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Life Orientation teachers' pedagogical content knowledge and skills in using a group investigation cooperative teaching approach

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Abstract

In this qualitative phenomenological study, we explored the pedagogical content knowledge and skills needed by Life Orientation teachers to implement a group investigation cooperative teaching approach. This study is based on constructivist theory and employed purposive sampling. Seven teachers from selected secondary schools in the Northern Cape province, South Africa, participated in face-to-face interviews. Data was analysed using inductive thematic analysis; it was supported by the literature review and by constructivist theory. Findings revealed that the participants' lack of adequate Life Orientation content knowledge and pedagogical content knowledge has an impact on their teaching praxis. We found that challenges such as the lack of training in implementing group investigation prevent them from participating in such practice. It is therefore recommended that the Department of Basic Education develop strategic plans and training sessions to promote the use of group investigation as a school-based professional development initiative. Further research on group investigation to benefit in-service Life Orientation teachers may pave the way towards the establishment of professional collaboration as a sustainable practice among them.

Keywords: Life Orientation teachers, cooperative learning, group investigation, teaching approach, secondary schools, subject content knowledge, pedagogical content knowledge

Introduction

We derived this article from a more comprehensive study that investigated the pedagogical content knowledge and skills of Life Orientation (LO) teachers in the Northern Cape Province of South Africa. The purpose of this paper is to answer the question:

- What pedagogical LO content knowledge and skills should secondary teachers have in planning group investigation as a cooperative teaching and learning approach?

Internationally, there is a growing focus on the command of content required for successful teaching. Noting that the literature on the subject repeatedly offers that of inexperienced teachers we characterise an effective teacher's knowledge as being more connected and integrated (see Krauss et al., 2008). Shulman (1986) and Kleickmann et al., (2013) have asserted that whenever a teacher's knowledge can be identified, this will enhance successful teaching and learning strategies and positive learning outcomes. This means that teachers need to be equipped with various kinds of knowledge about teaching and learning.

Shulman (1986) distinguished between subject content knowledge (SCK), pedagogical content knowledge (PCK), and general pedagogical knowledge (GPK). GPK has been described as "those broad principals and strategies of classroom management and organisation that appear to transcend subject matter" (Shulman, 1987:13). It is used with SCK and PCK.

The rationale for introducing LO into the school curriculum as a fundamental subject focused on a theory-driven and skills-oriented approach to teaching the subject, was mainly to develop South African youth into effective and productive citizens with strong values. But the different topics that comprise LO pose challenges to teachers since they have not been trained in all facets of these topics. They include:

- social and environmental responsibility;
- development of the self in society;
- democracy and human rights;
- careers and career choices;
- study skills; and
- physical education (Department of Basic Education, 2011).

These topics require teachers to design authentic lessons to which learners can relate and be enabled to acquire the relevant knowledge, skills, and values that promote responsible behaviour (Swarts et al., 2019). Although the assumption is that everybody can teach this subject, teachers need to be equipped with the necessary critical, analytical, problem-solving, and technical skills to join the LO community of practice. This is of serious concern because specialisation in the subject is needed along with the confidence to build on effective professional subject knowledge. Teachers need to be informed and knowledgeable about the broad spectrum of different topics covered by this subject area. Since their knowledge,

competencies, and skills are limited this necessarily prevents the successful implementation of effective teaching.

In a study by Hartell et al. (2013), their findings revealed that teachers did not have sufficient knowledge and skills to implement the LO curriculum effectively. They identified insufficient knowledge of subject matter and inadequate skills along with uncertainty and disregard for the subject framework principles established by the Department of Education in 2008. Similarly, Diale (2016) indicated that although teachers were expected to teach LO as a subject, they had not received the training. As a result, teachers experienced various challenges, including those related to their limited understanding of how to effectively implement the LO curriculum and their limited knowledge of the mediating tools and practice skills needed for effective teaching.

Many teachers were expected to teach the subject without having been trained. Rooth (2005) found that teachers were not trained sufficiently to allow them to be considered specialists in LO since they lacked the expertise to teach a subject whose topics vary from physical and health education to career guidance. Teachers need on-going training and professional development to update their knowledge, competencies, and skills to deepen their expertise and professionalism (see Krutka et al., 2017 and Whitworth et al., 2018).

LO is a multidisciplinary subject grounded in knowledge domains such as psychology, sociology, political science, human movement, and labour studies, all of which cater to successful integration in other subjects in the school curriculum (Geldenhuys et al., 2013). This subject, as with all others, requires a specialist teacher well-versed in both SCK and PCK. Teachers need to have good in-depth subject knowledge to ensure that learners can fully conceptualise and interpret the content (Kleickmann et al., 2013); in this way effective teaching and learning occurs in the classroom. A good understanding of the content will assist the LO teacher in responding to learners' queries and challenges and prepare them for life in the 21st century.

Description of the problem

Amid the turbulence of curriculum transformation in South Africa, teachers were expected to deliver the new curriculum (see Nkambule & Amsterdam, 2018), in which LO was a new subject. Since there were no experienced LO teachers, the alternative was to consider teachers who had no LO subject knowledge and teaching experience. The reason behind teachers being considered as qualified to teach LO was based on their being a teacher in one of the former subjects of Guidance, Religious Studies, or Physical Education and they were made responsible and accountable for the diverse demands of this multidisciplinary subject (Stroebel et al., 2019). These new LO teachers attended a three-day HIV/AIDS course, or a two-day LO workshop (Prinsloo, 2007) in preparation. This was regarded as a quick-fix approach that has made it difficult for teachers as well as district officials to implement the new curriculum, since most teachers did not acquire enough SCK to teach the subject (Department of Basic Education, 2011; Diale, 2016). These teachers were faced with

tremendous challenges and, as a result, the quality of education was jeopardised (Dada et al., 2009). Over the years, many efforts have been made by the South African education system to improve LO teachers' competence, professional knowledge, self-efficacy, and classroom practice, and to skill them through in-service training (Hofmeyr, 2015), but we cannot help but wonder to what extent the teaching of LO has been compromised.

Here we investigate the knowledge and skills needed by LO teachers when they are implementing group investigation as a cooperative teaching and learning approach. A critical initiative of the Department of Basic Education, as stipulated in the National Strategy for Learner Attainment, states that teachers must adhere to the correct implementation of the curriculum. Research indicates that teachers in South African schools are not yet fully capacitated with PCK to teach LO effectively. This means that teachers with limited SCK of LO (and of the other subjects they teach) find it challenging to respond effectively to learners' concerns and to clarify any misconceptions in their understanding of the subject content. Similarly, they are unable to deal with other cognitively challenging learning situations (Gama, 2015). As a result, we believe that the gap between the Department's theoretical aspirations and the teachers' role as subject experts in LO means that problems in the classroom are difficult, if not impossible, to overcome.

Our research question is: What PCK and skills should secondary LO teachers have to enable them to use group investigation as a cooperative teaching and learning approach?

Literature review

Conceptualising SCK and PCK for LO

Many scholars have made a distinction between and among content knowledge (CK), PCK, and GPK in the examination of teacher knowledge (Shulman, 1986, 1987). Researchers suggest that such knowledge should be identified since it contributes to effective teaching and learning outcomes.

CK can be defined as the knowledge of the specific subject and the subject matter that teachers must teach. Shulman (1987, p. 8), described GPK as "those broad principals and strategies of classroom management and organisation that appear to transcend subject matter" and is to be used in conjunction with SCK and PCK. PKC is described as the compulsory knowledge needed to make the subject matter accessible to learners and serves as the "category most likely to distinguish the understanding of the content specialist from that of a pedagogue."

Teachers' subject content knowledge

Teachers of the 21st century must possess good in-depth subject knowledge to respond to learners' needs and challenges. SCK is the acquired and developed knowledge that a teacher has within their field of specialisation. Significantly so, teachers' knowledge of the subject matter is at the heart of professional competence (Ballet al., 2008). Shulman (1986, pp. 9–10)

contended that the teacher "must not only understand that something is so, but the teacher must further understand why it is so." Teachers should have knowledge about contemporary theories of teaching and learning as well as different evidence-based teaching practices and their implementation in class (Abramczyk & Jurkowski, 2020). With limited SCK of the subjects they teach, teachers will find it difficult to effectively respond to learners' concerns and clarify any misconceptions in their understanding of the subject content and deal with cognitively challenging learning situations (Gama, 2015; Hill et al., 2008) as mentioned above.

The constant and marked changes in the contemporary world mean that teachers must develop new competencies and skills to adequately respond to the ever-increasing demands of the 21st century that relate to the tasks they must perform (Barrios, 2021). Teachers must understand the content that needs to be taught if they are to conceptualise or interpret it thoroughly and be in a position to implement it according to policy. Muller and Hoadley (2019) reported that the current Curriculum and Assessment Policy Statement (CAPS) represents a performance-based curriculum that is highly prescriptive regarding the subject content to be covered, as well as the sequencing and pace of coverage. Bertram et al., (2021) therefore suggested that such an approach results in teachers focusing on content coverage instead of helping learners to understand the content.

Teachers play a crucial role in a changing society and this calls for their multidimensional role to include teaching, demonstrating, guiding, facilitating, and initiating learning communities (Zhu & Wang, 2014). This means that today's teachers should have the ability to broaden the scope and depth of learners' understanding in constructing knowledge in a socially constructed environment (Kleickmann et al., 2013; Krauss et al., 2008). However, as previously indicated, subjects such as LO are allocated to teachers who have no SCK and this allocation is based on the need to fill up the timetable (Mosia, 2011); this is of great concern. To implement cooperative learning effectively the complex interplay of factors such as the teacher's knowledge of its procedures, curriculum alignment, and school policy (Ghaith, 2018) needs to be taken into account.

The importance of Life Orientation teachers' subject knowledge

Since the South African education system has changed from a teacher-oriented approach to a learner-centred one, it has become important that teachers be capable of applying various teaching strategies. Providing teachers with the knowledge to organise quality instruction that helps learners to achieve their full potential and sustaining this effort is a challenge to education systems worldwide (Neumann et al., 2019); teachers must be given the necessary skills and competencies to fulfil this task (Slavin, 2014). However, moving teachers from one learning area to another, to fulfil school placement needs compromises the teaching and learning process (Stroebel et al., 2019). LO teachers need to have a well-developed PCK that includes a broad repertoire of teaching approaches. One such innovative approach is cooperative learning that could assist in ensuring effective teaching and learning (Van Wyk, 2012, 2019). We argue that teachers' subject knowledge is a prerequisite because the LO curriculum is composed of various topics drawn from other domains, but in addition to this,

teaching skills and competencies are vital to implement the curriculum effectively. We do not claim that teachers are the sole source of knowledge, but they are required to assist, facilitate, and guide learners with interaction and participation, problem-solving, and the interpretation of information (Johnson & Johnson, 2018).

Current research on teachers' PCK and skills has indicated that teachers lack sufficient knowledge and skills to implement the LO curriculum in the classroom not only because of a lack of training and a lack of subject matter knowledge but also because of uncertainty (Diale, 2016; Hartell et al., 2013; Swarts et al., 2019). This means that little information is available on LO teachers' PCK and even less on their skills in using a group investigation cooperative learning approach.

Teachers' pedagogical content knowledge

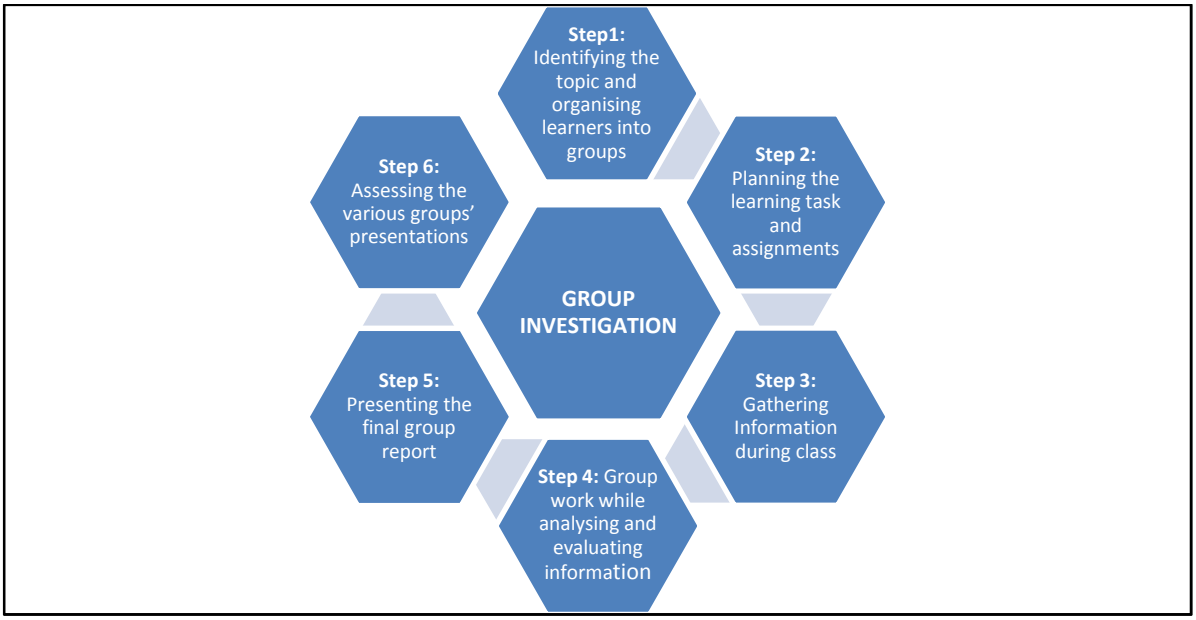
Teachers' PCK has been conceptualised in different ways. Some researchers see PCK as an innovative process in which teachers develop new ideas and repertoires for teaching a topic (Hashweh, 2013), while others see it as an integrative process in which teachers apply their PCK to new situations (Aydin et al., 2015). PCK kicks in when teachers create new knowledge in the sense of an intervention of a new instructional strategy. The teacher must develop new insights related to the new topic to understand previously unknown student learning difficulties and integrate their understanding of previous knowledge related to the topic in their teaching (Chan & Yung. 2018). Furthermore, PCK is an umbrella term for teaching strategies or methodologies, curriculum, and learning support material that the teacher uses to deliver content to learners (Kleickmann et al., 2013). To break it down, PCK, therefore, integrates content and pedagogy and demonstrates an understanding of how to translate subject matter knowledge into a classroom that has learners from diverse backgrounds and with different levels of ability (Shulman, 1987).

It is incumbent on every teacher to be equipped with PCK to teach the subject content so that it can enable learners to develop a clear understanding of the new information. Pillay (2012) concurred that knowledge, skills, values, and attitudes are essential attributes for a successful LO teacher who is not only a teacher of the subject but also one who possesses the ability to engage in several diverse roles in the school community. As alluded to earlier, PCK also includes having and using innovative teaching strategies and approaches to accommodate learners in a diverse teaching setting (Kleickmann et al., 2013). To sum up, teachers must be abreast of the subject's content to be effective and proficient in curriculum delivery and equipped to implement an innovative strategy such as a group investigation. However, Samuels (2012) expressed the same opinion as Gama (2015) about how limited some teachers' knowledge is and suggested that many teachers were not sufficiently trained to teach the LO content and that this has resulted in a less effective implementation of the LO curriculum.

Implementing group investigation in general as a cooperative learning strategy

Group investigation, as a cooperative learning strategy, enables learners to become interactive in the classroom, and leads to positive interdependence and individual responsibility during social interaction in group work (Ahsanah, 2015). Group investigation, as a technique, should be implemented with a set of guidelines, as illustrated in Figure 1 below.

Figure 1
Implementing group investigation



To ensure that group work is correctly and successfully implemented, teachers must continually practise cooperative learning procedures with their learners. Group member roles should be stipulated, evident, and assessable so that the teacher can intervene appropriately in a helping and encouraging manner (Masoabi, 2015). However, interconnectedness can be established only if the group members have common goals, information is shared among them, and members of the group are rewarded jointly (Van Wyk, 2012).

The teacher's primary role is to facilitate the learners' growing awareness of what interests them most about a topic and what they want to investigate. In Stage 1, learners form groups to work collaboratively on the same topic. Tran (2013) asserted that optimal interaction relies on the size of the group in which learners will cooperate in their learning tasks. During Stage 2, learners plan what they want to investigate cooperatively and develop their research questions related to their chosen sub-topics. The teacher moves among the groups and encourages learners to be more helpful. Moving from group to group gives the teacher a chance to see if any members of groups are having difficulty cooperating. However, the teacher may need to intervene to strike a balance between the heterogeneity of the group and the interest of the learners (Sharan, 2010).

At the third stage, each group carries out the plans for their assigned work, gathering the relevant information from a variety of sources. Thereafter, at Stage 4 students apply their skills through analysis, synthesis, and evaluation to create new knowledge and to summarise their findings. The groups decide which of their findings to share with the class and how to present them. The teacher then organises and coordinates the groups' plans for their presentation (Sharan, 2010). In this way teachers integrate the teaching of content with innovative methodology (Kahn & Nyamupangedengu, 2022).

At the fifth stage, the groups are invited to present their findings to the class with members of other groups listening and evaluating. At the end of each presentation, the teacher leads a short discussion and the audience comments on the presentation (Sharan, 2010). At the final stage, the achievement of each learner and the group is assessed.

As antagonists for implementing group investigation as a cooperative approach, Baloche and Brody (2017), highlighted issues that might be problematic in schools such as efficacy, theoretical relevance, and policy support.

Aim and research question

In this study, we aimed to explore LO teachers' PCK and skills when they are implementing a group investigation cooperative learning approach. The research question is: "What pedagogical Life Orientation content knowledge and skills should secondary teachers have in planning group investigation as a cooperative teaching and learning approach?"

Theoretical framework

This study is underpinned by constructivist learning theory (Vygotsky, 1978, and Piaget, 1896–1980), along with a number of learning theories that contributed valuable ideas to help inform it. Social constructivism posits that knowledge is constructed through negotiated social interactions based on reflection, discussion, and explanation (Vygotsky, 1978); reality and truth are subjectively constructed in a social environment (Nieuwenhuis, 2007). The teaching and learning strategies involved in group work offer learners the possibility of democratic participation in socio-environmental issues in their lived environment. Vygotsky emphasised social interaction and collaboration in the classroom and stated that such a society (in this case, a school) plays a vital part in understanding reality as happens in cooperative learner-centred teaching. Piaget (1973), through his theory of constructivism that covers learning theories, teaching methods, and education reform, maintained that learners generate knowledge and skills from experiences. The emphasis for LO moves towards the *how* and *why* instead of *what* is taught in the classroom (Nel, 2014).

Against this conceptual and theoretical framework, we go on to explain the research methodology.

Methodology

The research design

This investigation employed a qualitative-phenomenological research design so data on the everyday situations of the participants was collected (Maree, 2016). Our intention was to gain an in-depth understanding of, and insight into, teachers' responses on questions related to how they used their SCK and PCK to implement group investigation in their LO lessons.

Population and Sampling

This study focused on seven selected secondary schools in the Pixley Ka Seme District of the Northern Cape Province, South Africa. The purposive sampling of seven secondary school LO teachers (three male and four female) resulted in an in-depth analysis of their experience, expertise, and knowledge as related to the central issues of our study (Nieuwenhuis, 2007). Participants were in the age group of 24 to 50. One teacher had one year of experience, two teachers had between seven and eight years, and four had more than eight years of teaching experience in Grades 10 to 12.

Data Collection Procedure

We conducted in-depth, semi-structured interviews over a period of three months. Face-to-face interviews with the seven LO teachers were conducted at the district office according to the availability of each participant. Interviews, that ranged between 30 and 45 minutes, were guided by an interview schedule consisting of a series of open-ended questions. Teachers were required to motivate their answers using narratives. The questions were aimed at establishing the LO teachers' teaching praxis, particularly which aspects of SCK and PCK they felt they needed in a cooperative teaching and learning situation (see Marshall & Rossman, 2006). Each interview was used to determine the teacher's perceptions of their SCK and their PCK and how they apply both in their classrooms; their view of their training on cooperative learning and specifically group investigation; and the value of cooperative learning and the challenges they experience with it in the teaching of LO. The nature of the questions provided an opportunity for elaboration by participants on issues raised during the interviews.

Data analysis

Following Glaser and Strauss (1967), we employed thematic analysis to analyse this qualitative data inductively based on categories and sub-categories that emerged as the data was being analysed. Independent researchers transcribed the interview data, then coded it manually and condensed it into meaningful units (see Miles et al., 2014). Themes were generated based on the objectives we sought to achieve. Dependability was assured through having two researchers working independently and then analysing the data together, through

critical discussion, and arriving at consensus. We voice-recorded the interviews and discussed these recordings with the participants to complete an audit trail.

Trustworthiness

This was ensured through our giving a complete explanation of the research to participants along with the context of the research. Credibility was also ensured through engagement with the research participants in the field (see Lincoln & Guba, 2000). After the data was transcribed and analysed, it was returned to the participants for member checking so that they could scrutinise it and elaborate on it if they felt this to be necessary. All responded that they were satisfied with the analysed data. Any form of bias that could influence the findings of this study was attended to.

Ethical considerations

These involved applying for and being granted ethical clearance from The University of South Africa (UNISA) and having the Ethics Committee approve the research.[1] The Northern Cape Department of Education granted permission to conduct the study at the selected schools. Informed consent was obtained from the participants, and tenets of confidentiality and anonymity were adhered to.

Findings

Our study aimed to determine the skills and PCK of seven secondary LO teachers in planning group investigation as a cooperative teaching and learning approach. We discuss the findings according to the themes that emerged from the analysis: teachers' SCK, PCK, and training in implementing cooperative learning in the LO classroom.

Subject content knowledge and pedagogical content knowledge

This theme reveals the commitment of LO teachers towards their professional development and the improvement of learner performance. The participants illustrated that their purpose in a classroom is to implement important subject and pedagogical knowledge for the effective teaching and learning of LO. Teachers expressed themselves as follows.

> It is not just anyone who can teach the subject, although people assume that. When you understand the method, you can teach . . . and you are on top of the content (know the content well). (Veliwe)

> Once you love teaching, it is easy to integrate pedagogical knowledge into your daily teaching. You must understand how to apply group investigation to be successful. (Monti)

[1] Reference number: 2019/11/13/41003276/08/AM

> I think my understanding about group investigation is broad enough to teach it correctly. I am in a better position to help other teachers as we normally do at our school because I am on a higher level regarding my knowledge of the subject. (Umathi)

These statements confirm that these three teachers are aware of the need to attain an in-depth understanding of subject knowledge. They acknowledged that they have sufficient subject knowledge, and they are well informed about the LO content. The subject matter is of such a nature that one teacher feels capable of helping other teachers. One can also deduce from these extracts that teachers need to be competent and skilful with a sound understanding of LO that incorporates SCK and PCK.

Veliwe regards content knowledge as extensive knowledge (broader and deeper knowledge) that they obtained during their years of study and during the experience gained from teaching.

> . . . teacher [content] knowledge is extensive subject knowledge, and teacher pedagogical knowledge is the relationship between knowledge of teaching and subject knowledge . . . teacher knowledge is the knowledge you have learned at the college or university, experiences during practice teaching, and a real classroom environment. The pedagogy refers to the day-to-day management of the subject content with interaction with the learners . . . Also, how you teach and your way of instruction to the learners.

Richi referred specifically to skills and capabilities that LO teachers should acquire and develop.

> Teacher [content] knowledge . . . can be the different skills and capabilities you as a teacher have. Teacher pedagogical knowledge refers to the specialised knowledge you developed during the years of study, training, workshops on how to teach in the classroom.

Monwabi indicated that content knowledge was acquired during his studies and that over the years he has developed this in conjunction with pedagogy. He realises the importance of assisting learners in developing an understanding of the content so that it can be applied to their lives. He said,

> [You] demonstrate teacher knowledge when you convey information to learners. It is the theory you learnt during your studies and the experience you have gained over the years. Pedagogical knowledge [is] how to make information understandable to learners, the assessment they will do, and how learners must show an understanding about the content they learnt.

The above responses reflect the teachers' conceptual understanding of SCK and PCK. It remains essential for teachers to have an in-depth understanding of the content knowledge in order to teach the subject matter effectively so as to enable learners to develop a clear understanding of the new information and be able to apply it to their lives.

Training in implementing group investigation as a cooperative learning approach

Umathi reported on the value of group investigation thus:

> I see group investigation as a progressive teaching approach in a sense that it stimulates learners and everyone in the group, also those who are just listening and watching to what is presented by the different groups.

However, it is essential for teachers to be trained in this type of teaching approach. Teachers reported that although the essence of training, especially in this case, is to up-skill teachers on cooperative learning methods, it also aims to broaden their understanding and professional competence and skills so that they might be an effective resource for others in the LO classroom. Phakama said,

> You must at all-time attend training sessions. Never miss out. It empowers you, keeps you updated, and you learn new things every time.

Teachers acknowledged the importance of training and professional development in preparing them to implement an innovative teaching method. For Veliwe,

> The preparation of group investigation needs thorough planning. You have so much confidence in yourself, and you are better prepared to work with learners . . . When I do proper planning, learners immediately know how to do their tasks.

The above extracts indicate that teachers have positive perceptions of group investigation as a cooperative teaching-learning approach, but it also means that training is needed in order for this learner-centred approach to be effectively implemented. Veliwe acknowledged that "group investigation requires thorough planning" and that this paves the way for learners to know exactly what is expected from them.

Training to perform and execute effective teaching forms an important way of assisting teachers to acquire the necessary skills, knowledge, and capabilities to become productive and competent contributors to the work environment. However, some teachers had different views about their training. Petra said,

> One other thing to say, we were trained on cooperative learning but not on group investigation, to be specific. When you hear cooperative learning, you think about group work.

For Richi,

> It is important to mention that I have never received any formal training in group investigation so that you understand my background. I read many sources about cooperative learning, and because of the projects, I found group investigation the most proper to assist learners in research and assignments [and] this is how I try to keep myself updated and make planning for myself easier.

It seems that even though some of the participants had not undergone training specifically on group investigation, their experience and self-study gave them insight into cooperative learning techniques.

Richi raised three major issues facing LO: training; group investigation (cooperative learning); and planning. For all learners with their diverse learning styles to be catered for, teachers have to be mindful to ensure that their teaching approaches are always learner-centred, innovative, and focussed on not only "guiding and preparing learners to respond appropriately to life's responsibilities and opportunities" (Department of Basic Education, 2011, p. 8) but also ensuring that learners develop the necessary skills and competencies for the 21st century.

Discussion of the findings

We set out to explore the PCK and skills that secondary teachers of LO should have in planning group investigation as a cooperative teaching and learning approach.

Subject knowledge and pedagogical content knowledge of Life Orientation teachers

This study established that subject knowledge and PCK are the acquired and developed knowledges that a teacher possesses and that forms the cornerstones of effective teaching and learning within their field of specialisation. Confidence in the subject content and how to teach it was highlighted by teachers, but it was found that some teachers were not fully conversant with the subject matter and did not have adequate PCK, so they lacked sufficient knowledge to teach the subject effectively. This statement corroborates the assertion of Neumann et al. (2019) that it is quite difficult for teachers to acquire and constantly develop their knowledge in order to ensure organised quality instruction. What must be considered is that teacher SCK is at the heart of professional competence (Hill et al., 2008) and needs constant development. It is evident from the literature (see Mosia, 2011) that any teacher who wants to teach LO has not only to become knowledgeable about the subject matter but must acquire in-depth SCK. Most of the teachers in this study were confident in their knowledge of the LO content and also in their competency and skill in the teaching methods employed, which is in line with Shulman's (1986, p. 7) point that the teacher "must not only understand that something is so, but the teacher must further understand why it is so." Teachers who have not been trained to teach LO assume that they could teach the subject at the same level as those who have been trained. This assumption has been refuted; teachers with limited SCK of the subjects they teach will find it challenging to respond to learners' concerns effectively and will be unable to clarify any misconceptions in their understanding of the subject (Swarts et al., 2019).

Another finding revealed teachers' perceptions of their understanding of teacher knowledge that incorporates SCK and PCK. We deduced that teachers have a reasonable interpretation of the conceptualisation of both, but the application thereof remains a challenge. We argue that it is not enough to understand these concepts and teachers must have in-depth knowledge and

practical experience of the subject matter of what they teach along with PCK. This finding aligns with that of Kleickmann et al. (2013) who asserted that every teacher must acquire and be equipped with PCK to teach the subject matter in such a way that it enables learners to develop a clear understanding of the new information. Johnson and Johnson (2018) supported this assertion in stating that the importance of a teacher, not only as the source of knowledge, but as a guide and facilitator is that they be able to assist learners to develop deeper learning. Shulman (1986) suggested that teachers of all subjects, and in this study, LO in particular, should be able to present the content of their subject appropriately and should be conscious of typical misconceptions of students and regarded this as an essential precondition for the development of PCK.

In this study, some LO teachers were unable to demonstrate well-developed pedagogical knowledge that implies knowledge about what a task can contribute to the students' successful construction of knowledge. Shulman (1986) contended that PCK also includes an understanding of what makes the learning of specific topics easy or difficult. He further postulated that students of different ages and backgrounds bring different conceptions and preconceptions with them to the learning of those most frequently taught topics and lessons, so teachers need to know strategies that address the understandings of learners.

Training in implementing group investigation as a cooperative learning approach

Findings revealed that four of the participating teachers had not received training in group investigation as a teaching approach. All the teachers had undergone formal training in cooperative learning in general, and thus had some understanding of this technique that includes group work, but they lacked specific training in group investigation as a teaching approach. The reviewed literature suggested that many teachers who were required to teach LO had not been sufficiently trained to teach its content and thus had not developed appropriate teaching methods. This resulted in a less confident teacher delivering the LO curriculum (Samuels, 2012). This finding is congruent with that of Muller and Hoadley (2019) who argued that not being knowledgeable about the subject matter may lead to a superficial covering of curriculum content in relation to the prescriptive nature of CAPS. However, to effect a good teaching and learning process and respond to the needs of the learners, the teacher should employ a variety of teaching strategies and deliver the subject matter in a meaningful manner (Kleickmann et al., 2013). We argue that training also contributes to teachers' professional development, and this aligns with Rooth's (2005), postulation that as long as teachers are not professionally qualified in the subject, quality teaching will never be realised. Therefore, teachers should be up skilled in their LO PCK when they plan to use group investigation as a cooperative teaching and learning approach so that content coverage does not supersede learner understanding of the content (see Bertram et al., 2021).

Diale (2016) reported that many teachers were expected to teach LO as a subject without any training and that this has resulted in a variety of challenges that includes their limited knowledge of the mediating tools and practice skills needed for effective teaching. However, although some teachers lacked training in cooperative learning, they were optimistic in their

belief that group investigation as a learner-centred teaching approach during which learners create their own understanding and knowledge that can then be applied to their lives, is very useful. The lack of training has not prevented them from employing innovative strategies like this.

Conclusion and recommendations

We examined secondary teachers' SCK and PCK in planning to use group investigation as a cooperative teaching approach in the teaching of LO. For teachers to be regarded as competent to effectively implement the LO curriculum, they ought to have an in-depth understanding of SCK and PCK. Results from this qualitative-phenomenological study revealed that in LO teaching PCK was conceptualised but not operationalised in a cooperative learning framework that could successfully employ group investigation. A result of great significance is the fact that the PCK of a teacher, but not content knowledge *per se* contributes substantially to the learning development of learners. Therefore, it is worth investing in teacher training of LO teachers, especially with respect to PCK, based on a sound foundation of SCK. Given these challenges, we recommend that LO teachers should be trained to make a paradigm shift from the traditional teaching approach to a learner-centred one that deploys different teaching and learning approaches such as cooperative learning. A developmental training programme on group investigation as a cooperative teaching and learning approach should the implemented for LO teachers to assist them in balancing the different cooperative learning approaches. Equipping LO teachers with further innovative teaching strategies will assist them in implementing a learner-participatory approach that could enhance learners' performance in the LO classroom and ensure that the LO knowledge and skills can be applied to their lives.

Limitations

Only a small sample of secondary teachers' praxis on the SCK and PCK in planning group investigation as a cooperative teaching approach was examined in this study. For further research, a participatory action research study could be employed to obtain first-hand experience and insight into how learners experience this teaching approach in the LO classroom.

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References

Abramczyk, A., & Jurkowski, S. (2020). Cooperative learning as an evidence-based teaching strategy: What teachers know, believe, and how they use it. *Journal of Education for Teaching, 46*(3), 296–308.

Ahsanah, F. (2015). Group investigation: A cooperative learning method for the 10th grade students in the speaking English classroom. *TELL Journal, 3*(1), 57–69.

Aydin, S., Demirdogen, B., Nur Akin, F., Uzuntiryaki-Kondakci, E., & Tarkin, A. (2015). The nature and development of interaction among components of pedagogical content knowledge in practicum. *Teaching and Teacher Education, 46*, 37–50.

Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education, 59*(5), 389–407.

Baloche, L., & Brody, C. M. (2017). Cooperative learning: Exploring challenges, crafting innovations. *Journal of Education for Teaching, 43*(3), 274–283.

Barrios, T. (2021). Teaching competencies for 21st century. *Academia Letters,* Article 3183.

Bertram, C. A., Mthiyane, C. C. N., & Naidoo, J. (2021). The tension between curriculum coverage and quality learning: The experiences of South African teachers. *International Journal of Educational Development, 81*(10), 1–8.

Chan, K. K. H., & Yung, B. H. W. (2018). Developing pedagogical content knowledge for teaching a new topic: More than teaching experience and subject matter knowledge. *Research in Science Education*, *48*(2*),* 233–265.

Dada, F., Diphola, T., Hoadley, U., Khembo, E., Muller, S., & Volmink, J. (2009). *Report of the task team for the review of the implementation of the national curriculum statement* [Final Report]. Department of Basic Education.

Department of Basic Education. (2011). *National curriculum statement: Curriculum and assessment policy statement: Life orientation. Further Education and Training band grades 10–12*. https://Department+of+Basic+Education.+(2011).+National+curriculum+statement%3A+Curriculum+and+assessment+policy+statement%3A+Life+orientation.+Further+Education+and+Training+band+grades+10%E2%80%9312

Department of Education. (2008). *Learning programme guidelines: Life orientation*. https://Department+of+Education.+(2008).+Learning+programme+guidelines%3A+Life+orientation

Diale, B. M. (2016). Life orientation teachers' career development needs in Gauteng: Are we missing the boat? *South African Journal of Higher Education, 30*(3), 85–110.

Gama, R. B. (2015). *An exploration of life orientation educator's knowledge and the teaching of study skills in further education and training phase high schools in Ekudibeng Cluster*. [Unpublished Master's in Education thesis, UNISA, Pretoria, RSA].

Geldenhuys, J. L., Kruger C., & Moss, J. (2013). Selected South African grade 10 learners' perceptions of two learning areas: Mathematical literacy and life orientation. *Africa Education Review, 10*(2), 298–322.

Ghaith, G. M. (2018). "Teacher perceptions of the challenges of implementing concrete and conceptual cooperative learning." *Issues in Education*, *28*(2), 385–404.

Glaser, B. G., & Strauss, A. L. (1967). The discovery of grounded theory: Strategies for qualitative research. Aldine.

Hartell, C., Mosia, D., & Steyn, M. (2013). Secondary school teachers' understanding, response to and implementation of life orientation. *Journal for Educational Studies, 12*(2), 156–172.

Hashweh, M. (2013). Pedagogical content knowledge: Twenty-five years later. In *Teacher thinking to teachers and teaching. The evolution of a research community* Vol. 19 (pp. 115–140). https://www.emerald.com/insight/content/doi/10.1108/S1479-3687(2013)0000019009/full/html

Hill, H., Ball, D. L., & Schilling, S. G. (2008). Unpacking pedagogical knowledge: conceptualization and measuring teachers' topic-specific knowledge of students. *Journal of Research in Mathematics Education, 39*(4), 372–400.

Hofmeyer, J. (2015, March 13). Teachers in South Africa: Supply and demand 2013–2025. *Africa Portal*. https://www.africaportal.org/publications/teachers-southafrica-supply-and-demand-2013-2025/

Johnson, D. W., & Johnson, R. T. (2018). *Cooperative learning. The foundation for active learning*. University of Minnesota.

Kahn, R. R., & Nyamupangedengu, E. (2022). Investigating opportunities for integrating methodology when teaching a life science topic (meiosis) to fourth-year pre-service teachers: A case study. *Journal of Education, 86*, 64–84. https://dx.doi.org/10.17159/2520-9868/i86a04

Kleickmann, K., Richler, T., Kunte, D., Elsne, R. M., Besser, J., Krauss, M., & Baumert, J. (2013). Teachers' content knowledge and pedagogical content knowledge: The role of structural differences in teacher education. *Journal of Teacher Education, 64*(1), 90–106.

Krauss, S., Brunner, M., Kunter, M., & Baumert, J. (2008). Pedagogical content knowledge and content knowledge of secondary mathematics teachers. *Journal of Education, 100*(3), 716–725.

Krutka, D. G, Carpenter, J. P., & Trust, T. (2017). Enriching professional learning networks: A framework for identification, reflection, and intention. *TechTrends, 61*(3), 246–252.

Lincoln, Y. S., & Guba, E. G. (2000). Establishing trustworthiness. In A. Bryman & R. G. Burgess (Eds.), *Qualitative Research* (pp. 392–429). Sage.

Maree, K. (2016) *First steps in research* (2nd ed.). Van Schaik Publishers.

Marshall, C., & Rossman, G. B. (2006). *Designing qualitative research* (4th ed.). Sage.

Masoabi, C. S. (2015). *Designing a framework for the implementation of student teams' achievement divisions (STAD) for technology in a cultural-diverse school setting* [Unpublished doctoral dissertation, University of the Free State, RSA].

Miles, M., Huberman, A. M., & Saldaňa, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage

Mosia, D. E. (2011). *How secondary school teachers understand, respond to and implement life orientation* [Unpublished doctoral dissertation, University of Pretoria, RSA].

Muller, J., & Hoadley, U. (2019). Curriculum reform and learner performance: An obstinate paradox in the quest for equality. In N. Spaull & J. D. Jansen (Eds.), *South African schooling: The enigma of inequality* (pp 109–125). Springer Nature.

Nel, M. (2014). Pedagogy of life orientation/life skills. In M. Nel (Ed.), *Life Orientation for South African teachers* (pp.7–14). Van Schaik.

Neumann, K., Kind, V., & Harms, U. (2019). Probing the amalgam: The relationship between science teachers' content, pedagogical and pedagogical content knowledge. *International Journal of Science Education, 41*(7), 847–861.

Nieuwenhuis, J. (2007). Qualitative research designs and data gathering techniques. In K. Maree, (Ed.), *First steps in research* (pp. 69–97). Van Schaik.

Nkambule, G., & Amsterdam, C. (2018). The realities of educator support in a South African school district. *South African Journal of Education, 38*(1), Article 1433.

Piaget, J. (1973). *To understand is to invent: The future of education*. Grossman.

Pillay, J. (2012). Keystone life orientation teachers: Implications for educational, social and cultural contexts. *South African Journal of Education, 32,* 167–177.

Rooth, E. (2005). *An investigation of the status of practice of life orientation in South African schools*. [Unpublished doctoral dissertation, University of Western Cape, RSA].

Prinsloo, E. (2007). Implementation of life orientation programmes in the new curriculum in South African schools: Perceptions of principals and life orientation teachers. *South African Journal of Education, 27*(1), 155–170.

Samuels, F. (2012). *Life skills education in the context of HIV and AIDS*. [Paper Commissioned for EFA Global Monitoring Report 2012, Youth and Skills: Putting education to work].

Sharan, Y. (2010). Cooperative learning for academic and social gains: Valued pedagogy, problematic practice. *European Journal of Education, 45*(2), 300–313.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching: Educational researcher. *American Educational Research Association, 15*(2), 4–14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1–22.

Slavin, R. E. (2008). *Cooperative Learning*. Nusa Media.

Stroebel, L. C. E., Hay, J., & Bloemhof, H. J. (2019). An approach to re-skilling of in-service teachers in physical education in South African schools. *South African Journal of Education, 39*(2), Article1643.

Swafford, J. O., Jones, G. A., & Ve Thorton, C. A. (1997). Increased knowledge in geometry and instructional practice. *Journal for Research in Mathematics Education, 28*(4), 467–483.

Swarts, P., Rens, J. A., & De Sousa, L. O. (2019). A proposed framework for facilitating social and environmental responsibility in life orientation through environmental education in the South African context. *Africa Education Review*, *16*(4), 127–141.

Tran, V. D. (2013). Theoretical perspectives underlying the application of cooperative learning in classrooms. *International Journal of Higher Education*, *2*(4), 101–115.

Van Wyk, M. M. (2012). Teacher efficacy: The use of cooperative learning techniques in economics education in Free State secondary schools. *International Journal of Educational Science*, *4*(3), 187–195.

Van Wyk, M. M. (2019). Teachers' voices matter. Is cooperative learning an appropriate pedagogy for multigrade classes? *The International Journal of Pedagogy and Curriculum, 26*(2), 19–34.

Whitworth, B. A., Maeng, J. L., & Bell, R. L. (2018). Exploring practices of science coordinators participating in targeted professional development. *Science Education, 102*(3), 474–497.

Zhu, C., & Wang, D. (2014). Key competencies and characteristics for innovative teaching among secondary school teachers: A mixed-methods research. *Asia Pacific Educational Review*, 15(2), 299–311.