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Teachers' Perceptions of Student Engagement in Online Learning

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Teachers perceive student engagement in many ways, and do not necessarily align engagement strategies they employ with their own conceptualization of this construct. This situation is worsened in online learning of which popularity has grown since the emergence of the COVID-19 global pandemic. We explored perceptions of student engagement in online learning, both synchronous and asynchronous, using semi-structured in-depth interviews with K-12 teachers (N=13). We referred to different dimensions (behavioral, emotional, social, and cognitive) and contexts (student, peers, class, school, and home). Findings suggest that student engagement in online learning has unique characteristics: It is mostly behavioral, particularly task-centered; it relates to student-, class-, and home contexts; and teachers take responsibility on- and act upon issues related to it.

Keywords: student engagement, online learning, qualitative, teacher perceptions

INTRODUCTION

Over the last decades, students' engagement with school has been suggested as key to academic success and well-being. However, till now there is no full agreement about the definition of this construct or about its scope. In 1985, Mosher and MacGowan (1985) stated that up to that time, there was no direct conceptualization or measurement of student engagement in secondary schools; their literature review found only two actual uses of

that term. About two decades later, a literature review by Appleton, Christenson, and Furlong (2008) had found almost 20 different conceptualizations of student engagement, and since then this number increased dramatically. For example, in a recent review of engagement in language learning alone, over a hundred papers were analyzes, and only about a third of them included a clear definition or operationalization of the construct (Hiver et al., 2021); another recent review of student engagement in flipped learning also covered over 100 papers, with only 12% including a definition of student engagement (Bond, 2020).

It is not surprising then that in practice, teachers hold quite disparate conceptualizations of student engagement; moreover, they often employ engagement strategies that are contrary to such conceptualizations (Pedler et al., 2020). As teachers play an important role in student engagement—mostly due to their responsibility on classroom management and teaching strategies (Franklin & Harrington, 2019)—it is essential to better understand the way they conceptualize this construct and the ways by which they operationalize its measurement and make decisions upon measuring it. This was indeed our main goal in the study reported here.

As if not complicated enough, the discussion of student engagement gets even more noisy when referring to technology-mediated learning, specifically online learning, where, in addition to time and space boundaries that are often being blurred, interactions between students, content, and teachers may change dramatically compared to the traditional, face-to-face setting. This may impact the very understanding of student engagement and, of course, the ways of measuring it. Indeed, a recent study of engagement and disengagement in online learning demonstrated how complex these constructs are; the authors found that teachers' perceptions of engagement in online learning seem to lack inherent boundaries, that engagement and disengagement are influenced within and between dimensions and by context, and that these two constructs can co-occur in complex patterns (Bergdahl, 2022). Still, there is a lack of research into this important issue.

BACKGROUND

Dimensions and Contexts in Student Engagement

Student engagement has been the focus of many studies, however with no consensus on its exact definition and operationalization. Broadly speaking, student engagement is the extent to which students are involved in learning tasks. It has been widely accepted that student engagement is a multidimensional construct, a view that is drawn from Fredricks et al. (2004) framework and that was later extended. Fredricks et al. defined three dimensions of engagement, namely, behavioral, emotional (also called affective), and cognitive. Later, a fourth dimension of social engagement was

added (Finn & Zimmer, 2012), and together with the previous three form a four-dimensional construct that serves as one of the two major components of our framework.

Behavioral engagement is a complex construct that overall refers to the ways in which students are involved with school-related activities de-facto; this often includes aspects like attendance in- and active participation during lessons, positive conduct, and demonstration of effort, persistence, or attention, and may be related to either academic or non-academic activities that are part of school-life (Conner, 2016). Indicators to behavioral engagement (or to the lack of) are easily observable, as they mostly refer to the presence in- and action-taking during various activities (King, 2020), and may be as simple as hand-raising (Böheim et al., 2020).

Emotional engagement (also, affective engagement) is conceptualized as students' identifying with- and having an internalized feeling of belonging to school, and its importance is derived from the emotional drivers to motivation (Cook et al., 2020). Other terms—e.g., school bonding, positive attitudes towards school, have also been used to refer to it, and it is strongly associations with student-teacher relationship (Ribeiro et al., 2019). Indicators include measures like enthusiasm, interest, and enjoyment (Meyer & Turner, 2002).

Cognitive engagement broadly refers to academic motivation, effort, and strategic learning, which are strongly connected to students' investment in-, valuing of-, and directing effort toward their learning (Reschly et al., 2014). This dimension has mostly derived from the notions of investment in learning and self-regulation, and was inspired by theories of motivation, hence is often associated with a desire to achieve mastery and goals, or even to go beyond the requirements (cf. Fredricks et al., 2004). As such, indicators to cognitive engagement include measures like valuing of learning, demonstrating self-efficacy, setting mastery goals, investing time and effort in learning, or implementing self-regulated learning strategies (Pohl, 2020).

Social engagement is a relatively recent addition to the school engagement literature; it is mostly concerned with prosocial behavior in the school context, and was found to be a reliable, separate dimension of engagement (Fredricks et al., 2016; Wang et al., 2017). Social engagement may be manifested in different ways that represent positive student-peers relationship, like helping classmates who face difficulties, enjoying group work, or playfully engage with other students during break. Importantly, social engagement was shown to be strongly associated with self-efficacy, which is key to learning, hence is as important dimension of engagement as the previous three (Martin & Rimm-Kaufman, 2015).

Clearly, if we wish to fully understand the mechanisms that impact student engagement, we should consider various contexts in which it is situated, as student learning is part of a large ecosystem (Bond, 2019). We base our framework of contexts of school engagement on Furlong et al.'s work

(2003), which define four different contexts that are in constant relationship with each other: student, peer group, classroom, and school; under the student context, we include the four dimensions of student engagement. Building on this notion, we are also inspired from Bond's (2019) model of influences on student engagement which includes four levels of influence, corresponding to four systems in which the student is placed: microsystem (e.g., peers, teachers, school, parents), mesosystem (socioeconomic background), exosystem (e.g., school policy, national curriculum, media), and macrosystem (e.g., culture, digitalization, political and social environment). As we discuss teachers' perceptions of student engagement, based on their school-based professional and personal experience, we feel most confident on explicitly basing our framework on students' various human relationships, which are mostly related to in Bond's microsystem; with that in mind, we add the home context to the three additional contexts laid out by Furlong et al. (2003). That is, our framework of student engagement is defined by a student context, in which the four-dimensional student engagement construct resides, and additional four contexts which represent growing circles of belonging: peers, classroom, school, and home (see Figure 1). Importantly, Bond's other levels of influences may be associated with our structure by their impact on the host of student relationships in multiple ways; for example, socioeconomic background may be related to the home context, school policy and national curriculum may be related to the school context, culture and digitalization may be related to all contexts, etc. Of course, the very engagement, which is situated in the (inner) student context, has to do with all the other contexts, as it has complex associations with a host of factors related to various components that are part of a student's life.

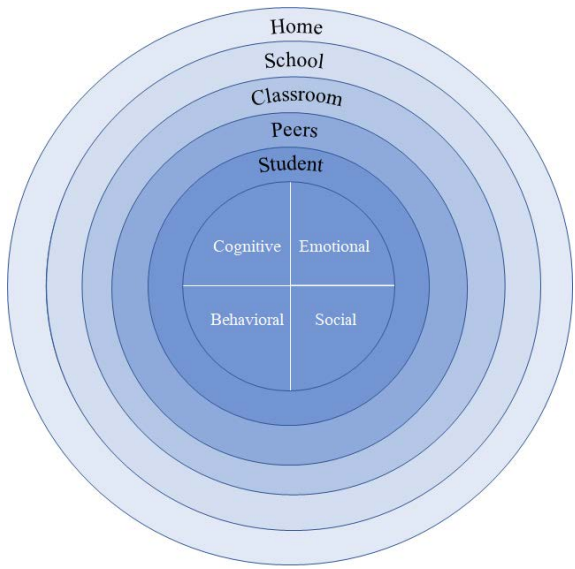

Figure 1. Our framework for studying student engagement.

Student Engagement in Online Learning

Online learning may dramatically change student engagement due to the ways by which it is handled and managed. Online learning has some unique characteristics compared with traditional classroom learning vis-à-vis each of the four dimensions of our framework (see Figure 1). We will just mention a few of them, demonstrating the complexity of these inter-associations. Cognition in online learning may be impacted by at least two ways: on the one hand, cognitive load may be affected by various extraneous factors, e.g., interacting with multimedia objects, multiple information representation, or emotional design (Skulmowski & Xu, 2022); on the other hand, online learning tends to involve certain types of instructional practices which, in turn, may ignite certain types of cognitive involvement (Sadaf et al., 2021).

Emotions that are manifested in online learning may by more negative than in traditional, face-to-face learning, such as aloneness and trepidation (Reilly et al., 2012); therefore, it is not surprising that emotional intelligence, i.e., the ability to understand and manage one's emotions, and to recognize and influence them, was found to be a predictor for success in online learning (Berenson et al., 2008). Social interactions—between peers and between students and teachers—are actualized differently in online learning, where students are physically isolated from each other, and may negatively impact sense of identity and belonging among students, which in turn may negatively impact learning (Delahunty et al., 2014); on the other hand, in such settings, teachers and instructors may be more prone to pay attention to social-related issues (Botvin et al., 2023; Usher & Hershkovitz, 2022), which may act as a counterforce. Lastly, behavioral aspects are quite different in online learning, a result of its different configuration, which may be evident by, e.g., the ways students ask questions or seek for help (Caton et al., 2021; Sumadyo et al., 2021).

Such differences between online learning and traditional learning necessitates discussing engagement in online learning with great care, because it is not clear a-priori that the very conceptualization of this construct could be directly transferred from one setting to the other. With no physical proximity between teachers and students and between students and their peers, there is a lack in traditional cues that are traditionally associated with teachers' understanding of- and assessing student engagement, like body language or face expressions. In such settings, notions of interactions and interactivity—which are strongly associated with engagement—should be looked at from a new perspective that considers different types of communication, various media types, alternative pedagogies, and the importance of computer interfaces (Kennedy, 2020). It is not surprising then that due to its high dependency on technology, engagement in online learning was found to be positively related to access to high-speed Internet and Internet-enabled devices,

as well as to digital skills (Bergdahl et al., 2020; Domina et al., 2021), and technology-related factors were suggested as crucially important for sustaining engagement (Kumar et al., 2022).

Still, it is reasonable to study the construct of engagement in online learning using the framework that has been long used to study it in traditional settings. Doing so, scholars highlighted the unique characteristics of the "new" engagement. For example, Louwrens and Hartnett (2015) suggested that in online learning, cognitive engagement is particularly evident in giving and receiving of feedback as well as in the ways activities generate interest as relevance for learners, and that emotional engagement was elicited through design and facilitation of activities; Bergdhal and Hietajärvi (2022) found that social engagement is associated with certain ways of facilitating learning online, specifically co-creation and shared cognition; and Al Mamun, Lawrie, and Wright (2016) demonstrated how behavioral engagement is sensitive to type of task and instructional guidance.

Considering this, our study aims at bridging over an existing gap in the literature that refers to the very definition of student engagement in online learning. Even though some automatic measures have been suggested already (Dewan et al., 2019), we feel that establishing a deep understanding of what it means to be engaged in online learning is still required. We address this need by studying teachers' perceptions of student engagement in online learning, both synchronous and asynchronous. For doing so, we set up the following research questions:

1. How do teachers perceive student engagement in online learning?
2. How do teachers perceive the factors affecting student engagement in online learning?
3. How do teachers measure student engagement in online learning?
4. When and how do teachers act upon engagement-related issues in online learning?

As perceptions of engagement in online learning may be related to perceptions of engagement in traditional, face-to-face learning, we referred to both these settings, comparing the former with the latter.

METHODOLOGY

This study took a qualitative approach, based on semi-structured in-depth interviews with primary and secondary Israeli school teachers (N=13) in which they reflected on issues related to engagement in face-to-face and online learning.

Research Field

The study was carried out in Israel, where the education system is mostly public, centralized and is typically divided into two broad school levels: primary schools (first to sixth grades, ages about 7-12 years old), and secondary schools (seventh to twelfth grades, ages about 13-18 years old); secondary schools are often divided into two sub-levels, i.e., middle-school (seventh-ninth grades) and high-school (tenth-eleventh grades). The school year in Israel begins on September 1st and ends on either June 20th (for secondary schools) or June 30th (for elementary schools).

As in many regions in the world, the COVID-19 pandemic outbreak has dramatically affected the education system in Israel, and most of the schools in the country operated remotely—at least to some extent—for a few months. Schools closed in mid-March 2020, as part of the first national lockdown, and as a whole, the education system did not fully recover until March 2021, due to national lockdowns or emergency regulations. Overall, during that time, schools did not operate in a face-to-face manner for 50%-73% of the time, with teachers experiencing remote teaching for 13-24 weeks (Weissblei, 2021). Importantly, even when schools opened for face-to-face learning, this was not necessarily the only setting, as some schools implemented hybrid learning that involved a mix of face-to-face and remote learning each week, and from time-to-time individual classrooms operated remotely due to quarantines. When online learning took place, it was implemented either synchronously, usually via Zoom, Microsoft Teams, or BigBlueButton, or asynchronously, via various platforms.

Participants

Participants included 13 Israeli teachers from 13 public schools across Israel. Participants were recruited via the authors' professional and personal networks, with the purpose of increasing variance in age, gender, teaching domain, teaching experience, and roles in school. Our main inclusion criterion was experience in teaching during the 2020/21 school year, where the most of remote teaching was experienced, and teaching from at least 2018/19 school year, when a full school year was experienced with traditional, face-to-face meeting for the last time before COVID-19 outbreak.

Of the participants, we had 11 females and 2 males; 6 who were teaching in primary schools and 7 who were teaching in secondary schools. Participants' age ranged between 26-57 years old (M=40.5 SD=10.6), and their teaching experience ranged between 3-30 years (M=12.5 SD=9.8). Participants were teaching various disciplines, related to STEM (Science, Mathematics, Technology), Humanities (Language, Literature, Arts), Social Sciences (Geography, Communication), and Physical Education. Different school-related leading roles were represented in our population, including homeroom teachers, subject coordinator, pedagogy coordinator, ICT coordinator, social involvement coordinator, and more.

Research Tool and Process

Our main research tool was a semi-structured in-depth interview. Interviews were conducted remotely, via a video call, and lasted between 43-110 minutes each. The interviews were conducted during January-March 2022, and were recorded and fully transcribed before analysis. The interview protocol was focused on the concept of engagement in face-to-face and online learning. As such, after some introductory questions about the participant's demographics and teaching experience, the following questions had led the interview: 1) How do you perceive student engagement in face-to-face/online learning?; 2) What affects student engagement in face-to-face/online learning?; 3) How would you measure student engagement in face-to-face/online learning?; 4) When and how would you act upon in the context of student engagement in face-to-face/online learning? In each of these questions, teachers were first asked to refer to face-to-face learning, and then to online learning, both synchronous and asynchronous.

Data Analysis

We conducted a qualitative content analysis of the full interview transcripts. For answering RQ1 and RQ2, we coded the transcripts using the direct approach (Hsieh & Shannon, 2005), that is, working in a top-down manner with a-priori frameworks for coding. For RQ1, we used the four types of engagement from our research framework, namely behavioral, emotional, social, and cognitive; for RQ2, we used the five contexts from our research framework, namely student, peers, class, school, and home (see Figure 1). We did so as these RQs referred directly to the different components in our theoretical framework, either to types of engagement (RQ1) or to contextual factors (RQ2).

For answering RQ3 and RQ4, we used the conventional approach (Hsieh & Shannon, 2005), i.e., working in a bottom-up manner, with no pre-defined codes. Here, we chose this approach as we did not assume any theoretical framing of measurement and teacher actions, hence wished to extend the scope of the answers as much as the data could reveal.

In all cases, the unit of analysis was teachers' statements related to student engagement. The first author had coded two interview transcripts, then discussed it with the second author, and together they agreed upon conflictual coding schemes. The remaining interviews were then coded by the first author, with frequent discussions among the authors, aimed to resolve further conflicts. Organizing the coded statement into higher-level themes—for each RQ separately—was done by the two authors jointly. This process of coding and organization into themes was done using Atlas.ti software version 22. Therefore, the resulting themes are a product of a rigorous spiral process of analyzing the data, which allowed us to thoroughly answer the research questions.

FINDINGS

This section is organized by the RQs, and within each of them – face-to-face and online learning are reported separately, in that order. This will enable us to first establish the baseline of participants' perceptions regarding traditional learning, and then to compare their perceptions regarding online learning to that baseline. Within each section, themes are presented by order of their prominence, and the same goes to sub-themes within each theme.

Perceptions of Student Engagement (RQ1)

Overall, we found that regarding both face-to-face and online learning, teachers perceive student engagement as a multidimensional construct that spans across behavioral, emotional, social, and cognitive dimensions. However, these dimensions are not equally represented; while in face-to-face learning, behavioral and emotional dimensions are the most prominent dimensions, in online learning only the behavioral dimension is prominent. Findings are summarized in Table 1.

Table 1

Expressions of Engagement by Dimension and Themes (with number of participants who mentioned each theme)

Dimension	Expressions in Face-to-Face Learning	Expression in Synchronous Online Learning	Expressions in Asynchronous Online Learning
Behavioral	Actively participating (n=5)	Performing tasks (n=13)	
	Performing tasks (n=11)	Actively participating (n=10)	Asking about tasks (n=5)
	Taking initiatives (n=4)	Attending (n=11)	
	Listening (n=4)		
Emotional	Showing interest and motivation (n=8)	Showing interest and motivation (n=5)	
	Wishing to be part of a group (n=5)		
Social	Helping others (n=4)	Enjoying group work (n=3)	
Cognitive	Being prepared to class (n=3)	Putting effort in assignments (n=4)	

Expressions of Behavioral Engagement

All participants referred to behavioral engagement, regarding both learning settings. In face-to-face learning, we identified four main themes regarding behavioral engagement: actively participating, performing tasks, taking initiatives, and listening.

Actively participating. This was mentioned by five teachers as an indicator of engagement. To them, an engaged student "is an active student, that you can hear them" (T11), it is "basically a student who takes part in the lesson, who is active, who answers questions" (T9). Comparing between engagement and non-engagement, one of the participants, this notion of being active becomes clearer:

> "There are students who […] sit in the side [of the classroom] and don't want to work, and there are those who are active, physically […] who participate. […] If, for example, there's a discussion […] then they will talk" (T2)

Being active includes some specific behaviors that were mentioned by the participants. Asking questions is the prominent of these behaviors, mentioned by all the participants; when one of the teachers talked about an engaged student, they mentioned that students "decided to ask a question on their own" (T2), and another teacher explicitly linked between being active and asking questions, saying that "an engaged student is a student who is asking questions" (T11).

Another behavior that indicated on being active is participating in teacher-led discussions and expressing opinions, which was mentioned by six teachers; one of them stated that when she was talking about an engaged student, "I am talking about those children who can come and be engaged and stand up and really express their opinion" (T3), and another one mentioned that she was talking about those students "who participate in the discussion, sharing their answers, sharing their knowledge with the classroom, participating in the academic or social discussions" (T4).

Finally, four teachers referred to raising hands during lessons as an expression of participation; one teacher stated that an engaged student is "a student who is active, who is participating, who is raising hand" (T4), and another one said that "being engaged in a lesson mostly means that you would raise your hand" (T2); similarly, another participant said that "active learning is [when, for example] we read a story, and they [the students] raise hands: 'I want to read!'" (T9).

Performing tasks. This was mentioned by eleven teachers as an indication of being engaged. This includes various tasks that are given or expected to be performed during lessons:

> "Working on the assignments I give them, copying from the board, solving exercises in the booklet – […] if the student does it, they are engaged" (T7)

> "If I asked to write an essay – so they are writing the essay […] that is what it means to be an engaged student" (T12)

One participant explicitly stated that performing tasks is an indication for engagement even when no active participation is evident: "those low-achieving students or the shy ones […] if they are sitting quietly, did what I gave them […] – for me, they are fully engaged" (T3).

Taking initiatives. This was mentioned by four teachers who referred to students' initiatives to lead a lesson or to learn by their own as an indication of engagement:

> "Initiative [is an indication of engagement" - there are students […] who suddenly with to teach a lesson, to prepare something" (T5)

> "[Engagement is when] they initiate things, I have a student, for example, who studies stuff at home and then […] shares it with me and wished to know how it is related [to the material we learn" (T13)

Listening. Four teachers referred to merely listening as an indication of engagement, saying that "in my opinion, engagement is whether the kid is listening, attentive, even if they don't do anything else" (T3), or emphasizing that "in the classroom, they listen, that's the most important thing [for being engaged] – you either listen or you don't listen" (T9).

When it comes to online learning, four main themes emerged: performing tasks, actively participating (in synchronous learning only), attending (in synchronous learning only), and asking about tasks (in asynchronous learning only). Note that the two most prominent themes in face-to-face learning (actively participating and performing tasks) are still the two most prominent themes in online learning, however in a reversed order; the least prominent theme in face-to-face learning, i.e., listening, changed a bit, and became attending, the third most prominent in online learning; taking initiatives, another theme in face-to-face learning, was replaced by asking about tasks.

Performing tasks. This was mentioned by all participants, regarding online learning at large. One of the teachers put it simply, "[we] give them assignments and exercises through which you see their work and engagement because that's the only way to know who did what" (T8). For some teachers, students' mere submission of the completed tasks is a sign of engagement, "[if] a student submitted – then they are engaged, [if] a student didn't submit – they are not engaged" (T12), and sometimes they may observe engagement through actual effort on the side of the students, "if I comment

[on their submissions…] and indeed after that they sat down and fixed it and resubmitted it, I know that they are engaged" (T6). In asynchronous learning, the indication of submitting tasks becomes ever more crucial, as "it is solely about completing the task, there is no discourse, so submitting the task, completing the task, that's student engagement" (T4).

Actively participating (in synchronous learning only). Ten of the participants referred to active participation in synchronous online lessons, and explicitly mentioned three such indicators. Of these, asking questions was the most prominent indicator, mentioned by seven teachers; for the teachers, asking questions is about "being interested" (T13), and may indicate on the student simply "being there" (T11). Another manifestation of active involvement is participation in teacher-led discussions or surveys, which was mentioned by four teachers, for example, "It's enough for me that they said something during the lesson, that they responded to a question I asked, or even that they hit 'yes' or 'no' on a survey I launched" (T2). Lastly, raising hands is another indication of active participation; this could be done in various ways, e.g., "by actually raising your hand in front of the camera, or by using emojis" (T3), and serves as an easy way for noticing engagement, "I would tell them to use this 'Like' if they didn't understand, and then I saw many yellow [icons], and it meant for me that they were there" (T7).

Attending (in synchronous learning only). For eleven of the participants, merely attending a synchronous class meant being engaged in it. One of the participants explained that "being part of a Zoom class is, first and foremost, to connect to it" (T7), and another one defined an engaged student in such a lesson as "one who was connected" (T8). For a few teachers, turning on the webcam is a required act that goes beyond merely joining the online class, as "otherwise you could be sleeping in bed or doing stuff that are not related to the lesson, so turning on the webcam is an important step" (T4); one of the teachers emphasized this aspect:

> "Zoom has a guest and a host, but you should add a third state: 'ghost', which means that you're [connected but] with your webcam turned off, on mute, and basically not there. That's the very opposite of engagement" (T11)

Asking about tasks (in asynchronous learning only). This was mentioned by five teachers, who thought that in asynchronous learning, if students ask questions about the tasks, "you could know that they were doing the task […] therefore it is engagement" (T13).

Expressions of Emotional Engagement

Eleven of the participants referred to aspects of emotional engagement when talking about face-to-face learning. We identified two main themes: showing interest and motivation, and wishing to be part of a group.

Showing interest and motivation. This was mentioned by eight participants, who referred to aspects like "wishing to know, wishing to understand, […] even if I didn't teach it – it's highly important for them [the engaged students] to know what's going to happen" (T3). One teacher said that an engaged student is "first and foremost a student who has motivation for learning, so you can really get with them to other places" (T9).

Wishing to be part of a group. This was mentioned by five teachers, who mostly referred to students who share from their knowledge and of their work, "there are students who want to share and to show the class what they did […] – that's engagement" (T2). Sometimes, this actions are interpreted by the teachers as if these students "wish others to hear them" (T9), "they want others to know that they know" (T3), as if they would like to feel part of a larger group.

As for online learning, the first theme remained, however to a lower extent—with only five teachers mentioning statements related to it—and with a slightly different meaning.

Showing interest and motivation. This was mentioned by five participants, who mostly referred to the general notion of engagement as "excitement" (T5) and of "motivation […] and encouraging others [to do stuff]" (T1); the latter explained that engagement is built in this way, often with more students involved, as one of them "shows enthusiasm and talks, and then they talk with each other".

Expressions of Social Engagement

Only four participants referred to aspects of social engagement when discussing face-to-face learning. We identified one main theme: Helping peers.

Helping peers. To the teachers who mentioned it, an engaged student is "like a young teacher who cares about helping others, being engaged in others' knowledge. If they see a kid who doesn't understand something during a lesson, they would go and explain that kid" (T3). Such an action tells the teacher that "they didn't just finish their task, but they can also pay it forward, this is how I know they're engaged" (T4). In the eyes of these teachers, engaged students are "friends who push one another [to succeed]" (T8).

While referring to online learning, this theme diminished to only few mentions, and instead arose another theme, enjoying group work.

Enjoying group work. This was mentioned by three teachers, one of whom referred to engaged students as those who, during synchronous learning, "loved to work in groups […] they feel comfortable to talk there

with each other" (T5). Also, while learning asynchronously, engaged students were those who "went to each other's house to study together" (T12). Group work was a driving force for some students to take a more active part in learning, which is why it was considered as an indication for engagement:

> "Working in groups does them good, because they are being contributed and contribute to other, it resulted in collaborations, it resulted in seeing the other, it resulted in kids expressing themselves" (T1)

Expressions of Cognitive Engagement

Three teachers referred to cognitive engagement when talking about face-to-face learning. One theme raised, being prepared for class.

Being prepared to class. Part of being prepared means taking active steps, like "if I give them an assignment – […] so they do it, if there's an exam – […] they learn for it, that's what it means to be engaged" (T12). Alternatively, being prepared for class may simply mean "knowing where we are in the material, that's for me being engaged, knowing what we learned in the previous lesson" (T1).

Regarding online learning, four participants mentioned aspects of cognitive engagement, and the theme that arose was putting effort in assignments.

Putting effort in assignments. Often, students invest time and effort in an assignment because "they didn't like the grade they got, so they wrote to me and asked if I could return it to them so they could redo it for improving the grade" (T6). Hidden from the teacher's sight, students can sometimes take the same assignment over again, so "they'll take the same exam again and again and again, and they like tricked me, but for me […] they learned and fixed their mistakes" (T1).

Factors Affecting Student Engagement (RQ2)

Participants were asked about factors that may affect student engagement, and we coded them by their relationship to the five contexts of engagement, i.e., student, peers, class, school, and home. Overall, we found factors related to all these contexts, however with some contexts being more prominent. Findings are summarized in Figure 2.

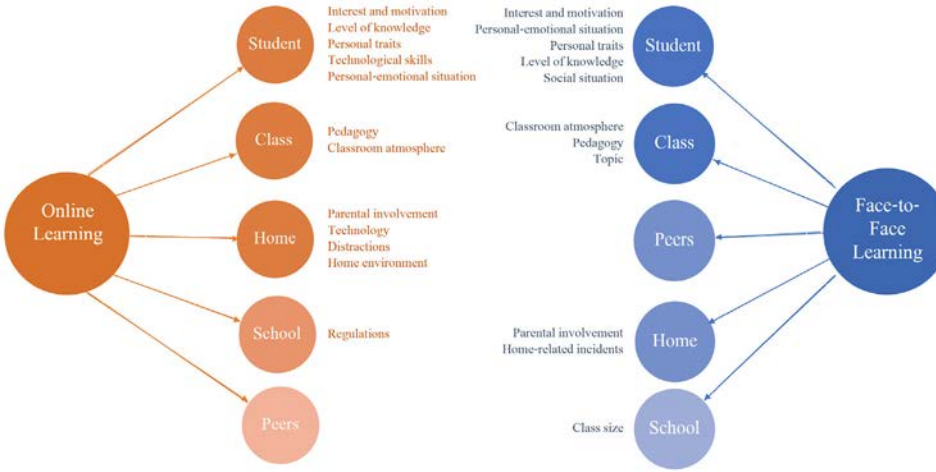

Figure 2. Factors affecting engagement, by context (ordered by prominence, from top to bottom), in face-to-face and online learning.

Student Context

All participants had mentioned factors related to the student context, in both face-to-face and online learning. Referring to face-to-face learning, there were five themes related to student context: interest and motivation, personal-emotional situation, personal traits, level of knowledge, and social situation.

Interest and motivation. Eleven teachers mentioned factors relevant to interest in the taught material or motivation to learn. Of course, they could point out that interest and motivation are directly associated with engagement, be it cognitive, behavioral, or emotional:

> "There are kids who are very interested in the topic, so they immediately go to the computer and search for resources, and they summarize and read and check" (T6)

> "The lesson topic makes kids participate more if they're interested in it than if it's something of less interest" (T2)

> "You need it to be interesting for them. Which means that if it's not interesting, they will not be engaged, they will not have the 'drive' to be engaged anyhow" (T7)

Personal-emotional situation. Ten teachers referred to factors relevant to personal-emotional situations as affecting engagement, specifically demonstrating it by the opposite scenario of non-engagement. In such cases, "they wouldn't want to be engaged in learning, they will be occupied with other stuff" (T7), and often "they're there [at the classroom] but they're not available for learning" (T13). The "other stuff" could be one of many things that had happened before coming to school that day, like "breaking out with girlfriend or boyfriend, fighting with someone" (T12), and can also happen in school, between classes, when "they could come back from the break with a certain emotional baggage" (T4). Sometimes, not being engaged is a result of more mundane personal situations, like "not sleeping good at night, being hungry" (T7), or "not feeling good" (T5).

Personal traits. Nine teachers referred to personal traits, like charisma, self-confidence, shyness, or introversion as affecting engagement. Some of these, as the participants perceive it, are associated with higher levels of engagement, while others are associated with lower levels of engagement, as one of our participants clearly put it: "the more engaged ones are the more charismatic […] and in contrast the shy ones are less engaged" (T3). Also, self-confidence and shyness were associated with high and low motivation, respectively, evident by their level of behavioral engagement, "there are children who have over self-confidence, so they just raise their hand all the time, whether they know or don't know – they raise their hand […] and the very shy kids, even if they know – they will not raise their hand ever" (T1). These perceptions had led teachers to appreciate other forms of engagement, where shyness or introversion are less of an obstacle, like "copying from the board" (T7), or "merely working on the task" (T3).

Level of knowledge. This was referred to by seven teachers, who explained how level of understanding or learning difficulties may impact engagement, as one of them put it straightforwardly, "a kid who understands more […] their engagement will be higher" (T3). This may be related to either behavioral, emotional, or cognitive engagement:

> "They want, they want to participate, [but…] they don't have the language to do so, their language is poor" (T9)

> "A student who faces difficulties [in learning…] will be frustrated and then locks themselves and then they don't want to learn" (T12)

> "The strongest predictor to being engaged is […] whether you understand or don't understand what's going on in the classroom" (T11)

This lack of engagement may serve as a vicious cycle, as one of the participants explained, "when we read in class, I already lost three students who have reading difficulties" (T4). Therefore, these students will be kept behind, which made this teacher to look for ways to help these students, and in some cases this works in terms of engagement, as the same teacher told us: "I work with a small group [of students] once a week […] about what we will do in class next time, and I have already prompted them to participate [in class], because they already have the required knowledge".

Social situation. Five teachers referred to social situations as affecting engagement, linking, for example, between this and behavioral engagement, "if they're now in a poor social situation […] they won't be attentive" (T5). Social status may also be related to social engagement, in particular when working in groups; if the group consists of "friends with whom they meet outside school, they feel more comfortable and will connect to the topic more easily and will collaborate better" (T6). Following this notion, enhancing social engagement may be done via intervening in the social situation:

> "If there's a social difficulty [to one of the students], we can establish a social group […] with the aim of promoting this student socially […] so he would be more socially engaged" (T4)

When referring to online learning, the above set of themes somehow changed. While interest and motivation and personal traits remained in the prospective place in the list, level of knowledge became more prominent and personal-emotional situations became less prominent. Additionally, technological difficulties appeared as a new theme, and social situations were omitted.

Interest and motivation. Mentioned by all participants, this factor was prominent both in synchronous and asynchronous learning, with teachers emphasizing that in the online learning they had experienced, "students' engagement was [manifested] because they wanted it, I mean that a kid who wanted – could be very very engaged in learning, and a kid who didn't want –had the choice of not being engaged" (T6). This was mostly evident in synchronous learning, where attending was basically a matter of "if they wanted to participate […] as they knew that they could do something else during that time" (T9). Like in the case of face-to-face learning, oftentimes external motivation played its role, in particular when students were engaged in synchronous classes because "there was an exam after that" (T12). The crucial role motivation played in online learning made teachers realize that for increasing engagement "you should constantly work on motivation" (T4).

Interest and motivation also affected engagement in asynchronous learning, which was mostly focused on completing tasks:

> "Interest is always relevant. For example, […] they all submitted it [a given task] because it was interesting for them, but in another assignment [that was not that interesting] this wasn't the case" (T7)

> "That's motivation […] A kid who doesn't want – won't do it" (T12)

> "There [in asynchronous learning] it's simply just motivation—either internal or external, it doesn't matter—to succeed" (T9)

Level of knowledge. Nine teachers referred to level of knowledge as affecting engagement, which makes it more prominent here than in face-to-face learning. The issues raised here were similar to the ones raised regarding traditional learning, as here too "competency matters – reading and comprehension and all the skills" (T5). Such difficulties may have led to behavioral dis-engagement, "students who faced difficulties [with the subject matter] – […] some of them didn't log-in to Zoom, they weren't engaged in the Zoom classes at all" (T12). In the context of asynchronous learning, when learning alone is difficult to some students, "gaps are formed […] far more than in learning in the [physical] classroom" (T2).

Personal traits. Seven teachers referred to personal traits as affecting engagement. Here too, like in the case of traditional learning, some traits were mentioned as associated with high engagement, and others – with low engagement. Being mature and responsible were associated with high motivation, mostly when it came to planning your own time for learning, as "it is, first and foremost, related to something that is innate – whether they are mature enough, responsible" (T13). Also, self-confidence and shyness were mentioned as positively and negatively associated with behavioral engagement, respectively. In synchronous classes, shyness has a unique expression, because "in Zoom, many kids often feel uncomfortable being exposed with the webcam turned on" (T4), and sometimes they find themselves explicitly telling about it to the teacher, "they write to you in the chat: 'I'm turning my webcam off because I'm ashamed that I have this and that, but I'm here'" (T5).

Technological skills. Seven teachers mentioned factors that affect engagement and relate to technological ability; this is a theme that did not arise when referring to face-to-face learning. This was evident both in synchronous and asynchronous learning, and was related mostly to behavioral engagement:

> "During an asynchronous lesson, I had to help students with some technical difficulties, they couldn't enter the Zoom lesson" (T2)

> "If they don't have the basic technological skills, it's hard for them to be engaged in completing tasks" (T4)

Personal-emotional situation. Finally, six teachers mentioned factors that were affecting engagement and were related to personal-emotional situations; these were overall similar to the ones mentioned regarding face-to-face learning, like being tired, fighting with others, or being hungry.

Peers Context

Ten participants had mentioned factors related to the peers context in face-to-face learning, associated with all dimensions of engagement. One of the participants tied together emotional and social engagement, while saying that when students work with their friends, "it's much easier for them to connect to the material, then they are more collaborative" (T6); another tied together behavioral and cognitive engagement, saying that while working with peers, "there's an argument, there's information exchanging" (T10). Factors related to peers can also cause students to be not engaged, as for some "it's more important what others say about me […] so there are numerous reasons why not to be engaged, like in talking" (T13).

Regarding online learning, peers-related factors were similar, and were mentioned by nine teachers. This may be relevant in synchronous learning when working in groups, when the group structure may impact emotional and behavioral engagement, "when I divided them into Rooms [in Zoom], it may be that [being with your] friends had an impact, they asked whom they wanted to be with, and I really wanted them to have motivation for learning, that they would really work" (T6); also in asynchronous learning peers may have affected cognitive engagement, for example, "if there's an exam or something important […] they often went to another student's home to study together" (T12). Also, in synchronous learning, factors related to peers may impact behavioral engagement, like the very attending, because it somehow connects one to their peers, "if your friends are there, so you say, 'all right, I'll log-in, I'll be there with them'" (T11), or of turning on webcam, "there are some who—not because of me, but rather because of their friends—don't like to be shown" (T7); also, it may cause students to not be engaged in the online class, as "I know that while I'm teaching, they write to each other on WhatsApp" (T7).

Class Context

Twelve participants had mentioned factors related to the class context regarding face-to-face learning, which we divided into three groups: classroom atmosphere, pedagogy, and topics learned.

Classroom atmosphere. Ten teachers referred to classroom atmosphere-related factors, which is a result of both student-teacher and student-student relationships. Student-teacher relationship may affect behavioral engagement, as when teachers "learn more about the kid, if it's something about their personal life, if it's something they love, to potentially create a connection, so they would like to [participate]" (T13). This works also at the classroom level, where teachers are making an effort to "create a positive climate […] so students can ask any relevant question" (T11). Part of it is giving respect to teachers, as one of the teachers explicitly stated, "the situation was respectable—with an underline under respectable—and so everybody listened, everyone was focused […] it's about respect – students can't not do what the teacher is asking them to do" (T10). Participants emphasized that it is their responsibility to create a supportive atmosphere, so one of the important factors is "to what extent does the teacher make effort, to what extent it is the teacher's goal that the students would be engaged" (T11), and another teacher put is simple, "I make them engaged" (T9). In addition, student-student relationship may also promote or hinder engagement. On the one hand, "it [the atmosphere] also depends on the kids, if it's positive, it's more easy for them to share" (T2), and on the other hand, "kids may comment something [about what another kid said in class] that would make that student want to vanish, and if it happened to you once – you will barely participate" (T1).

Pedagogy. Nine teachers explicitly mentioned the use of specific teaching methods as a means to improve engagement. Using a game may promote emotional and behavioral engagement, because "it will make them want to participate […] so everybody is active, there's action, everybody participates, wants to express their opinion" (T4). Also, initiating a discussion or group work instead of merely lecturing may improve behavioral engagement, as "they can express their opinions, share, so they have more place to be active […] this is what I consider as engagement, I give the stage to the students" (T2). Here too, teacher's responsibility was emphasized, as "even shy kids, if I wish to getting them involved in the discussion […] so eventually I grab them—metaphorically—and directly ask them to respond […] they get the attention and they are engaged in that very moment of one-on-one" (T3).

Topic. Five teachers mentioned that the topic taught has an important impact on student engagement, as "they need the topic to ignite them, that it'd be interesting" (T5). This may cause behavioral and cognitive engage-

ment, as the students "participate more if it's [the topic] interesting them than if it's not" (T2), and if it is indeed taught in an interesting way "it will make them think" (T7).

All participants had mentioned factors related to the class context regarding online learning; here too, pedagogy and classroom atmosphere were prominent, however in a different order.

Pedagogy. This was mentioned by twelve participants as affecting student engagement. Similarly to the face-to-face setting, here too, using pedagogical elements that make the students to be active was mentioned as increasing behavioral, emotional, or social engagement, mostly regarding synchronous learning; some of these included "to make things like a game […] to let them respond to polls so I could see them" (T2), "to hold competitions, because then I see them excited and talk with each other" (T1), or to work in groups where "they feel comfortable to talk with each other" (T5) and "to contribute and to be contributed […] to collaborate, to see the other, to express themselves" (T2). Other practices included "breaking down the lesson to small units […] it stimulates them and it makes them involved, so I can see if they're with me at all" (T8), creating a lot of repetition, "so students will feel like their interested in the lesson" (T2), or giving students the alternative to work on assignment in a different format, for example, recording a video instead of answering questions in the booklet, which make "students who usually don't talk and do nothing in the lesson […] suddenly thrive" (T1).

Besides these pedagogical approaches, which were relevant to the whole classroom, online learning emphasized the need to support students in a one-on-one manner. This was evident for both synchronous learning, because some students "can't learn in Zoom lessons" (T12), and asynchronous learning, where teachers felt that "students need me there […] if I just simply give them an assignment […] what will happen is that many will choose not to submit it, not to do it […]" (T7).

Again, teachers emphasized their responsibility on this end, as "if a teacher does not wish for student engagement […] – there will not be student engagement. […] A teacher that wishes for student engagement should prepare herself for it" (T1), and "my way of increasing student engagement is to be more engaged myself" (T2).

Classroom atmosphere. Eight teachers mentioned factors related to the classroom atmosphere, mostly regarding student-teacher relationship, as affecting engagement, mostly behavioral, as evident in synchronous learning:

> "If there's a personal relationship with the teacher, so they will log-in because they love the teacher" (T11)

> "When I was not acting as a homeroom teacher, students of another homeroom teacher turned off their webcams [when they were in my lesson] as if there's a feeling of belonging with a teacher […] and openness" (T4)

School Context

Five teachers had mentioned factors related to the school context regarding face-to-face learning, and mostly referred to class size. Although this issue might be related to the classroom context, we decided to assign it to the school context, as class size is not determined at the individual teacher-level but rather at the school-level (or above it). Predictably, class size was perceived as inversely related to student engagement, as "I, as a teacher, can give much more explanations and mediation to a small group" (T4), and in a large class, "when a student really needs my help, so I gave them some attention, I helped them […] but maybe they needed more […] so at that point during the lesson – I lost them" (T11). One of the participants clearly stated that "large classes are totally, totally part of the engagement" (T12).

Contrary to that, when referring to online learning, class size wasn't mentioned as affecting student engagement, but rather school regulations:

> "There was not a rule that said, 'hey, you must turn on your webcam'" (T10)

> "In the beginning, it was about threats, 'if you don't turn on your webcams […] I'll decrease your grade', but we understood that it didn't help […] so you're teaching while facing black screens" (T12)

Also, some teachers mentioned that their schools were taking initiative to give computers to students who did not have them, which obviously increased these students' engagement.

Home Context

Nine teachers had mentioned factors related to the home context regarding face-to-face learning, which could be divided into two groups: parental involvement, and home-related incidents.

Parental involvement. Participants made it clear that "there's a direct link between it [student engagement] and parent's motivation that the kid would succeed" (T3), and mentioned that "there are parents who influence, who serve as an external motivation […] they say 'do your homework'" (T1).

Home-related incidents. On the other hand, home-related incidents may also be related to student engagement, and these were mostly mentioned regarding negative impacts on emotional engagement:

> "What happened to them at home – some run to school and they are just seemingly there, but they are not available for learning" (T13)

> "All kinds of distractors [from the lesson] […] if something happened at home, if they fought with someone" (T12)

> "There are all kinds of emotional barriers if something happened at home […] in the long term […] if, for example, the parents go through a divorce" (T3)

The home context was much more prominent when referring to online learning, with all participants mentioning it. Such factors were divided into four groups: Parental involvement, technology, distractions, and home environment.

Parental involvement. As learning occurs at home, this issue was emphasized more than when referring to face-to-face learning. When parents were present at home during online learning, "they were very involved in aspects like whether the kid logged-in or even if the kid woke up late" (T3), so teachers could easily notice that "there were students whose parents were not at home and they didn't know how to connect to Zoom, and if there were parents at home, they would connect their kids to Zoom" (T6). Parental involvement may have impacted not only their kids' behavioral engagement but sometimes also their cognitive engagement, as in the case of "a mother who noticed that her daughter got 75 on an assignment and immediately called me: 'send it again, we want to improve the grade'" (T6). The extent to which parents were involved may be related, as our participants perceived it, to their level of education or to their technological skills:

> "If it's uneducated parents, they can't guide their children to log-in to Zoom […] they don't know what their kids learn, they don't know how to help them manage their time" (T10)

> "There were parents that couldn't even connect their kids to Zoom […] because they weren't 'technological' enough to do so" (T6)

Sometimes, parental involvement went too far when learning occurred at home, where student engagement was forced upon them, "many times we heard [background voices]: 'tell them, tell them, share it with them'" (T4), or when a student was seemingly engaged, as indicated by an assignment submission, where in fact "it's their parents who did the assignment for them" (T1).

Technology. Nine teachers mentioned factors related to technology—specifically, lack of sufficient infrastructure—as affecting student engagement, either behavioral or cognitive. This seemed obvious, as "a student who don't have a computer – how will they be in Zoom?" (T12), so "many times […] it was either they had something [electronic device] to work with or not" (T6), and "if a kid doesn't have a webcam […] so their engagement decreases, because they can't really connect with us" (T3). The type of the device with which students connected to synchronous lessons also had an impact, specifically when "they connected via smartphones […] if I share a presentation or showing them the booklet, it's really hard to see these things on the smartphone screen, it's very very small, very unclear, and it's hard to concentrate" (T6); another participant made a direct link between the device used and student engagement, "if I have a computer and if I learn via a smartphone it's two different things. With the smartphone you listen […] and with the computer you can be active" (T5).

Distractions. Eight teachers mentioned this as affecting student engagement, mostly compared to face-to-face learning, as there are "all kinds of distractions at home that don't exist in the classroom" (T7). These include, among others, "TV, sleeping, games, being outside" (T9), as well as the ability to act upon your needs without any hassle, so "if they were hungry – they would go to eat, and when they needed to go to the bathroom – they simply went […] and when they go to the bathroom they don't listen" (T7). Some students were distracted by the very computer which they used for learning, because "the way to run away from a synchronous lesson is by simply hitting a button, but to run away from a physical classroom is much more complicated" (T2); so, teachers observed lack of engagement in cases where "I suddenly saw them laughing […] too many hand movements, eye movements, you see a head leaning down if they, say, writing to each other on the phone" (T5).

Home environment. Seven teachers mentioned factors related to the home environment as affecting student engagement, mostly negatively. For example, physical space, "some didn't have a room of their own, so they had to learn in a noisy space" (T5), "they weren't comfortable joining the lessons from their living room" (T13). Also, the presence of other family members was affecting student engagement negatively, "if they were required to keep an eye on their younger siblings, they couldn't be at the lesson" (T13).

Measuring Student Engagement (RQ3)

We asked our participants about the ways by which they measured student engagement. Findings are summarized in Table 2.

Table 2
Ways of Measuring Student Engagement for Each Learning Configuration

Face-to-Face Learning	Synchronous Online Learning	Asynchronous Online Learning
Assessment tools	Attendance taking	Assignments
Observations	Observations	

In face-to-face learning, measuring student engagement was mostly done via assessment tools and observations. Assessment tools, mentioned by nine teachers, are used for measuring engagement, which is evident by "succeeding in knowledge assessment, succeeding in assignments during lessons, answering in an optimal way, giving full answers" (T4). Observations, mentioned by seven teachers, help them to assess whether students "participate in class, submit assignments, or arriving prepared with homework done", "are active for a long time, ask questions, express interest, do various tasks" (T2), "work, write, if they're with you" (T5). As one of the teachers simply put it, "basically, by observing them, I saw to what extent they were engaged or not" (T1).

In online learning, we distinguish between synchronous and asynchronous learning, as measuring engagement was reported to be very different between these two settings. In synchronous learning, measuring student engagement was mostly done via attendance taking, and observations, and was mostly referring to behavioral engagement. Six teachers mentioned attendance taking as a means for assessing engagement, as in synchronous lessons, "they, first and foremost, were asked to log-in to the Zoom lesson" (T6), so "the easiest is to assess those who weren't engaged, those who didn't log-in to the lesson in the first place – there couldn't be less engagement than that" (T1). Notably, in synchronous online lessons, there is a need to track attendance throughout the lesson, because "if they just logged-in and went […] they actually were not in the lesson […] they were not engaged" (T7), so some teachers took attendance "during the lesson, and also at its end" (T9). Observations, mentioned by eight teachers, were also used as a means for assessing student engagement in synchronous learning. Teachers observed whether students "answering, responding, not busy with other things" (T2), "asking questions" (T3), "sharing" (T4); importantly, these observations go beyond the main platform screen, towards other

modules, like “when I ask a question, and everybody responds in the chat, or when I use a survey” (T7).

In asynchronous learning, measuring student engagement takes a different form, and is mostly done via assignments; as one of the teachers put it, “you give them assignments through which you see engagement, because that’s the only way to know [who is engaged]” (T8). So, completing assignments is a way for the students “to prove that they were doing the things,” hence is a way for the teachers “to track them, contrary to the classroom where I can actually see what they’re doing” (T3). To that end, some learning environments offer teachers with easy ways of tracking students’ assignment completion, where they can see “if the kid did it […], what is their score, where did they have certain difficulties” (T3), “it’s all in one screen […] all the students at once” (T7).

Acting Upon Identifying Engagement-Related Issues (RQ4)

Finally, we asked our participants about when and how they would act upon engagement-related issues. Findings are summarized in Table 3.

Table 3

When and How Teachers Act Upon Identifying Engagement-related Issues

	Face-to-Face Learning	Synchronous Online Learning	Asynchronous Online Learning
Acting upon identifying…	Not working on class assignments	Not appearing to lessons	Not submitting an assignment
	Changed engagement behavior		Copying in assignments
Doing what?	Talking with student	Changing pedagogy	Talking with parents
	Talking with parents	Talking with student	Changing pedagogy
	Talking with colleague	Talking with parents	Talking with student
			Talking with colleague

In face-to-face learning, such actions were mostly a result of noticing students who do not work on class assignments, or noticing students whose behavior has meaningfully changed. Seven teachers referred to students who do not work on class assignments, one of whom said that “when there are kids who suddenly decide that now they’re not working – I do intervene” (T5), and another gave an example to a situation in which she decided to intervene:

> "As soon as I see that they are not sufficiently engaged, for example, I explained something and asked them to work on a task, so I see a kid who's going to the bathroom, and when they came back, they go out and back in, go to fill up their bottle, and again go to the bathroom […] and eventually they don't get to work on the task" (T6)

Three teachers referred to cases where there is a negative change in student behavior, for example, "if there's a excellent student, and suddenly […] like they decided that they didn't want to work, didn't open the notebook, didn't care about the subject matter, they know everything but didn't do anything" (T3), or "if they shared very nicely at the beginning of the school year, and then suddenly in mid-year they stopped sharing, shut down" (T2).

The actions teachers take can be categorized by the person involved in the action, be it the student, the student's parents, or a colleague. All participants mentioned that they would intervene directly with the student by one of the following methods: talking with them personally, "asking them what happened" (T11), "maybe there's a certain barrier or a certain difficulty" (T3), in order to "see […] how I can help them" (T6), and sometimes to "motivate them to keep their motivation" (T5) or to "complement them […] so that next time […] they will share" (T9); supporting them academically, "so it'll be easier for them, so they would feel comfortable to share [in class]" (T1); or directly asking them to participate, for example by "pointing out to some specific kids, asking them to read aloud" (T4). Eight participants mentioned talking with the student's parents—either relatively immediately, by calling them or sending them a message, or during parents' day—when the student is not sufficiently engaged; doing so, they try to figure out "whether something happened at home, if the kid is going through something" (T3), and they are also aware that this talk could motivate the student, because "parents immediately put pressure on the kid, so the kid sits down to study" (T9). Five teachers mentioned talking with another staff member at school, e.g., the student's homeroom teacher or the school adviser, upon identifying engagement-related issues; this is done either for "passing this [information]" (T2) or in order to "ask about the situation of that student" (T12).

In online learning, we again distinguish between synchronous and asynchronous learning, as teacher action was manifested quite differently in both cases. In synchronous learning, they would mostly act upon not appearing to lessons, that is when students "did not log-in to the lesson" (T5), "joining late or not joining lessons for a while, or decide to not join a specific lesson" (T3), or even when not turning on the webcam, because "I felt that they were simply not with me" (T5).

Interestingly, the most prominent action teachers take while facing engagement-related issues in synchronous online learning is towards themselves, with other actions involving talking with the student, or with their parents. Twelve participants mentioned changing their pedagogy and making the online classes more dynamic or interesting for engagement-related issues to decrease, for example, by "adding games, shortening the Zoom sessions, teaching a bit differently, letting them [the students] talk more, be part of the lesson" (T2). At times, this also helped in engaging those students who did not have a webcam or a mic, e.g., by "writing questions in the chat window, or when I send them a Padlet activity – they could participate in it" (T3). Eleven teachers directly turned to those students who manifested engagement-related behavior, by explicitly asking them "what's happening with you? Where are you?" (T7), or by "asking them questions, to check that they're with me" (T11). Additionally, like in the case of face-to-face learning, teachers hold personal talks with those students involved in engagement-related issues, or offer them academic support. Also, similarly to face-to-face learning, often teachers talked with the student's parents. Talking with colleagues was much less prominent regarding synchronous online learning.

In asynchronous learning, teachers mostly act upon engagement-related issues that relate to student assignments, either when an assignment is not submitted, which is an indication of behavioral-related engagement issue, that is, "when the engagement is low, when there are a few assignments that they didn't submit" (T11), or when students copy from each other when working on assignments, which is an indication of low cognitive engagement.

In this case, teachers mostly act by contacting the student's parents (seven participants), by changing their own teaching (six participants), by talking with or supporting the students (six participants), or by contacting a colleague (five participants). Besides the frequency of mentioning these types of intervention, their very nature is quite similar to what was reported above regarding face-to-face or synchronous learning, with the obvious exception being pedagogical changes; in asynchronous learning, changing pedagogy involves either adding more "online tasks, where […] I have a way of knowing who's active there" (T2), or giving "easier tasks, simplified tasks" (T4).

DISCUSSION

In this qualitative research (N=13), we studied teachers' perceptions of student engagement in online learning, across different dimensions (behavioral, emotional, social, and cognitive) and contexts (student, peers, class, school, and home), by contrasting these perceptions with their baseline per-

ceptions of engagement in face-to-face learning. This included an understanding of what teachers considered as expressions of engagement, which factors they thought of as affecting engagement, how they measure engagement, and how and when they would act upon identifying engagement-related issues.

In this section, we will discuss our findings in light of the most relevant and updated literature.

Face-to-Face Engagement Perception is Mostly Behavioral and Emotional; Online Engagement - Mostly Behavioral, Particularly Task-Centered

As our findings suggest, teachers' perception of engagement in face-to-face learning is perceived as mostly behavioral and emotional. The behavioral indicators are clearly visible in the classroom, like participation, performing tasks, taking initiatives, and listening; the emotional indicators can also be easily visible while sharing the same space—e.g., by examining students' facial expressions—like showing interest and motivation, and wishing to be part of a group. Social and cognitive engagement indicators—namely, helping others, and being prepared to class—were less prominent in teachers' perceptions, which is alarming, as these dimensions are vital for students' academic success and well-being (Nielsen, 2010; Richardson & Newby, 2006; Wang & Hofkens, 2020). The picture depicted from our findings is of a somewhat traditional way of thinking about teaching. Our participants perceived a teacher-centered teaching, where students' social and cognitive efforts are less evident. Therefore, although student engagement is a multi-faceted construct, it can only be manifested in ways that are allowed by the way teachers manage the classroom. Indeed, learner-centered pedagogies were shown to impact the way student engagement is manifested (Beirnes, 2022; Lee & Hannafin, 2016; Zhao & Li, 2021). Specifically, it was shown that hands-on activities could foster cognitive engagement (Adesope et al., 2019), and that when students are treated as leaders and collaborators, rather than merely students – social engagement could be improved (Kreikemeier, 2022).

Regarding online learning, engagement was found to be mostly behavioral. Importantly, behavioral engagement in online learning is important, and may have a positive impact on academic success (Goode et al., 2022). Indeed, online learning heavily relies on behavioral indicators like attending synchronous classes, or completing tasks; in a sense, relying on these indicators in online learning replaces teachers' ability—which is based on their experience and intuition—to estimate students' understanding by using visual cues during face-to-face classes. Computer-based algorithms which aim at predicting learning use such cues, which are automatically and continuously stored in log files, hence have a great advantage when analyzing online learning (Du et al., 2021).

As our participants focused mostly on behavioral engagement when defining student engagement in online learning, they also referred mostly to this dimension when measuring student engagement and when acting upon engagement-related issues. Therefore, the cues they look for when assessing student engagement de facto relies almost solely on attendance and task completion. Although this is seemingly superficial, behavioral engagement was found to be positively related to other dimensions of engagement, including cognitive (Yang et al., 2021), so it may be that by focusing on this dimension teachers are actually informed about engagement at large, which is somehow comforting. Even more comforting are recent findings based on which all four dimensions of engagement are highly positively linked in online learning, so "increase in any type of engagement may support in increasing the others" (Joshi et al., 2022, p. 16).

Still, the behavioral-focused, task-centered view on student engagement that is evident in our findings, may shed light on a broader issue of online learning, namely, that teachers facilitate online learning similarly—albeit in a reduced manner—to their traditional, face-to-face teaching. As we found, the expressions of engagement in online learning may be seen as a reduced set of expressions compared with those who were mentioned regarding face-to-face learning; the ways of measuring student engagement and the "when?" and "how?" of acting upon engagement-related issues also follow this notion, as they are direct derivatives of teachers' perceptions of engagement. Transferring old habits to a new medium is not a new phenomenon in education (Forkosh-Baruch & Hershkovitz, 2018; Hershkovitz & Karni, 2018); indeed, Mayer (2019), while reviewing 30 years of research on online learning, emphasized that learning occurs because of instructional design rather than instructional media; therefore, focus should be given to the unique features of digital learning environments that allow for meaningful learning.

Interestingly, our findings suggest that upon identifying engagement-related issues in online learning—mostly in synchronous settings—teachers do change their pedagogy to be more suitable to this environment, i.e., dynamic and interactive; this may mean that it was not planned as such in the first place. Moroever, asynchronous learning is portrayed by our findings as merely based on assignments students have to work on, mostly individually, and then to submit to their teacher. Instead, and following Mayer's notion, online learning—both synchronous and asynchronous—should be designed in a way that will create meaningful learning in ways that are not feasible in the physical classroom; this could be done by relying on various strategies and best practices that have been studied for decades already (e.g., Darabi et al., 2011; Moller, 1998; Riggs & Linder, 2016).

Student, Class, and Home Contexts Matter for Online Engagement

Our findings regarding the factors that affect student engagement, indicate that the contexts of student, class, and home are the most impactful on student engagement in online learning. Interest and motivation were found to be the most important factors associated with engagement—in both face-to-face and online learning—and positively affecting it, a finding that echoes insights long known (Blumenfeld et al., 2006). Compared with their perceptions of student engagement in face-to-face learning, teachers emphasized the potential impact of level of knowledge (student context), which makes sense considering their emphasis on behavioral-focused, task-oriented online engagement. Indeed, prior knowledge was found to be positively associated with student engagement (Dong et al., 2020), which emphasizes its importance. Moreover, while learning online, uncertainty regarding one's level of knowledge may be more prominent than in traditional learning, which may hinder engagement (Lin, 2021), therefore making level of knowledge more important than ever. Another difference between face-to-face and online learning vis-à-vis the factors affecting engagement, is the mention of technological skills regarding the latter only, which is quite obvious.

More prominent regarding engagement in online learning is the role home context plays. As students in these settings learn from home, this arena becomes vital and may have a crucial impact on student engagement. Specifically, it is parental involvement that has a major role when students learn online from home. As our findings suggest, parents take an active role when at home, closer than ever to where learning occurs, on an imaginative scale that goes from helping their children with technical issues of online learning, overseeing their children's learning, motivating them for learning, all the way to doing the learning for them. Indeed, parental involvement, which may contribute to students' online learning (Lawrence & Fakuade, 2021), becomes a complex issue in supporting students' home-based online learning (Borup et al., 2019).

Importantly, the peer context was barely mentioned as related to student engagement, and the school context was fully lacking. This sheds some important light on both pedagogy and school culture. As collaborative learning supports student engagement, due to interaction with peers and social presence (Asif Qureshi et al., 2023; Unal & Cakir, 2021), it may be that collaborative or cooperative learning is not a common pedagogy implemented in our participants' classroom, hence they barely have the chance to observe the impact of peers on student engagement. As for school culture, the literature suggests mixed results, with some indicating the importance of school

culture in promoting student engagement (Daniels & Steres, 2011; Khan, 2022), and others not finding such associations (Samson & Shobayo, 2014). It may be that culture at large plays a role in these associations (Page, 1987; Tyler et al., 2006), hence we suggest further studying this issue.

Teachers Take Responsibility for Student Engagement in Online Learning

An interesting finding is that teachers take responsibility for student engagement in online learning, and when they identify engagement-related issues – they ask themselves what they could do to bring students back on track, resulting in pedagogical changes, specifically modifying teaching methods or assignments in ways that would increase student engagement. In the context of our study, it may be interpreted that our participants had gone through a learning path, as they did not have a meaningful experience in online teaching prior to COVID-19 outbreak. However, in a broader sense, it is in line with recent studies which show that teachers are aware of the role of pedagogical approaches in student engagement (Kelly et al., 2022). In any case, our finding emphasizes two important issues.

First, teachers should have rich, reliable, accessible, ongoing data about student engagement, which will make their decision making more efficient and effective. One way of achieving this goal is by using learning analytics, which has been explored extensively for that very use, not without challenges (Vytasek et al., 2020). Second, for teachers to successfully design and implement digital pedagogies that would promote student engagement, they must be digitally skilled and professionally trained. This may require a great effort, as a recent literature review of that topic reveals that digital competences is still one of the most important challenges teachers face, and teacher training for effective implementation of ICT is still lacking (Fernández-Batanero et al., 2022).

Therefore, it is important to include various issues related to teaching in the digital age along the continuous path of teachers' professional development, starting as early as in teacher training; this should be done by going beyond teaching how to use digital tools towards inducing a comprehensive, critical view on what it means to be a digitally competent teacher (Starkey, 2020; Tarraga-Minguez et al., 2021). Looked at from a broader perspective, it may be suggested that pedagogical adjustments are not enough for intervening in student engagement in online learning. As was shown recently, not only competency—which is an aspect of learning that can be addressed via pedagogical intervention—is important for student engagement, but also autonomy, relatedness, and classroom atmosphere (Chiu, 2022; Luo et al., 2022); hence, teachers should pay attention to these aspects as well.

Limitations and Future Research

This study has several limitations, which may indicate some directions for future research. First, it was situated in a single country, characterized by a specific culture of learning and teaching, schooling regulation, and student-teacher relationship, which may impact teachers' perceptions of student engagement. Moreover, our research population is not necessarily representative of K-12 teachers in Israel. Therefore, our findings should be validated in other countries, and with larger populations. Second, data collection was conducted a few months after schools re-opened for traditional, face-to-face teaching. This means that interviews were taken in retrospect, which may have biased teachers' attention towards those acts of student engagement that were most prominent and had left a mark. While this may be seen as an advantage, i.e., highlighting those instances that are important, we may have missed some nuances and mentions of student engagement that were significant in real-time. Therefore, we recommend collecting data about teachers' perceptions of student engagement in online learning in (close to) real-time. Third, although our participants reported on their experience during emergency remote teaching (ERT), the aspect of emergency is barely evident in our findings, which generally refer to online learning. Still, it can be that ERT-related issues had had an impact on our participants' perception of student engagement in online learning. Therefore, we recommend collecting more data referring to multiple forms of online learning, with and without it being related to emergency times. Despite these limitations, we feel that the contribution of the current study is solid.

CONCLUSIONS AND IMPLICATIONS

The current study indicates that teachers' perception of student engagement is rather limited, and that when it comes to online learning – their perception is even narrower. Teachers perceive student engagement in traditional classroom settings as mostly behavioral and emotional, and in online learning as mostly oriented towards task-centered behavioral aspects of learning. Furthermore, teachers do not put enough emphasis on the peers and school contexts in student engagement. This narrow view of engagement is also evident in the way it is being assessed, which is mostly done online by attendance taking in synchronous learning, and assignments completion in asynchronous learning; in synchronous online learning, observations are also used—just like in face-to-face teaching—however they are less insightful, because of limited visibility.

Maybe due to this limited scope of student engagement in online learning, teachers feel the need to act upon identifying engagement-related issues, however their actions are limited to academic aspects of learning.

These findings have some important implications. First, it is advised for teachers, and school staff at large, to consider a more comprehensive view of student engagement in both in-person and online settings which takes into consideration the four dimensions, i.e., behavioral, emotional, social, and cognitive, and the five contexts, i.e., student, peers, classroom, school, and home. This could be supported by the promotion of advanced pedagogies that are student-centered, hands-on, and collaborative—hence, calling for various kinds of interactions, which may impact engagement—and by promoting a coherent, transparent school culture. As we found, teachers' perceptions of student engagement have far-fetching implications on teachers' actual behavior, which may impact student learning and well-being, hence the importance of promoting a more holistic view.

Second, researchers are also advised to consider a comprehensive view of student engagement when studying this topic, especially when comparing student engagement between different settings. As we demonstrated, perceptions of student engagement are sensitive to the teaching and learning setting, hence this should be taken into consideration in future studies. Also, cultural aspects should not be neglected as they may affect perceptions of engagement and engagement itself.

Finally, we also consider implications for developers of educational technologies. They should enable teachers with software components to easily identify various indicators that may help assess student engagement. This will extend teachers' view on student engagement and will allow them to act in new ways. Such technological features should be co-designed with teachers, in a way that will extend their view on possible indicators, hence will help them grow professionally.

DECLARATIONS

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