

International Journal of Learning, Teaching and Educational Research
Vol. 21, No. 9, pp. 17-34, September 2022
<https://doi.org/10.26803/ijlter.21.9.2>
Received Jun 2, 2022; Revised Aug 18, 2022; Accepted Sep 6, 2022

Promoting Self-Directed Learning as Learning Presence through Cooperative Blended Learning

Chantelle Bosch 

Research Unit Self-Directed Learning, Faculty of Education,
North-West University, Potchefstroom, South Africa

Dorothy J Laubscher 

Research Unit Self-Directed Learning, Faculty of Education,
North-West University, Potchefstroom, South Africa

Abstract. Students often feel isolated when they do blended learning courses and they do not always have the necessary skills to work on their own. Blended learning courses need to be thoughtfully planned to actively involve students in the learning processes. Cooperative learning is an active teaching strategy that can assist students to engage in online and blended courses and is known to promote self-directed learning. The communities of inquiry framework is often used as a framework to design blended learning. In this study, we focused on an additional dimension of the communities of inquiry framework, namely courses learning presence, which is closely linked with self-directed learning skills. In this basic qualitative study, semi-structured interviews were conducted with post-graduate Mathematics Education students ($n = 8$) to establish their experience of the cooperative blended learning course. Data were coded and analysed using a deductive approach. The aim of this article is to describe how self-directed learning as learning presence can be enhanced through a cooperative blended learning course. The findings showed that the use of cooperative learning was a useful strategy to promote self-directed learning as learning presence. Furthermore, matters relating to motivation as a component of self-directed learning were incorporated into the design of the course, such as allowing students to manage their own learning, making the learning experience enjoyable, and providing encouraging feedback. Aspects of the course design that assisted in promoting self-directed learning as learning presence included the use of authentic tasks, allowing students to develop and apply their own learning strategies, and providing students with the opportunity to socially construct knowledge.

Keywords: blended learning; communities of inquiry; cooperative learning; learning presence; self-directed learning

1. Introduction and Problem Statement

The rapidly changing educational landscape and the use of educational technologies have increased the need for effective online and blended learning (BL). However, some educators still embrace old learning paradigms, such as John Locke's theory of titularity, when turning to BL (Cunningham & Bergstrom, 2020). The transition is often undertaken without realising the importance of a paradigm shift in the process of planning and designing the new blended approach to the course (Chandler et al., 2020). It is not only educators who have difficulty adapting, as this shift is new to many students as well. It is, therefore, even more important to plan BL courses thoughtfully so that meaningful learning will occur and the use of the technology will add value to the course instead of hindering the learning process (Bizami et al., 2022; Mishra et al., 2020).

Actively involving students in BL courses is a difficult task. Students are removed in time and space and often tend to struggle on their own. We believe that learning happens in a social-constructive setting and, consequently, we tried to find an alternative to the isolated learning environment that students often experience in online courses. Cooperative learning (CL) involves the use of small groups of students working together on shared experiences and successes (Johnson & Johnson, 2018). In face-to-face environments, CL is a well-researched active teaching strategy, known to enhance self-directed learning (SDL) and student engagement and motivation (Bosch, 2017). According to Knowles (1975:18), "in its broadest meaning self-directed learning describes a process by which individuals take the initiative, with or without the assistance of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes" (p. 18). By implementing CL strategies, students become more engaged in their own learning by taking responsibility to teach and assist their fellow group members in a more engaged and social manner, which are key characteristics of SDL (Bhandari et al., 2022; Van Zyl & Mentz, 2022).

We redesigned our online Mathematics Education course by adapting CL strategies for a BL environment and used Google Docs as the main collaboration platform. Students were divided into CL groups, and each student was assigned a specific role. The communities of inquiry (CoI) framework was used as a theoretical model in this qualitative study. Although the CoI framework originally focused on three presences, namely teacher presence, social presence, and cognitive presence (Garrison, 2018), researchers have also identified other presences that are visible in online and blended environments. One of these alternative presences is the learning presence that was introduced by Shea and Bidjerano (2010) and has been studied by researchers since then (Ryu et al., 2022; Wertz, 2022). According to Shea and Bidjerano (2010), "learning presence represents elements such as self-efficacy as well as other cognitive, behavioral, and motivational constructs supportive of online learner self-regulation" (p. 1).

Much research has been done on the constructs of BL, CL, SDL, and the CoI framework, not only in isolation but also in combination with one another.

However, this paper highlights the particular relationship between SDL and learning presence, where CL is used as a teaching strategy in a BL environment. This study specifically focuses on enhancing the learning presence in the BL course. In this paper, we aim to describe how SDL as learning presence can be enhanced through a cooperative BL course. Two questions drove this research, namely:

- How does SDL relate to learning presence?
- What aspects of SDL as learning presence were promoted through a cooperative BL course?

2. Literature Review

From a social constructive perspective, learning is seen as an interactive social phenomenon between teachers and students (Perdana & Atmojo, 2019). This study shares the view of Vygotsky's cognitive developmental theory in that knowledge is a societal product that is constructed from cooperative efforts to learn, understand, and solve problems (Picciano, 2017). This process entails collaborating and reflecting with others, which lead to the co-construction of knowledge (Bozkurt, 2017). CL refers to a teaching strategy that makes use of small groups to complete tasks (Johnson & Johnson, 2018). It requires students to take responsibility for their own learning while coordinating with their peers in the process of achieving common goals (Delgado-García et al., 2021).

Previous studies have suggested that CL is one of the key teaching and learning strategies to equip students with 21st-century competencies by promoting active learning and SDL (Bosch, 2017; Loh & Ang, 2020). For successful implementation of CL, the facilitator should foster the willingness and skills of students to work together (Loh & Ang, 2020). Johnson and Johnson (2018) stress that five elements are essential to implementing genuine CL. These are positive interdependence, face-to-face interaction, interpersonal and small-group skills, individual and group accountability, and group processing (Johnson & Johnson, 2018). When these elements are consciously planned for, students are more likely to benefit from active, deep-level learning (Munir et al., 2018).

Johnson and Johnson (2018) assert that through the discussions in which students engage, conceptual understanding is constructed and mental models of the phenomena they deal with are formed. It is through group discussions and interaction that students acquire attitudes, values, and a need for continuous improvement (Duran et al., 2019; Johnson et al., 2007). Unlike other methodologies that support group work, CL stresses the notion of group members being assigned specific roles to perform during the CL task (Ortuzar, 2016). Facilitators can create role interdependence among students when they assign them complementary roles such as reader, recorder, checker of understanding, encourager of participation, and elaborator of knowledge. These roles will differ according to the teaching strategies and CL techniques used and are vital to high-quality learning (Bosch, 2017).

When incorporating CL in online and blended environments, the process of socially constructing knowledge is used to guide students to take responsibility

for their own learning and become more self-directed (Bosch, 2017). As with CL, BL also offers opportunities where these skills can be facilitated (Garrison & Kanuka, 2004). In BL environments, classroom interaction is extended to a space where students who might have difficulties meeting in person can effortlessly work together (Fan & Woodrich, 2017). In web-based collaborative platforms, such as Google Docs, students do not only focus on their own perspectives but also learn through social interaction and joint activities in groups (Hsu & Shiue, 2018; Widodo, 2017). Furthermore, Hsu and Shiue (2018) stress that with “the support of effective collaborative technologies, knowledge can be transferred not only from the teacher to students, but also the students can effectively construct knowledge through collaboration in the learning process” (p. 936). The fact remains that in a CL-BL environment, Google Docs, like numerous other online collaboration platforms, can only enhance learning if the learning tasks are carefully planned (in terms of the CL elements and BL principles) and consist of real-world problems (authentic learning tasks), and students know exactly what is expected of them (division of roles). To ensure that no aspect is left behind, a framework such as the CoI framework is often used when planning collaborative constructivist learning environments.

The CoI framework consists of three core dimensions, namely cognitive presence, teaching presence, and social presence (Fiock, 2020). These dimensions need to interact dynamically so that a meaningful online learning environment, which supports purposeful inquiry and meaningful collaboration, can be established (Hsu & Shiue, 2018). The teaching presence focuses on the visibility of the facilitator and what they do to structure and facilitate the learning process. The teaching presence interacts with the cognitive presence when the resources that assist with completing the tasks are selected, while the social presence has to do with the engagement of the students and the climate of the learning community (Nolan-Grant, 2019).

In a review of a number of CoI studies, Dempsey and Zhang (2019) report that social presence has been shown to be the mediating factor between cognitive presence and teaching presence, while cognitive presence is most indicative of student satisfaction and success. They further assert that teaching presence is understood to be of the greatest value to students and the most critical in establishing purposeful CoI (Dempsey & Zhang, 2019). This may raise some concerns, as it may indicate that students feel the need for facilitators to give them the information and knowledge needed to succeed in their learning. This again highlights the importance for educators to rethink their teaching role and to plan for the promotion of SDL skills when designing their BL courses. In addition to the three presences that the original CoI framework explored, several other presences have been identified in research, such as a learning presence, an agency presence, and an emotional presence (Bosch et al., 2020).

To answer the first research question, namely “How does SDL relate to learning presence?”, we explore the literature relating to the CoI framework further. As we value the need for student self-direction, we also recognise the learning presence, as originally conceptualised by Shea and Bidjerano (2010) and Shea et al. (2012).

As discussed above, learning in blended environments requires students to be more self-regulated (Bosch et al., 2020). Shea and Bidjerano (2010) have examined student self- and co-regulation in online environments. They believe that these skills relate to desired outcomes such as higher levels of cognitive presence as described in the CoI framework. Shea et al. (2012) further assert that student motivation and engagement are crucial in the learning process. The aspects included in Shea and colleagues' (2012) discussion on learning presence, such as self-efficacy and self-regulation, are clearly recognisable in the SDL framework presented by Fisher et al. (2001). They categorise SDL into three main concepts, namely self-management, self-control, and the desire for learning (Fisher et al., 2001). These concepts are key to other SDL conceptual frameworks as well (Brockett & Hiemstra, 2018; Candy, 1991; Garrison, 1997). Learning presence, therefore, features within the conceptual framework of SDL (Bosch et al., 2020); subsequently, we will use the term "SDL as learning presence" as an amalgamated concept.

In this paper, we aim to describe how SDL as learning presence can be enhanced through a cooperative BL course. To answer the second research question, "What aspects of SDL as learning presence were promoted through a cooperative BL course?", we followed a set of guidelines presented by Laubscher and Bosch (2021) on how to design a self-directed, BL environment. This systematic review scrutinised the literature to create guidelines for facilitators to use when designing BL environments. The focus is specifically on the promotion of SDL in these environments. Their recommendations include four SDL categories, namely SDL skills, strategies to promote SDL, motivation as an aspect of SDL, and designing for SDL (Laubscher & Bosch, 2021). Under each of these categories, a number of recommendations are presented that guide the facilitator in designing a self-directed BL environment. In this paper, in order to explore aspects of SDL as learning presence, these recommendations serve as a suitable guide to use when designing for learning presence.

3. Course Design In this paper, we aim to describe how SDL as learning presence can be enhanced through a cooperative BL course. In this paper, we aim to describe how SDL as learning presence can be enhanced through a cooperative BL course. In this paper, we aim to describe how SDL as learning presence can be enhanced through a cooperative BL course. In this paper, we aim to describe how SDL as learning presence can be enhanced through a cooperative BL course.

The course was designed by using the CoI framework, where learning presence is included. This was done because of the importance of enhancing SDL skills in students, especially in a distance environment. The course formed part of a post-graduate degree in Mathematics Education, offered through the distance mode. The student group comprised students who resided in various regions of South Africa. It was a diverse group of students in terms of age, race, background, culture, and educational background. They were all studying part-time and had the challenge of balancing their careers, studies, home life, and personal relationships. The module focused on students' ability to engage critically with content relating to mathematics teaching and learning, where effective mathematics teaching is placed under theoretical and practical scrutiny. The

focus, therefore, is mainly on the coherence between the teaching and the learning of mathematics, as viewed from the perspective of not only a researcher or theorist but also a practitioner (the mathematics teacher). In the course, students are expected to engage with these aspects independently and collaboratively.

Throughout the presentation of the course and the design of the assessments, as suggested by the recommendations of Laubscher and Bosch (2021), we wanted to provide students with the opportunity to engage with the content and provide them with sufficient opportunity to take responsibility for their own learning, plan, find and use resources (including human resources), process information, and think critically, which are all key components of a self-directed student. The recommendations suggest CL as a teaching strategy, which was implemented in the learning tasks. CL is a teaching-learning strategy that is known to promote SDL (Mentz & Van Zyl, 2018). As the students were distance students and were physically removed from one another, they communicated through a Google Doc that served as a platform for students to interact and engage with one another. It also formed the basis from which we could stimulate the five elements of CL that are known to assist in enhancing students' SDL. Each member of the group was assigned a specific role that needed to be fulfilled in the group to ensure even work distribution. In addition, by allocating a specific responsibility to each member, the elements of CL were enhanced. There were other tasks too that needed to be completed to ensure the smooth functioning of the group and the successful completion of the assignment.

4. Research Method

In this paper, we aim to describe how SDL as learning presence can be enhanced through a cooperative BL course. To answer the second research question, "What aspects of SDL as learning presence were promoted through a cooperative BL course?", an interpretive qualitative research study was done. In this study, semi-structured interviews were conducted to understand the students' experiences of the course. The interviews were conducted and analysed at the end of the academic year after the students had completed the module (for ethical reasons). The students, therefore, participated in the interviews knowing that it could not influence their course marks.

In this basic qualitative study, the target population consisted of the students enrolled for the post-graduate degree course in Mathematics Education (n = 12). Of the population, eight students agreed to participate in semi-structured interviews. These students participated voluntarily, and they all signed an informed consent form. The interview questions were related to the participants' experiences of the CL tasks and aspects relating to SDL. The transcripts of the interviews were analysed in ATLAS.ti™. The data were analysed using a deductive approach where the participants' statements were coded through a thematic, step-by-step analysing method (Braun & Clarke, 2013; Karlsen et al., 2017). In qualitative research, validity and reliability are concerned with the issue of trustworthiness (Coleman, 2021). To ensure validity, we made use of member checking and respondent validation by confirming the accuracy of our understanding by the participants during the data collection. Multiple coding was

used to ensure reliability and minimise bias. The two researchers independently coded the data and identified the main themes of the study. Where discrepancies arose, revisions were made, and the data analysis was done using the codes and themes that were agreed upon. The study and its associated research procedures were approved by the research ethics committee of the faculty.

5. Discussion of Findings

Since we have already established the close connection between learning presence and SDL by answering the first research question, the data will be discussed according to the main themes proposed by Laubscher and Bosch (2021) in their guidelines to create a self-directed blended environment. However, where suitable, we will use the amalgamated concept of “SDL as learning presence” where they referred to “SDL”. Figure 1 illustrates the identified themes in this study in the form of a diagram.

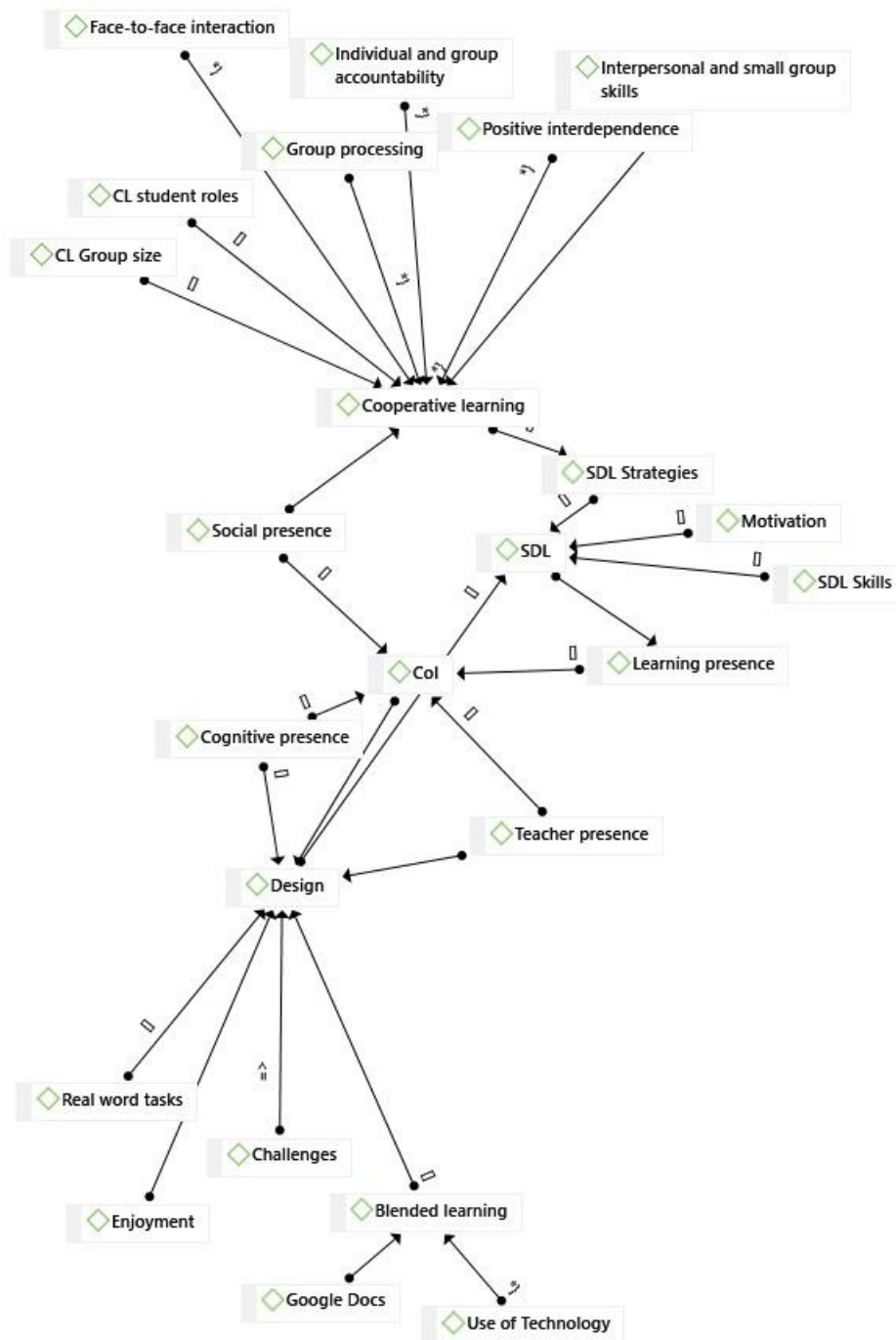


Figure 1: Network of Identified Themes

Source: Author's own creation

5.1 Strategies to promote SDL as learning presence

Laubscher and Bosch (2021) suggest CL as a strategy to enhance SDL. Various studies confirm that CL is a suitable strategy to promote SDL (e.g. Bhandari et al., 2022; Van Zyl & Mentz, 2022). Sekano and colleagues (2020) confirm the significance of enhancing SDL in the mathematics classroom. To evaluate the success of CL environments, it is important to measure it against the five principles identified by Johnson and Johnson (2018), namely positive interdependence, face-to-face interaction, interpersonal and small-group skills,

individual and group accountability, and group processing. In the data, there were clear references to the elements of CL. In addition, the group sizes and role division were identified. With regard to *positive interdependence*, most of the students conceded that in their groups, they were working towards the same goal. One student said: “*What I can take away from the experience is that both parties need to be focused on the same goal*” [3:3]¹. Another student added: “*We complimented each other by each doing our part to reach the final goal*” [7:5]. Another one said: “*The tasks helped me to realise that I have to make deadlines for myself and to keep them. Because if I don’t, not only I but also my group will suffer*” [1:10].

This goes hand in hand with the principle of *individual accountability*, where they also acknowledged that not only were they responsible for their own work, but the success of their group member also depended on their individual contribution. The sharing of responsibilities is evident from the following response: “*[The group work was] making my work much easier because, if the assignment could have been assigned to one person only – you can only imagine how much reading one person is expected to do*” [2:4]. Another student noted: “*Because you are working together, it also helping [your group partner] to prepare for the exam. You have to check the other person’s work because you are going to use that person’s work to prepare for the exam. So, you are killing two birds with one stone. One person is helping you to prepare for the exam, and you are also helping the other person.*” [3:9]. Another student confessed: “*If the CL was not there, I would not have much energy and I would be a bit lazy to google a lot of articles, and I would only rely on the ones that are on [the learning management system]*” [2:11].

The students also mentioned *interpersonal and small-group skills*. One of them revealed: “*I learned so much about myself. I usually do not like group tasks ... but I learned how to work [together] ... this is a new way to approach a group task*” [5:3]. Another student concurred: “*I learned that ... sharing ideas and [collaborating] just makes it much easier*” [2:1]. A similar response provided was: “*It helped a lot – getting feedback from someone who is going through the same thing that I am going*” [3:5]. Another student added to that by saying that “*it was nice to share knowledge and also to get another’s perspective*” [8:4].

The fourth principle relating to CL that could be found in the interviews was *group processing*. This specifically relates to reflecting on one’s own learning, as well as reflecting on the group goals. There was not much evidence of the aspect of group reflection, since the group as a whole reflected on the goals they set for themselves (as a group). There was, however, enough evidence with regard to the role that the group played in personal reflection. One student mentioned: “*... positive in the sense that I could get feedback from my partner. It helped a lot – getting feedback from someone who is going through the same thing that I am going*” [3:1]. Another said: “*Two is better than one. If you work collaboratively, you can correct each other’s mistakes. The results is [sic], therefore, more valid and reliable*” [6:2]. One student mentioned that, in distance education, one is often isolated. The fact that they then had the opportunity to have interaction regularly and reflect together with other people

¹ [a:b] is an identifier for the participant, where “a” refers to the participant number and “b” to the quotation number in ATLAS.ti™.

made for a good experience. Another participant asserted that *“it was nice to hear from someone else from time to time... we did not only talk about the work, but also about our experiences in the course in general”* [8:4].

The principle of *face-to-face interaction* was not mentioned often, which is understandable when one takes into account that it was a distance course. One student remarked: *“When you are studying in distance courses, you don’t get much interaction with lecturers and other students. [This task] was really nice because you got the opportunity to talk to other people and work with them”* [8:2].

The final two aspects regarding CL were the group sizes and the roles that the group members fulfilled. When asked whether they were happy with the group size, all the students agreed that they were. One student elaborated as follows: *“The bigger the group gets, the more difficult it is to manage. Two is the perfect group size for me. It worked well”* [1:15]. The same goes for the roles of the group members. The students were asked whether they felt it was necessary to have specific roles in the group and if it contributed to the effectiveness of the group. All the students agreed on both accounts, and they elaborated on the importance of specific roles. One student stated: *“Yes, it did help. Especially like when you are doing the group assignments, having the roles clearly defined that, okay, the technical person must insert this, this, and this. It helped a lot”* [3:6].

5.2. SDL skills

Laubscher and Bosch (2021) assert that when designing a BL environment, educators should plan the tasks in a manner that will encourage SDL skills. The importance of SDL skills cannot be denied. According to Yulianti et al. (2021), self-directed students can use their knowledge and abilities in various contexts and continue to improve their learning capabilities throughout their lives. They further state that by giving students the freedom to learn what is essential from their perception, learning motivation is increased and the students are motivated to develop their SDL abilities. When the data were analysed, responses relating to SDL skills yielded aspects of time management, finding relevant resources, socially constructing knowledge, and communication. These are in line with SDL skills identified by Garcia (2021). The students’ responses revealed that the designed tasks required them to plan their time well in advance in order to accommodate the group members and spend sufficient time on the sections they were responsible for.

Thus, the students were responsible to manage and plan their own learning processes. The skill of time management was of the utmost importance and is evident from the following student’s response: *“[The course] helped me to make myself deadlines and forced me keep to them. I think now I will make better deadlines in future, even if you don’t work in a group”* [1:10]. Another student added that the communication between the group partners was crucial when it came to time management and provided the following example: *“My partner would say that [he is] going to [the] rural areas and [he] won’t be online for the next couple of days. I would understand and not put messages and things there in that time that he will not be there. So, it helped me also to relax and not feeling that he is not just going off the grid, and I am worried that he has dropped out or things like that. So, at the end (especially when we did*

assignment 2) *I was more relaxed, knowing that if he's got any issues, he does communicate*" [3:18]. While most students agreed on the importance of their personal time management, one student pointed out that they decided on "smaller" deadlines in their group to complete specific sections of the task. They were then responsible for adhering to not only the module deadlines but also those of the group. The student stated that *"keeping to those [group] deadlines actually helped me to plan my own time better and I know if I keep to the group's deadlines I don't have to stress about the timeframes of the module"* [7:5].

With regard to finding relevant resources, one student said: *"We had to get more articles [than what was given to us] to answer the questions ... The more you read, the more you try to construct your own meaning and the more you understand"* [2:8]. One student was of the opinion that the group setting helped them to collect more information and declared as follows: *"[Working in a group] just makes it easier for me. I just go straight to [the resources that other group members found] and read the [relevant] information found there. It also helped me ... when I was studying for the exam, because I [now have] more articles and understand more information [than when I work alone]"* [2:7]. Another student stated: *"We had to find our own resources. I went to the library, used the internet to find information on the topics. It gave me better insight [into the topic] because I now have information from different people with different perspectives and not just the two or three sources that the [lecturer] gave us"* [8:8].

Most of the students found that working in a group helped them to construct new knowledge and improve the quality of their work. One of the students remarked: *"I think because we had different sections to deal with ... you are working on your own, but you are getting feedback from the other person, so the individual work is still the same, and you are doing it as if you are doing it alone, but you are taking the other person's input to adjust your work"* [3:10]. Another one added: *"[Your group partner] will then help you to plan much better and write the perfect assignment that you need to write"* [2:12]. Another student agreed as follows: *"Sometimes you have to figure out some information and you are not 100% sure. But I could always talk to [my group partner] and ask him if I understand correctly and if he agrees"* [7:2]. This student concluded with the following statement: *"I sometimes feel that in a normal setting, students feel in a sense that they are competing with each other. But [with these tasks] the whole point is to work together and that was really nice for me"* [7:2].

With regard to the use of social and other web technologies, Google Docs and the learning management system were the main platforms for interaction during the course. The participants indicated that they used other communication platforms too, such as WhatsApp and SMS. One student explained: *"I feel it is important that we have that start communication that when the person is not responding, you can just check on them via WhatsApp and SMS to say"* [3:16]. Another one said that you *"type something and then you put it on Google Doc and then that would give a chance for your partner to comment"* [2:11]. Furthermore, one student asserted: *"I enjoyed the fact that we used Google Docs; it was new to me. I learned a lot"* [1:14].

5.3 Motivation as an aspect of SDL as learning presence

According to Laubscher and Bosch (2021) and Zhu et al. (2022), motivation in SDL can be increased through lecturer involvement and feedback, scaffolding,

incorporating a variety of learning tasks, and creating a feeling of enjoyment among the students. In the interviews, the students mentioned that they enjoyed the tasks, and some of them also mentioned that their group partners contributed to their motivation. One student said: *“Because we are all working and studying part-time, it gets difficult, and you are not always motivated. It was so nice to have someone who help motivated me and help keep me on track ... I really enjoyed these group tasks”* [1:5]. Another one mentioned: *“I was lucky that my partner was also working hard on their part. I want to also pull my weight so that they do not do all the work alone”* [3:8]. In addition, the following explanation was provided: *“I sometimes feel that in a normal setting, students feel, in a sense, that they are competing with each other. But [with these tasks] the whole point is to work together and I, that was really nice for me”* [7:2].

With regard to lecturer involvement, the students mentioned that the active involvement of the lecturer was visible in the course, especially in Google Docs where she gave weekly feedback on the students’ work and progress. One student remarked that *“the fact that the lecturer monitored our progress and motivated us on a regular basis was really nice”* [1:2]. They also mentioned that they valued the support from the lecturer, and one student said: *“I like how supportive the lecturer has been, how informative the assignments have been, and I like the fact that they make me explore new methods of teaching the subject [mathematics] in class”* [5:1].

When analysing the data, various aspects relating to the design of the course were evident. A few students commented on the structure of the tasks. One of them said: *“There were very good instructions that showed us how to do the task and what is expected from us in terms of communication ... I enjoyed the tasks – they were practical and doable. It also gave us perspectives on how other people think and reason”* [8:6]. Another student declared: *“I think this was one of my better university experiences ... at first I was concerned because I did not know what was required of me, but as soon as I figured it out, I enjoyed it very much”* [7:1]. The task structure did not only contribute to the cognitive development of the students – *“[The structure of the task] helped me understand the content much better”* [2:11] – but also played an important role in the application thereof in their teaching practice. One student stated that *“[the fact that we worked together] made the task seem easier than working alone”* [1:3] and continued as follows: *“A lot of the topics that we researched were relevant in our own teaching and classrooms”* [1:16]. Another student remarked: *“I believe that people learn better when they learn from each other and when they learn from their peers. So, I have tried to incorporate that in my lessons”* [3:7].

Table 1 gives a summary of the SDL aspects evident in the findings in relation to the recommendations made by Laubscher and Bosch (2021, p. 162). The table presents the four categories with specific recommendations relating to the category. For this study, we added a third column in which we provide evidence of how the aspects were promoted or if they were not evident in the study.

Table 1: A summary of the SDL aspects evident in the findings in relation to the recommendations made by Laubscher and Bosch

Category	Recommendations	Aspects promoted
----------	-----------------	------------------

1	Strategies to promote SDL as learning presence	The varied use of social and web technologies can create interest, independence, and creativity	Google Docs was the main platform for social and academic collaboration, and the students communicated with one another on WhatsApp [1:14; 2:11; 3:16]
		The following strategies can promote SDL: Problem-based learning Collaborative learning CL (cooperative learning) Project-based learning	CL was chosen as the strategy to promote SDL as learning presence. The findings referred to all five elements of CL: Positive interdependence [3:3; 7:5; 1:10] Individual accountability [2:4; 3:9; 2:11] Interpersonal and small-group skills [2:1; 3:5; 8:4] Group processing [3:1; 6:2; 8:4] Face-to-face interaction [8:2] The findings also revealed the importance of group sizes and the role division that was implemented [1:15; 3:6]
2	SDL skills	Institutional policy should support SDL	<i>Not evident in the findings; however, SDL is a strategic priority at the institution and forms part of the teaching-learning plan in the faculty</i>
		Facilitators should enrol for professional development in SDL	<i>Not evident in the findings; however, the facilitators are actively involved in SDL research and training</i>
		The learning design should encourage the use of SDL skills (e.g. planning, goal setting, task analysis, and self-assessment)	The findings revealed that students took responsibility for their own learning, and a number of SDL skills were promoted: Time management [1:10; 3:18; 7:5] Finding relevant resources [2:8; 8:8; 2:7] Social construction of knowledge [3:10; 2:12; 7:2]
		Encourage critical thinking and reflection	This aspect is linked to the CL principles of interpersonal and small-group skills [2:1; 3:5; 8:4] and group processing [3:1; 6:2; 8:4]
3	Motivation as an aspect of SDL as learning presence	To increase motivation, students should be allowed to manage, choose, and evaluate their own learning	This aspect correlates with time management [1:10; 3:18; 7:5]
		Scaffolding and coaching sessions can increase motivation	<i>Not evident in the findings</i>
		Facilitators should provide encouraging feedback	The students recognised the valuable input of the lecturer [1:2; 5:1]
		Incorporate a variety of learning tasks and resources	<i>No mention was made of this aspect in the data</i>
		Make learning fun	The aspect of enjoyment was evident in the findings [1:5; 3:8; 7:2]
4	Designing for SDL as learning presence	Authentic tasks and learning environments can promote SDL	The findings yielded aspects of authentic learning that are linked with real-world contexts [8:6; 2:11; 1:16; 3:7]
		A BL environment should be user-focused	<i>No mention was made of this aspect in the data; however, the CL tasks were planned to address this aspect</i>
		Incorporate learning analytics	<i>This aspect was not implemented in this study</i>

	Encourage sharing	This corresponds with positive interdependence [3:3; 7:5; 1:10] and the social construction of knowledge [3:10; 2:12; 7:2]
	Make students aware of their learning needs	The students indicated that they knew what was expected of them [7:1; 8:6]
	Encourage self-assessment	<i>This aspect was not implemented in this study</i>
	Allow students to plan, develop, and apply their own learning strategies	This was evident from the SDL skills that were promoted [1:10; 3:18; 7:5; 2:8; 8:8; 2:7]

Source: Adapted from Laubscher and Bosch (2021, p. 162)

6. Conclusion

In order to address the research question “What aspects of SDL as learning presence were promoted through a cooperative BL course?”, we reflect on the findings above. SDL is a 21st-century skill that is important to be a successful lifelong learner (Beckers et al., 2016). With regard to the SDL categories in the recommendations suggested by Laubscher and Bosch (2021), all four categories were evident in the findings of this study. Various aspects of SDL as learning presence were promoted in the cooperative BL course. As mentioned in the literature review, CL is a key strategy to promote SDL and 21st-century skills (Hsu & Shiue, 2018; Loh & Ang, 2020). In order to achieve this, the CL tasks need to be based on the five key elements that are essential to implementing genuine CL (Johnson & Johnson, 2018). From the data, it is evident that all five elements were woven into the course design, which resulted in the students acknowledging the use of SDL skills. These elements were time management skills, improved resource management, critical reflection, critical thinking, and the ability to construct knowledge socially. Mishra et al. (2020) and Ortuzar (2016) also acknowledge the importance of motivation as an aspect of SDL. In line with this, the findings revealed that the following aspects contributed to the participants’ motivation: the active involvement of the lecturer; the benefits of sharing responsibilities and successes; and the fact that they enjoyed the group tasks. With regard to design, the CoI framework (see Fiock, 2020; Shea et al., 2012) was used as the main design framework. Our focus was on SDL as learning presence, and the findings explored these aspects. It was evident that the use of authentic tasks was of value to the participants, not only in their studies but also in the application thereof in their teaching practice. They also indicated that the instructions were clear and they knew what was expected of them in the course. Furthermore, they emphasised the value of shared reasoning and the perspectives of their peers and the lecturer. Based on the data, we conclude that the cooperative BL environment enhanced SDL as learning presence in this course.

7. Limitations and Future Research

Since only 12 students were enrolled for the course, and eight agreed to participate, a small sample was used, which could be viewed as a limitation of the study. For future research in the field, we suggest incorporating more scaffolding in the course with the aim of increasing motivation. Furthermore, in the course, only two comprehensive tasks, which were similar in nature, were implemented. We, therefore, suggest exploring the use of a variety of smaller and different tasks,

as well as other assessment strategies, such as self-assessment. Learning analytics can also be used as an additional indicator of student participation and achievement. Although some elements of face-to-face interaction were evident in this study, it remains an aspect of CL that is difficult to implement in an online environment and, therefore, needs to be investigated further.

8. References

- Beckers, J., Dolmans, D., & Van Merriënboer, J. (2016). e-Portfolios enhancing students' self-directed learning: A systematic review of influencing factors. *Australasian Journal of Educational Technology*, 32(2). <https://ajet.org.au/index.php/AJET/article/view/2528>
- Bhandari, B., Agarwal, P., Chopra, D., Panwar, A., Kaur, D., & Sidhu, T. K. (2022). Implementation of self-directed learning in physiology for phase 1 undergraduate medical students. *Medical Science Educator*, 1-8. <https://doi.org/10.1007/s40670-022-01585-y>
- Bizami, N. A., Tasir, Z., & Kew, S. N. (2022). Innovative pedagogical principles and technological tools capabilities for immersive blended learning: A systematic literature review. *Education and Information Technologies*, 1-53. <https://doi.org/10.1007/s10639-022-11243-w>
- Bosch, C. (2017). *Promoting self-directed learning through the implementation of cooperative learning in a higher education blended learning environment*. [Doctoral dissertation, North-West University]. <http://repository.nwu.ac.za/handle/10394/26102>
- Bosch, C., Laubscher, D. J., & Olivier, J. (2020). The affordances of the community of inquiry framework for self-directed blended learning in South African research. In J. Olivier (Ed.), *Self-directed multimodal learning in higher education (NWU Self-Directed Learning Series Volume 5)* (pp. 51-92). AOSIS. <https://doi.org/https://doi.org/10.4102/aosis.2020>
- Bozkurt, G. (2017). Social constructivism: Does it succeed in reconciling individual cognition with social teaching and learning practices in mathematics? *Journal of Education and Practice*, 8(3), 210-218. <https://eric.ed.gov/?id=EJ1131532>
- Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage. <https://books.google.com/books?hl=en&lr=&id=nYMQAgAAQBAJ&oi=fnd&pg=PP2&dq=Successful+qualitative+research:+A+practical+guide+for+beginners.&ots=SqMzwaHY9p&sig=5KtbsUYi5etKuoDcXjSuh71Frx8>
- Brockett, R. G., & Hiemstra, R. (2018). *Self-direction in adult learning: Perspectives on theory, research, and practice*. Routledge.
- Candy, P. C. (1991). *Self-direction for lifelong learning. A comprehensive guide to theory and practice*. ERIC.
- Chandler, R. C., Burton, B. G., Wallace, J. D., & Darby, D. G. (2020). Eyewitnesses to the Suddenly online paradigm shift in education: Perspectives on the experience, sustaining effective teaching and learning, and forecasts for the Future. *Journal of Literacy & Technology*, 21(3), 5-13. <http://www.literacyandtechnology.org/>
- Coleman, P. (2021). Validity and reliability within qualitative research for the caring sciences. *International Journal of Caring Sciences*, 14(3), 2041-2045.
- Cunningham, U. N. A., & Bergstrom, A. (2020). Reimagining learning in a language education course thrust online: Social constructivism in times of social isolation. In R. E. Ferdig, E. Baumgartner, R. Hartshorne, R. Kaplan-Rakowski, & C. Mouza (Eds.), *Teaching, technology, and teacher education during the Covid-19 pandemic: Stories from the field* (pp. 449-456). Association for the Advancement of Computing in Education. <https://www.diva->

- portal.org/smash/record.jsf?pid=diva2:1508596
- Delgado-García, M., Conde Vélez, S., & De la O Toscano Cruz, M. (2021). Cooperative learning at university: Opinion of students and application of the instrument Cooperative Learning Questionnaire (CLQ). *Innovations in Education and Teaching International*, 00(00), 1-10. <https://doi.org/10.1080/14703297.2021.1932557>
- Dempsey, P. R., & Zhang, J. (2019). Re-examining the construct validity and causal relationships of teaching, cognitive, and social presence in community of inquiry framework. *Online Learning Journal*, 23(1), 62-79. <https://doi.org/10.24059/olj.v23i1.1419>
- Duran, D., Flores, M., & Miquel, E. (2019). The teacher's role during cooperative learning: Should I leave the classroom when students are independently working in teams? *Journal of Classroom Interaction*, 54(2), 24-40. <http://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=07494025&AN=142244395&h=4WNFbDcEwnom9OjE DJ6a%2FBbNacR%2FdJCWDzVt5QzREneLdfgh2RgopKmjhstb%2F9ILNnHwLk TPmbbosN4AmEY3TA%3D%3D&cr1=c>
- Fan, M., & Woodrich, M. (2017). Google docs as a tool for collaborative writing in the middle school classroom. *Journal of Information Technology Education: Research*, 16, 391-410. <http://www.informingscience.org/Publications/3870>
- Fiock, H. S. (2020). Designing a Community of inquiry in online courses. *International Review of Research in Open and Distance Learning*, 21(1), 135-153. <http://www.irrodl.org/index.php/irrodl/article/view/3985>
- Fisher, M., King, J., & Tague, G. (2001). Development of a self-directed learning readiness scale for nursing education. *Nurse Education Today*, 21(7), 516-525. <https://doi.org/10.1054/nedt.2001.0589>
- Garcia, R. S. (2021). Influence of self-directed learning skills on the academic adjustment in an online learning platform among level I and II student nurse. *International Journal of Recent Advances in Multidisciplinary Research*, 8(6), 6925-6929.
- Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. *Adult Education Quarterly*, 48(1), 18-33. <https://journals.sagepub.com/doi/abs/10.1177/074171369704800103>
- Garrison, D. R. (2018). Designing a community of inquiry. *The Community of Inquiry*. <https://www.thecommunityofinquiry.org/editorial9>
- Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet and Higher Education*, 7(2), 95-105. <https://doi.org/10.1016/j.iheduc.2004.02.001>
- Hsu, Y. C., & Shiue, Y. M. (2018). Exploring the influence of using collaborative tools on the community of inquiry in an interdisciplinary project-based learning context. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(3), 933-945. <https://doi.org/10.12973/ejmste/81149>
- Johnson, D. W., & Johnson, R. T. (2018). Cooperative learning: The foundation for active learning. In S. M. Brito (Ed.), *Active Learning – Beyond the Future* (pp. 59-71). IntechOpen. [https://books.google.com/books?hl=en&lr=&id=ghT8DwAAQBAJ&oi=fnd&pg=PA59&dq=Johnson,+D.+W.,+%26+Johnson,+R.+T.+\(2018\).+Cooperative+learning:+The+foundation+for+active+learning.+Active+Learning%E2%80%94Beyond+the+Future.&ots=cZWqm-Vk_C&sig=qM94Yvpa1bzn_FIlNOHTAiT03jo](https://books.google.com/books?hl=en&lr=&id=ghT8DwAAQBAJ&oi=fnd&pg=PA59&dq=Johnson,+D.+W.,+%26+Johnson,+R.+T.+(2018).+Cooperative+learning:+The+foundation+for+active+learning.+Active+Learning%E2%80%94Beyond+the+Future.&ots=cZWqm-Vk_C&sig=qM94Yvpa1bzn_FIlNOHTAiT03jo)
- Johnson, D. W., Johnson, R. T., & Smith, K. (2007). The state of cooperative learning in postsecondary and professional settings. *Educational Psychology Review*, 19(1), 15-29. <https://doi.org/10.1007/S10648-006-9038-8>
- Karlsen, M. M. W., Gabrielsen, A. K., Falch, A. L., & Stubberud, D. G. (2017). Intensive care

- nursing students' perceptions of simulation for learning confirming communication skills: A descriptive qualitative study. *Intensive and Critical Care Nursing*, 42, 97-104. <https://doi.org/10.1016/j.iccn.2017.04.005>
- Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. N.Y. Cambridge books.
- Laubscher, D., & Bosch, C. (2021). A systematic literature review to probe design guidelines for a self-directed blended learning environment. In J. Olivier (Ed.), *Self-directed multimodal learning in higher education* (pp. 117-163). AOSIS. <https://doi.org/10.4102/aosis.2020.bk210.04>
- Loh, R. C.-Y., & Ang, C.-S. (2020). Unravelling cooperative learning in higher education. *Research in Social Sciences and Technology*, 5(2), 22-39. <https://doi.org/10.46303/ressat.05.02.2>
- Mentz, E., & Van Zyl, S. (2018). The impact of cooperative learning on self-directed learning abilities in the computer applications technology class. *International Journal of Lifelong Education*, 37(4), 482-494. <https://doi.org/10.1080/02601370.2018.1513426>
- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, 1(August), 100012. <https://doi.org/10.1016/j.ijedro.2020.100012>
- Munir, M. T., Baroutian, S., Young, B. R., & Carter, S. (2018). Flipped classroom with cooperative learning as a cornerstone. *Education for Chemical Engineers*, 23, 25-33. <https://doi.org/10.1016/J.ECE.2018.05.001>
- Nolan-Grant, C. R. (2019). The community of inquiry framework as learning design model: A case study in postgraduate online education. *Research in Learning Technology*, 27(1063519), 1-15. <https://journal.alt.ac.uk/index.php/rlt/article/view/2240>
- Ortuzar, P. V. (2016). Using cooperative learning to increase motivation and achievement in students. *Universidad Alberto Hurtado*, 1-32. <http://repositorio.uahurtado.cl/handle/11242/23971>
- Perdana, R., & Atmojo, I. R. W. (2019). A conceptual of teaching models inquiry-based social constructivism (IbSC). *IOP Conference Series: Earth and Environmental Science*, 243, 012110. <https://doi.org/10.1088/1755-1315/243/1/012110>
- Picciano, A. G. (2017). Theories and frameworks for online education: Seeking an integrated model. *Online Learning Journal*, 21(3), 166-190. <https://doi.org/10.24059/olj.v21i3.1225>
- Ryu, E. J., Jang, K. S., & Kim, E. A. (2022). Influence of learning presence of non-face-to-face class experience in nursing students on academic achievement: Mediating effect of learning flow and moderated mediation of digital literacy. *Journal of Korean Academy of Nursing*, 52(3), 144-151. <https://doi.org/10.5977/jkasne.2021.27.2.144>
- Sekano, G., Laubscher, D., & Bailey, R. (2020). Facilitator experiences on implementing technology-supported cooperative learning professional development. In E. Mentz, & R. Bailey (Eds.), *Self-directed learning research and its impact on educational practice (NWU Self-Directed Learning Series Volume 3)* (pp. 273-299). AOSIS. <https://doi.org/10.4102/aosis.2020.BK206.08>
- Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of a communities of inquiry in online and blended learning environments. *Computers & Education*, 55(4), 1721-1731. <https://www.sciencedirect.com/science/article/pii/S0360131510002095>
- Shea, P., Hayes, S., Smith, S. U., Vickers, J., Bidjerano, T., Pickett, A., Gozza-Cohen, M.,

- Wilde, J., & Jian, S. (2012). Learning presence: Additional research on a new conceptual element within the community of inquiry (CoI) framework. *Internet and Higher Education*, 15(2), 89-95. <https://doi.org/10.1016/j.iheduc.2011.08.002>
- Van Zyl, S., & Mentz, E. (2022). Deeper self-directed learning for the 21st century and beyond. In P. Hughes, & J. Yarbrough (Eds.), *Self-directed learning and the academic evolution from pedagogy to andragogy* (pp. 50-77). IGI Global.
- Wertz, R. E. (2022). Learning presence within the community of inquiry framework: An alternative measurement survey for a four-factor model. *The Internet and Higher Education*, 52, 100832. <http://dx.doi.org/10.1016/j.iheduc.2021.100832>
- Widodo, S. (2017). Implementing Google apps for education as learning management system in math education. *Journal of Physics: Conference Series*, 895(1). <https://doi.org/10.1088/1742-6596/895/1/012053>
- Yulianti, R., Miftakh, F., & Fitriyana, W. (2021). Undergraduate students' perspective on self-directed learning in speaking skill. *Interaction: Jurnal Pendidikan Bahasa*, 8(2), 163-173. <https://doi.org/10.36232/jurnalpendidikanbahasa.v8i2.1146>
- Zhu, M., Bonk, C. J., & Berri, S. (2022). Fostering self-directed learning in MOOCs: Motivation, learning strategies, and instruction. *Online Learning*, 26(1), 153-173.

Funding

This work was based on research supported by the National Research Foundation of South Africa (Grant Number 113598) and funding provided the UNESCO Chair on Multimodal Learning and Open Educational Resources and the NWU Scholarship of Teaching and Learning.

Appendix: Interview Schedule

1. Tell me about your experience of the CL tasks that you did in the module.
2. What were the positive aspects of working together in the CL tasks?
3. What were the challenges involved with working cooperatively on the tasks?
4. What have you learnt from working together in pairs in the tasks?
5. How did learning with other teachers or colleagues affect you and/or your teaching?
6. How did the CL tasks support you in:
 - 6.1. Gathering relevant resources?
 - 6.2. Taking responsibility for your own learning?
 - 6.3. Reflecting on your own teaching practices?
7. How did you experience the use of specific roles in the CL task?
8. Compare your feelings of working together at the start of the task with the way you felt at the end of the module
9. What role did the CL task play in developing you in terms of:
 - 9.1. Module content knowledge?
 - 9.2. Planning the solution to the task?
 - 9.3. Taking responsibility for your own learning / Working more autonomously?
 - 9.4. The use of technology?
 - 9.5. Collaborating with colleagues?
10. What would you do differently if you were the lecturer of the module?
11. Is there anything else you would like to add?