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Factors affecting online synchronous course engagement: The students' perspective

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Abstract: Student engagement is a fundamental issue for educators and researchers. In some cases, even with advanced technological facilities or trained instructors, it can be difficult to encourage students to participate synchronously. The multidimensional nature of engagement may provide a rationale for this phenomenon. While definitions and classifications exist, additional factors may impact engagement depending on the context. Each study contributes to a better understanding of engagement by completing a puzzle piece. Therefore, this study aimed to identify the variables facilitating or hindering students' engagement in synchronous courses. Accordingly, the views of 8 students with high and 7 with low behavioral engagement were obtained through semi-structured interviews. Engagement was determined using log data such as number of messages and conversation time. The interviews were analyzed using the inductive content analysis method. The analysis showed that many factors influence student engagement. Among these factors, teacher characteristics, methods used, student attitudes toward distance learning, self-regulation skills, and interaction come to the fore. One of the most important findings of the research is that emotional engagement acts as a mediator for behavioural engagement. Suggestions for practitioners on what to consider increasing student engagement were made based on the findings.

Keywords: Student engagement, interaction, attitude, motivation, self-regulation, time-management, online learning, synchronous course, higher education, teacher characteristics.

Highlights

What is already known about this topic:

- Student engagement is important in both face-to-face and online learning.
- Ensuring student engagement in online learning environments can be more challenging compared to face-to-face education.
- The instructor is a significant factor in fostering engagement within learning environments.

What this paper contributes:

- Instructors' personal characteristics, their mastery of teaching techniques, and their interaction with students collectively play a crucial role in fostering synchronous engagement.
- Student characteristics, attitude, and skills can have both positive and negative effects on engagement.
- The quality of technical equipment, internet infrastructure, and the physical environment also affect students' engagement.

Implications for theory, practice and/or policy:

- As instructors play a critical role, distance education instructors should be trained in distance education pedagogy.
- It is recommended that orientation and counseling on issues such as time management and coping with procrastination should be provided to students who will be taking courses through distance education.

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Introduction

Student engagement is important in both face-to-face and online learning contexts. Engagement refers to students' involvement and spending time in learning activities (Kuh, 2003). Engagement is the strongest predictor for students' learning performance (Günüç & Kuzu, 2015; Lei et al., 2018; Martin & Bolliger, 2018; Svanum & Bigatti, 2009) and satisfaction (Ji et al., 2022; Küçük & Richardson, 2019; Martin & Bolliger, 2018). Since students are often challenging to engage and their drop-out rates are often high, engagement is more critical in online education than in face-to-face education (Bolliger & Martin, 2018; Dumford & Miller, 2018; Kurt et al., 2022; Wang et al., 2023). Therefore, a better understanding of student engagement in online learning environments is critical to improving learning outcomes (Martin & Borup, 2022; Martin et al., 2020) and reducing drop-out rates (Appleton et al., 2006). Student engagement is most commonly explained by three dimensions: behavioral, cognitive, and emotional. According to Fredricks et al. (2004), these three dimensions are not separated from each other; they are interrelated. Behavioral engagement refers to the consummation of learning-related tasks by students (Günüç & Kuzu, 2015; Liu et al., 2019; Liu et al., 2023). Cognitive engagement refers to students' cognitive efforts and their motivation to learn (Lee et al., 2021; Liu et al., 2023; Luan et al., 2023). Finally, emotional engagement refers to students' feelings and satisfaction about learning experiences (Chiu, 2023; Lee et al., 2021; Liu et al., 2023). In the existing literature, more is known about behavioral engagement since it has been studied more than cognitive and emotional engagement (Bedenlier et al., 2020; Lee et al., 2021; Chiu, 2023; Wang et al., 2023; Tu et al., 2025). Zeng and Xin (2025) emphasize that a comprehensive understanding of student engagement requires to examining both behavioral and emotional dimensions. The results of a meta-analysis study (Lei et al., 2018) showed that all dimensions of engagement (behavioral, cognitive, and emotional) had a positive correlation with students' academic achievements.

Previous studies have indicated that the four interaction types (student-instructor, student-student, student-content, and student-interface) affect student engagement in online learning (Bryan et al., 2018; Chakraborty & Muyia Nafukho, 2014; Dixson, 2010). The formation and effects of these interactions must be taken into account in online course design and delivery (Chakraborty & Nafukho, 2014; Vrasidas & McIsaac, 1999). Bryan et al. (2018) found that students tend to be more engaged in online courses where they interact with their peers using technology. Technical problems have an impact on student engagement in online learning (Ji et al., 2022; Song et al., 2004). Accordingly, Song et al. (2004) posited that the technical preparation of students is crucial for engagement in online learning. Instructors' technical preparation and their techno-pedagogical skills are similarly pivotal in fostering engagement (Rehn et al., 2016).

Various studies have indicated that instructors' presence plays an important role in engaging students (Heilporn & Lakhal, 2021; Uslu Kocabaş & Bavlı, 2025; Kurt et al., 2022; Morrison, 2021; Wang et al., 2023; Zhang & Zou, 2022; Zheng et al., 2023). Whang et al. (2023) showed that the instructor is one of the key factors, as interaction with instructors and peers, use of interactive learning methods, and delivery of practice-related learning content play an important role in engaging students in online learning environments. Results from a cluster analysis study (Gupta, 2023) also indicate that there is a correlation between teaching behaviors (motivating/demotivating) and student engagement in virtual classrooms. Moreover, Jeon and Lee (2023) point out that instructors may need to use different motivational strategies in online synchronous courses than those used in face-to-face courses. Tu et al. (2025), in their recent literature review, emphasize that instructors should recognize the importance of promoting emotional engagement, particularly in online synchronous courses and adapt strategies to ensure that students are emotionally involved in learning.

Bergdahl (2022) emphasizes the complexity of online engagement and disengagement phenomena. In the context of online synchronous courses, this complexity increases even more as students can easily feel isolated, less supervised, and lack physical interaction (Chiu, 2023). The lack of physical presence of the instructor reduces control over students' engagement (Raes et al., 2020). Thus, an in-depth

investigation of the reasons for student engagement and disengagement in online synchronous courses is critical. Some studies (Aslan et al., 2022; Bergdahl, 2022; Martin & Borup, 2022) have pointed out the lack of research to understand student engagement in online environments. Aslan-Altan and Göçen Kabaran (2022) state that there is a need for research that can be a resource to strengthen engagement in synchronous education. Händel et al. (2022) also emphasized that there is very limited evidence regarding the factors influencing students' engagement in online synchronous courses. A recent study by Donelan et al. (2025) highlights the importance of further exploring student engagement in synchronous learning environments. Recent findings also suggest that synchronous learning environments may foster greater engagement compared to asynchronous learning environments, yet the specific factors influencing student engagement in synchronous settings remain unclear (Donelan et al., 2025; Yorgancı, 2025). This highlights the need for a deeper understanding of the factors that influence student engagement in online synchronous courses.

In conclusion, the literature has identified various challenges related to student engagement and disengagement in online learning. However, current knowledge about the factors that influence students' engagement in online synchronous courses remains limited. In particular, the emotional dimension of engagement has received relatively little attention, even though recent studies have shown that emotional aspects play a critical role in learning performance and persistence. Therefore, it is important to examine student engagement in online synchronous courses from a multidimensional perspective that includes reflects students' own experiences. This study aims to address this gap in the literature.

Current Study

The primary focus of the research is to reveal the factors that affect online synchronous course engagement from students' perspectives. In accordance with the stated problem situation, this research aims to comprehensively evaluate and describe the factors that positively and negatively affect the students' engagement, as well as the causes of students' disengagement in online synchronous courses. The findings obtained from the present study may shed light on the reasons for student engagement and disengagement in online synchronous courses, thereby increasing student engagement.

Methodology

Research Model/Design

In this study, it was deemed appropriate to obtain in-depth information directly from the students, as it was questioned why students engaged and did not engage in synchronous courses. The research followed a case study design, which is a qualitative research method used to obtain comprehensive, systematic, and in-depth information about a real situation/phenomenon (Merriam, 2015; Patton, 2014). This study covers students taking the "Open and Distance Learning" course via distance education at the education faculty of a state university in Turkiye. The researchers collected data from real people and thoroughly examined the case.

Study Group

The study included both high and low-engaged students in a course named "Open and Distance earning" in order to understand why students do or do not participate in synchronous courses. Criterion sampling, a method of selecting situations that meet certain criteria (Patton, 2014), was used to select participants. In this case, the criteria were high and low levels of engagement.

When examining the research on online engagement, it can be seen that analyzing log data is one of the most frequently used methods to determine engagement (Author, 2020). The number of messages

students post in online discussions has been considered an important indicator of engagement in some valuable studies (Andersen et al., 2009; Cheng et al., 2011; Sharma et al., 2023). This study definitively considers log data, including the number of messages, time spent in the course and audio participation, to determine engagement.

Table 1. Engagement Details of the Participants

Participants	Time in class (minutes)	Total messages	Voice participation (minutes)	Technical problems
H1	199	10	92	0
H2	284	17	0	0
H3	358	115	470	0
H4	273	35	0	0
H5	324	2	0	0
H6	311	14	0	0
H7	374	12	0	0
L1	88	12	0	4
L2	84	3	0	3
L3	56	0	0	0
L4	146	2	32	3
L5	66	1	0	4
L6	35	0	0	0
L7	32	0	0	4
L8	38	0	0	0

Table 1 provides information on students' engagement. The study was conducted with 15 students, 7 of whom were highly engaged and 8 of whom were low engaged. The students spent 32 to 358 minutes in the online classroom over 14 weeks. Table 1 shows that some students experienced technical problems, which resulted in low engagement. In addition, most students chose to participate via text messages rather than verbally.

Demographic information about the participants is presented in Table 2. The table shows that the study included students from nine different departments. Most of the students attended the class remotely, with nine using computers and six using phones to connect. Upon examining the internet connection speeds of the students, a generally positive picture emerges. However, it is worth noting that a small number of students experienced poor connection speeds.

Table 2. Participant Information

Participants	Interview Duration (sec)	Engagement	Department	Form of interview	Place connected	Device connected	Internet speed	GPA
H1	1032	High	Psychological Counseling and Guidance (PCG)	Teleconference	Home	PC	Medium	3.42
H2	1748	High	English Ed.	Video	Home	PC	High	3.24
H3	1365	High	English Ed.	Face-to-face	Home	PC	High	3.90
H4	1320	High	English Ed.	Face-to-face	Home	PC	High	3.81
L1	1450	Low	English Ed.	Face-to-face	Home	PC	Very high	3.44
H5	1077	High	PCG	Teleconference	Home	PC	Very high	3.25
L2	806	Low	Turkish Ed.	Teleconference	Library	Mobile Phone	High	3.21
L3	745	Low	Science Ed.	Face-to-face	Dormitory	Mobile Phone	Low	
L4	1170	Low	Preschool Ed.	Face-to-face	Dormitory	Mobile Phone	Low	3.55
L5	950	Low	Mathematics Ed.	Face-to-face	Home	Mobile Phone	High	3.08
H6	903	High	Classroom Teaching	Teleconference	Library	PC	High	3.55
L6	447	Low	English Ed.	Face-to-face	Home	PC	High	3.22
H7	1183	High	Mathematics Ed.	Face-to-face	Home	PC	High	3.46
L7	509	Low	Art Ed.	Face-to-face	Home	Mobile Phone	Medium	3.28
L8	780	Low	English Ed.	Teleconference	Home	Mobile Phone	Medium	3.09

Data Collecting Tools and Process

Data were collected through semi-structured interviews. The interview is advantageous as it allows the situation to be seen directly from the participants' perspective (Merriam, 2015; Patton, 2014). During the development of the interview form, feedback from two field experts was gathered and utilized to shape the final version. In the interview form, the students were asked, "What are the factors affecting your engagement in live/online synchronous courses of the Open and Distance Education course taught online?". Further questions were asked based on the participants' answers to probe deeper. The interviews lasted an average of 20 minutes. Participants were free to choose their interview method. Responses were carefully recorded throughout the interviews. The requisite permissions for this research were obtained from the ethics committee of the university with which the researchers are affiliated. The ethics committee approval process also incorporates a "voluntary consent form." Prior to data collection, participants were informed about the purpose of the research, how the data obtained from them would be used, and their rights. The commencement of data collection was contingent upon the confirmation of participant willingness to engage in the research study.

Data Analysis

The data were analyzed using qualitative data analysis, which is inductive content analysis. In inductive content analysis, categories and themes emerge during data analysis (Hsieh & Shannon, 2005). This study used the categories Rovai (2003) identified and adapted by the Bağrıaçık Yılmaz (2020) for content analysis. The coding process followed a path of coding, identifying themes, and organizing the data according to the codes and categories suggested by Miles and Huberman (1994). The themes and categories are presented in Tables 3 and 4.

To ensure the reliability of the study, some of the data (2 students with low engagement and two students with high engagement) were coded by both researchers. The coding process continued after the researchers reached a consensus on categories and themes. Upon completion of the coding process, the coded versions of two randomly selected interview transcripts were shown to the participants for confirmation. Participant confirmation is one of the methods that can be used to ensure the validity and reliability of research (Cresswell, 2009). In addition, as suggested by Cresswell (2009), the researchers indicated their experience in the field and any biases they may have in the researchers' role section. For the reliability of the study, the steps suggested by Gibbs (2007) were also followed: checking the transcripts to ensure that they did not contain apparent errors and ensuring that there were no deviations or changes in the definition of the codes that occurred during coding.

Researchers’ Role

The researchers have significant experience in distance learning. One researcher was the director of the distance learning center at the time of the study and also taught undergraduate and postgraduate distance learning courses. The other researcher conducted qualitative and quantitative studies on student engagement in open and distance learning. Both researchers have experience in teaching synchronous and asynchronous online courses. The investigators' backgrounds positively impacted the study's conduct and data interpretation. They made several observations, experiences, and thoughts about the factors influencing student engagement. Additionally, their involvement in synchronous online teaching allowed them to understand the students better, contributing to a more in-depth data analysis.

Findings and Discussions

In this study, the reasons why students engage and disengage with online synchronous courses are examined in detail from the students' perspective. In the findings section, the reasons for engagement

and then the reasons for disengagement were given. When interpreting the factors, those with high frequencies were prioritized.

Factors Enabling Students to Engage in Synchronous Courses

The themes and categories that emerged from the content analysis for students' online engagement are given in Table 3.

Table 3. Factors Enabling Engagement

Theme	Categories	Subcategories	Codes	*f*	Total *f*
Internal Factors	Instructor characteristics	Personal characteristics	Warm-blooded (6) Encouraging (5) Sympathetic (3) Caring about students' ideas (2) Empathy (1)	17	32
		Classroom management skills	Time management (7) Ice breakers (6)	13	
		Instructor engagement	-	2	
	Teaching methods and techniques	Active learning	Collaborative activities (7)	18	21
		Engaging learning activities	-	3	
	Interaction	Content interaction	Interest in the content (5) Finding content useful (3)	8	14
		Instructor interaction	-	4	
		Student interaction	-	1	
	Total				67
External factors	Adequacy/quality of technological equipment	-	-	5	5
	Physical environment suitability	-	-	5	5
	Internet infrastructure	-	-	3	3
	Time availability	-	-	1	1
	Total				14
Student characteristics	Attitude	Freedom of time and space	-	7	14
		Feeling relax	-	2	
		Time-saving	-	3	
		Ability to watch again	-	1	
	Personal characteristics	-	Responsibility (4) Eager to learn (3) Self-confident (3) Patient (1)	11	11
	Experience	-	-	2	2
	Total				26
Student Skills	Empathy			4	4
	Self-regulation/control	Time management		5	9
		Attention management		1	
	Total				13
General Total					120

Internal Factors Engaging Students

Internal factors are the primary theme in students' engagement in online synchronous courses. The instructor's characteristics, teaching methods and techniques, and interaction enable students to engage in the course. The instructor's warmth, encouragement, and sympathy attract students to synchronous courses. The effectiveness of the instructor's class management and their level of engagement can impact student engagement. Instructors need to be aware that students can discern their level of engagement. A notable observation regarding instructor characteristics is as follows: *"The instructor was very warm-blooded. I enjoyed the class; I loved it. She was an instructor with whom I*

wished to take more classes. I think the instructor's characteristics affect my engagement." (H7-Warm-blooded).

The methods and techniques employed in the classroom also play a crucial role in synchronous engagement. Students expressed satisfaction with the instructor's use of collaborative activities: *"As my peers shared their ideas, I became increasingly motivated to participate. This led me to produce more products during group work."* (H1-Teaching methods and techniques).

Table 3 demonstrates the significance of student-content interaction in synchronous courses. Notably, the student's interest in the subject and its usefulness stand out in this category*: "Does distance education resemble what we do at university, or are there different aspects? This question caught my attention, which is why I chose this course."* (H4-Content interaction)

Student Characteristics

Following internal factors, the most frequently cited factor is student characteristics. Students' engagement in synchronous courses can be influenced by their attitudes toward distance education, individual characteristics, and previous experiences. The time and space flexibility offered by distance learning, along with the time saved in synchronous courses, may lead students to have a more positive attitude towards distance learning and engage in synchronous courses: *"I support distance education, and yes, attitude affects engagement when it comes to voluntary participation."* (H4-Attitude).

Some highly engaged students participate in synchronous courses because they are responsible, eager to learn, self-confident, and patient. The effect of personality characteristics can be seen in the statement of H7*: "I already attend both synchronous classes and face-to-face classes at school. Some students say that they have the right to be absent for four weeks. So I do not have such an idea; I attribute my engagement to this."* (H7-Personal characteristics-Taking responsibility)

External Factors Engaging Students

In addition to the characteristics of the students, the technological devices and internet infrastructure they also facilitated engagement in the synchronous course. A physical environment in which the student could easily participate in the synchronous course positively affected engagement. However, it is essential to note that external factors can have a contrary effect (see Table 4). The participant statements belonging to some of the categories in the external factors theme are as follows: *"It (having access to technological devices) can have a significant impact. I have access to the internet, a computer, and a phone. This has allowed me to attend my class easily and without problems."* (H5-Technological device adequacy/quality*). "The environment you are in is crucial in this regard. Distractions, such as whispering to a friend, can make it difficult to concentrate. In my case, the environment was conducive to concentration."* (H2-Physical environment suitability)

Student Skills Engaging Students

Although less frequently mentioned than other categories, student skills play an important role in engagement in synchronous courses. In particular, whether students have self-regulation skills is a critical factor. Students with high self-regulation skills can make their own decisions about whether to participate or not. Students prefer synchronous courses when they believe they comprehend the course material better or concentrate more effectively during synchronous sessions. The effect of self-regulation on disengagement is discussed in Table 4. The statement of H6 is an excellent example of the effect of self-regulation: *"I usually tried to attend the synchronous class because watching it later was more tiring for me. I have to allocate time again."* (H6-Time management).

The study determined that students also participated in the lessons because of their empathizing skills. H1 expresses this situation with the following words: *"When I put myself in the instructor's shoes, I realized how upsetting it must be to teach a lesson as if there is no one in front of you, and it must surely*

decrease one's work motivation? Therefore, I want to participate as much as possible, especially in classes where there is little participation." (H1-Empathy skill)

Factors Causing Students to Disengagement in Synchronous Courses

The same general factors that lead students to engage in synchronous courses (see Table 3) can also lead to disengagement (Table 4).

Table 4. Factors Causing Dis-engagement

Theme	Categories	Subcategories	*f*	Total *f*
Internal Factors	Organizational/Regulations	Availability of recorded videos	4	11
		LMS based problems	3	
		Optional attendance	3	
		Clashing courses	1	
	Instructor characteristics	Non-compulsory attendance	4	4
	Interaction	Student-instructor interaction	1	3
	Content	Perceived ease of the course	2	2
	Teaching methods and techniques	Collaborative activities	1	1
	Total			21
External factors	Physical environment suitability	-	3	3
	Adequacy/quality of technological equipment	-	2	2
	Internet infrastructure	-	2	2
	Total			7
Student characteristics	Attitude	Technology acceptance	2	5
	Asynchronous content preference	Procrastination	3	11
		Time freedom	2	
		Attention span	2	
		Individualistic Student	1	
		Minimal effort	1	
		Adjustable video playback speed	1	
	Total			16
Student skills	Self-regulation	Goal orientation	4	8
	Digital literacy		1	1
	Total			9
General Total				53

Internal Factors Causing Disengagement

In explaining reasons for disengagement, similar to reasons for engagement, intrinsic factors are prominent. Instructor characteristics were more prominent in the reasons for engagement, while the reasons for disengagement emphasized administrative factors. Some of these factors are due to the advantages of an ideal learning management system. For example, allowing students to access recorded lecture videos later reduces their engagement in synchronous lectures. L5 expressed this situation as follows*: "I realized that I could watch the videos later. I said, why waste my time on the lecture now, I can learn it all later anyway."* (L5- Availability of recorded videos).

Due to the decisions of the school, participation in synchronous courses is optional, and students can enroll in more than one course during the same period. This situation also reduced participation. In some cases, students preferred to attend the other overlapping courses synchronously. Some students stated that they experienced LMS-related technical problems. Only a few students stated that they did not attend the course because the instructor did not require attendance (which was a rule of the institution). This situation can be better understood with the following statement: *"It depends on the instructors. Some instructors wanted us to be in the live session. Teacher X did not take roll. That is why I mostly watched the class asynchronously later."* (L7 - Compulsory class attendance).

Two students found it challenging to participate in live classes, reflecting their negative attitude towards online learning in general, not just this course. Besides, some students said they did not attend classes

because they found the course easy. Interestingly, it was found that one student stopped attending because of the collaborative activities. However, Table 3 shows that some students participated mainly because of the group activities, which shows how individual preferences affect engagement. L8 expresses the situation as follows: *"After I took the midterm exam, I saw that it was easy. So, I assumed that the final exam would require less studying time, causing my engagement to decrease."* (L8-Perceived ease of the course)

Student Characteristics Causing Disengagement

In the reasons for disengagement, students emphasized their own characteristics most after internal reasons. Student characteristics can both facilitate and hinder disengagement. Negative attitudes towards distance education, procrastination, and the desire to pass the course with minimum effort can prevent engagement in synchronous courses. Furthermore, students' preference for faster viewing of content and the desire to view the course at any time are some of the reasons for disengagement from synchronous courses. Some participant statements in this category are as follows: *"I stopped attending synchronous classes. It was because of my relaxed personality. When I have much free time, I tend to use it".* (L1- Procrastination) *"I get very bored studying for a long time; I take breaks very often, so I did not participate in synchronous lessons."* (L5- Attention span)

Student Skills Causing Disengagement

Regarding student skills, student goal orientation's impact on the synchronous lesson can be seen. Some students stated that there is an annual exam for becoming a civil servant in the country where the research was conducted, and they prepare for and prioritize this exam. L2 expressed this situation as follows: *"The main reason for my absence was the Public Service Selection Examination. As the exam was a big step ahead of us, 70% of my time was dedicated to preparation, leaving me unable to attend classes."* (L2- Goal orientation).

In addition, some students prioritized courses that they thought were more difficult: *"Because I had an internship and various courses and assignments to complete. So I did not even think about distance courses that do not require attendance."* (L8 - Goal orientation)

External Factors Causing Disengagement

Students' lack of a suitable physical environment, inadequate technological devices, or internet infrastructure reduced their participation in synchronous lessons. For example, L3 lived at home during the pandemic and returned to a dormitory after the pandemic. The student stated that although she wanted to participate in the lessons synchronously, she could not participate due to some technical reasons with the following sentences: *"Throughout the pandemic, I actively participated in all the synchronous courses. However, after the pandemic, my participation in all distance learning courses decreased due to poor internet speed and logging in from my mobile phone."* (L3-Internet infrastructure-limit).

L1 stated that she could not participate in synchronous lessons because she could not find a suitable environment to work in when her roommate was at home, and her concentration was distracted: *"Sometimes my roommate and I did not have classes at the same time. She was also at home. Her presence or the fact that I prioritized other things at the time reduced my participation."* (L1-Physical environment suitability)

Discussion and Conclusion

According to the study results, the factors that influence student engagement in synchronous courses can be divided into four groups: internal factors, external factors, student characteristics, and student skills. These factors sometimes facilitate and sometimes hinder student engagement. For example, the fact that the instructor is warm, sympathetic, and encouraging helps students to be engaged. Conversely, the instructor's lack of concern for attendance can result in disengagement. Looking at the internal factors that lead to engagement in general, the instructor plays a prominent role.

Although this study focused on students' behavioural engagement, one of its most significant findings is that the characteristics of teaching staff primarily influence students' emotional engagement, which in turn affects their behavioural engagement. This result confirms the findings of the study Özyürek et al. (2016). In the aforementioned study, students stated that the instructor's inclusion of students in the lesson, giving importance to their thoughts, and taking roll calls would increase their engagement. Gentleness, patience, and encouragement are qualities that teachers should possess in face-to-face

education, according to Duta et al. (2015). Distance education administrators also think that a reasonable distance education teacher should have characteristics such as encouragement, empathy, time management, positive communication, goodwill, interactivity, and friendliness (Samora, 2013).

In addition to personal characteristics, the methods and techniques used by the teacher and his/her interaction with students influence synchronous engagement. Bağrıaçık Yılmaz (2020) also found that the instructor's use of innovative and active techniques, giving feedback to students, and classroom management skills are essential for engagement. Similarly, Dixson (2010) determined that the interaction between instructors and students affects engagement. In the study by Kurtoğlu (2022), students stated that the instructor's monotonous lecturing, lack of interaction with them, and the fact that the course content is only in the form of presentations make online courses boring, which can be associated with emotional engagement. It is possible that a student who finds the lesson boring will not participate in a synchronous lesson. The study by Uslu Kocabaş and Bavlı (2025) shows that instructors play an important role in supporting student engagement in synchronous online courses. Their study highlights that students feel more connected and are more willing to participate when the instructor is visible, gives quick responses, and uses interactive tools.

It is among the results of this study that the instructor's mastery of teaching methods and techniques and the use of Web 2.0-supported collaborative activities have a positive effect on engagement. Bryan et al. (2018) also revealed that students' collaboration through technology positively affects engagement. In Dixson (2010), interaction between students through various channels was even cited as necessary for distance education. However, how technology is put to work is of utmost importance. Indeed, technology supports engagement but can have adverse effects when pedagogical aspects are not considered (Bedenlier et al., 2020). At this point, the importance of the techno-pedagogical skills of the instructor, which is also emphasized by Rehn et al. (2016), emerges.

In addition to the teacher's techno-pedagogical skills, technical equipment, internet infrastructure, and the physical environment also affect students' engagement. Anggriani et al. (2022) also found that one of the main problems rural students face in online learning is that they have various problems related to internet connectivity. In the study by Bağrıaçık Yılmaz (2023) on the accessibility problems experienced by pre-service teachers in Turkey, not having the necessary device, problems with the internet infrastructure, and not having the necessary environment came to the fore. The finding that technological problems are a barrier to engagement was also found by Ji et al. (2022).

Students stated that some institution regulations, such as not requiring course attendance and the ability to watch the course videos afterward, negatively affected their synchronous engagement. A similar conclusion was reached by Aslan Altan and Gökçen Kabaran (2022) that the lessons are recorded as videos negatively affect synchronous engagement. In support of this, in Bolliger and Martin's (2018) study, instructors stated that forcing students to participate in synchronous lectures was not valuable in engagement. Moreover, instructors consider asynchronous videos more functional in terms of engagement. In the current study, the opposite conclusion was also reached. Some students prefer attending synchronous lectures to avoid watching asynchronous videos. At this point, it is seen that student characteristics and preferences come to the fore here.

Student characteristics and skills can have both positive and negative effects on engagement. For example, time management skills allow students to prioritize; thus, some may prefer to do something more urgent and essential instead of attending a synchronous lecture. Another student, on the other hand, prefers to do the work at the assigned time and attends the synchronous lecture. Time management is one of the most essential skills that distance education students should have and is one of the most challenging points for distance education students (Cox et al., 2022; Santos et al., 2022). Students who are able to effectively manage their time tend to perform better (Khiat, 2022; Mou, 2023). However, each student may prefer to manage their time differently thanks to the flexibility provided by distance education (Ahmad et al., 2019), and this may be fine if the student participates asynchronously. However, procrastination is a significant problem in terms of academic achievement (cognitive engagement) (Ucar et al., 2021) and engagement in course activities (behavioral engagement) (Michinov et al., 2011). Melgaard et al. (2022) found that students without procrastination preferred to attend synchronous courses more. In this study, although it is not possible to generalize, it was observed that those with procrastination behavior were those who did not participate synchronously.

The general attitude of students towards distance learning is one of the most critical factors for engagement. If students develop a positive attitude for various reasons, their engagement will also be positively influenced. In addition, one of the striking findings of this study is the importance of students' empathy skills. In the literature, the empathy skills of the instructor are often emphasized (Bozkurt & Özden, 2010; Samora, 2013), but the fact that students participate in synchronous courses, thanks to their empathy with the instructor, makes this study different.

Limitations and Suggestions

Despite the fact that the present study initiated the data collection process based on indicators of behavioural engagement, the research results determined that the engagement of students who exhibited behavioural engament was triggered by their emotional engagement. Consequently, subsequent studies may investigate the association between emotional engagement and behavioural engagement. The area of expertise of the instructor who taught the course in the study is educational technology; therefore, she may have had different positive effects than any other instructor. For this reason, teaching the course with instructors from different areas of expertise may provide additional insights into the findings of this study. As instructors play a critical role, distance education instructors should be trained in distance education pedagogy. Another important factor is the characteristics of the students. It is recommended that orientation and counseling on issues such as time management and coping with procrastination should be provided to students who will be taking courses through distance education. It has been observed that if students find the course easy, they are less likely to continue. Another suggestion from this study is that teachers should adjust to the challenge well, as emphasized by Chickering and Gamson (1987). Teachers should also take other measures to increase students' behavioral engagement in courses where attendance is not compulsory. These measures may include variables such as the number of messages, count of posts, homework completion rate, late homework submission, and voice participation. Moreover, an important finding of this study is the role of students' empathy skills, which suggests that future research should explore the various dimensions of emotional engagement, especially in relation to students' emotional connection with their instructor.

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Author's Contributions (CRediT)

Ayşe Bağrıacık Yılmaz: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Software, Validation, Visualization, Writing – original draft, Writing – review & editing; Şerife Ak: Conceptualization, Investigation, Project administration, Resources, Supervision, Validation, Writing – original draft, Writing – review & editing. All authors have read and agreed to the published version of the manuscript.

Sustainable Development Goals (SDGs)

This study is linked to the following SDGs: Quality education (SDG 4) and Partnerships for the goals (SDG 17).

Data Accessibility Statement

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Ethics and Consent

The ethical approval has been taken from Aydın Adnan Menderes University Ethical Commission of Educational Studies.

Competing Interests

The authors have no competing interests to declare.

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