2015), early-career teachers reported more learning through trial-and-error methods and experimenting than the more experienced teachers. However, in the study of Kyndt et al. (2016), it was reported that more experienced teachers were more willing to experiment with new teaching and learning methods to further develop their instructional repertoire.

In this study, no significant difference was observed between the early-, mid- and late-career geography teachers in either interacting with other geography teachers or preparing lessons with colleagues. This finding concurs with Krečič and Grmek's (2008) finding that teachers' perceptions of the importance of cooperative learning among various role-players did not differ according to the teachers' varying levels of experience. However, the finding differs from that of Richter et al. (2011) that there was a negative relationship between age (or experience) and teachers' learning through collaboration with colleagues, which would indicate that more experienced teachers cooperate less often.

The mid- and late-career geography teachers in this study reported being more inclined to observe fellow geography and other teachers' lesson presentations. A possible reason for this, as pointed out by Patrick et al. (2010), could be that more-experienced teachers usually engage in mentoring early-career teachers, which may include observing and assessing early-career teachers' lesson presentations in the classroom. In contrast, Kyndt et al. (2016) and Thoonen, Sleegers, Oort, Peetsma and Geijsel et al. (2011) reported that early-career teachers were more in favour of observing colleagues and interacting with experienced colleagues. Moreover, Patrick et al. (2010), Mawhinney (2010) and Richter et al. (2011) all highlight the importance of early-career teachers interacting with their mentors and colleagues for meaningful teacher professional development.

Differences between geography teachers with different amounts of teaching experience and their research in the geography subdisciplines and learning domains

With reference to the influence of the teaching experience of geography teachers in doing research in the various geography subdisciplines and learning domains, the mid-career geography teachers had a higher mean score and small practically significant differences compared to the early- and late-career teachers. This finding concurs with that of Richter et al. (2011) where teachers' interest in the learning domains of subject content and subject-specific pedagogies shows an increase towards their mid-career and a decrease after that point, which can be expressed as a curvilinear relation between teacher learning and experience. They further conclude that from a teacher's mid-career onward, there is reduced involvement in professional learning due to a reduced need for information and knowledge (Richter et al., 2011). In line with this, Kyndt et al. (2016) state that late-career teachers are often characterised as confident in their teaching abilities and knowledge of the subject. A possible reason, as reported by Krille (2020), is that early-career teachers who have entered the teaching profession are of the opinion that they still have deep knowledge from their pre-service teacher training. However, these findings differ from those of Pedder and Opfer (2011) who found that early-career teachers were more likely to participate in continuous professional development with an emphasis on deepening their pedagogical knowledge than their colleagues with more years of experience.

In this study, map work, climatology and geomorphology received the highest ratings from the early-, mid- and late-career geography teachers. A possible reason for this, as highlighted by Mukondeleli (2018), is that most South African geography learners struggle with map work and aerial photographs; therefore, these domains pose perceptual and conceptual barriers to teachers' teaching. In a study conducted by Ahiaku and Mncube (2018) in a district in KwaZulu-Natal, geography teachers expressed their dislike for the teaching of map work and climatology because of the lack of resources in their schools. Furthermore, Ahiaku and Mncube (2018) state that most

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geography teachers' lack of mathematical skills contributes to the poor teaching of map work, geographical information systems and climatology. Interestingly, according to the South African National Senior Certificate results, geography learners' average marks in climatology and geomorphology are the lowest (Department of Basic Education, 2016). In this regard, Mushayikwa and Lubben (2009:381) point out that teachers engage in SDPD activities under conditions of adversity, and when they are 'fighting for professional survival, they tend to become tenacious in their bid to improve themselves'.

Limitations

This study relied on a self-report questionnaire instead of objective assessments of geography teachers involved in SDPD activities. Consequently, caution is needed when generalising these results. It is also important to point out that the geography teachers in this study were volunteers, and it is possible that they might have had a more positive attitude towards being involved in SDPD activities. It is necessary to indicate that factors such as geography teachers' gender, academic qualifications and self-directed learning skills can also influence their involvement in SDPD activities, but it is beyond the scope of this study.

Conclusion and recommendations

This study was conducted to explore the influence of teaching experience on geography teachers' involvement in SDPD activities. The results revealed that most of the early-, mid- and late-career geography teachers were involved in SDPD activities to enhance their geography content knowledge and pedagogical content knowledge. No relationship was found between the geography teachers' teaching experience and their involvement in the SDPD category and subcategories. However, the late-career geography teachers reported lower involvement in most of the SDPD activities compared to the mid- and early-career geography teachers. The mid- and early-career geography teachers reported being more involved in reading articles and books, watching videos, consulting role-players and engaging in experimentation in their classrooms, compared to the late-career geography teachers. The mid- and early-career geography teachers

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were more involved in doing self-directed research in geomorphology, development geography, geographical information systems and geography teaching and learning aids compared to the late-career geography teachers.

The findings of the study have practical implications for policymakers in the South African Department of Basic Education who manage the professional development opportunities of geography teachers. With late-career geography teachers reported to have the lowest involvement in SDPD, it is recommended that policymakers make it compulsory for all geography teachers with any amount of teaching experience to complete a minimum number of SDPD activities per year, thus ensuring that all geography teachers are involved in SDPD activities on a regular basis. Against this background, it is recommended that early-, mid- and late-career geography teachers in South Africa should be supported to initiate and manage their own professional development through a plan of improvement.

In the South African context, the South African Council for Educators (SACE) developed a "Professional development points schedule" where geography teachers must earn at least 150 professional development points every three years. The geography teachers must participate in all three different types of professional development activities or programmes to earn the 150 PD points (SACE, 2018). These types of professional development activities include teacher-initiated (self-directed professional development), school-initiated and externally initiated activities (the last two types is known as "formal professional development"). It is recommended that the SACE provide clear guidelines for early-, mid- and late-career geography teachers on how to reflect and do self-assessment of their geography knowledge, skills, pedagogical content knowledge and teaching and learning practices to encourage them to be involved in self-directed, self-initiated professional learning. It is necessary for geography teachers with different amounts of teaching experience to formulate learning goals to be achieved through self-directed professional learning. Early-, mid- and late-career geography teachers should keep a learning journal of their involvement in SDPD activities during the year. In the learning journal, they should provide proof of their

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involvement in SDPD activities and the influences of these activities on their geography knowledge and teaching practices. It is also suggested that early-, mid- and late-career geography teachers in neighbouring schools should have informal meetings where they can report on their involvement in SDPD activities. This could be another type of SDPD to provide opportunities for geography teachers to gain access to new geography knowledge, clarify their ideas and beliefs, examine different ways of thinking about teaching and learning geography and reflect on their own geography practices.

Considering the willingness of most of the early-, mid- and late-career geography teachers in this study to do research on the internet and watch online videos, it is recommended that the SACE uses available online learning technologies to assist geography teachers in their professional development. For example, online short mini-lectures, demonstrations and reading material resources can be provided on geography subdisciplines and learning domains such as map work, geomorphology, development geography, geographical information systems, climatology and teaching and learning resources. However, it is important to first create a safe collegial online learning environment in a school where, as a team, geography teachers support each other through online peer evaluations, collaborative geography lesson planning, and the implementation of active teaching and learning strategies and methods in their classrooms. With time, geography teachers can be part of geography teacher networks in neighbouring schools through online communities to discuss and reflect on their involvement in SDPD activities to enhance their geography knowledge, skills and pedagogical content knowledge.

Conflict of interest declaration

The author has no conflict of interest to declare.

References

Ahiaku, P.K.A., & Mncube, D.W. 2018. Geography educators' perceptions of learner performance in Grade 12 geography in public schools. *Alternation,* 21, 37–67.

Anshu, Gupta, P. & Singh, T. 2022. The Concept of self-directed learning: Implications for practice in the

undergraduate curriculum. *Indian Pediatrics*, 59, 331–338.

Appova, A.K. 2009. Teacher opportunities to learn: Responses and recommendations of Grades 6–12 mathematics teachers from one district [Unpublished doctoral dissertation]. University of Missouri.

Bakhshi, M.A. 2019. Teachers' perceptions on self-directed professional learning in Newfoundland and Labrador [Unpublished master's thesis]. Memorial University of Newfoundland.

Bednarz, S.W. 2002. Using action research to implement the national geography standards: Teachers as researchers. *Journal of Geography*, 101(3), 103–111.

Boehm, R.G., Brysch, C.P., Mohan, A., & Backler, A. 2012. A new pathway: Video-based professional development in geography. *Journal of Geography*, 111(2), 41–53.

Brekelmans, M., Wubbels, T., & Van Tartwijk, J. 2005. Teacher-student relationships across the teaching career. International *Journal of Educational Research*, 43(1–2), 55–71. http://dx.doi.org/10.1016/j.ijer.2006.03.006

Brooks, C. 2010. Why geography teachers' subject expertise matters. *Geography*, 95(3), 143–148.

Brysch, C.P. 2020. Teacher attitudes toward alternative professional development in Geography. *Journal of Geography*, 119(2), 55-62.

Cameron, S., Mulholland, J., & Branson, C. 2013. Professional learning in the lives of teachers: Towards a new framework for conceptualizing teacher learning. *Asia-Pacific Journal of Teacher Education*, 41, 377–397. http://dx.doi.org/10.1080/1359866X.2013.838620

Chalmers, L., & Keown, P. 2006. Communities of practice and the professional development of geography teachers. *Geography*, 91, 109–116.

Cohen, J. 1988. Statistical power analysis for the behavioral sciences (rev. ed.). Orlando, FL: Academic Press.

Day, C., & Gu, Q. 2009. Teacher emotions: Well being and effectiveness. In M. Zembylas & P. Schutz (Eds.), *Advances in teacher emotion research: The impact on teachers' lives.* (pp. 15-31). New York: Springer.

Department of Basic Education (South Africa). 2011. *Action plan to 2014. Towards the realisation of schooling*

2025. Pretoria: Government Printing Works.

Department of Basic Education (South Africa). 2016. *Education management information systems 2016 school reality report, September 2016.* www.education.gov.za

Department of Higher Education and Training (South Africa). 2015. National Qualifications Framework Act (67/2008): Revised policy on the minimum requirements for teacher education qualifications. *Government Gazette*, 596(38487).

Dube, C. 2017. The uptake of education for sustainable development in geography curricula in South African schools. In H. Lotz-Sisitka, O. Shumba, J. Lupele, & D. Wilmot (Eds.), *Schooling for sustainable development in Africa* (pp. 93–106). Gewerbestrasse: Springer.

Ellis, S.M., & Steyn, H. 2003. Practical significance (effect size) versus or in combination with statistical significance (p-values). *Management Dynamics*, 12(4), 51-53.

Flores, M. A. 2005. How do teachers learn in the workplace? Findings from an empirical study carried out in Portugal. *Journal of In-service Education,* 31, 485–508. http://dx.doi.org/10.1080/13674580500200290

Francom, G.M. 2010. Teach me how to learn: Principles for fostering students' self-directed learning skills. *International Journal of Self-directed Learning*, 7(1), 29–43.

Gerber, R. 2002. Understanding how geographical educators learn in their work. In M. Smith (Ed.), *Teaching geography in secondary schools: A reader* (pp. 293–306). London: Routledge.

Goldschagg, P., & Wilmot, D. 2020. Exploring the role of a Google Group in enabling lesson resource sharing in a South African geography teachers' professional learning community. *Journal of Geography Education in Africa*, 3, 51–62. http://dx.doi.org/10.46622/jogea.v3i.2546

Govender, R. 2015. Practices of self-directed professional development of teachers in South African public schools. *International Scholarly and Scientific Research & Innovation*, 9(2), 487–494.

Grosemans, I., Boon, A., Verclairen, C., Dochy, F., & Kyndt, E. 2015. Informal learning of primary school teachers: Considering the role of teaching experience and school

culture. *Teaching and Teacher Education,* 47, 151–161. http://dx.doi.org/10.1016/j.tate.2014.12.011

Guglielmino, L.M. 2013. The case for promoting self-directed learning in formal educational institutions. *SAeDUC Journal*, 10(2), 1–18.

Hamilton, E.R. 2013. His ideas are in my head: Peer-to-peer teacher observations as professional development. *Professional Development in Education*, 39(1), 42–64.

Hill, J., & Jones, M. 2017. Professional development. In M. Jones (Ed.), *The handbook for secondary geography* (pp. 278–291). Geographical Association.

Hutton, M.K.L. 2011. Teachers' perceptions toward required and self-directed professional learning. *Dissertations*, 446. http://aquila.usm.edu/dissertations/446

Karatas, K. 2017. Predicting teacher candidates' self-directed learning in readiness levels for terms of metacognitive awareness levels. *Hacettepe University Journal of Education*, 32(2), 451-465.

Kirk, J.M., Shih, C.K., Smeltzer, B.C., Holt, L.L., & Brockett, R.G. 2012. A citation analysis of the *International Journal of Self-Directed Learning*. Presented at the 26th annual International Self-Directed Learning Symposium, Cocoa Beach.

Knowles, M. 1975. *Self-directed learning: A guide for learners and teachers.* New York: Association Press.

Kolnik, K. 2010. Lifelong learning and the professional development of geography teachers: A view from Slovenia. *Journal of Geography in Higher Education*, 34(1), 53–58.

Krečič, M.J., & Grmek, M.I. 2008. Cooperative learning and team culture in schools: Conditions for teachers' professional development. *Teaching and Teacher Education*, 24(1), 59–68

Krille, C. 2020. Motivation for professional development of teachers (in business education). *Journal of Vocational Education & Training*, 72(4), 612.

Kyndt, E., Gijbels, D., Grosemans, I., & Donche, V. 2016. Teachers' everyday professional development: Mapping informal learning activities, antecedents and learning outcomes. *Review of Educational Research*, 86(4), 1111–1150. http://dx.doi.org/10.3102/0034654315627864

Lopes, J.B., & Cunha, A.E. 2017. Self-

directed professional development to improve effective teaching: Key points for a model. *Teaching and Teacher Education*, 68, 262–274.

Louws, M.L. Meirink, J.A., Van Veen, K., & Van Driel, J.H. 2017. Teachers' self-directed learning and teaching experience: What, how, and why teachers want to learn. *Teaching and Teacher Education,* 66, 171–183.

Masuda, A.M., Ebersole, M.M., & Barrett, D. 2013. A qualitative inquiry: Teachers' attitudes and willingness to engage in professional development experiences at different career stages. The Delta Kappa Gamma Bulletin International *Journal for Professional Educations*, 79(2), 6–14.

Mawhinney, L. 2010. Let's lunch and learn together: Professional knowledge sharing and in teachers' lounges and other congregational spaces. *Teaching and Teacher Education*, 26, 972–978. http://dx.doi.org/10.1016/j.tate.2009.10.039

Mondal, P. 2014. Application of action research in geography in school. *Asian Journal of Multidisciplinary Studies*, 2(8), 102–105.

Mukondeleli, A. 2019. Teaching of geography map work in Grade 12: A case of Nzhelele West Circuit in Vhembe District [Unpublished master's thesis]. University of Venda.

Mushayikwa, E., & Lubben, F. 2009. Self-directed professional development – Hope for teachers working in deprived environments? *Teaching and Teacher Education*, 25, 375–382.

Nawab, A. 2011. Workplace learning in Pakistani schools: A myth or reality. *Journal of Workplace Learning*, 23, 421–434 http://dx.doi.org/10.1108/13665621111162954

Patrick, F., Elliot, D., Hulme, M., & McPhee, A. 2010. The importance of collegiality and reciprocal learning in the professional development of beginning teachers. *Journal of Education for Teaching: International Research and Pedagogy*, 36, 277–289. http://dx.doi.org/10.1080/02607476.2010.497373

Pedder, D., & Opfer, V.D. 2011. Are we realising the full potential of teachers' professional learning in schools in England? Policy issues and recommendations from a national study. *Professional Development in Education*, 37(5),

741–758.

Porter, B., & Freeman, M. 2020. Experienced outcomes of a self-directed professional development program. *The Professional Educator*, 43(1), 36–47.

Richter, D., Kunter, M., Klusmann, U., Lüdtke, O., & Baumert, J. 2011. Professional development across the teacher career: teachers' uptake of formal and informal learning opportunities. *Teaching and Teacher Education*, 26, 116–126. http://dx.doi.org/10.1016/j.tate.2010.07.008

Rolls, S., & Plauborg, H. 2009. Teachers' career trajectories: An examination of research. In M. Bayer, U. Brinkjaer, H. Plauborg, & S. Rolls (Eds.), *Teachers' career trajectories and work lives* (pp. 9–28). Dordrecht: Springer.

Rueschhoff, J., & Palma, H. 2021. Geography achievement and opportunity to learn: A focus on teacher quality. *Journal of Geography*, 120(6), 218–224.

Schell, E.M., Roth, K.J., & Mohan, A. (Eds.). 2013. A road map for 21st century geography education: Instructional materials and professional development. National Council for Geographic Education.

Schulz, M., & Stamov Roßnagel, C. 2010. Informal workplace learning: An exploration of age differences in learning competence. *Learning and Instruction*, 20(5), 383–399.

Slavit, D., & McDuffie, A.R. 2013. Self-directed learning in collaborative contexts. *School Science and Mathematics*, 113(2), 94–105.

Smith, K. 2017. *Teachers as self-directed learners: Active positioning through professional learning.* Singapore: Springer.

South African Council for Educators. 2018. *Professional development points schedule.* https://www.sace.gov.za/Documentation/PROFESSIONAL%20DEVELOPMENT%20POINTS%20SCHEDULE.pdf

Steinke, K. 2012. Implementing SDL as a professional development in K-12. *International Forum of Teaching and Studies*, 8, 54–63.

Thenga, M., Goldschagg, P., Ferguson, R., & Mandikonza, C. 2020. Teacher Professional Development and Geography Teachers' Pedagogical Practices for Climate Change Education. *Southern African Journal of Environmental Education*, 36, 34-47.

Thoonen, E.E.J., Sleegers, P.J.C., Oort, F.J., Peetsma, T.T.D., & Geijsel, F.P. 2011. How to improve teaching

practices: The role of teacher motivation, organizational factors, and leadership practices. *Educational Administration Quarterly*, 47(3), 496-536. http://dx.doi.org/10.1177/0013161x11400185.

Van Daal, T., Donche, V., & De Maeyer, S. 2014. The impact of personality, goal orientation, and self-efficacy on participation of high school teachers in learning activities in the workplace. *Vocations and Learning*, 7, 21–40. http://dx.doi.org/10.1007/s12186-013-9105-5

Weir, C.D. 2017. Understanding self-directed professional development in mathematics for elementary teachers: A phenomenographical study [Unpublished doctoral dissertation]. University of Western Ontario.

White, A.L., Lim, C.S., & Chiew, C.M. 2006. An examination of a Japanese model of teacher professional learning through Australian and Malaysian lenses [Paper presentation]. Conference of the Association for Active Educational Researchers.

Wuam, P.W., & Bulus, M.A. 2022. In-service education and professional development as tools for enhancing geography teachers' job performance in Nigerian secondary schools. *African Journal of Humanities Contemporary Education Research*, 4(11), 110-120.