How do Middle School Students Perceive the Sociocultural Dialectic Method?

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***Abstract*:** The present study sought to explore how students perceive the Sociocultural Dialectic Method (SDM). A phenomenological case study approach was employed in gathering and analyzing the data. The study focused on the students' lived experiences of two classroom settings: one representing the teacher's regular classroom, and the other representing the classroom where the SDM is implemented. A total of 20 middle school students volunteered and participated in the study. Individual interviews were conducted, recorded, and later transcribed. The transcriptions were then analyzed inductively to discover patterns in the data. The results indicated all students found the class conducted with the SDM to be superior in terms of comprehension, retention, experience, participation, and enjoyment. To specify further, all students stated that they learned better in the class where the SDM was in use. In other words, without exception, the students found the SDM to be a superior method for learning. Further to that, 90% of the students claimed that they had the opportunity to observe the phenomenon in the class where the SDM was used and stated that their participation in this class was higher. 20% of the students found the class with the SDM more enjoyable. Also, a similar number of students (20%) expressed that what they learned in this class was more unforgettable.

Keywords: Sociocultural Dialectic Method, SDM, Phenomenology, Hands-on activity.

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Introduction

Today's education system is continuously advancing, propelled by a combination of theoretical advancements and the wealth of research data at our disposal. With each passing day, we find ourselves armed with a greater understanding of educational principles and practices. This enhanced knowledge empowers us to navigate the intricacies of the classroom environment more adeptly and to foster meaningful communication with our students. Beyond simply imparting knowledge, we now recognize the importance of nurturing a range of cognitive skills in our students, including problem-solving, creativity, and entrepreneurship, alongside their conceptual development. This comprehensive understanding of educational objectives allows us to tailor our teaching methods more effectively to meet the diverse needs of our learners.

However, the challenge lies not only in acquiring this knowledge but also in synthesizing it into cohesive instructional approaches that can be readily applied in practice. It is essential to transform these individual pieces of information into pedagogical strategies that are not only effective but also practical for everyday use in the classroom. In response to this imperative, the Socio-cultural Dialectic Method (SDM) emerges as a product of our collective awareness of the need for a more holistic approach to education. It could be seen as an instructional method fostering active learning (Lombardi, Shipley, et al., 2021) in the classroom. By drawing upon the insights gleaned from both theory and research, SDM provides a framework that integrates diverse educational principles into a unified methodology. Its aim is to facilitate a more comprehensive and effective approach to teaching and learning, thereby contributing to the continual evolution and improvement of our educational practices. In the scope of this study, our objective is to ascertain the way students perceive this innovative and assertive pedagogical approach.

Theoretical Frameworks

Sociocultural Dialectic Model

The Socio-Cultural Dialectic Method (SDM) is an instructional method developed by Yilmaz Saglam (2013, 2014, and 2019). This method is detailed in the first (2013) and second (2014) editions of the book "How Can I Teach?" and in the book "An Art of Teaching: Socio-Cultural Dialectic Method" (2019). SDM is developed based on various research outcomes and theories. According to Saglam (2019), learning occurs through an individual's participation in social and cultural activities within a specific context. This contextual nature of learning has been studied and emphasized by many researchers (Bingolbali & Monaghan, 2007; David & Watson, 2007; Lave & Wenger, 1991; Lemke, 1997; Samarapungavan, Westby, and Bodner, 2006). To them, meaning always arises from its context. For example, a real understanding of the taste of an unfamiliar fruit can only be acquired through tasting it (Sağlam, 2019) or experiencing it (Lewis, 1933).

Secondly, according to SDM, learning requires social/cultural participation or interaction. The necessity of participation is emphasized in Vygotsky's work. Vygotsky (2016) proposed that learning occurs through cultural interaction. This is akin to a child learning the rules of a game by participating in it. Games are cultural activities inherited from our ancestors, and we learn them through social interactions. According to Vygotsky (1978), this interaction occurs on two planes: first on social plane and second on psychological one. Learning therefore begins with an individual's external interaction with an adult on a social plane. This interaction then transforms into a mental (psychological) activity through internalization. In other words, dialogues once emerging from adult-child interactions on a social plane turn into internal dialogues with on the child's mental plane. These inner dialogues later serve as tools for

individual's activity of thinking (Vygotsky, 1930), much like our feet enabling the act of walking or running. While our feet help us reach a destination, internal dialogues are used for thinking activity. Therefore, our efforts to learn or understand are fundamentally social (Wertsch, 1991). Hence, according to Vygotsky (Ibid, 1930), our mental activities are semi-social. That is, meanings or theoretical concepts we currently possess once belonged to someone else.

This approach to learning has inspired van Oers. Van Oers (2001) stated that learning is an abstraction and occurs through social interaction within a specific context. According to him, learning or abstraction occurs by drawing attention to the important elements of a context by a knowledgeable being. He called this action contextualizing action. Thus, van Oers viewed learning as an interaction between novices and experts. According to SDM, meaning is not the common/general characteristics of an object but the distinguishing features that set the object apart from other groups of objects (Cassirer, 1957). For example, in the meaning we attribute to the concept of a horse in our mind, instead of the general characteristics of horses (being warm-blooded, moving, etc.), we find important the distinguishing features that differentiate them from other animals (single hoof, long mane, short ears, long tail, long head, etc.). Therefore, the cartoon of a horse does not seem strange or foreign to us. Hence, seeing is not done with eyes but with concepts. Our concepts are our windows that enable us to see the outside world. A doctor's understanding of an X-ray film (which we cannot make sense of) by looking at it is not due to the sharpness of his eyes but to his knowledge (Chalmers, 1999).

Based on the theories and research outcomes mentioned above, SDM consists of three steps: Creating a Meaningful Context (1), Contextualizing Action (2), and Labeling (3). For example, let's say we want to teach the concept of geometric shapes. According to SDM, to create a meaningful context, geometric shapes should be brought to the classroom first. For example, toys or pictures of these shapes can be brought to the classroom. This stage is called *creating a meaningful context*. In the second stage, instead of examining each shape separately to draw attention to their differences, all shapes are placed on a wall (for example, a square, a triangle, and a circle) where children can see them altogether. To draw attention to the differences between them in terms of edge and corner properties, students are asked how they differ between these shapes. This question is vital. The responses to this question are written on the board. Students' attention is drawn to the differences (such as, unlike the circle, the sides of the square and triangle are straight; while the square has four sides, the triangle has three sides; unlike the circle, the square and triangle have corners; while the square has four corners, the triangle has three corners; the circle has no corners; the circle is not composed of straight lines; etc.). This step is called *contextualizing action*. In the final step, the teacher tells the students that the shape with four corners and edges is called a SQUARE, the one with three corners and edges is called a TRIANGLE, and the one without corners and straight lines is called a CIRCLE according to mathematicians and writes their names in capital letters above each shape. This final step is called labeling.

Phenomenology and Phenomenological Interviewing

Phenomenology serves as the guiding philosophy underpinning the data collection approach utilized in this study. As articulated by van Manen (2016), phenomenology delves into our direct experience of the world before reflection sets in. This pre-reflective experience encompasses the ordinary occurrences that constitute the fabric of our daily lives. According to van Manen, phenomenology primarily functions as a philosophical tool for inquiry rather than as a mechanism for providing definitive answers or conclusions. Through questioning, phenomenology opens pathways to new insights, understandings, and both cognitive and non-cognitive perceptions of existential realities. It sheds light on the significance of phenomena within their specific contexts.

van Manen (2016) further posits that in our day-to-day routines, we engage in habitual activities characterized by their repeatability and commonality. These routines are expressed through everyday language, which consists of words facilitating mutual understanding and communication of shared meanings. While this language suffices for describing typical situations, its reproducibility enables us to navigate daily life. Yet beneath this surface lies the realm of original thoughts and poetic imagery that breathe life into our experiences. Phenomenology aims to capture and articulate these original meanings while remaining receptive to new beginnings that shape the essence of phenomenological inquiry. Given the study's focus on exploring how students interpret their lived experiences, phenomenological interviews were conducted. These interviews aim to delve into students' lived experiences and the meanings they attribute to them.

Research Question

The objective of this study is to investigate how students perceive the Sociocultural Dialectic Method (SDM). More specifically, the aim is to reveal the disparities students perceive between their teachers' regular instructional approach and the SDM method in terms of comprehension, engagement, and other aspects as observed by the students themselves. Therefore, the following question has been investigated in this research:

What variances do students recognize when contrasting the SDM with their teachers' regular instructional approach?

Method

Before the main study, two pilot studies were conducted. In the first pilot study, students participated in two different classes, one where the SDM method was used and the other where it was not. Both classes were taught by the same teacher, the second author of this paper. Thereafter, interviews were conducted with these students. These interviews provided us with an opportunity to make additions to interview questions, remove inappropriate questions from the interview protocol, and rephrase the wording of questions in the protocol. In the second phase of the study, a decision was made to involve different instructors. While one of these instructors was permitted to employ their own teaching methodology, the other instructor, the second author, utilized the SDM. Subsequently, interviews were conducted with the students. However, as these interviews were conducted by the second author as an interviewer, students naturally expressed praise for the class delivered by them. Following this observation, it was agreed to continue the interviews with both instructors present. Surprisingly, during these subsequent sessions, it was noted that students made efforts to acknowledge and praise both teaching methodologies as well as honor both instructors. Considering this unexpected outcome, it was concluded that employing a single instructor to teach both classes would offer the most objective approach to collect data for comparing these two methodologies. Observation 1 and 2, part of the main study, consist of descriptions of the classes conducted by the second author.

Observation 1

Records from December 11, 2023, documenting the classroom session without the implementation of the SDM.

The teacher entered the classroom and provided an explanation regarding the topic to be covered. They announced, "Today, we will engage in a discussion about the propagation of sound," and wrote the unit title on the board. They instructed the students to open their

notebooks and write down what was written on the board. Furthermore, they asked a student to read from the textbook and proceeded with the reading. The teacher then provided examples related to sound and wrote the definition of sound on the board as follows: "Sound: vibrations originating from a sound source." They gave examples of sound sources, such as tapping the board with a pen or tapping the table and explained to the students that the place where the sound originates from is called the sound source. Moving to the center of the classroom, the teacher asked different students, "Could you hear my voice?" receiving affirmative responses from the students. The teacher then wrote another heading on the board regarding the characteristics of sound and instructed the students to take notes. They wrote, "The properties of sound include the fact that sound waves spread in all directions." Continuing, they wrote about the properties of sound waves. The teacher proceeded with readings from the textbook, drawing attention to visuals related to sound. There were examples in the textbook indicating that sound is transmitted in solids, liquids, and gases. By asking questions, the teacher emphasized that sound is transmitted in solids, liquids, and gases. They posed the question, "Imagine there was a gas medium between us, could you hear my voice?" to which the students responded affirmatively. The teacher stated that sound is transmitted in gases. Next, the teacher continued the narrative by asking the students to imagine metal spoons clinking together inside a container filled with water, asking if they could hear the sound. After receiving affirmative responses from the students, the teacher explained that sound is also transmitted in liquids. Then, they instructed the students to place their ears on the table and asked them if they could hear when the table was tapped. The students confirmed that they could hear it. The teacher explained that the table was solid, and sound was transmitted in solids. They then continued to write about the characteristics of sound on the board. When sound waves encountered a substance, they interacted with it. The teacher wrote about the interaction with other substances on the board. Then, they drew a visual representation of the proximity of particles in solid, liquid, and gas substances. They explained that the particles in solids were very close to each other, those in liquids were somewhat farther apart, and those in gases were much farther apart. They instructed the students to copy the visuals from the board into their notebooks. Next, they engaged in question-and-answer sessions with the students, using examples from the textbook. The teacher reiterated that sound propagated in solids, liquids, and gases. Then, they wrote about the interaction of sound with other substances on the board. "Sound was transmitted through particles," they wrote, referring to other substances. After writing about other substances, they explained that sound spread using the particles depicted in the visual they drew earlier on the board. They explained that one particle receiving sound passed it to another, and so on, thus transmitting the sound. The teacher then explained that solids had many particles, making sound transmission easy, while liquids were somewhat more difficult, and gases transmitted sound much more difficult. They explained the concept of space, where there were no particles, and thus, sound could not be transmitted. They clarified that due to the absence of particles, sound could not be transmitted in space and explained that solar explosions could not be heard.

Observation 2

Records from December 14, 2023, documenting the classroom session where the SDM was implemented.

During the SDM session, the teacher initially posed questions to the students regarding their understanding of sound. The teacher elicited responses from the students. Subsequently, the teacher wrote the unit title as "SOUND and ITS CHARACTERISTICS." Then, the topic title "Propagation of Sound" was written. The teacher inquired from the students about what substance filled the space within the classroom. The students responded with "air." The teacher then posed the question, "Could you prove that air exists?" No response was received from the students. The teacher proceeded to instruct the students to fan their notebooks towards one

another or themselves, resembling a fan motion. The teacher then asked, "What happened?" Responses from the students indicated the presence of air or wind. When asked if air would be present in the classroom if it were empty, the students replied that air would not be present. The teacher concluded that since the classroom environment was not empty, there must have been something present. The teacher emphasized the notion that the classroom environment was not empty. Introducing a device related to sound propagation called an "air evacuation pump," the teacher familiarized the students with it. The air evacuation pump was a device within a plastic chamber that allowed the intake and release of air. The teacher played music from a phone and placed the phone inside the air evacuation pump. The teacher then asked the students if there was any change in the sound from the phone after a portion of the air inside the pump was removed. Responses from the students indicated that the sound from the phone became quiet with the removal of air from inside the pump. The teacher further reduced the air inside the pump and asked the students again about the change in the sound from the phone. Students indicated that the sound decreased further. The teacher wrote on the board, "As the air inside the chamber was removed, the sound decreased," and instructed the students to write the same. The teacher then asked the students if there was any change in the sound of the phone itself. The students said that there was no change in the sound of the phone itself. Despite no change in the sound of the phone itself, the teacher asked the students for their opinions on why they perceived the phone's sound to be inaudible. One student suggested it was not due to the phone but rather the chamber. Another student explained that sound was not heard in vacuums, and with the air evacuation pump removing air, sound became less audible. The teacher concluded that despite no change in the sound of the phone itself, the removal of air from the air evacuation pump resulted in decreased sound, highlighting the necessity of a material medium for sound propagation, which was reiterated on the board. The teacher then questioned the students about the situation of sound in space where there was no matter. Responses from the students included that there was no sound, it was not heard, and it did not propagate. The teacher asserted that in space where there was no matter or particles, sound did not propagate, and wrote the statement "Sound does not propagate in a vacuum" down on the board. The teacher previously removed some air from the air evacuation pump. Taking another step, the teacher ensured the restoration of the extracted air back into the chamber. After refilling the air inside the chamber, the teacher asked the students about the change in the sound of the phone. Students indicated that the sound increased. The teacher restated the necessity of a material medium for sound propagation and emphasized that sound did not propagate in a vacuum.

Interviews

Having participated in two classes described above, the students were invited to volunteer for an interview. Semi-structured interviews were carried out with a cohort of 20 students (10 female and 10 male) at the school library on December 14th and 15th, 2023. In the pilot studies, when students compare two classes, one is labeled "hands-on activity" and the other "non-hands-on," so when building interview questions, the class where the SDM is used is referred to as the class that students have named as the one with a hands-on activity. During the interviews, the teacher initially prompted students to compare the methods involving hands-on activities with those that did not, in terms of understandability and participation. Following this, the teacher inquired about the strengths and weaknesses of these methods, if any. At the end of the interviews, the teacher inquired which of these methods the students would prefer to see implemented in other classes. The student responses were elaborated through probing questions to obtain comprehensive and codable data. Below is the interview protocol.

Interview Protocol

1. Which method helped you learn better: the one where you discussed a hands-on activity or the one where you didn't? Why?
2. In which method were you more involved in class: the one with a hands-on activity or the one without? Why?
3. Concerning the hands-on activity, what did you like and dislike about it if any?
4. Concerning the method without the hands-on activity, what did you like and dislike about it if any?
5. Would you choose any of these methods to be used in other classes?

Operational Definitions for Codes

Each interview session was recorded and transcribed afterward. The transcriptions were then subjected to inductive analysis, following the approach outlined by Patton (2001), to identify recurring themes and patterns in the students' responses. Pseudonyms were assigned to the transcriptions to ensure the confidentiality of real names. Specifically, uppercase letter "S" was used to denote students, while uppercase "T" was utilized for the teacher's statements within the transcripts. Table 1 below displays the codes emerged from the data, their definitions, and sample student expressions associated with those codes.

Table 1
Operational Definitions and Sample Student Statements for Codes

Codes	Code Descriptions	Sample Student Statements
1.Comprehension	Statements where students indicate that they learn or understand better with the SDM.	*(I learned better in the experimental group)* S1
		(You understand, you see, what you understand stays in your mind) S3
2. Retention	Statements where students indicate that what they learned with the SDM is more unforgettable.	
		(Thanks to that pump, I saw how it was done, how it was done, ...) S4
3. Experience	Statements where students indicate that the SDM provides an opportunity for experiencing or observing the phenomenon.	
		(... I participated more in the experimental group because there...) S13
4. Participation	Statements where students indicate that they participated more in the class given with the SDM.	
		(...it's more fun in the experimental group...) S7
5. Enjoyment	Statements where students indicate that they found the SDM more enjoyable or liked the class given with this method.	

The Results

Each student's explanations were analyzed based on Table 1 depicted above. Without exception, all students found the class conducted with the SDM to be superior in terms of comprehension, retention, experience, participation, and enjoyment. Table 2 below displays the codes that emerged from each student's explanations for the classroom where the SDM was in use.

Table 2
Data Analysis Table

Student	Gender	Codes emerged
1	Female	Comprehension, Experience, Participation, Enjoyment
2	Female	Comprehension, Experience, Participation
3	Male	Comprehension, Experience, Participation, Retention
4	Female	Comprehension, Experience, Participation, Enjoyment
5	Female	Comprehension, Experience, Participation
6	Male	Comprehension, Retention, Experience, Participation
7	Female	Comprehension, Retention, Experience, Participation
8	Female	Comprehension, Experience, Participation
9	Male	Comprehension, Experience, Participation
10	Female	Comprehension, Experience, Participation, Enjoyment
11	Male	Comprehension, Experience, Participation
12	Male	Comprehension, Experience, Participation
13	Male	Comprehension, Experience, Participation, Enjoyment
14	Male	Comprehension, Experience, Participation
15	Female	Comprehension, Experience, Participation
16	Male	Comprehension, Experience
17	Male	Comprehension, Retention, Experience, Participation
18	Male	Comprehension, Participation
19	Female	Comprehension, Participation
20	Female	Comprehension, Experience

To determine the reliability of the coding, two different fellows were asked to independently code the student statements. Then, the codes emerged from the data were compared with the researcher's own codes, and the percentage of agreement between the codes was calculated. The researchers' and coders' codes showed full consistency, 100 % agreement, indicating, according to Miles and Huberman (1994), which the coding was done with high reliability. To make the above data more comprehensible, the data has been converted into the following bar graph.
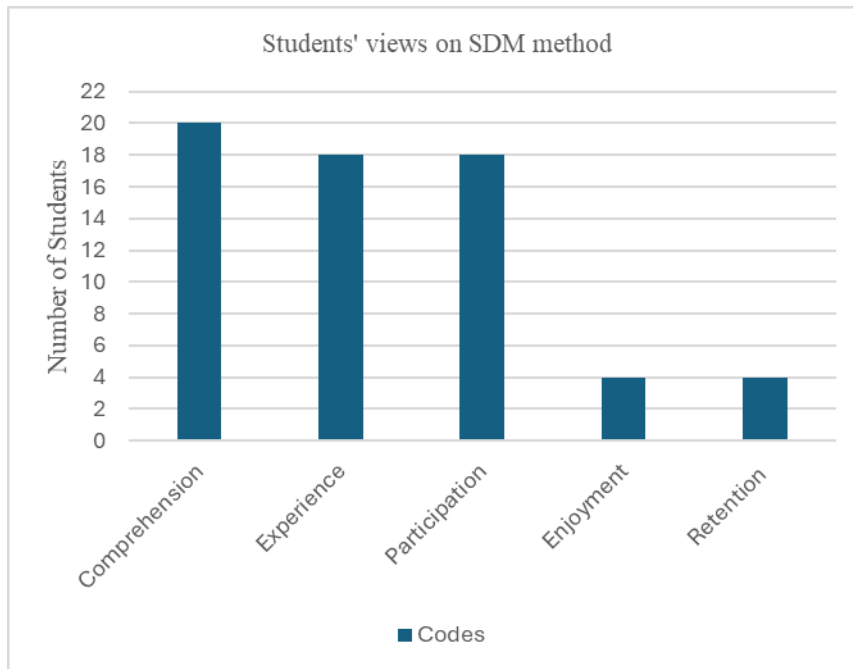
Figure 1. Students' views on SDM method

Figure 1 indicates that in the statements made by all 20 students, the "comprehension" code emerged, while in the statements of 18 students, the "experience" and "participation" codes emerged. Additionally, the "enjoyment" and the "retention" codes appeared in 4 student statements. In other words, all students specified that they learned better in the class where the SDM method was used. Further to that, 90% of the students mentioned that they had the opportunity to observe the phenomenon in the class where the SDM was used and stated that their participation in this class was higher. 20 % of the students found the class with the SDM more enjoyable and also expressed that what they learned in the class with the SDM was more unforgettable.

Conclusion and Discussion

The results indicated that all twenty students unanimously expressed their preference for the class where the Sociocultural Dialectic Method (SDM) was employed, citing its superiority in facilitating comprehension, fostering lasting learning experiences, promoting active participation, and enhancing overall enjoyment compared to the alternative method. Specifically, the "comprehension" code emerged consistently across all students' remarks, indicating a clear consensus regarding the effectiveness of the SDM approach in enhancing understanding. Moreover, eighteen students explicitly referenced the "experience" and "participation" codes in their statements, underscoring the immersive and engaging nature of the learning process facilitated by the SDM. In other words, a notable percentage of the students (90%) highlighted their enhanced observational opportunities and heightened engagement levels in the SDM classroom setting, affirming the method's efficacy in promoting active involvement and experiential learning. Additionally, a minority of students (20%) expressed their preference for the SDM class due to its perceived enjoyment factor, indicating a positive affective response to the learning environment. Similarly, a small fraction of students (20%) emphasized the superior retention of knowledge experienced in the SDM class, suggesting a tangible cognitive advantage associated with this instructional approach. In summary, the collective feedback from the students unequivocally underscores the advantages of the SDM in facilitating comprehensive learning experiences, fostering active participation, enhancing enjoyment, and

promoting long-term retention of knowledge, thereby affirming its superiority over an alternative instructional approach.

The outcome of this study aligns with a study conducted in 2021. In the previous study (Saglam & Goksu, 2021), it was observed that SDM led to an increase in students' behavioral, cognitive, and emotional engagement. Further to that, the data supporting the claim that students express enhanced learning in the SDM classroom has served as substantiating evidence for the assertion that meaning inherently emerges from its context (Bingolbali & Monaghan, 2007). Additionally, it supports the idea that learning is facilitated through an individual's active engagement in social and cultural activities within a specified setting (Vygotsky, 2016). Also, the assertion made by students regarding the improved learning experienced in the SDM class aligns with Van Oers' (2001) proposition that learning, being an abstraction, unfolds through social interactions within a particular context.

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