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AIMING FOR ACTIVE STUDENT PARTICIPATION IN ONLINE UNIVERSITY LESSONS: A CASE STUDY OF TWO TEACHERS DURING EMERGENCY REMOTE TEACHING

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ABSTRACT

While learning is most effective when students are actively engaged, student participation in university classrooms is usually dominated by monologic teacher talk. Digital technologies are often seen as a way to enhance active student participation, yet most reports show that the emergency remote teaching that used digital technologies during the COVID pandemic worsened student participation. We look at active student participation in the synchronous online university lessons of two teachers with shared views on the importance of active student participation but differing approaches to online teaching. We employed a range of tools, including multiple lesson observations over time, line-by-line micro-analysis of the lessons, analysis of discourse moves based on Hardman's coding system, network visualizations of interactions, and interviews with the teachers reflecting on their teaching. With these tools, we aimed to link the teachers' views of online teaching with their teaching practices and with the resulting active student participation in their online lessons. The findings of our study indicate that teachers' views of online teaching can significantly influence their teaching practices. We found that the view that online teaching can serve as a substitute for contact teaching has a detrimental effect on teacher ability to employ the practices necessary for active student participation in online settings. We suggest abandoning the idea of online teaching as a substitute for contact teaching. Instead, online and contact teaching should be seen as two distinct entities requiring different teaching practices. We discuss specific teaching practices that we observed in relation to their role in promoting active student participation in online lessons.

KEYWORDS

emergency remote teaching, online learning, COVID teaching, interactive lessons, case study, mixed design

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Introduction

Student active learning and student engagement in classroom talk have become key topics in educational sciences (Børte et al., 2020). It is understood that learning is most effective when students are actively involved in a dialogic co-construction of meaning (Wells & Arauz, 2006). Empirical studies have indicated that the more students talk, discuss, and argue, the better they learn and the more motivated they are to study (Baber, 2020; Bernard et al., 2009; Kuo et al., 2014). However, investigations across the world have demonstrated that student participation in university classroom dialogue is limited – teachers mainly pose factual questions and students reply with short and rote answers. The current style of teaching in higher education has been characterized as teacher-centered with little space for student active learning and engagement (Børte et al., 2020). Studies investigating student engagement report that few students participate and contribute to class discussions; most remain silent during the lesson (Fritschner, 2000; Howard & Baird, 2000). A typical lesson scenario includes monologic teacher talk combined with short question and answer sequences with brief student utterances (Klerk, 1995; O'Boyle, 2010; Wood et al., 2018).

Hardman (2016) conducted a particularly elaborate study, recording, thoroughly coding, and analyzing interactions in four university seminar lessons. Based on the observed lessons, Hardman created a set of different types of discourse moves occurring in the university setting. The discourse moves represent exchanges between students and teachers based on the "initiation, response, follow-up" (IRF) structure. However, Hardman observed that the IRF can take on very different forms, leading to very different outcomes in student engagement. She therefore expanded the prototypical IRF structure into further subcategories. The initiation moves were categorized into open, closed, and check questions directed toward students and student questions directed toward the teacher. The response moves were categorized into brief (one word, phrase, or sentence) and elaborate answers. The follow-up moves were categorized into acknowledgement (verbally acknowledging or repeating an answer), praise (praising a student answer), negation (disagreeing with or rejecting an answer), comment (building on or expanding an answer), probe (asking the same student to elaborate or justify a previous answer), and uptake (incorporating a previous answer into a new question for everyone). In her study, closed questions comprised 50.3% of the teacher's initiation moves, brief answers made up 86.5% of the student responses, and acknowledgements were 51.7% of the follow-up moves. As closed questions lead to brief answers and acknowledgements do not give space for any further elaboration (whether from the students or the teacher), Hardman (2016) found the interaction in the lessons to be dominated by short question and answer sequences.

The reasons that university lessons are dominated by the prevailing teacher-centered pattern of interaction and the lack of active student participation remain largely unclear. Research has suggested that a number of teacher practices play a crucial role in promoting student active classroom participation. Fischer and Hänze (in press) conducted an extensive study in 80 university courses observing the share of students participating actively in the class discussion. They found the number of teacher questions put to students to be determinative in this regard. The more a teacher asked, the more students participated. The course atmosphere was also found to have an effect. Students participated more when they perceived the teacher as respectful and appreciative, open to other opinions and suggestions, and incorporating student questions and comments into discussions. Similarly, Mustapha et al. (2010) and Abdullah et al. (2012) reported that university students feel more likely to actively participate in the classroom when a teacher encourages them to talk by giving them both verbal and non-verbal cues, calls them by their names, does not scold them for their answers, is not impatient, and accepts and even supports differing opinions.

Previous studies (Abdullah et al., 2012; Fisher & Hänze, in press; Mustapha et al., 2010) have proposed several teacher guidelines aimed at improving active student participation in university classrooms. Teachers should actively pose questions, be welcoming and appreciative of all student contributions, and incorporate student contributions into teaching. The question remains whether such an approach is viable for a higher education environment. Heron (2018) interviewed several university teachers and found that the teachers believed in the crucial roles of class dialogue and discussion in cognitively activating students, empowering their voices, and facilitating their learning. However, at the same time, the teachers felt that various tensions and institutional constraints limited their capacity to establish dialogue in their lessons. These included the tension between valuing student participation and needing to cover specific material. Richards (2006) suggested further constraints limiting active student participation in higher education environments – the power asymmetry in classroom dialogue and the institutional settings that cast students in the roles of passive actors. It has been argued that the space for student talk and active engagement is limited in traditional settings but could be radically enhanced by digital technologies by overcoming some of the institutional constraints – specifically, that digital technologies could be used to facilitate peer learning with the use of online forums and synchronous online group activities and to reduce the power asymmetry between students and teachers by making teachers more accessible (Coorey, 2016; Englund et al., 2017; Wdowik, 2014).

However, a study by Šeďová et al. (2021) suggested that the use of digital technologies in higher education does not necessarily mean higher active

student participation. The study was based on interviews with 34 university teachers at the Faculty of Arts at Masaryk University during the period of emergency remote teaching (ERT) resulting from nationwide COVID containment measures in 2020. As with many other university programs across the world (Mishra et al., 2020; Walker & Koralesky, 2021), Masaryk University was forced to shift to fully online teaching. Compared to established online learning, ERT is unplanned, lacks established infrastructure, and is a direct response to a crisis rather than a deliberate decision (Whittle et al., 2020). The study by Šeďová et al. (2021) suggested that in the ERT period, university teachers fell into two polar categories based on their approaches to online teaching. On one side of the spectrum were functionalists who saw online teaching as a challenge but were willing to overcome the hindrances by changing teaching practices with the aim of passing the required knowledge to students. On the other side of the spectrum were authenticators who also saw online teaching as a challenge but were not willing to change their teaching practices as their central idea in teaching was authentic spontaneous teacher-student communication as a means of creating new knowledge. The study suggested that while the functionalists were mostly content with online teaching and active student participation in their online lessons as they saw that online teaching was bringing new features into their teaching practices, the authenticators were mostly dissatisfied and complained about the quality of active student participation in their online lessons. A key limitation to their study is the fact that the authors lacked data enabling them to assess active student participation in the teachers' online lessons beyond self-reports in interviews with the teachers.

Most other studies dealing with student participation in online lessons during ERT have lacked lesson observations and relied heavily on teacher and student reports. These studies reported decreases in active student participation after the transition to ERT. While some studies reported teachers and students praising the chance to interact with others in chat rooms while hearing a lecture, feeling less stressed during online lessons, and appreciating the opportunity to use chat rooms to ponder before engaging in discussions (Müller et al., 2021; Shim & Lee, 2020), most studies reported more negative aspects of ERT. Some research identified decreases in student engagement (Petillion & McNeil, 2020; Shim & Lee, 2020; Walker & Koralesky, 2021) and decreases in both teacher–student and student–student interactions (Ferri et al., 2020; Le & Truong, 2021; Thurab-Nkhosi et al., 2021) during ERT at universities. Teachers have complained about the inability to read student faces (Mishra et al., 2020), the lack of confidence (Lei & So, 2021), and technical problems (Nambiar, 2020); students often reported being distracted (Petillion & McNeil, 2020; Shim & Lee, 2020; Walker & Koralesky, 2021) and lacking stable internet connections (Shim & Lee, 2020).

1. Present study

While there have been studies investigating active student participation in the context of ERT, they lack data from the lessons that could provide objective measurements of active student participation and link the teachers' perceptions of online teaching with their practices and with active student participation in their lessons. This study aims to address the research gap – the lack of studies providing analyses based on lesson observations. We formulated our research question as *How are teachers' views of online teaching reflected in their teaching practices and what effect do their practices have on active student participation?* We aim to link teachers' views of online teaching during ERT with their teaching practices, and, ultimately, with the outcomes in active student participation in their lessons. We understand teaching practices as specific behaviors – the means by which teachers attempt to impart knowledge to their students. To address the question, we approach the issue as a mixed-design case study of two teachers and employ a range of tools including multiple observations of lessons over time, line-by-line micro-analysis of the lessons (Lefstein & Snell, 2014), analysis of discourse moves based on Hardman's (2016) coding system, network visualizations of interactions, and interviews with teachers with reflections on their teaching. With the selected tools, we aim to provide a detailed image of active student participation in ERT and put it into the wider context of teacher practices and teacher views of online teaching. The cases are two experienced university teachers, both aiming for interactive and dialogic lessons and having no prior experience with fully online teaching. However, the two teachers dramatically differed in their attitudes toward online teaching, in the teaching practices they employed, and, ultimately, in the active student participation in their online lessons.

2. Materials and methods

2.1 Research design

To address the research question, we employed a mixed-design case study approach. A mixed-design approach was used to address the gap identified in previous research from the same institution (Šeďová et al., 2021) that lacked objective measurements of active student participation in the form of observations and relied solely on teacher reports. We utilize both teacher reports and views of online teaching from interviews and complement these with observations of lessons followed by a qualitative analysis of teaching practices and a quantitative analysis of active student participation. This design allowed us to study the interconnectedness of teachers' views of online teaching, their teaching practices, and active student participation in their lessons.

2.2 Context

Our study is based at the Faculty of Arts of Masaryk University – a large public research university in the Czech Republic. Starting in mid-2020, all the teachers at the Faculty had to switch to synchronous online teaching via the Microsoft Teams platform. The teachers were expected to stick to their original schedules and lesson structures, with the only difference being the online mode of delivery. The online mode of delivery continued for the duration of the 2020/2021 school year.

2.3 Study participants

Our cases are two university teachers. We chose the teachers based on the criteria of: (1) having broad and similar teaching experience (mid-career tenure-track assistant professors); (2) being noted by their students and their fellow colleagues as having dialogic and interactive lessons before the COVID outbreak – we made use of student course opinion polls from before the pandemic, and we had talks with the respective departmental heads; and (3) having no prior experience with fully online teaching. The two teachers come from a larger sample of two previous studies – the study aimed at exploring the transition to online learning through teachers' eyes (Šeďová et al., 2021) and a study of four teachers whose lessons had been studied in relation to interactions in online lessons (Lintner, 2021). The two teachers were selected by the authors of this study to address the research question, which is based around making lessons during ERT with active student participation. The teachers had shared views on the importance of active student participation in the classroom, but they differed in their views of online teaching, their teaching practices, and the resulting student participation in their lessons. Hence, the two cases make it possible to illustrate the differences in teaching practices stemming from differing views of online teaching and not from differing views of active student participation. The two teachers occupy two opposite poles of the functionalist–authenticator spectrum constructed in the previous study (Šeďová et al., 2021). We refer to the teachers by pseudonyms: Cora and Ben. Cora has seven years of teaching experience, teaches education to a class of 27 master's degree students, and is a functionalist replacing components of face-to-face teaching with new tools with the priority of passing on knowledge to students in mind. Ben has six years of teaching experience, teaches literature to a class of 32 master's degree students, and is an authenticator prioritizing the idea of authentic spontaneous teacher-student communication as a means of creating new knowledge over a change in teaching strategies. Students in both classes are predominantly Czech and Slovak.

2.4 Data collection

First, we obtained video recordings of three consecutive 90-minute online lessons from both teachers over the span of three weeks. The recordings were obtained in the middle of the fall semester – in November 2020 – which was marked by a transition from on-site and blended learning to fully online learning. We decided to include lessons marked by the sudden mass transition to online teaching to study the context when teachers did not have much time to prepare for the online teaching. We included three consecutive lessons to expand the validity of our findings. The recordings were collected in accordance with the principles of the research ethics of Masaryk University and the data collection was approved by the Masaryk University Research Ethics Committee. The two teachers gave their written consent to the data collection. All students were informed about the purpose of the study and the scale of the data collection. All participants were able to withdraw their consent at any time. All the participants' personal data were anonymized.

We next performed 90-minute interviews with the teachers in the middle of the spring semester, in April 2021. The first part of the interview was focused on the teachers' perceptions of the transition from face-to-face to ERT and their view of online teaching. The aim was to identify: (1) the challenges the teachers faced with the sudden transition; (2) teachers' views of the role of active student participation in online lessons; and (3) what the teachers considered effective strategies in bolstering student participation in online lessons. The second part of the interview was a self-reflection of the teachers' practices based on the recorded lessons. The teachers were shown short excerpts from their lessons consisting of both highly interactive moments with extended IRF structures and moments showing student unresponsiveness and short question and answer sequences. The aim was to see how the teachers perceived their actual practices in relation to their aims for active student participation.

2.5 Data analysis

The first step of the data analysis consisted of analyzing the interviews with inductive open coding identifying codes related to the categories of active student participation in the classroom, online teaching, and teaching practices aimed at maintaining active student participation – comparing and contrasting the teachers' views on the three topics. Then, we analyzed the lesson recordings, focusing on teaching practices and the resulting student participation – we tried to identify how the teachers' practices related to active student participation in their lessons. We transcribed the video recordings of the lessons verbatim and edited them to distinguish the individual turns and their speakers to prepare the data for a subtle qualitative analysis. We followed

the methods of linguistic ethnography (Maybin & Tusting, 2011) aiming toward a description of social practices in specific contexts through a detailed analysis of the use of language. All transcripts were subjected to a line-by-line micro-analysis (Lefstein & Snell, 2014). We studied the video-recorded data to see how and under what conditions students actively participated and compared this material to the situations when students did not participate even if they were invited by the teachers. Next, we synthesized the results from the interviews with the observed teaching practices – linking teachers' perceptions of online teaching with their practices.

Afterward, we performed a series of quantitative analyses aiming at objectively assessing active student participation in the teachers' lessons. First, we calculated the basic metrics of student engagement – specifically, how many students talked at least once in a given lesson – and the duration of both student talk and teacher talk in the individual lessons. We measured student and teacher talk as every utterance related to teaching/learning – not including talk related to organizational issues – in seconds. We included both absolute durations of student and teacher talk in each lesson as well as relative durations by calculating percentages of student and teacher talk relative to all measured utterances in a given lesson. We then coded discourse moves as outlined by Hardman (2016), adding *no answer* as an additional response category (see Appendix I in Hardman (2016) for detailed descriptions of each conversation move). Each utterance was therefore classified as either *initiation* (further divided into *open*, *closed*, *check*, and *student* question), *response* (further divided into *brief*, *elaborate*, and *no answer*), or *follow-up* (further divided into *acknowledge*, *praise*, *negate*, *comment*, *probe*, and *uptake*). Next, we calculated both absolute and relative occurrences of the discourse moves by lessons and teachers. The absolute occurrence of a discourse move refers to the number of times a given discourse move occurred in a lesson. The relative occurrence of a discourse move refers to the percentage of a given discourse move occurring in a lesson. Finally, we visualized the interaction patterns in the individual lessons as social networks consisting of actors (teacher and students) and links between the actors (discourse moves in a given lesson) in a *ggraph* (Pedersen, 2021). The visualization of the interactions as social networks makes it possible to see which students engaged in interactions with whom and intuitively shows which actors the interaction was centered around. Since the teachers took part in most interactions, we used a star layout placing the teacher in the center and the students equidistant around the teacher.

3. Results

The result section is organized as follows: first, we employed the results from the interviews with the teachers to show how our teachers' views on active student participation in the classroom matched, how they differed in their views of online teaching, and how differently they approached teaching in online settings; second, we employed the results from the analysis of the lesson recordings to point out how our teachers' specific practices related to student participation in their lessons; and third, we employed the results from the quantitative analyses to show how the active student participation in our teachers' lessons differed.

3.1 Teacher views on active student participation, online teaching, and teaching practices in online settings

We utilized the data from the interviews to discuss how the teachers perceived active student participation and to identify differences in teacher perceptions of how online teaching should look, aiming to explain how their differing perceptions influenced their teaching practices and led to their (in)ability to maintain active student participation.

Both teachers seemed to value interaction and active student participation as an organic component of their established teaching strategy. For Cora, it is essential to let students discuss the topics raised in the lessons. She teaches education to master's degree students and she wants them to build the competency to practically deal with issues once they start their teaching careers:

> It is not enough when they understand the content. I need them to take a step forward to incorporate it. To link it with their own thinking and experiences. … Therefore, I try to give them space to let them reflect on the content during the lesson. (Cora)

Furthermore, Cora expressed her intention to maintain student multivoicedness (Mortimer, 1998) by not acting as a single authority providing the right answers and by letting the students engage in discussion with others with contrasting views:

> With some topics, I let them (students) challenge others' opinions and my opinions too. If I consider it enriching for the class, I want everyone to figure out their right answers, share them with others, and make everyone think about each others' answers. (Cora)

Ben teaches literature to master's degree students and focused his seminar on interpreting selected stage plays. Before the lesson, all the students read the assigned play and wrote a reading journal about it. The lesson was intended to let students share and discuss their interpretations to grasp the piece more deeply:

> I usually have an idea what they want to talk about, as they have written about it. So I follow up with some questions or introduce some theme and invite them to express their thoughts. … Actually, a major part of the lesson, I am trying to be just a moderator of the discussion. (Ben)

These statements show that Cora and Ben appreciate the verbal participation of students and that their instructional concept relies heavily on student contributions to class discussion. Both teachers are therefore similar in this regard.

Both Cora and Ben also identified the same barriers as accountable for reduced active student participation in online settings. Primarily, they noted the "incompleteness" of the online communication, specifically the absence or imperfection of the non-verbal side of the matter. This had two important consequences for the teachers. First, turn taking did not go smoothly – the students hesitated to raise their voices or, by contrast, to interrupt each other. Second, being spatially separated, students did not create personal bonds and a sense of belonging to the group. On that account, they were less willing to open themselves and share their personal points of view. Altogether, online communication limited student engagement, according to both teachers.

While both teachers were aware of both the importance of active student participation and the barriers of online space making interaction more challenging, the teachers differed in their approaches to overcoming the identified barriers and stimulating student participation and engagement. Ben decided to maintain the methods he had formerly used in his face-to-face teaching in the online setting:

> My idea was to replicate the offline lesson, ok? I feel the creative atmosphere of face-to-face seminars as an ideal and this is my benchmark. … Actually, I did not modify my teaching too much when we moved online. (Ben)

In contrast to Ben, Cora perceived the necessity of transforming her previous teaching methods:

> Shortly after the transition to online, I realized that synchronized online teaching has to be conducted differently from contact teaching. Different methods are needed to engage students and make them work. I learned how to use Padlet, Jamboard, shared documents, etc. These tools helped to hold student attention and interest and push them to contribute to share their thoughts within the group. (Cora)

Cora adopted many tools to overcome the barriers that led to decreased student engagement in smooth turn taking in the online environment. Using these tools, she often invited students to share their opinions in a

written form in real time during a lesson and then she started the discussion from their written contributions.

Cora also cared about belonging and community building in the study group. She established a "cameras on" rule during the lessons in order to maintain eye contact and visual signals within the group. Also, she started every lesson with small talk to create bonds with the students:

> It is a group of forty people with whom I spend the whole semester. They are important for me; I want to see them, and I want to know their moods to predict how our joint work will be that particular day. … Sometimes I take a photo of the screen with their faces and share the photo with them, sometimes I encourage them to wave to each other. It is kind of childish, but they enjoy it. This creates the feeling of community. (Cora)

By contrast, Ben not only did not adopt any of the new specific tools applicable online, he even restricted the repertoire possible to be implemented within Microsoft Teams. Most importantly, he did not insist on switching cameras on during the lessons. Due to this, only a few students were visible for him. Also, in contrast to Cora, he did not call on students by name. Instead of this, he preserved the same mechanisms for student engagement that he used to apply in face-to-face seminars:

> I don't insist on anyone having their camera on and I don't insist on specific people speaking, because it's the people who will then stop joining the online lesson and will start making insane excuses instead. Or they will suddenly start having technical issues and will log out. (Ben)

From Ben's comment, it is apparent that he does not see the online space as enabling student talk, but rather as a space allowing students to avoid talking. This mirrors Ben's view of online teaching as a substitute for face-to-face teaching, but with reduced opportunities for active student participation.

Ben awarded student verbal participation with points included in their final evaluation in the course. He kept this evaluation method in online teaching during the ERT and he often reminded the students of this fact. Furthermore, before the transition to ERT, during face-to-face seminars, he used spatial proximity and silence as a way to push students to contribute. After asking question, he would neither repeat nor rephrase the question, but remain silent and physically come closer to his students. He believed this created an awkward situation where someone would eventually start interacting with him. Physically approaching the students was unfeasible in the online environment, but Ben still continued to use silence as a part of his interactive approach:

> Awkward silences are part of my pedagogical repertoire. I do it consciously and it is based on my personal experience. I think it makes the student say something to end the silence. (Ben)

There are two apparent differences between the two teachers concerning their view of online teaching. First, Cora was working hard to find new tools for online teaching, while Ben tried to replicate his usual teaching in an online setting. Second, Cora strove to keep interaction with the students as personal as possible, while Ben did not. The data from their interviews indicate that both teachers were aware of their outcomes. Cora was satisfied with the interaction; Ben was frustrated and expressed strong discomfort with online teaching:

> My interaction with students during distant teaching was good quality …. For me, the ideal lesson is still the contact lesson. On the other hand, I can imagine that I will integrate some remote online elements into my regular teaching, because it is effective and saves time. (Cora)

> I did not succeed in activating the silent majority. … The expectation that we can deliver the same objectives as we can in contact teaching is just make-believe. … It is kind of a futile effort. (Ben)

These statements reveal that Cora coped with the abrupt change and even capitalized on the situation for her professional development as a teacher. By contrast, Ben did not see any professional enrichment.

The interviews with the teachers reveal that while both teachers valued active student participation and both teachers were aware of the barriers online teaching can pose to promoting active student engagement, the difference came with their approach to the transition and teaching in ERT. While Cora started perceiving online teaching as a practice requiring different approaches, Ben perceived online teaching only as a substitute for face-to-face teaching, complaining of its limitations, but not changing anything from what he was used to doing in a face-to-face mode. We argue that these different perceptions resulted in our two teachers employing different teaching strategies.

3.2 Linking teachers' views of online teaching with their practices

Building on the interviews revealing teachers' differing views of teaching during ERT, we utilized the data from the recorded lessons to identify differences in teachers' practices, aiming to explain what determined their (in)ability to maintain active student participation. We provide excerpts from both teachers' lessons illustrating distinctive exchanges. We discuss the excerpts in connection with practices related to interaction in the classroom in general and in connection with practices specific for online teaching.

We start with an excerpt from Cora's lesson for future educators aimed at discussing the viability of differentiated assessment based on student learning needs. Prior to this part of the lesson, several students had proposed that students should be assessed differently based on their career aspirations and interests.

1. **Cora (teacher)**: You are now talking about a differentiated approach to student assessment. Is there anyone who thinks it's not fair? That someone gets the same marks for less work? There're usually some people who think it's not fair. Anyone want to bring it up?
2. **Lea (student)**: (*starts talking spontaneously*) Well, I just want to say that if a teacher is willing to do that, I really admire that, because at my school, nobody cared about anything like a differentiated approach to assessment. We had a young, inexperienced biology teacher – she wanted all of us to write seminar theses, even though most of us were not aiming for biology A-Levels. She really had this feeling like she needed all of us to do some extra work. And I must say her approach was absolutely mad and if anyone considers student interests and career aspirations, it's great, and we should do the same ourselves.
3. **Cora (teacher)**: Right, you've mentioned two issues here – first, you know, she could've had good intentions there. I mean, if she's young, she might not have been aware of the consequences of such an approach. Then, you agreed with the guys before, that differentiated instruction is an ideal you should aim for.
4. **Paul (student)**: (*pushes the* raise hand *button*)
5. **Cora (teacher)**: I'm gonna pass this to someone else – Paul, you have the floor.
6. **Paul (student)**: Well, I'd like to react to Lea. I also have my own experience – similar to Lea's. The assessment was all very strict and everyone needed to know the same things. Considering differentiated assessment, though, I can't really agree with that if we are talking about academic high schools. I mean, they (students) should have very strong general knowledge, not only specialized knowledge.
7. **Cora (teacher)**: Paul, you are raising the problematic issue of finding a balance between providing specialized and general knowledge at schools. Is that what you had in mind?
8. **Paul (student)**: Yes, that's the thing – where we should draw the line between what everyone should know and what we should require only from some.
9. (*many students push the* raise hand *button*)
10. **Cora (teacher)**: Right… I see Ann, Susan, John, and Matthew want to react – you will all get the floor. Let me just first ask everyone – how would you respond to Paul concerning the line between specialized and general knowledge, and how should it be reflected in student assessments?

Cora started this interaction by posing an open question referring to her students' own experiences, which are thus taken as a legitimate entrance to discussion (line 1). Immediately, student Lea contributed with a long utterance in which she appreciated the discussed differentiated approach to student assessment and at the same time gave a negative example of a past teacher who used a non-differentiated approach and had a very high level of expectation from all her students (line 2). Cora did not evaluate Lea's contribution. Instead, she highlighted the main themes (line 3) and gave the floor to another student – Paul (line 5). Paul responded to Lea with disagreement. He commented that in academic high schools all students have to be expected to meet high academic standards (line 6). Cora again did not evaluate the student's contribution;

instead, she highlighted the main point and made sure she followed the student's argument (line 7). Many students then wanted to enter the discussion (line 9) and Cora made use of Paul's argument as a starting point for another round of student utterances – engaging the students themselves to answer the raised question, instead of simply providing the answer herself (line 10).

It is apparent from the excerpt that the students were willing to enter the discussion; they were confident enough to express their personal positions and supported them with examples. The student utterances were elaborate and long. Moreover, students reacted to each other; multivoicedness was present in the class, with many students presenting differing stands and views (Mortimer, 1998), and the class talk was exploratory (Barnes & Todd, 1978), as the students worked together to construct new knowledge. In this lesson, almost all the students had their cameras on, allowing Cora to call on each person by name and to maintain a personal approach.

Cora's lesson continued into a discussion on how future teachers should communicate with their pupils about expected study outcomes. This excerpt illustrates Cora's ability to maintain high student engagement utilizing Microsoft Whiteboard. During this activity, most student had their cameras off and everyone was looking at the shared digital whiteboard. Students were simultaneously asked to write their notes on the whiteboard and probed to explain their notes and react to others.

1. **Lea (student)**: I think it's important to explain to them (pupils) at the beginning of each lesson what the lesson is based on, like previous lessons, and what they should know at the end of the lesson. Kind of put it into context so everyone knows what the lesson is about. (*starts writing on whiteboard*)
2. **Cora (teacher)**: Lea, I'll let you finish writing now. What Doris said definitely applies to all contexts. Also, it's usually a good idea to always give them (pupils) some time to inquire if anything's not clear to them about that. I am now going to give the floor to someone else.
3. (*several students start writing on the whiteboard*)
4. **Mike (student)**: If I may...
5. **Cora (teacher)**: Yes Mike, go on.
6. **Mike (student)**: Well, we should think of communicating the expectations based on differentiated assessment. I mean if we have pupils and we have different expectations of them, it makes it harder to communicate that to everyone.
7. (*two students push the* raise hand *button*)
8. **Cora (teacher)**: Well… Now I see Paul and Susan. Paul, would you mind?
9. **Paul (student)**: What came to my mind is related to what Mike said and what Lea is writing… I'd like to ask if we actually have time for that. And especially if we do some differentiated assessment.

Here, Cora did not need students to have cameras on, she – along with the students (Paul on line 9) – was drawing cues from the contributions on the digital whiteboard. The whiteboard served as a space for students to share their thoughts with the others as well as to prepare their reactions. As in the previous excerpt, Cora called on students

by name (lines 2, 5, 8) and she did not evaluate student contributions but instead elaborated on them (line 2) or let others provide alternate views (line 8), which led to multivoicedness in the form of Paul questioning the viability of the previous solutions (line 9).

From the excerpts of Cora's lesson, it seems that her views of active student participation and of online teaching – challenging, requiring different practices than contact teaching, but doable – were aligned with the teaching practices she employed – making use of cameras to maintain a personal approach, to see all the students, and to call students by their names; using software beyond basic videoconferencing tools to enhance interaction; and, with many students actively participating, bolstering multivoicedness in her lessons by welcoming students to express differing opinions.

A contrasting excerpt is from Ben's lesson, marked by student silence, brevity, and teacher restlessness. This excerpt is from a lesson aimed at discussing the play *The Octoroon* in relation to melodrama.

1. **Ben (teacher)**: How about positive and negative characters? What do you think their relation is to melodrama?
2. **silence**
3. **Ben (teacher)**: You know, when you think about McClosky, what is his motivation to be such an ass*?*
4. **silence**
5. **Aaron**: Being in charge… Having money…
6. **Ben (teacher)**: Okay, okay… But what about personality-wise? What can we say about his personality?
7. **silence**
8. **Ben (teacher)**: In the moral connection… Anyone? C'mon, c'mon!
9. **silence**
10. **Ben (teacher)**: Does he have any good sides?
11. **silence**
12. **Aaron**: Well… He's ambitious; I mean, he's like goal oriented. He's like, I'm gonna do this, I'll get that, because of his reasons…
13. **Ben (teacher)**: (*interrupts Aaron*) What are the reasons?? What are the reasons?? I'm asking about the reasons…
14. **Aaron**: Well, he wants to get back at people. Like, he wants revenge.

Like Cora, Ben started the interaction with an open question asking the students what they thought about the characters depicted in the drama they read (line 1). Unlike in Cora's lesson, however, the students resisted contributing and stayed mostly silent (lines 2, 4, 7, 9, 11), even when the teacher strove to reformulate the original question (lines 3, 6, 8, 10) and emphatically invited students to participate (line 8). The only student willing to talk was Aaron, who repeatedly attempted to answer (lines 5, 12, 14). When giving feedback to Aaron, the teacher did not comment on what the student said. Instead, he indicated that his question was meant to be answered differently and Aaron's answers were skewed (lines 6, 13). Ben repeatedly invited students to give their opinions, but the students remained mostly silent. When the student answers did appear, they were not utilized to create new knowledge.

The excerpt from Ben's lesson also includes what Ben referred to as an "awkward silence" (lines 2, 4). Here, Ben remained silent for around 20 seconds after asking a question. While Ben was expecting the question to lead to elaborate answers, it only led to a brief utterance from Aaron after reformulating the question. The reason the "awkward silence" did not lead to the expected outcomes was presumably due to the fact that most students had their cameras off, did not feel like part of the conversation, and therefore did not feel the social awkwardness otherwise felt if they had been together in person in close proximity or if they had their cameras on. Only one person in this lesson had their camera on – Aaron – who was also the person most often interacting with Ben. Ben did not call on anyone by name, did not see anyone apart from Aaron, and never attempted to invite any specific student into the discussion by explicitly calling on them. As we discussed in the previous section, this was Ben's conscious decision as he believed that pressuring students to have their cameras on and calling on them by name would cause students to stop attending his online lessons.

From the excerpt from Ben's lesson, it seems that his view of online teaching limited his teaching practices, which then did not match his views on active student participation – the lessons did not develop into smooth turn taking and spontaneous interactions allowing the creation of new knowledge. Ben perceived the online mode of teaching as limiting, a poor substitute for contact teaching, and, believing that the online mode was only a substitute, he did not change his approach to teaching. His employed teaching practices did not bring his desired level of active student participation.

3.3 Measuring active student participation

In the previous section, we indicated some differences in student participation between the lessons of the two teachers. We now provide quantifiable measurements of active student participation in our teachers' lessons aiming to link the two teachers' teaching practices with their success in promoting active student participation. The quantitative part provides evidence that the two teachers' lessons differed in the length of student talk as well as in the number of actively participating students. The quantitative part further breaks communication in the lessons down into the discourse moves described by Hardman (2016) and allows for a comparison of the active student participation between the two teachers' lessons from the point of view of the initiation moves employed by the teachers, the resulting student response moves, and the follow-up moves. Finally, the quantitative part shows active student engagement in the observed lessons in terms of interactions.

The two teachers differ in terms of the output of their efforts to maintain active student participation. Cora was more successful than Ben both in activizing a larger number of students and in maintaining higher ratios

of student talk time. Table 1 shows the verbal engagement rate of the students in the lessons as well as a breakdown of both teacher and student talk. The engagement rates in both teachers' lessons were consistent across the three observations. However, in Ben's lessons, only around a quarter of students engaged at least once during the lesson; in Cora's lessons, it was half of the students. In Each lesson, approximately twice as many students engaged with Cora as with Ben. Similarly, the student talk in Cora's lessons was over twice as frequent as in Ben's lessons, with an average 25.4% of the time in Cora's lessons spent on student talk, compared to 11.7% in Ben's lessons.

Table 1
Student engagement and talk

BEN (32 students)	**lesson 1**	**lesson 2**	**lesson 3**	**average**
engaged students	8 (25.0%)	8 (25.0%)	7 (21.9%)	7.67 (24.0%)
teacher talk	80:35 min (90.6%)	37:30 min (84.6%)	47:35 min (83.4%)	55:13 min (88.3%)
student talk	8:20 min (9.4%)	6:50 min (15.4%)	6:50 min (12.6%)	7:20 min (11.7%)
CORA (27 students)				
engaged students	13 (48.2%)	14 (51.9%)	16 (59.3%)	14.33 (53.1%)
teacher talk	60:15 min (78.5%)	56:35 min (61.4%)	74:00 min (85.1%)	63:37 min (74.6%)
student talk	16:30 min (21.5%)	35:35 min (38.6%)	12:55 min (14.9%)	21:40 min (25.4%)

Both teachers provided comparable and ample opportunities for students to actively participate, yet they greatly differed in the response rates and the number of students engaging with them. Furthermore, the two teachers greatly differed in the use of the follow-up moves. Table 2 gives a breakdown of the discourse moves seen during the observed lessons. Both Ben and Cora employed comparable numbers and types of initiation moves – predominantly open questions – however, in Cora's lessons, student questions were more prevalent. A remarkable difference comes with the response moves. Ben had 34.0% of his questions left with no response, while only 11.1% of Cora's questions were unanswered. Cora (68.4%) also received elaborate answers more often than Ben (44.7%). Differences between the two teachers also appear with the follow-up moves; while Ben most often employed uptakes (30.9%) as a move following student response, Cora mainly employed comments (50.9%). Since uptakes – compared to comments – give students opportunity to actively participate, it becomes even more surprising that Ben had a much lower number of engaged students and a much lower ratio of student talk than Cora.

Table 2
Breakdown of the discourse moves

BEN (32 students)		**lesson 1**	**lesson 2**	**lesson 3**	**average**
initiation		36 (25.4%)	5 (13.2%)	8 (18.2%)	16.33 (21.9%)
	open	21 (58.3%)	4 (80.0%)	7 (87.5%)	10.67 (65.3%)
	closed	6 (16.7%)	0 (0.0%)	1 (12.5%)	2.33 (14.3%)
	check	9 (25.0%)	0 (0.0%)	0 (0.0%)	3.00 (18.4%)
	student	0 (0.0%)	1 (20.0%)	0 (0.0%)	0.33 (2.0%)
response		58 (40.9%)	16 (42.1%)	20 (45.5%)	31.33 (42.0%)
	no	25 (43.1%)	2 (12.5%)	5 (25.0%)	10.67 (34.0%)
	brief	16 (27.6%)	1 (6.3%)	3 (15.0%)	6.67 (21.3%)
	elaborate	17 (29.3%)	13 (81.3%)	12 (60.0%)	14.00 (44.7%)
follow–up		48 (33.8%)	17 (44.7%)	16 (36.4%)	27.00 (36.2%)
	acknowledge	7 (14.6%)	2 (11.8%)	2 (12.5%)	3.67 (13.6%)
	praise	2 (4.2%)	2 (11.8%)	0 (0.0%)	1.33 (4.9%)
	negate	1 (2.1%)	0 (0.0%)	0 (0.0%)	0.33 (1.2%)
	comment	14 (29.2%)	2 (11.8%)	6 (37.5%)	7.33 (27.2%)
	probe	12 (25.0%)	4 (23.5%)	2 (12.5%)	6.00 (22.2%)
	uptake	12 (25.0%)	7 (41.2%)	6 (37.5%)	8.33 (30.9%)
CORA (27 students)					
initiation		20 (22.7%)	11 (10.8%)	16 (17.4%)	15.67 (16.7%)
	open	11 (55.0%)	6 (54.6%)	8 (50.0%)	8.33 (53.2%)
	closed	4 (20.0%)	0 (0.0%)	3 (18.6%)	2.33 (14.9%)
	check	3 (15.0%)	3 (27.3%)	0 (0.0%)	2.00 (12.8%)
	student	2 (10.0%)	2 (18.2%)	5 (31.6%)	3.00 (19.2%)
response		37 (42.1%)	43 (42.7%)	37 (40.2%)	39.00 (41.5%)
	no	6 (16.2%)	4 (9.3%)	3 (8.1%)	4.33 (11.1%)
	brief	8 (21.6%)	5 (11.6%)	11 (29.7%)	8.00 (20.5%)
	elaborate	23 (62.2%)	34 (79.1%)	23 (62.2%)	26.67 (68.4%)
follow–up		31 (35.2%)	48 (47.1%)	39 (42.4%)	39.33 (41.8%)
	acknowledge	5 (16.1%)	0 (0.0%)	5 (12.8%)	3.33 (8.5%)
	praise	2 (6.5%)	0 (0.0%)	1 (2.6%)	1.00 (2.5%)
	negate	1 (3.2%)	0 (0.0%)	1 (2.6%)	0.67 (1.7%)
	comment	16 (51.6%)	27 (56.3%)	17 (43.6%)	20.00 (50.9%)
	probe	4 (12.9%)	15 (31.3%)	7 (18.0%)	8.67 (22.0%)
	uptake	3 (9.7%)	6 (12.5%)	8 (20.5%)	5.67 (14.4%)

The lessons of our two teachers also differed in the ways interaction took place – while Ben's lessons were heavily teacher-centered with student participation taking place mostly with exchanges between Ben and his students, Cora managed to move toward a student-centered instruction model with student participation taking place also with exchanges between the students. To put the active student participation into the context of who interacted with whom, we visualize the interaction patterns in the lessons in the form of social networks (Figure 1). During Ben's first two lessons, all communication was teacher-centered, with communication going from teacher to students and back. In Ben's third lesson, a spontaneous interaction between four students appeared; however, most of the interaction was still teacher–student and student–teacher. Student–student interactions were present in all three of Cora's observed lessons; it was most prevalent during the second lesson, when eleven students were engaged in some form of student–student interaction.

The quantitative part of the study shows several striking differences in active student participation between the lessons of our two teachers. First, it shows that even comparable invitations for students to actively participate may result in dramatically different student engagement. Both teachers provided predominantly open questions, yet the results differed. Twice as many students verbally engaged during a lesson at least once in Cora's lessons compared to Ben's lessons. Furthermore, on average, the student talk in Cora's lessons covered twice as much time as in Ben's lessons. Despite Ben employing more uptakes than Cora – in theory, this should have led to higher student participation as it explicitly gives students space to enter the discussion – it did not have the desired effect. This elaborates what we saw in the lesson excerpts – Ben posed many open questions and he used uptakes and probes when he received answers; however, the students were mostly not receptive, lessons were often filled with silences, and only a small number of students were willing to enter the discussions. The data show that the two teachers also differed in the occurrence of student–student interaction despite providing quantitatively equal opportunities for students to actively participate. This resulted in Ben's failure to achieve his idea of the ideal lesson in which he would be only a moderator of the discussion, while knowledge would be constructed by the students spontaneously engaged in discussions with each other.

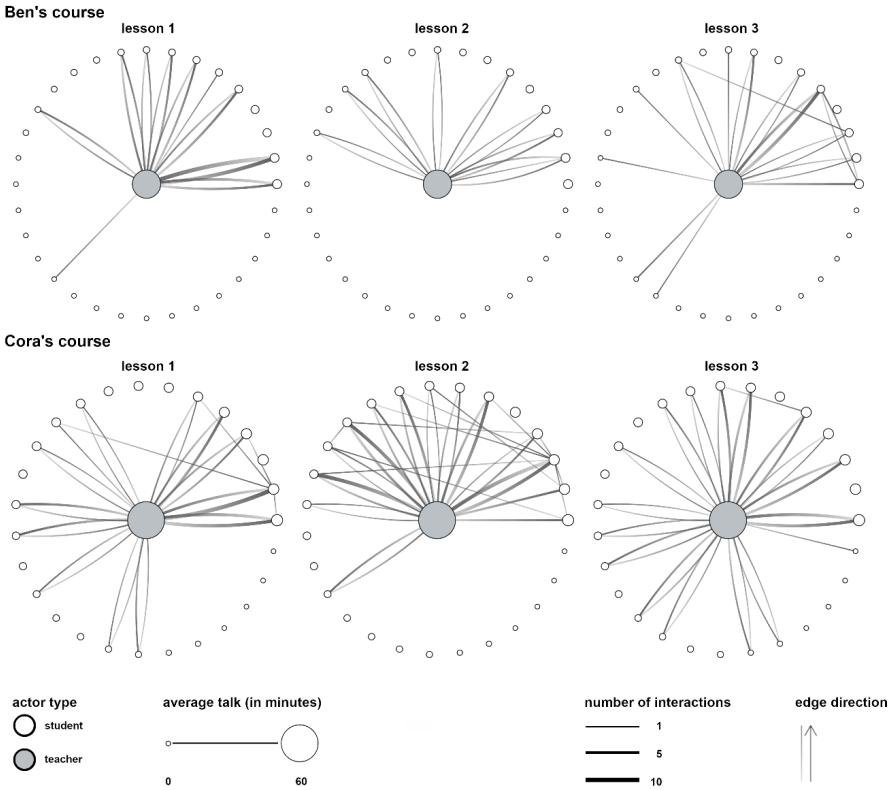

Figure 1
Interaction patterns

Discussion and conclusion

Our study shows that even if a teacher has rich teaching experience, provides ample opportunities for students to participate, and, apart from having no experience with online teaching, possesses all the necessary knowledge and awareness of how to have discussion-rich lessons, it does not mean that the teacher will be able to maintain active student participation in the online mode during ERT. We illustrate this with the cases of two teachers – Cora and Ben – differing in their ability to create online lessons with active student participation. We show that both Cora and Ben had the necessary knowledge of the importance of active student participation, and we show that active student participation in their lessons was a priority for both teachers, as they considered it essential for an effective teaching process. Both teachers also perceived ERT conditions as challenging. However, while Cora saw the necessity to alter her teaching practices in the online mode, Ben saw online teaching only as a deficient substitute for face-to-face teaching, and was

unwilling to change any practices from what he was used to in the face-to-face mode. Our two teachers' views of online teaching reflect the wider functionalist-authenticator spectrum of teachers outlined by Šeďová et al. (2021), with Cora falling into the functionalist and Ben falling into the authenticator side of the spectrum. The two differing views of online teaching influenced our two teachers' practices: Cora decided to change her pedagogical approach and saw the transition as an opportunity for professional development; Ben decided not to change anything, saw online teaching only as a substitute for face-to-face teaching, and considered the idea of online teaching serving as a substitute for contact teaching to be futile. Cora adopted the use of new online learning tools beyond the required Microsoft Teams; by asking the students to have their cameras on and taking pictures of the group, she simulated a face-to-face environment and built a sense of community among the students; by calling on students by name, she tried to keep interaction with her students personal. Ben did not make use of even the most basic tools available – e.g., the cameras – and employed methods that might work in contact teaching but are uncertain in an online setting (such as the awkward silences). The resulting active student participation in the lessons of our two teachers then differed dramatically, with Cora being successful in activizing twice as many students, maintaining twice as high ratios of student talk time, and stimulating student–student interactions much more often than Ben.

Our results concerning teachers' views of online teaching during ERT mirror previous research. Analogously to the statements of the teachers included in the studies by Ferri et al. (2020), Le and Truong (2021), Petillion and McNeil (2020), Shim and Lee (2020), Thurab-Nkhosi et al. (2021) and Walker and Koralesky (2021), both of our teachers perceived student engagement and interaction with students to be more challenging in the online mode than in contact teaching. Also, in accordance with the statements of the teachers included in the study by Mishra et al. (2020), one of the biggest challenges in online teaching for our two teachers was the inability to read student faces. Our results therefore support the condition extensively reported in the previous literature – during the mass transition to online teaching, teachers mostly perceived the online mode as challenging and feared that the online mode would be detrimental to active student participation.

On the other hand, our results concerning the degree of active student participation in university lessons stand in contrast to previous findings. While Børte et al. (2020) reported university lessons to be mostly teacher-centered with little space for student active learning and engagement, we found that both of our teachers provided ample opportunities for students to actively participate, with both teachers posing large numbers of open questions to students in each of the observed lessons. Similarly to Børte et al. (2020), Hardman (2016) found university lessons to be dominated by teacher closed

questions, student short answers, and teacher acknowledgements. However, we found both of our teachers posing mainly open questions, students reacting mostly with elaborate answers, and teachers following up with discourse moves (uptakes, probes, and comments) trying to expand the ongoing discussion. The difference between our teachers and teachers from the studies by Børte et al. (2020) and Hardman (2016) may be the result of both of our teachers having robust knowledge of the importance of active student participation and their strong willingness to make their lessons open to active student participation.

While both of our teachers provided ample opportunities for their students to actively engage – both teachers posed many and mainly open questions – Cora was much more successful in activizing her students than Ben was. This suggests that the key guidelines for teachers on how to provide lessons with active student participation (e.g., Fischer and Hänze, in press) based on actively posing questions and incorporating student contributions into teaching may not be sufficient. Quite the opposite: while actively posing questions and incorporating student contributions into teaching are necessary prerequisites for active student participation, our findings suggest that, in the context of online teaching, further teaching practices are necessary to maintain active student participation.

Our study therefore has several implications for educators seeking to have students actively participating in their online lessons. To maintain active student participation, it is useful to promote multivoicedness by incorporating contrasting student views into discussions. Furthermore, it is important to maintain interactions with students that are as personal as possible, e.g., by calling on students by name or by incorporating activities aimed at building a sense of community among the students. However, maintaining personal interaction is difficult when the students' cameras are off. We therefore suggest that teachers aiming to have interactive online lessons ask their students to have their cameras on, which also makes it possible to read students' non-verbal cues, an issue mentioned by both of our teachers. We also find the use of teaching tools beyond the videoconferencing tools to be useful in promoting active student participation.

Our findings further imply that asking teachers to simply shift contact lessons into an online space – a prevalent approach during the COVID pandemic – does not automatically result in teachers having the same effectiveness in delivering interactive lessons as they may have had in contact teaching. We therefore suggest abandoning the idea of online teaching serving as a substitute for contact teaching. Instead, universities forced to transition into an online mode should perceive online and contact teaching as two distinct entities requiring different teaching practices to achieve the same outcomes, and this view should be shared by the teachers. It is natural that when people find

themselves in situations they had not experienced before, they transfer practices from situations they are familiar with. However, the notion of online teaching being a substitute for on-site teaching was detrimental to active student participation in Ben's lessons. Ben relied on practices he employed during contact teaching, and this limited his ability to create lessons with active student participation as oftentimes these practices were just not effective in online setting.

While our study is based around the ERT during the COVID pandemic, the findings of our study are relevant for any situation in which educators need to shift their teaching into online mode. It is unclear what higher education will look like once the pandemic is over, but with online teaching on the rise even before the pandemic, it is plausible to say that online teaching will continue to play a substantial part. Many teachers' perceptions of online teaching will fall close to those of Ben. Understanding how teacher perceptions influence their teaching practices and ultimately affect active student participation in their lessons will therefore be crucial to ensure quality university education in the future.

Our study is limited in its design – a case study with a sample of two teachers. While we attempt to grasp the problems of active student participation in synchronous ERT at a university from two contrasting viewpoints and suggest what may or may not lead to the desired online active student participation, we cannot generalize. Also, while we link teachers' attitudes toward the online teaching during ERT to the active student participation in their lessons, we do not know how to change teacher attitudes to potentially influence pedagogical outcomes during ERT. Further research would therefore benefit from studies investigating synchronous online interaction on a large scale and from studies investigating how teachers' negative perceptions of online teaching can be changed to influence their teaching practices.

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