RESEARCH ARTICLE
LEARNING PROCESSES

Medical student engagement in small-group active learning: A stimulated recall study

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Abstract
Background: Active learning relies on students’ engagement with teachers, study materials and/or each other. Although medical education has adopted active learning as a core component of medical training, teachers have difficulties recognising when and why their students engage or disengage and how to teach in ways that optimise engagement. With a better understanding of the dynamics of student engagement in small-group active learning settings, teachers could be facilitated in effectively engaging their students.

Methods: We conducted a video-stimulated recall study to explore medical students’ engagement during small-group learning activities. We recorded one teaching session of two different groups and selected critical moments of apparent (dis)engagement. These moments served as prompts for the 15 individual semi-structured interviews we held. Interview data were analysed using Template Analysis style of thematic analysis. To guide the analysis, we used a framework that describes student engagement as a dynamic and multidimensional concept, consisting of behavioural, cognitive and emotional components.

Results: The analysis uncovered three main findings: (1) In-class student engagement followed a spiral-like pattern. Once students were engaged or disengaged on one dimension, other dimensions were likely to follow suit. (2) Students’ willingness to engage in class was decided before class, depending on their perception of a number of personal, social and educational antecedents of engagement. (3) Distinguishing engagement from disengagement appeared to be difficult for teachers, because the intention behind student behaviour was not always identifiable.

Discussion: This study adds to the literature by illuminating the dynamic process of student engagement and explaining the difficulty of recognising and influencing this process in practice. Based on the importance of discerning the intentions behind...
1 | INTRODUCTION

Student engagement is recognised as an essential yet difficult to achieve aspect of small-group active learning in medical training.\textsuperscript{1–4} Students who engage more learn more.\textsuperscript{5–7} However, it can be difficult for teachers to recognise when and why their students engage or disengage in their classrooms and to interact with students in ways that optimise engagement.\textsuperscript{4,8–10} If we could gain more insight into the dynamics of student engagement in small-group learning activities, teachers could be facilitated in effectively engaging their students in these settings.

In health professions education, many schools have reformed their teaching and learning approaches to support active learning. Active learning requires students to become actively involved in the learning process.\textsuperscript{11} Although not definitively or unequivocally, reviews generally support the effectiveness of active learning in various health professions education curricula, like problem-based learning,\textsuperscript{5,12,13} case-based learning\textsuperscript{9,14,15} and team-based learning.\textsuperscript{16–18} One of the reasons why active learning is effective is student engagement.\textsuperscript{2,19,20}

Schools using active learning need to create settings in which students can engage with teachers, peers and study content to construct their own knowledge.\textsuperscript{21–23}

Teachers play an important role in stimulating the engagement of their students.\textsuperscript{8,9} They can motivate their students for engagement,\textsuperscript{24,25} monitor and guide the learning process\textsuperscript{26,27} and initiate reflection on the value of engagement.\textsuperscript{8,28} Students report, however, that teachers may lack the knowledge, skills and attitudes to do this effectively.\textsuperscript{8,9} Teachers, at the same time, may attribute a lack of students’ engagement to student characteristics, like low motivation, preparation, ability, confidence or interest.\textsuperscript{9,29–31} For teachers to be effective in stimulating engagement, they need to understand what engagement really is and how it can be observed in practice.

As active learning often requires students to voice their thoughts and collaboratively try to find answers, verbal participation is understood as a good indicator of engagement.\textsuperscript{29,32,33} The amount of verbal participation can sometimes count towards the grade of a course, or even be part of professional behaviour assessments.\textsuperscript{31,33,34} The absence of verbal participation, or silence, is consequently perceived as a sign of disengagement. However, silence can be a sign of engagement, for example, when students think quietly about a question, analyse a problem or carefully listen to others.\textsuperscript{30,32} Likewise, student use of electronic devices (e.g. smartphones or laptops) in the classroom is easily understood as a sign of disengagement.\textsuperscript{35} However, electronic device use can be a sign of engagement, for example, when students look up information or save information for later use.\textsuperscript{36} Therefore, we need to expand our understanding of student engagement so that teachers can better recognise when and why students engage or disengage in their classrooms and use that information to optimise the interaction with their students.

Fredricks, Blumenfeld and Paris\textsuperscript{37} have described a framework that may help to expand our understanding of student engagement in medical education. They propose that student engagement is a multidimensional concept that includes behavioural, cognitive and emotional components.\textsuperscript{37} Behavioural engagement describes the learning-related conduct of students. It is concerned with the activities that students participate in, for example, verbal participation in class, but also completing homework, and complying with the rules of a class. Cognitive engagement describes the willingness and effort that students put in to learn the content of a course. It is concerned with (self-regulatory) learning strategies, like paying attention in class and use of metacognitive skills (planning, monitoring and evaluating study approaches). Emotional engagement describes the feelings that students have towards study content, teachers and peers. It is concerned with affective reactions, like interest in the content and sense of belonging. Likewise, Fredricks et al\textsuperscript{37} also describe behavioural disengagement (e.g. being late or disturbing other students), cognitive disengagement (e.g. redefining parameters for assignments to make it easier or being distracted from the learning process) and emotional disengagement (e.g. boredom or feelings of loneliness). In other words, student engagement is how students behave, think and feel.\textsuperscript{37}

In this study, we will research three currently unknown aspects of the student engagement framework to achieve our aim of (1) better recognising when and why students engage or disengage in small-group active learning settings and (2) positively influencing this process. First, according to the framework, the three dimensions of engagement are dynamically interrelated within an individual. However, it has not yet been described how this relation can be identified or observed in practice. Second, in-class student engagement results from a variety of personal, social and educational antecedents (i.e. factors that influence engagement). However, it is unknown how these antecedents jointly influence the engagement in a classroom. Third, the framework describes engagement as malleable. However, the framework does not provide an explanation for the difficulty that teachers experience in engaging their students. Therefore, we sought to answer the following research questions:

1. How do the three dimensions of student engagement interrelate in a classroom setting?
2. How do antecedents of student engagement influence student engagement in class?
3. How can the multidimensional view of student engagement help us to understand why it can be difficult for teachers to engage their students?

Student behaviour, we advise teachers to use their observations of student (dis)engagement to initiate interaction with students with open and inviting prompts. This can help teachers to (re-)engage students in their classrooms.
2 | METHODS

2.1 | Study design

Given the nature of the research questions, we needed data on how engagement occurs in real time and in a natural setting. Therefore, we conducted a video-stimulated recall (VSR) study to research medical students’ engagement in a small-group active learning setting. VSR enhances (one-on-one) interviews with video recordings of behaviour to stimulate participants’ recall and reflection on critical moments. The video recording adds depth to the interviews by allowing participants to ‘relive’ events.

2.2 | Research team and reflexivity

The authors were all educational researchers, most working within the medical curriculum of Vrije Universiteit Amsterdam. The interviews were conducted by experienced faculty developers (JG and AC) and colleagues from the Research in Education team. Students and interviewers did not know each other before the interview. Students were informed that neither their tutors nor anyone else from the medical programme would receive any information about their participation in the interviews. MMV was the coordinator of the educational theme ‘Professional Behaviour’ at the time of the interviews and as such could be known by students. She, therefore, did not participate in the interviews, but only read the anonymised transcripts. All authors were convinced of the value of student engagement in the medical curriculum.

For this study, we adopted a social constructivist epistemological stance. We sought to understand the meaning that participants gave to their (learning) experiences and used those experiences to gain insight into student engagement. We took an active role in making sense of the data in the light of our research aims.

2.3 | Participants and setting

We invited ‘study groups’, not single students, to participate in this study, as we were interested in student engagement in small-group learning activities. By interviewing students from one group, we were able to explore how differences between students’ perceptions in the same environment influenced their engagement. Study groups in the Bachelor phase of the Faculty of Medicine, Vrije Universiteit Amsterdam, consist of maximum 12 students who meet twice per week for 2 h and employ a case-based collaborative learning approach. Students stay in the same study group, guided by the same tutor, for the duration of a semester. During the first meeting of the week, students brainstorm about patient cases and associated assignments. After the meeting, they finish the assignments in subgroups and prepare to present their findings at the second meeting of the week. The students assume the different roles of chair, feedback provider, presenter and note-keeper in rotation. Tutors observe the process and students’ individual contributions and act only if needed. Tutors also evaluate the professional behaviour of their students. We decided to recruit second-year study groups, as they have experience with the design and expectations of study groups, can compare across multiple study groups of which they were a member and can reflect on the approaches of multiple tutors.

2.4 | Procedure

We approached study groups through their tutors. Students could object or agree to the video recording, and students could object or agree to the interview. We only included a study group if all students in that group agreed to the video recording. Students who additionally agreed to the subsequent interview were scheduled for an interview within 1 week after the recorded meeting. Interviews took place in a classroom on the university campus.

When a study group agreed to the video recording, we recorded one of their meetings in full. From that recording, we selected moments of students showing either signs of participation or non-participation in the learning process (e.g., asking or answering a question, staring out of the window and students having a private conversation between themselves). We recorded the meetings in June 2019, so before the COVID-19 pandemic and in a face-to-face situation. For each student, at least one moment of participation and non-participation was selected. In line with stimulated recall research recommendations, we watched the selected moments with the students in individual interviews as soon as possible, but no later than 1 week after the meeting. The moments we selected were directly related to the research questions, that is, showing observable signs of (non-)participation, to stimulate best the student’s recall of that specific moment of the meeting. We chose to do individual interviews after recording a group meeting, as individual interviews are better suited to gain an in-depth understanding of an individual student’s perspective while creating a safe space for the student for reflecting on his/her behaviour. The interviews were semi-structured in nature and guided by a list of questions (Table S1). We asked open-ended questions to stimulate recall of the student’s behaviour, thoughts and feelings at that time. Students were also invited to select a certain moment of the meeting to review during the interview and offer any other thoughts about the meeting and their behaviour in it, or their engagement in general. All interviews were audiotaped, pseudonymised and transcribed for analysis.

2.5 | Analyses

We analysed the transcripts using the Template Analysis style of thematic analysis, and followed recommended procedures. ATLAS.ti Version 8.4.18.0 was used to aid the data analysis. Analysis was done in three steps.
| Components of engagement | Explanation | Illustrative quote |
|--------------------------|-------------|--------------------|
| **Behavioural engagement** | | |
| Verbal participation | Student speaking in class | ‘If I notice the answer from a fellow student is incomplete, and I know that I am able to give the full answer, then I would say something’ |
| Non-verbal participation | Student showing non-verbal behaviours indicating their engagement, for example, by nodding, pointing or looking at peer who talks | ‘I nodded, because I heard that in the lecture’ |
| Completing homework | Student showing they did their homework, for example, by referring to their notes or questions prepared for the meeting | ‘It can be useful to look things up before the meeting, because you might be able to ask good questions that help others onto the right path’ |
| Complying with rules | Student behaving as expected, because they are following the rules of the class, for example, by taking the role of chair | ‘I was mainly taking notes of what fellow students had said’ |
| Other compliant behaviour | Any other observable signs of behavioural engagement, for example, by volunteering to do extra task | ‘This is the second semester of the second year, so I have been the student chair 4 times. And this semester I volunteered to do it a second time, which made it the fifth time, and I thought it went the best of all times’ |
| **Behavioural disengagement** | | |
| Being late | Students being late for class | ‘It is because I was late for the meeting and thought it would be rude to use my phone’ |
| Interfering with others’ work | Students distracting their peers, for example, by having a private conversation | ‘I am often that person who says something funny when we are working seriously, and causes everyone to be distracted’ |
| Non-participation | Students not participating in learning activity, but also not actively disrupting their peers, for example, by staring out window | ‘I sometimes think ... that a question has been answered, and then I sort of “shut off”. I just start looking around’ |
| Other disruptive behaviours | Any other observable signs of behavioural disengagement, for example, by not going to class | ‘I might be listening here, but I am also doing my nails’ |
| **Cognitive engagement** | | |
| Autonomous motivation | Students wanting to engage out of a sense of importance, fun or interest | ‘When you say something controversial, people have to defend their answer. And then you get some more motivation, which helps when you have to explain and present an assignment’ |
| Substantive engagement | Students being committed to learning the study content, for example, by using metacognitive learning skills | ‘Some assignments are difficult. As chair, you realize you need to guide the discussion more and so you prepare better, so you can ask the right questions to help the others find the right answer’ |
| Other contributing thought processes | Any other cognitive contribution to the learning process, for example, by giving feedback to peers, deciding not to bring laptop because it distracts when present | ‘I like it when one person is designated to observe the chair for the full meeting, and then give their feedback at the end’ |
| **Cognitive disengagement** | | |
| Controlled motivation | Students not wanting, but having to engage because it is enforced, for example, by tutor or rules of the programme | ‘I only go to meetings because I have to’ |
| Components of engagement | Explanation | Illustrative quote |
|--------------------------|-------------|--------------------|
| **Procedural engagement** | Students trying to complete the task requirements with other aim than learning from it, for example, finish the class early | ‘When a question was more difficult, they would be like “let us skip this one and let the subgroup doing the presentation figure it out”’ |
| **Other non-contributing thought processes** | Any other cognitive process not contributing the learning process, for example, not paying attention, deciding not to ask a question because they will learn it another time | ‘I was confused because I thought I was right. So I was thinking “either they do not understand, or I do not”. So I wrote in the notes “look into this later”’ |
| **Emotional engagement** | | |
| Relatedness/belongingness | Students’ positive affective reactions to the group and tutor, for example, by having fun, sense of belonging, making jokes | ‘Our group is a very sweet one. We care for each other’ |
| Positive emotions | Students experiencing positive emotions, for example, happiness | ‘I think that people are laughing, because the first couple of times it happened, I would also laugh really loud’ |
| Other positive feelings | Any other positive affective reaction to the learning environment, for example, feelings of curiosity or general contentedness | ‘I never felt really unpleasant or unsafe or thought that I could not say what I wanted to say’ |
| **Emotional disengagement** | | |
| Alienating/distancing | Students’ negative affective reactions to the group and tutor, for example, by not feeling like a part of the group, not understanding inside jokes | ‘Sometimes when I say things, they give me these looks you know’ |
| Negative emotions | Students experiencing negative emotions, for example, anxiety | ‘When people respond to what has been said, but they have no idea if it is right, it is just very frustrating’ |
| Other negative feelings | Any other negative affective reaction to the learning environment, for example, feelings of indifference or boredom | ‘Sometimes they are long-winded, then I just sit there “okay, I do not care”’ |
| **Antecedents of engagement** | | |
| Course design | Everything to do with how the course and study group meetings have been designed, for example, assessments, responsibilities of students and tutor | ‘I mean, it’s like you read the assignment and the learning objectives are there as well, and then the question starts. But based on those learning objectives, if you get a case of a patient with certain complaints, and the learning objectives say: know the symptoms and treatment plan of acute otitis media, ...’ |
| Study group | Everything to do with group processes, for example, collaboration, agreements, taking breaks | ‘In the beginning of a study group you always need to see what other people are like, but fairly quickly some bonding occurs’ |
| Learning beliefs | Everything to do with students’ personal beliefs about learning, e.g., appreciation of small-group active learning | ‘The best and most efficient way to learn is to do the exam first, to know what they are asking there, and when you then go and study, to recognize questions from the exam, so you can read it again’ |
| Learning strategies | Everything to do with activities that students use, and combination thereof, to stimulate their learning | ‘[Why do you go to the group meetings?] To try to apply my knowledge. And to rehearse what I already knew’ |
| Non-school activities | Everything to do with (potentially conflicting) non-school activities that students engage in, for example, jobs or sports | ‘He had a drink yesterday, so he was rather tired, which you can see because he nearly falls asleep the entire time’ |
1. Familiarising ourselves with the data. In the first step of the analysis, researchers JG, MMV and AC familiarised themselves with the data by reading two transcripts and carrying out inductive preliminary coding.

2. Creating, revising and applying coding template. Based on a discussion among the three coders, we agreed that Fredricks, Blumenfeld and Paris’ student engagement framework seemed appropriate to guide further coding of the data. We used the data from Step 1, as well as the framework, to create a tentative coding template. The framework was thus used as a sensitising concept. Three transcripts were coded with this template by JG and MMV. Using data from the interviews, we expanded and clarified the template based on discussions in the author team. We also formulated explanatory descriptions of coding categories. This expanded template was used for two more transcripts to establish intercoder agreement. Table 1 shows the finalised coding template, which ultimately was the result of a combination of deductive and inductive strategies.

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In the last step of the coding process, JG and MMV divided all transcripts and applied the final template. Throughout the analysis, JG and MMV discussed and resolved questions about the transcriptions, uncertainties about coding and potential text fragments not fitting the template. AC advised when necessary to resolve a question or uncertainty.

3. Theme development. Themes were collaboratively constructed ‘through analyzing, combining, comparing, and even graphically mapping how codes relate to one another’. Authors MMV, JG and AC held multiple discussions to evaluate the fit and support of each constructed theme in the data. Finally, the full author team reviewed the themes to evaluate the degree to which the research questions were answered.

We reached theoretical sufficiency after including two study groups and conducting 15 interviews: Data from the last interviews did not require modifications of the identified categories. Furthermore, all authors agreed the sample was adequate and appropriate, and the data were rich enough to answer the research questions.

2.6 | Ethical aspects

The Ethical Review Board of the Netherlands Association for Medical Education approved the study (dossier number 2019.2.7).

3 | RESULTS

Three study groups were invited to participate. Two study groups agreed, and 15 individual interviews were conducted. Four students agreed to the video recording, but declined an interview. We will first report on the relationship between the dimensions of engagement (RQ1), then on the influence of antecedents on in-class student engagement (RQ2) and finally on the difficulty for tutors in engaging students (RQ3).

3.1 | Relationships between dimensions of engagement: Spirals of engagement

Students reported to engage and disengage multiple times during a meeting. Students engaged for a variety of reasons, mainly out of
interest for a topic or having prior knowledge that could add to a discussion. Students also tended to engage when their tutor or peers demanded it. Interestingly, we identified a pattern in the interviews that once a student engaged on one dimension, other dimensions were likely to follow. In other words, engagement seemed to build upon itself, creating a 'spiral-like pattern of engagement'. The following quote illustrates this finding:

[Interviewer and Student watching a part of the video recording in which the student was asked to read a patient case aloud and answer a question about it]

Interviewer: How do you feel about being asked to answer that question?
Student: I do not mind that. I notice I am touching my face a lot. When I am thinking about something ... like at an exam, I always touch my hair and I look down, but apparently, I also do it when I am thinking in the group.

Interviewer: So you were really thinking here?
Student: Yes, I was really thinking here. And of course, when someone else says something then I am listening and thinking 'yeah that's true'. [...] 

Interviewer: How did you feel about other people also answering here, while you were still thinking?
Student: I liked that. Because if you do not know the answer, and nobody says anything, we would not get anywhere. You would say 'I do not know' and then someone else would get a turn or someone else would say something eventually. [...] 

Interviewer: So you are okay with people jumping in when they do know?
Student: Yes, otherwise I would look like a fool for creating a silence, would not it? (Student 5)

In this quote, a prompt for verbal participation (reading the patient case out loud—behavioural engagement) started a cognitive process in which the student would think about the question and the answers from his peers (cognitive engagement) and elicited positive feelings about the group (helping him and avoiding negative feelings about himself—emotional engagement). In another interview, a student reported how she had strong feelings about a certain topic (emotional engagement) and how this led her to be more verbally active during the case discussion (behavioural engagement) and also more attentive to hear others' point of view (cognitive engagement). Other interviews demonstrated this same spiral-like pattern of engagement. We did not identify a certain order in these spirals, and they could start from any dimension.

The opposite, a spiral-like pattern of disengagement, was also identified in the interviews. Students who reported to disengage on one dimension reported to consequently disengage on the other dimensions as well. Thus, disengagement also seemed to build upon itself. The next quote illustrates this finding:

Student: I do not like study group meetings. I would rather study on my own. That would be a more effective use of my study time. [...] So I only go to study group meetings because they are mandatory.

Interviewer: That is all? No other purpose for you to be there?
Student: No there is not. I do not learn much from the meetings, because they are not going to my desired pace. Collaborating like this does not work for me. It's too slow and there is too much distraction in a large group. [...] Also, all the questions are based on the lectures, and they assume you go there. But if you have not gone, you can automatically not answer the questions properly. So yeah, then it is just brainstorming with the rest of the group, but then I do not have much to contribute.

Interviewer: Is there anything the tutor could do to help you contribute or to partake more actively?
Student: No, I do not think so. (Student 7)

In this quote, the student described how his dislike of the study group meetings resulted in merely being present at the meetings because he had to, and not out of a motivation for learning. Finally, because of his emotional and cognitive disengagement, he also disengaged behaviourally.

3.2 Influence of antecedents of engagement: Willingness to engage

Students reported how their engagement varied across meetings. They indicated a number of factors that influenced whether they would be more or less likely to engage during a meeting (Table 1). Each of these factors could have a stimulating or limiting effect on their engagement. However, from the interviews, we came to understand that the combination of these factors jointly influences how willing a student will be during a meeting. The following quote gives a clear insight into how before-class factors jointly influenced a student's willingness to engage:

A large part of the study group is focussing on the questions and answers. Because the questions and answers will be part of the exam. And, in my opinion, passing the exam is not the most important. The most important thing to me is to be able to apply the knowledge you have. [...] And that is what you could see [in the video recording]. What I am trying to do, is to say something controversial, [...] so that the others actually start to think. On the one hand I am trying to stimulate them to think outside the box, but on the other hand I try to motivate them to say what they think. Because every now and then I have a different opinion than they have. And when you give that
In this quote, the student described how other students in his study group would be satisfied when they reached the answer to a question, but he often felt he did not understand why that answer was the right answer or that he had another opinion. His learning beliefs included that discussing answers with peers leads to better understanding. So, his learning strategies included challenging his peers to explain the content to him to advance his understanding. This was possible given the highly interactive nature of the study group meetings. This quote shows how antecedents jointly influence the students’ willingness to engage with his peers during a meeting. It is the result of the combination of stimulating and limiting factors.

Additionally, antecedents seem to have a dynamic influence. Students reported how their engagement varied from meeting to meeting, depending on their perception of the antecedents beforehand:

Study group meetings vary in how engaging they are. It has to do with the content. For example, last period we learned about medical research, and everybody knows very little thereof, everybody thinks it’s not so interesting, and then the levels of engagement drop. The meetings become less instructive. And content which everybody likes, then you learn a lot and yeah you participate more. (Student 1)

This quote illustrates that students anticipate or reflect on upcoming meetings and that antecedents do not have a fixed or static influence on student engagement.

3.3 | Tutor difficulty: Distinguishing engagement from disengagement

Students found it difficult to stay engaged for longer periods of time, especially when they did not think the topic was interesting, the questions were perceived as too difficult, or when the meeting was at the end of a day. They indicated a role for the tutor to stimulate, maintain and regulate their engagement. As one student put it:

Our study group meeting is from 3.45–5.45 PM. Well, I had to work in the morning that day, so I got up at 6.30 AM. Then I am not at home the entire day, and then I need to walk in the classroom at 3.45 PM. Yeah, you are just tired then […] I think I also had a drink the day before, so I was not feeling very well. So yeah, it all piles up and you just get tired. But I could get myself to do something you know, that is not a problem. But you get the feeling that after a while everybody feels like ‘guys, we could also skip the last assignment?’ You get that feeling after a while, and then the tutor is very handy to sort of, redirect us. (Student 3)

Students reported that interventions from all three dimensions of engagement would help. Tutors could stimulate them through their behaviour (e.g. remind them of the rules or read a case out loud), their cognitions (e.g. ask them a question) or their emotions (e.g. have them reflect on their personal stance towards a patient).

However, students reported that, in their eyes, tutors sometimes had difficulty distinguishing engagement from disengagement. Student behaviour, looking outwardly the same for tutors, could have different intentions. One student gave an example of this difficulty, when his behaviour of grabbing and using his smartphone was mis-interpreted by the tutor:

Student: I am only on my phone when I am looking up something. But I have heard from [tutor] that I grab my phone too often. But sometimes they [peers] say something during the meeting and I just want to look it up. Because they look like they are searching on their laptop, but they are just sending messages through WhatsApp, while I am looking up what we are talking about […].

Interviewer: So what you are saying is that a tutor cannot distinguish between reasons why you grab your phone?

Student: Yes, exactly. (Student 4)

Therefore, although behaviour is observable, it can be difficult for tutors to accurately assess the intention behind the behaviour. That makes it difficult to assess if the behaviour fits engagement or disengagement and if an intervention is required.

For the student above, the intervention of the tutor (give feedback on phone use) actually led to emotional disengagement within the student (negative emotions, being misunderstood), cognitive disengagement (reducing his intentions and effort for learning from the meetings) and behavioural disengagement (not looking up information anymore).

The same difficulty of accurately assessing intention was observed for cognitive engagement:

Interviewer: At a certain point I heard the tutor asking if you wanted a break.

Student: Yes. Sometimes we have a small break in between, especially after a very long assignment. Then everybody agrees to take a break. But usually everybody is like ‘let us get this done as quick as possible’. So we do not really take breaks.

Interviewer: So at a certain moment some sort of exhaustion arises, and you need a break. Even if you want to give your best and engage, you cannot do so for two hours non-stop?
This quote shows that students keep working on the assignments, not for the sake of learning, but for the sake of ending class early. Although it might appear students are cognitively engaged, they actually are disengaged. Students’ intentions here are again important.

Verbal participation and silence were both reported as a sign of engagement and disengagement. Also here intention was important. Verbal participation was reported as a means to contribute to the collaborative learning process but also as a means to finish the class quickly. Silence was reported as a means to improve understanding of difficult topics (e.g. listening to peers) but also as a sign of not paying attention. However, students described how their tutors seemed to view verbal participation as good and silence as bad. Silent students were urged to ‘speak up more’ (Student 12) by their tutor. Talkative students reported that they received feedback that they ‘participate well’ (Student 9). This indicated to students that silence was perceived as a sign of disengagement. Students reflecting on their silence indicated that their silence often meant they were ‘thinking about questions’ (Student 2) and ‘curious to hear other people’s perspectives’ (Student 8). They also did not ‘want to repeat what another had said’ (Student 8) or ‘speak up when they were not sure enough about something’ (Student 2).

4 | DISCUSSION

This study uncovered three main themes that illuminate the dynamic process of student engagement and explain the difficulty in recognising and influencing this process in practice. First, the spiral pattern of student engagement and disengagement shows how the three dimensions of engagement interrelate in classroom settings. We found that when students engage or disengage on one dimension, other dimensions are likely to follow suit. The engaged become more engaged, and the disengaged become more disengaged. Second, students’ willingness to engage in class is dependent upon their perception of engagement antecedents before class. It is the combination of these antecedents that jointly influences the likelihood of a student being engaged during a meeting. Third, distinguishing engagement from disengagement can be difficult, as behaviour can outwardly look the same for tutors, but have very different intentions. The intentions determine if a student is engaged or disengaged.

4.1 | Recognising student engagement in a classroom

Teachers look for indicators of engagement in the behaviour of students. The amount of verbal participation and use of electronic devices are common examples. This study illustrates how behaviours are preceded by intentions, and the intentions determine if behaviour fits engagement or disengagement. Students who are silent because they want to learn from their peers are engaged. Students who verbally participate because they want to end class early are disengaged. Students who type on their smartphone to look up information are engaged. Students who type on their laptop to text a friend are disengaged. Thus, in order to recognise student engagement, teachers need to look beyond the behavioural dimension of engagement.

The combination of behaviour, cognition and emotion is what defines engagement. The difficulty for teachers is that they can observe the behavioural dimension of engagement, but not the cognitive and emotional dimensions as these are internal to students. Furthermore, this study illustrated how student engagement is a dynamic process. Students can engage or disengage on any or all of the three dimensions, and this study showed they do so multiple times during a 2-h meeting. Moreover, student engagement levels vary from meeting to meeting. This complicates recognising engagement.

A recent review on disengagement acknowledges how difficult it is to accurately identify student disengagement. In the review, it is suggested to define standardised measurable indicators of disengagement and transform those in a ‘checklist of engagement’. We, however, would argue against such a course of action. As checklists for reflection can create ‘reflective zombies’, we would fear for ‘engagement zombies’. That is, students who are conditioned to behave in a certain way rather than truly engaging with the course content, teachers and fellow students. Therefore, we recommend teachers to look at the contributions that students make to the learning objectives of a meeting and group dynamics. Engaged students contribute to achieving the learning objectives and positive group dynamics. Disengaged students do not.

4.2 | Stimulating engagement

Based on our results, we reiterate the finding that teachers play an important role in stimulating student engagement. However, as described above, influencing in-class engagement can be difficult for teachers because it is difficult to recognise in practice. Additionally, as found in this study, an incorrect judgement of a student’s engagement can actually increase disengagement.

This study adds three suggestions to the literature for teachers to have a positive influence on their students’ engagement: (1) Initiate spirals of engagement; (2) address the (modifiable) antecedents; and (3) focus on the intentions behind student behaviour. Adhering to these suggestions may help to optimise student engagement in active learning settings.

(1) To initiate a spiral of engagement, tutors can make use of the multidimensional view of student engagement and the finding that students respond well to interventions from each dimension. Teachers can thus use students’ behaviour, cognitions and emotions. Examples from this study are asking students to read a patient case out loud,
asking open-ended questions about the content and having students reflect on their feelings. (2) To stimulate willingness, tutors can reinforce engagement-supportive antecedents and discuss or challenge engagement-limiting antecedents. Examples from this study are to explore students’ thoughts and feelings about the content of a course, students’ prior knowledge and the learning process. Teachers could increase willingness by discussing the relevance of the content, how to gain adequate prior knowledge to be able to participate and how the learning process will help them achieve the course objectives. A limitation here is that teachers cannot address all antecedents, as some might be unknown to teachers or be defined by course designers or educational policy. Therefore, we suggest teachers to focus on the antecedents that are modifiable. (3) The suggestion to focus on the intention behind behaviour warrants a little elaboration. Intention is not always directly observable for teachers. It has to be inferred from observations and cues related to the learning and group process. Oftentimes, observable behaviour (like silence and use of electronic devices) is used to form negative judgements of students.9,29–32,35,36 However, as we confirmed in this study, the same behaviour can fit both engagement and disengagement. The student intention is what matters. Teachers can therefore make better use of their observations by prompting students to engage and learn their intentions at the same time. A prompt for teachers could be: ‘I see you typing attentively to the discussion. What are your thoughts?’ or ‘I see you typing on your laptop. What did you find worthwhile from this discussion to take note of?’ Such an approach would fit well with previously identified student preferences for small-group learning environments, in which a teacher creates a positive, non-threatening group atmosphere and at the same time gains information about students’ engagement.26,50 Making use of open and inviting prompts could also help to avoid situations in which teachers would make incorrect assumptions about students’ (dis)engagement.

4.3 | Strengths and limitations

VSR depends on the recall of events. Therefore, we interviewed students as quickly as possible after the recorded study group meeting. However, due to logistic reasons, some interviews were held several days after the group meeting. Although the video did improve recall, some students reported to have difficulty recalling their thoughts. Additionally, we acknowledge that the interviews themselves were a conversational setting that might have led students to express themselves in a certain way and in another setting might have answered differently. However, in line with our social constructivist stance, the interviews allowed us to co-construct knowledge with the participants by gaining insights into the thinking behind behaviour, thoughts and feelings.51

In line with our finding that distinguishing engagement from disengagement can be difficult, we had the same experience during the data collection. When we showed the selected moments to students during the interviews, we did not provide a reason for selecting that moment. For example, when we selected a moment on video we thought showed disengagement (student looking out the window), the student would elaborate on how he was engaged (thinking hard about a specific bias in research). The reverse also happened (student being disengaged while the researcher assessed the student to be engaged from the video recording). This strengthens our finding that it indeed can be difficult for teachers to distinguish engagement from disengagement.

4.4 | Future research

Tutors might want to learn how to best initiate a spiral of engagement. Within engagement, it is possible to identify qualitative differences.37 Emotional engagement, for example, can range from simple liking to deeply valuing a topic. Cognitive engagement likewise can range from simply remembering to creating new knowledge. It is likely that higher qualities within each dimension have a better chance of initiating a spiral. Secondly, students have suggested that teachers play an important role in stimulating, maintaining and regulating engagement. However, students also reported responding well to prompts from peers. If peer prompts have a greater chance of initiating a positive spiral, this could influence how teachers design their small-group learning activities. A study in which students are asked about their responsibilities regarding their engagement might include questions about the design of learning activities.

4.5 | Conclusion

This study illuminates the dynamic process of student engagement and explains the difficulty of recognising and influencing this process in practice. Teachers can use the insights and suggestions gained from this study to optimise the engagement in their classrooms. With higher engagement, small-group active learning will be a more pleasurable and instructive form of education for both teachers and students.

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CONFLICTS OF INTEREST

None.

ETHICAL APPROVAL

The Ethical Review Board of the Netherlands Association for Medical Education approved the study (dossier number 2019.2.7).

AUTHOR CONTRIBUTIONS

Authors JG, AC, MM and RK contributed to the conception and design of the study. All authors (JG, AC, MMV, MM, RK) contributed
to the interpretation of the findings and drafting and revising of the article. JG and AC collected the data. JG, MMV and AC analysed the data. All authors approved the final manuscript for publication. All authors agree to be accountable for all aspects of the work.

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SUPPORTING INFORMATION

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