British Journal of Education, Society & Behavioural Science
18(3): 1-15, 2016, Article no.BJESBS.28810
ISSN: 2278-0998

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Student-centred Learning: How Does It Work in Practice?

Dürdane Bayram-Jacobs[1*] and Fahriye Hayırsever[2]

[1]Department of Science Education and Communication, Delft University of Technology, Delft, The Netherlands.
[2]Düzce University, Faculty of Education, Düzce, Turkey.

Authors' contributions

This work was carried out in collaboration between the both authors. Authors together designed the study, wrote the protocol and supervised the work. Authors DBJ and FH collected and analyzed the data together. Author DBJ wrote the first draft of the manuscript. Author FH managed the literature searches and edited the manuscript. The two authors made equal contribution in this work and are both equally considered as first author. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJESBS/2016/28810
Editor(s):
(1) Shao-I Chiu, Taipei College of Maritime Technology of Center for General Education, Taiwan.
Reviewers:
(1) Siti Norliana Ghazali, Univeristi Teknologi MARA, Malaysia.
(2) Karen Roland, University of Windsor, Canada.
(3) Uchenna Egodi Ajake, Institute of Education, University of Calabar, Cross River State, Nigeria.
Complete Peer review History: http://www.sciencedomain.org/review-history/16559

Original Research Article

Received 7th August 2016
Accepted 5th October 2016
Published 14th October 2016

ABSTRACT

Aims: The aim of this study was to gather the opinions of teacher candidates and to find out their conceptions of student-centred learning. By means of this method, we desire to learn about the practical applications of student-centred learning in teacher training practices.
Participants: The participants of this study were 40 teacher candidates of the Teacher Training Programme for Primary Education who were in the last year of their study.
Methodology: The opinions of the teacher candidates were gathered through an instrument which had three open-ended questions. The written data were analysed by the two researchers using content analysis of the written opinions of the teacher candidates.
Results: According to the findings of this research, although teacher candidates have gained knowledge about student-centred learning, the teaching-learning processes were not organized

**Corresponding author: E-mail: D.Bayram-Jacobs@tudelft.nl;*

according to this approach. It was remarkable to find that in the teacher training programme, student-centred learning approaches were rarely used. Therefore, the teacher candidates do not have an opportunity to experience student-centred learning in practice.
Conclusion: The teacher candidates' learning of student-centred learning remained at the knowledge level and they were not able to reach the 'apply' level which is necessary to implement this approach in different learning environments. Therefore, the candidates may have difficulty transferring this knowledge to different lessons and contexts.

Keywords: Student-centred learning; teacher candidates; learning-teaching approaches; content analysis.

1. INTRODUCTION

Finding the most effective ways of learning and teaching has kept educators busy for centuries. It is important to find effective methods of learning and teaching to create a young generation which has the required competencies for today's world. Today, the aim of education is not to transfer knowledge but to learn how to learn. This new definition of learning requires a learning environment in which learners are responsible for their own learning. Furthermore, the concept of knowledge transfer is exchanged with the concept of learning how to gain the knowledge, use the knowledge and construct new knowledge, etc. According to this approach, learners should be active in their learning process and in this way, they can transfer new skills and competences to new circumstances. Therefore, these ideas and requirements call for student-centred learning (SCL) approach [1].

1.1 What is Student-centred Learning?

The concept of 'student-centred learning' is based on the studies of Hayward (1905) and Dewey (1956) [2]. The concept of a student-centred educational approach emerged with the studies of Froebel in the school system and with the idea that 'teachers should not interfere with this maturation process but should lead it' [3, p.27]. This development and the 'readiness' are associated with the process because a child learns when she/he is ready to learn [3]. Furthermore, '...student-centred learning environments emphasize constructing personal meaning by relating new knowledge to existing conceptions and understandings...' [4, p.170]. In student-centred learning environments, a student can choose what and when she/he will learn; this brings increased responsibility to a student for the learning process [1].

Tabulawa [5] states that the concept of 'learner centredness' is usually used together with 'participatory', 'democratic', 'inquiry-based', and 'exploratory' methods. The expectation of student-centred pedagogy is that students are active participants in the learning process rather than receivers of knowledge from the teachers. This is a democratic type of pedagogy as it requires a relationship which is based on a dialogue between teacher and student. This shows that in new educational approaches, the roles of teacher and student have changed and been redefined.

O'Neil and McMahon [1] argue that although learning methods are generally divided into two groups, teacher-centred and student-centred, in reality it is not as easy as black and white. They state that the student is passive and has low preference and the teacher has the power in a teacher-centred learning approach; whereas the student is active, has more preference and has the power in a student-centred learning approach. Moreover, Neo & Kian [6] add that the student is active and has a role of an independent learner in student-centred learning. As independent learners, students construct new meaning to pre-existing knowledge, experience and social environments.

The Turkish Ministry of Education has developed a student-centred application model. In this model it stipulates that in student-centred education the individual differences between students should be taken into account. Student-centred learning environments should be organized in a way that students are able to learn by themselves, gain knowledge and use it, use technology effectively and participate in all learning activities [7].

In the literature, some researchers define student-centred learning as an approach in which students can make their own choices [8]. Some scholars state that this type of learning is active versus passive learning, the student is more active than the teacher [4]. Other

researchers, who have a broader perspective, have added a third feature to student-centred learning, namely that there is a shift in power from the teacher to student in the power relation which exists between them [1].

There is also a strong connection between SCL and constructivist approach which is explained by Hannafin, Hill and Land [9, p. 94] as follows:

> ...Student-centred approaches, on the other hand, are rooted in constructivist epistemology: knowledge and context are inextricably connected; meaning is uniquely determined by individuals and is experiential in nature, and the solving of authentic problems evidence of understanding.

There is not only agreement but also disagreement among researchers about SCL, which causes confusion. Farrington [10, p. 16] pointed out there is 'disagreement and confusion about what SCL actually is'. Therefore, it is important to design studies which gather different opinions about SCL from different stakeholders.

1.1.1 The role of students

Regarding the roles of students in SCL, Cannon and Newble [11] draw attention to two important roles: responsibility and activity. Furthermore, according to Lem [12] in a student- centred learning process, there are some competencies which students should perform and some opportunities which they should have. Students should be able to [12]:

- Establish a relationship between various elements of the content of a lesson
- Make an action plan to learn independently
- Test their learning development and its results
- Establish a connection between the content of the lesson and their existing knowledge
- Construct the content of the lesson in order to learn independently
- Select important and less important knowledge
- Learn about their learning process

In a student-centred learning process students have great responsibilities [1]. However, it should be kept in mind that the competencies mentioned above could be gained when a student-centred learning environment is provided for students. How should this approach be used so that students can learn this approach by experiencing it themselves? Do existing applications work to allow students to experience student-centred learning? In this context, it is important to find out what student-centred learning means for students (the teacher candidates) [12]. Therefore, this also gives us an idea about whether the learning environments, which were provided to them in teacher education programmes, are designed as student-centred environments or not.

Although many institutions and teachers intend to use, and think that they use SCL, it is well known that despite their intent learning remains more teacher-centred [10]. O'Neil and McMahon [1] refer to this as one of the most important points that should be taken into consideration when researching SCL. It is for this reason that the aim of this study was to gather the opinions of prospective teachers about SCL.

The main principles of student-centred learning are defined in the book of Brandes and Ginnis [13]:

- Student is completely self-responsible from his/her learning
- Attention and attendance are necessary for learning
- The relationship between students is more equal and supports development
- Teacher is a facilitator and a supervisor
- Student experiences different areas at the same time (emotional and cognitive areas are parallel)
- Student realises herself/himself different as a result of the learning experience

Koen and Santa [14] have found in their research that students and teachers are positive towards a student-centred learning approach. In their research it is pointed out that instruction should not be accepted as being a one-way process 'from teacher to student'. Moreover, they add that a real education can happen through discussions, projects and activities requiring critical thinking and which can happen in SCL.

1.2 Aim

The purpose of this study was to gather the opinions of teacher candidates about student-centred learning and the practical applications of this approach. Since it is frequently mentioned in the literature that many so-called SCL lessons

are still teacher-centred, in this study the objective was to assess this approach from the eyes of the teacher candidates. Therefore, our expectation was to gain insight into the efficient use of the SCL approach. In order to achieve this aim, answers to the following questions were sought:

1. What does student-centred learning mean for teacher candidates?
2. What are the opinions of teacher candidates about the advantages and disadvantages of student-centred learning?
3. What are the opinions of teacher candidates about the applications of student-centred learning during their initial teacher training programme?

1.3 Importance of the Study

Developments in science and technology affect all fields, including education. The understanding of education and the competences and skills that are required from young people have changed. As science and technology develop rapidly, individuals should also develop and update their personal and professional skills. This affected the educational systems and therefore the concept of 'lifelong learning' has arisen. With lifelong learning it is emphasised that learning is not a process which starts and finishes at school but continues throughout life. Moreover, with lifelong learning, 'learning to learn' has gained significance instead of transferring knowledge to students. In this context, student-centred approaches, methods and activities are preferred in the educational systems of different countries. Student-centred learning approaches give more responsibility to the student for his/her learning process, make the student more active and shape the learning environment according to the needs and interests of students. Therefore, it is the preferred approach for creating effective and permanent learning.

The aim of this study was to find out what 'student-centred learning' meant to teacher candidates, and how this approach may be used in teacher training programmes. Lea, Stephenson and Troy [15] suggest in their study, in which they worked with higher education students to determine their attitudes towards SCL, that more research is needed about SCL for better implementation. This study also sought to detect the misunderstandings about the student-centred learning approach. Teacher candidates will use this approach in their classes when they start teaching at schools. Therefore, it is very important to know what the perception the teacher candidates have about this approach. For these reasons this study is important and it is expected that the findings will contribute to the literature about student-centred learning and teacher training.

2. METHODOLOGY

The working group of this study was composed of the final stage teacher candidates at Ankara University Faculty of Educational Sciences Teacher Training Programme for Primary Education. Since the final year students have taken more courses than students at the earlier stages, they have more experience and more frequent observations of lessons and educational strategies employed in the programmes. For this reason, the last stage students were chosen to be the participants in this study.

The teacher training programme for primary education was chosen for two reasons. Firstly, this programme has more diverse courses with respect to both content and structure. Secondly, the new primary school curricula which started in 2005 are based on constructivism. Therefore, a student-centred approach needs to be used. As a result of this, it is expected that the teacher candidates of this programme would have more experience with student-centred learning.

The study was intended to reach the whole population, thus a sample was not chosen. Therefore, in order to collect data, an instrument was developed which had 3 open-ended questions. Because it was intended to reach the entire population, it was decided to collect written data instead of interviews. For data analysis, content analysis technique was used by two researchers.

The primary school teacher training programme has two classes in the faculty of educational sciences. The participants in this study are 18 voluntary teacher candidates from class A and 22 from class B. So, a total of 40 individuals participated in the study.

2.1 Data Collection

The questions used to gather the opinions of teacher candidates were:

1. How do you define a student-centred learning approach?
2. In your opinion what are the advantages and disadvantages of using a student-centred learning approach?
3. When you think of all the courses you took during your studies in this teacher training programme, which courses were designed and were carried out according to a student-centred learning approach? And which courses were not?

For the content validity of the data collection instrument, views and feedback were collected from experts in either teaching or research methods. According to the opinions of the experts, the questions are in line with the aim of the study. Moreover, for reliability, a pilot study was conducted with 4 students (10% of the working group). The answers of these students were analysed and there no problem was found with the questions. Therefore, no changes were made to the above-mentioned questions.

2.2 Data Analysis

Content analysis technique was used to analyse the data. As Van Manen [16] points out, the experiences of learners can be ascertained by using content analysis of their written comments.

Data analysis was conducted by two researchers in several stages which are summarized below. The coding process and especially defining the categories are very important when using content analysis. Yıldırım and Şimşek [17] point out that 'the fundamental aim in content analysis is to obtain concepts and relations in order to describe the data gathered'. The subsequent stages were followed in content analysis:

1. The researchers read all the written responses thoroughly and all the data was transferred into a digital environment.
2. The responses collected include:
   - 1st question,132
   - 2nd question,133
   - 3rd question, 96
   - 4th question, 63
   - Total = 424
3. The opinions, written in the exact same words, were collected and the frequency (f) was noted.
4. In the next step, the responses were grouped according to their meanings and they were coded.
5. The frequency of the response for each code was counted.
6. 158 codes were defined from all the responses.
7. Codes were grouped according to their meanings and category names were defined to represent these groups.
8. When the categories were more than one, with respect to meaning and the integration of the categories, main categories were made to make the analysis easier.
9. The two researchers worked separately when defining the codes and categories in order to have high reliability of data analysis. Afterwards, the researchers came together, discussed the analysis and conducted an interview with an educational expert concerning the validity of data analysis. After that, the final form was given to the tables.
10. A code number was given to each response form of the respondents and these numbers were used in the analysis of qualitative data. This was also useful when it was necessary to recheck a particular response form. Another aim of this action was to diminish the effect of the existing notions of bias which researchers may have had about the responses.

The two researchers composed indices for codes and categories independently, and negotiated their different interpretations to reach an agreement and finalize the coding process. Then, the two researchers analysed the answers to the first and second questions and performed coding independently. Each researcher independently created a table to see the codes and categories and to form sub-categories when needed. The aim of this action was to see the level of agreement and to determine reliability, the rate of which was calculated as 81%. For this purpose of finding out the intercoder reliability rate, the formula of *Reliability = (agreement/ agreement + disagreement) x 100* was used [18]. It is suggested that the agreement should be at least 70% [19], and therefore, the reliability of the analysis was ensured. In the analysis, process samples were not taken but all the sentences for the answers were analysed.

2.3 The Role of the Researchers in Data Collection

Both researchers are experts at curriculum development and instruction.

3. RESULTS AND DISCUSSION

A total of 40 teacher candidates provided written opinions. Extended responses were provided which gave rich data to the researchers. The findings of the study were given according to problem statements of this research.

3.1 What Does SCL Mean for Teacher Candidates?

The findings obtained from the teacher candidates' opinions on 'What does student-centred learning mean for you?' were categorized into three groups: 1) student, 2) teacher, and 3) the characteristics of the approach. The findings are shown below in Table 1.

As Lowyck, Elen and Clarebout [20] have stressed, the success of new approaches like SCL depends on the adaptation of students and teachers as the main actors in the teaching and learning process. Therefore, it is important to know the perceptions of prospective teachers not only of the method of SCL but also the roles of teacher and student, which this study tried to ascertain.

Table 1. SCL according to the 3 categories which emerged from the analysis

Category	Codes	Frequency (f)
Student	1. Participates actively in learning process	29
	2. Organises learning process according to his/her ideas/needs	7
	3. Transfers the skills, which he/she constructs, to daily life	4
	4. Constructs knowledge according to his/her needs/ideas	3
	5. Participates in group work	3
	6. Searches for information, thinks critically/does research and questioning	2
	7. Expresses himself/herself	1
	Total	**48**
Teacher	1. Is a guide, s/he plans and manages the teaching process	30
	2. Designs learning process according to the needs of and differences among students	6
	3. Teaches how to learn	1
	4. Gives opportunity to students to express themselves	1
	Total	**38**
Characteristics of the approach	1. Activities which put students at the centre	8
	2. Education is provided by considering the readiness levels, individual differences, interests and needs of students	6
	3. Methods and application (used in and out of school) which appeal different sensory organs	2
	4. Learning which happens in a comfortable and democratic environment without teacher authority	1
	5. A method to improve high-level thinking skills	1
	6. Process is important, not the result	
	Total	**18**
	Theory/Application	**(f)**
	1. Constructivist learning theory	2
	2. Multiple intelligence theory	1
	Strategy	
	3. Inventory teaching	5
	4. Learning through research	4
	5. Cooperative learning	3
	6. Exploratory teaching	1
	Method	
	7. Drama/role play	6
	8. Project-based learning	1
	Technique	
	9. Brainstorming	4
	10. Six thinking hats	3
	11. Station technique	2
	Total	**37**
	Grand total	**60**

For the first category, 'student', the majority of prospective teachers defined SCL as active participation of students in the learning process. Participation in 'group work' and 'doing research' and 'questioning' are also related to the active participation of students. In the literature pertaining to SCL, active learning and active participation of students in the learning process are seen as the cornerstone of this approach [11,21,22]. In this regard, the prospective teachers agree with the researchers.

For the second category, 'teacher', the prospective teachers explain the role of a teacher as a guide who plans and manages the learning process. The second most mentioned opinion about a teacher's role is 'designing the learning process according to the needs of and individual differences among students'. Likewise, Harris and Cullen [23] describe the role of a teacher as a facilitator, a designer, or a guide in a SCL process. Elen et al. [24] found in their research, in which they compared three views on the relationship between teacher-centredness and student-centredness, that all three views emphasise the joint responsibility of the student and teacher in the learning process. The findings of our study for the category 'student' and 'teacher' support the result of Elen et al. [24] by indicating that designing the learning process according to the needs, interests and individual differences of students is the responsibility of both the student and teacher.

For the third category 'characteristics of the approach', the most mentioned opinion about an SCL approach is that it employs 'activities which put students in the centre'. Accordingly, Lea et al. [15] pointed out that a student has freedom, interdependency and self-responsibility in SCL.

In the third category, the prospective teachers also mentioned the theories/applications which require or use SCL such as constructivism and multiple intelligence theory. Indeed, constructivism is seen as the source of SCL [9]. According to social constructivist theory, the individual learns in a socially interactive environment by constructing the new knowledge [25]. O'Connor [26] mentions that according to social constructivism, learners construct and reconstruct new knowledge based on their existing knowledge and experience in the process of reflection and co-construction.

It is an interesting finding that one of the respondents mentioned exploratory learning as a learning method that can be used in SCL. Actually, expository learning is known as one of the traditional teaching methods in which the teacher has power and stands in the centre. Another remarkable finding is that only one respondent showed project-based learning as a method which can be used in SCL. Project-based learning is mentioned as a method in which the student has responsibility for his/her learning and is active in the process of learning [22]. In other words, in project-based learning, the student manages the learning process; s/he has the responsibility for his/her learning and stays in the centre. This finding may show us that project-based learning was not often used in the lessons of this teacher training programme.

In the literature, it is mentioned that on the one hand there are various SCL environments, and on the other hand, there is disagreement about what SCL is [10]. Farrington [10] also adds that despite the goodwill, there are problems in adopting SCL. Although in many practices teachers think that they use SCL, it is still the teacher who controls and directs the learning process instead of coaching and guiding the process.

Teacher candidates also mentioned the applications which cannot be accepted as -. Their opinions are given in Table 2.

Table 2. Applications which are not SCL according to the teacher candidates

Category	Codes	f
What is not a SCL approach?	1. The teacher transfers the knowledge to the students.	3
	2. The student is responsible for all learning processes and the teacher is completely out the process.	1
	3. Student teaches in place of teacher.	1
	4. Student makes homework continuously.	1
	5. The teacher is active.	1
	6. Parents make homework and assignments.	1
	Total	**8**

The candidates mentioned that a lesson in which all knowledge is transferred by a teacher or a lesson in which students do presentations on subjects cannot be defined as SCL. This is the conception of the teacher candidates, along with their opinions which were presented in the former paragraphs and tables. The practices in which students do presentations on subjects show misunderstanding about and misuse of SCL in the teacher training programme.

3.2 Opinions of the Teacher Candidates about Advantages and Disadvantages of SCL

Teacher candidates were asked, 'what do you think about the advantages and disadvantages of using SCL approaches?' The opinions of the teacher candidates are represented below.

3.2.1 Advantages of SCL

The advantages of using SCL are organised into two groups—'advantages' and 'gained skills'—which can be seen in Table 3.

According to students, the most important advantage of SCL is that it fosters permanent learning. In the study of Korkmaz [27], students mentioned that they learn better, more easily and more permanently when they learn with SCL approaches. Supporting this, Akyol and Fer [28] also found that in social constructivist learning environments students learn effectively and there is more permanent learning. Actually, the permanent learning is the result of SCL. The main aim of learning processes is to make students learn the intended knowledge, skills and attitudes permanently.

The majority of prospective teachers indicated effective learning and actively taking part in the learning process as the advantages of SCL. In the literature, SCL is accepted as one of the effective methods to provide meaningful, effective and deep learning [22]. As another advantage of SCL, teacher candidates mentioned that it motivates the learner in the learning process more than conventional methods. Since motivation is accepted as the central element in explaining learning and achievement [29], it is important to know that respondents verify the findings on this point. This opinion also supports Boekaerts [30] who notes that in a SCL process, the student regulates his/her own motivation. Furthermore, in the report of the World Bank [31], SCL is defined as activities in which students do not take notes but instead can participate actively and learn according to the aims of the lesson. Students mentioned that having an opportunity to ask questions and express their own ideas is important to participating in the learning process actively.

Table 3. The advantages of SCL in regard to students

Category	Codes	(f)
Advantages to students/learners	1. Permanent learning	16
	2. Active involvement in the learning process	12
	3. Motivates learning	4
	4. Makes learner construct the knowledge by himself/herself	2
	5. Allows learner to choose the best way for learning	2
	8. Gives responsibility to the learner	2
	9. Self-confidence and self-sufficiency of the learner increases	2
	10. Provides opportunity to learn by interaction	1
	11. Provides opportunity to learn according to his/her own learning speed	1
	12. Learner can feel comfortable	1
	Total	**33**
Skills which learners develop through SCL	1. Entrepreneurship	3
	2. Self-expression	3
	3. Social communication	3
	4. Problem solving	3
	5. Critical thinking	3
	6. Ability to access information	2
	7. Creative thinking	1
	8. Ability to transfer the knowledge to other areas	1
	Total	**19**
	Grand total	**64**

The literature provides many examples of the advantages of SCL. For example, Fleder and Brent [32] found that SCL increases students' motivation, helps deep learning and understanding, and fosters an understand of the value and usage of knowledge. Likewise, Aliusta, Alasya and Özer [33] also found that SCL increases students' motivation to learn. In the present study, the teacher candidates stated that SCL creates an interactive learning environment and that they felt more comfortable and behaved more comfortably in such a learning environment. The opinions of the teacher candidates support the findings from the study of Korkmaz [27] where he found that in SCL, students communicate and learn more effectively based on better interactions between students and teachers.

The opinions of the teacher candidates are in line with the findings of various studies in which the common points are mostly about the active participation of students in the learning process. In addition, the increased motivation of students, an interactive learning environment, feeling more comfortable and increased self-confidence are the other positive aspects of SCL approaches. Whilst defining the advantages of SCL, the teacher candidates also mentioned some skills that SCL fosters, such as, for example, entrepreneurship, social communication, problem solving and critical thinking. In a report from Memorial University [34], the characteristic features of SCL are defined as 'active learning, flexible curriculum, and student responsibility, developing the communication, cooperation and thinking skills of students'. Therefore, the conceptions of the teacher candidates about SCL support the findings of the literature.

The teacher candidates' opinions on the advantages of using SCL in regard to learning processes are represented in Table 4.

Table 4. The advantages of SCL in regard to learning processes

Category	Codes	(f)
Learning process	1. The individual differences are taken into account whilst planning the learning process.	6
	2. It makes learning fun.	4
	3. It is not limited and planned.	3
	4. It provides time and saves effort.	4
	5. Practising is more important than theory.	1
	6. It prevents memorizing.	1
	Total	**26**

According to the participants of this study, the most important advantage of SCL is that it considers the individual differences and unique features of learners. SCL should consider the different thinking and learning styles of students and it should help students to recognise their own learning and thinking styles and to improve them [35].

3.2.2 Disadvantages or barriers of using SCL approaches

The opinions of the teacher candidates about the disadvantages of or the barriers to using SCL approaches are organised into three categories: 'teacher related, student related and SCL approach self-related'. The disadvantages and barriers related to the teacher are given in Table 5.

Table 5. The disadvantages of and barriers to SCL approaches related to teachers

Category	Codes	(f)
Disadvantages and barriers arising from teacher	1. Students can go further than the limits, learn unnecessary or incomplete knowledge.	5
	2. If the teacher does not perform his/her role as a guide well, s/he can lose control of the learning process completely.	4
	3. If the teacher cannot control the process, s/he cannot guide students.	2
	4. If teacher has incomplete or incorrect knowledge, s/he cannot lead students.	2
	5. Teacher may avoid using SCL approaches because of intensive curriculum and central exams.	2
	6. Teacher may not find SCL necessary to use and not take it seriously.	2
	7. Teacher may not make any preparations.	1
	8. The workload of a teacher increases.	1
	Total	**19**

The teacher candidates think that the disadvantages of or barriers to using SCL approaches related to the teacher may arise if a teacher cannot perform his / her roles related to the planning, guiding and leading of the learning process. It is very well known that the teacher is an important factor in students' learning. In this respect, if a teacher cannot adopt SCL well, it may bring some disadvantages instead of advantages. The points which prospective teachers indicated as responses to this question are related to the role of the teacher in SCL process.

The teacher candidates also mentioned as barriers to SCL that a teacher may find SCL approaches unnecessary, may not make preparations and that it will increase their workload. The researchers found that although there are various approaches, methods and techniques suggested to teachers, they mainly used expository, question and answer and other methods that they already knew and they did not frequently use the new methods [36-39]. However, according to constructivist learning theory, a teacher should use different student-centred methods and techniques such as problem solving, project-based learning, cooperative learning, case studies, etc.

The teacher candidates reported that there may be disadvantages to using SCL which are caused by the students and their own approach, as well as those caused by the teacher. The opinions are given in Table 6.

Teacher candidates reported that to them SCL means being active in the learning process, being responsible from their own learning, organising learning according to their own needs and constructing knowledge according to individual differences and needs. Therefore, they indicated that high-level cognitive skills define SCL. However, when students are not able to show these high-level cognitive skills, this will limit the effects of SCL. This shows us that the teacher candidates are aware of their role and their responsibility in the process of SCL.

As a disadvantage to this approach, the teacher candidates mentioned that it takes long time. Among the other disadvantages, high number of students in a class, inadequate instruments to use, economic reasons and the difficulties related to planning and applying SCL were mentioned.

Each teaching method requires different conditions, among which the goals, objectives, readiness level of students, class size, physical conditions and the teacher's skills related to certain methods can be mentioned. According to the opinions of the teacher candidates, many of these conditions were indicated as disadvantages of SCL.

3.3 Opinions of the Teacher Candidates about Applications of SCL during the Teacher Training Programme

The participants mentioned their opinions related to the application of SCL during their studies. These opinions are given in Table 7.

Table 6. The disadvantages of and barriers to SCL approaches related to students

Category	Codes	(f)
Disadvantages arising from student	1. If s/he does not have previous knowledge about the subject, understanding and constructing new knowledge will be difficult	3
	2. Not knowing if something is correct if learned alone	1
	3. If no social interaction with the others, cannot participate in the process effectively	1
	4. May not be open to other ideas	1
	Total	**6**
Disadvantages arising from the self-driven approach	1. Requires/takes long time	12
	2. Difficult to use in crowded classrooms	2
	3. Requires various materials & tools	1
	4. It can be expensive	1
	5. Teacher is not in the centre of the process	1
	6. It can be difficult to plan and apply it	1
	Total	**18**
	Grand total	**24**

Table 7. Participants' opinions: The courses in which SCL was used or not used

Category	Codes	(f)
Courses in which SCL was used	1. Science and technology teaching (AD)*	13
	2. Teaching social sciences (AD)	10
	3. Mathematics teaching (AD)	7
	4. Teaching life sciences (AD)	5
	5. Teaching Turkish language (AD)	3
	6. Teaching methods (ÖMD)	3
	7. Arts education (AD)	2
	8. Science and technology lab (AD)	2
	9. Museum education (GK)	1
	10. Sports education (GK)	1
Total		**46**
Courses in which SCL was not used	1. SCL is used in none of the courses	6
	2. Sociology	4
	3. Philosophy	3
Total		**13**

**AD: Subject courses*
ÖMD: Teaching profession courses
GK: Liberal education courses

The teacher candidates mentioned that SCL is used mainly in subject courses such as science and technology and social sciences. They expressed the following ideas:

> *'Courses were mainly practice-based.'*
> *'We reached the knowledge through practising and learned by experiencing it.'*
> *'We enjoyed the activities in which we actively participated and we learned better.'*
> *'In the courses where there is no expository teaching but discussion and constructive learning takes place, SCL was used effectively*.'

As is seen from the comments of the teacher candidates, practical applications, and making students obtain knowledge through practical methods and discussions were defined as characteristics of SCL. They also associated experiencing pleasure in this process with permanent learning. These opinions are similar to the advantages of SCL which were mentioned by the teacher candidates. However, few teacher candidates think that the course 'Teaching methods' follows a SCL approach. It is a remarkable and very interesting finding of this research that this course which aims to teach teaching and learning theories, strategies, approaches, methods and techniques does not follow a SCL approach. It may be because, in this course, more exploratory teaching methods are used which are focused more on content and knowledge, and not on skills and a SCL approach. In addition, the teacher candidates mentioned that in sociology and philosophy courses SCL is not used either. The opinions of the teacher candidates were:

> '*We were passive listener in the courses. We have forgotten half of what we listened to after the exams. No permanent learning happened.'*
> *'The courses, except the teaching courses, do not use this approach.'*
> *'The teacher explains the concept; if there is something extra s/he gives lecture notes.*
> *'Teachers explain the constructivist approach, then they follow a behaviourist approach in the lesson.'*
> *'Very often we do presentations and I do not think that this matches with SCL and is of any benefit to us.'*
> *'In the courses, SCL is presented but the course is teacher-centred.'*

According to the comments of the teacher candidates, SCL is explained in the lessons and yet there is no practical application of it. It should be taken into account that all the good and bad things that happened during the courses can be taken as models by the teacher candidates. Because of this reason, in one hand aiming to teach teacher candidates SCL approach, but on the other hand not using this approach in the courses would not help them to use this approach in their own classes in the future.

3.4 Discussion

This research sought to investigate the opinions of teacher candidates about SCL in order to find out the conceptions of future teachers and to show the barriers related to using this approach.

The following remarkable results were found according to the aims of the research. For the first research question, the teacher candidates defined the SCL approach as an approach in which they actively participate in the learning processes and the teacher plans and guides this process. Some students defined SCL as an approach in which they construct knowledge, and their individual differences, interests and needs are taken into account; more than one sense is addressed and high-level thinking skills

are improved. What students said about this approach is in line with what is stated in the literature. Therefore, the teacher candidates have conceptual knowledge about SCL.

Moreover, some participants in this study described SCL as an approach in which a teacher gives control to the students and s/he has no authority over students. They also mentioned that SCL takes place in a democratic atmosphere, which is a remarkable finding. In the research which was conducted at education faculties, such Samanci and Yildirim [40] found that the teacher candidates perceived some of their teachers' behaviours such as not listening or not paying attention to their opinions, criticising and not letting them give their opinions as non-democratic.

Similarly, according to Dewey, school should be a place where learners can learn together through democratic and sincere interactions. He also mentions that the more the shared activities, the more the development opportunities [41]. Supporting Dewey, Williams, Cate and O'Hair [42] indicate that in democratic schools the best applications can take place through trust and cooperation. Likewise, Apple and Beane [43] mention that in democratic society educators have the responsibility to help learners research different views and express their own opinions. In order to create democratic learning environments, it is important to practise SCL activities effectively.

For the second research question, teacher candidates reported that SCL has the advantage of providing permanent learning. They also mentioned that if a teacher could not plan and guide this process well, then the disadvantages instead of advantages of this approach may appear.

Williams, Cate and O'Hair [42], point out that the teacher should consider individual differences among students. Likewise, Schmeck [44] mentions that a learning process is a planned process which is guided by a teacher to allow students to be aware of their own learning process. On the other hand, Rainer and Guyton [45] suggest that teachers and students should plan learning processes together for more effective learning and should include different opinions. The participants in this research agree that the teacher should not be the authority but a guide in the learning process. Moreover, they think that overcrowded classrooms are a disadvantage to using SCL.

Yaman [46] found that an overcrowded classroom has a negative influence on students' learning. Likewise, Cinar [47] points out that an overcrowded classroom lowers the quality of teacher-student relations, students' participation in the lesson, the motivation of students and student success. In the "Report for Turkish Higher Education Guide", Turkish Higher Education Council (YOK) states that the number of students per teacher at public universities is 51, whereas this number is 16 according to Organisation for Economic Co-operation and development (OECD) average [48].

For the third research question, the teacher candidates gave their opinions about practices of SCL during their studies. According to them, SCL is mostly used in subject courses and is rarely used in teaching profession courses. In liberal education courses (sociology, philosophy) SCL is not used at all. Consequently, opinions of the teacher candidates show that especially in teaching profession courses, knowledge about SCL is given, however, the approach is not practised.

This result makes us question the knowledge of the teacher candidates about SCL. As Willingham [48] says, their knowledge about SCL may be surface or memorized knowledge. According to Willingham [48], if students' knowledge is surface or memorized knowledge, the learning process is shorter. Because, in this situation, the knowledge of students builds upon the explanations they have gathered. In this research, the knowledge that the teacher candidates mentioned is the knowledge they gathered from their teachers. However, Willingham [49] calls attention to the importance of deep knowledge. For a student who has deep knowledge and knows more, the parts of this knowledge connect better with each other. Therefore, a student understands not only the parts but also the whole. The teacher candidates can learn the relation of methods and techniques of SCL when they have deep knowledge about SCL. This happens by practising SCL in teaching profession courses.

The opinions of the teacher candidates support the findings of Demir [50] who evaluated the course "Teaching Principles and Methods" according to the opinions of students. The participating students in his study reported that although they found the content of the course important and crucial to learn, not all teaching methods and techniques were taught with practical applications.

Whereas permanent learning is remembering or recalling the learnt knowledge, transfer of knowledge requires not only remembering the knowledge, but also understanding and using it [51]. This learning level is 'apply' and constitutes upper levels according to a revised version of Bloom's taxonomy of learning domains. Applying means the ability to use the learnt material in new situations, such as applying rules, principles, laws, etc. in different situations when it is needed [51].

4. CONCLUSIONS

The evidence from this study shows that the teacher candidates have knowledge about SCL, however the approach is not used often enough to practise it. Therefore, this study calls attention to teacher trainers, and curriculum developers for teacher training faculties. There is no doubt that students need knowledge of this approach, but it is also well known that if they do not practise it, they cannot reach the 'apply' learning level. Therefore, they cannot apply this approach in their lessons.

The answers of the teacher candidates related to the approach itself, the role of a teacher and students, and the advantages and disadvantages of this approach revealed a high level of understanding of SCL. The teacher candidates know very well what SCL is, when advantages and disadvantages occur, and the roles of a teacher and a student. Although they can give written explanations of all these aspects of SCL, we concluded that they have surface knowledge which they may forget at short notice. Therefore, the contribution of this study to teacher training programmes is to make them aware of this temporary learning of the teacher candidates.

Therefore, it is suggested to reorganize the courses of the teacher training programmes in a way that these courses will be taught using SCL approaches. In this way, in addition to knowledge of SCL, the teacher candidates will also experience and be witness to applications of SCL approaches in practice. Hence, they will reach the 'apply' level of learning which will enable future teachers to use SCL approaches in their lessons.

Therefore, the recommendations arising from this study are:

- More practice is needed regarding the SCL approach, not only in the teaching courses but also in the other courses of the teacher training programme.
- The lecturers in the teacher training programme need to evaluate their courses and revise the courses accordingly.
- More research is needed related to practical applications of a SCL approach in different contexts to figure out the boundaries related to the usage of this approach.

Moreover, we want to underline that the results of this study are limited to our participants' experiences and the teacher training programme in which they were enrolled.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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