Lecture Capture in Finnish High Schools: Teachers' Perspectives

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Abstract: The introduction of lecture capture technology has had a significant impact on teaching practices and forced teachers to rethink how lessons are delivered and experienced. While its use is widely examined in higher education context, its role in secondary education, particularly in high schools, has received less attention. Teachers are at the heart of how lecture capture becomes part of everyday classroom practice. As they work to integrate the technology into their teaching, many find themselves navigating a tricky balance between their educational goals and the demands that technology can bring. Some worry that using lecture capture might lead to less interaction with students, a loss of spontaneity during lessons, or even a shift in their role from being a responsive educator to feeling more like a performer in front of a camera. Nonetheless, teachers acknowledge the potential of lecture capture to support differentiated and self-paced learning. This study explores Finnish high school teachers' perspectives on lecture capture through interviews with eight STEM teachers. The study also includes a longitudinal dimension, as two teachers were interviewed in 2012 and 2017, and their legacy regarding lecture capture in the case high school was frequently referenced in the 2022 interviews. This long-term perspective reveals that teachers consistently view lecture capture as a student-centred service. They are generally willing to produce recordings to support student learning, even though it demands additional effort. Editing and distributing materials is time-consuming and only partially supported financially by school administration. As a result, the use of lecture capture rely heavily on the individual commitment of teachers. Furthermore, the interviews highlight a need for formal training that addresses both the pedagogical and technical aspects of lecture capture. While schools may benefit reputationally from offering recorded content, the responsibility for implementing and maintaining the system often falls on individual teachers without adequate institutional backing or financial compensation. These findings highlight the importance of recognizing teachers' perspectives in the development and implementation of lecture capture practices in secondary education. If the technology is to enhance rather than burden teaching, greater institutional support, sustainable practices, and subject-specific professional development are essential.

Keywords: Lecture Capture, High School, STEM, Teachers' Perspective

1. Background

The use of lecture capture technology – i.e. the use of digital technology to record, store, and distribute lectures (Witthaus & Robinson (2015) – changes the way teachers deliver, organize, and share their instructional content. While the majority of research has focused on universities, there is growing interest in its use in secondary education, particularly in high schools. This research avenue brings valuable insights from high school teachers themselves, who are in a key role to comment on how lecture capture fits with their teaching style, lesson planning, and the everyday dynamics of their classrooms.

Teachers' reflections often reveal a tension between pedagogical objectives and technological practices. Freed et al. (2014) observed that teachers reflected on how recordings negatively affected their classroom dynamics, spontaneity, and sense of control. Similarly, Hall and Ivaldi (2017) found that institutional efforts to standardize lecture capture frequently conflicted with teachers' desire for autonomy and flexible pedagogy.

Dommett, Gardner, and Van Tilburg (2019) highlighted concerns among teachers that recording lectures could reduce student interaction in the classroom. When students rely too heavily on recorded materials, the communal and real-time aspects of learning may diminish. This apprehension about the potential decline in lecture quality was further validated in later studies (Dommett et al., 2020), although students continued to value the flexibility recordings offered.

Divergences between teacher and student perspectives often stem from differing conceptions of the lecture. For students, lecture captures represent alternative ways to deliver instructional content, while teachers emphasize interaction and pedagogical methods that support learning (Dommett et al., 2020). This divergence is significant in high school context in particular because high school teachers serve not only as content experts but also as developmental guides who support students' broader growth.

Recording lectures introduces new cognitive and emotional demands on teachers. Johnson and Renner (2012) found that high school teachers implementing flipped instruction experienced empowerment and uncertainty. The shift from content deliverer to learning facilitator requires both training and re-evaluation of professional identity. Teachers may come to view themselves as performers on camera rather than educators engaged in authentic classroom interaction (Sumer, et al., 2018).

Subject-specific perspectives influence how lecture capture is perceived and used. In STEM education, Rahman and Shah (2018) found that social and behavioural factors shaped attitudes toward recording. Teachers were worried about cognitive load, misunderstandings, and depersonalization as potential challenges. On the other hand, recordings can address learning gaps and facilitate deeper understanding of challenging topics. Al Nashash and Gunn (2013) showed that engineering students used recordings to review difficult topics, improving comprehension and exam performance. Wiese and Newton (2013) found that biology students strategically used recordings to support learning, especially before assessments.

In computer science courses, recordings support self-directed, data-informed learning. Mark and Vrijmoed (2016) reported that students who watched recordings demonstrated better content mastery than those who did not. The ability to pause and replay step-by-step explanations was particularly beneficial for learners with varying skill levels. This function was seen as helpful in subjects like mathematics and other quantitative disciplines. E.g. Owston, Lupshenyuk, and Wideman (2011) reported that students used recordings effectively to understand problem-solving methods and review calculations.

In social sciences and humanities, benefits are less clear-cut. Dona, Gregory, and Pechenkina (2017) noted that while students appreciated the accessibility of recordings in fields such as education and communication, they also valued interactive classroom settings for engaging with abstract ideas. In these subjects, recordings often serve as supplementary rather than replacement resources.

French and Kennedy (2017) emphasized that successful integration of lecture capture requires alignment with subject-specific learning goals. In theoretically and technically oriented fields, recordings support efficient review. In contrast, experiential disciplines like performing arts or architecture benefit less from recorded formats.

Witthaus and Robinson (2015) argue that while lecture capture can benefit most disciplines, its pedagogical application must be tailored. For example, science teachers may focus on clarity and pacing, while humanities teachers may emphasize narrative flow and thematic structure.

Banerjee (2021) and O'Callaghan, Neumann, and Jones (2017) stress the importance of discipline-specific research to avoid oversimplification and one-size-fits-all solutions. Educational institutions must consider subject-specific needs, student behaviour, and pedagogical goals when adopting lecture capture technologies.

Implementing lecture capture is not merely a technical shift but a pedagogical transformation that requires new competencies from teachers. Thus, teacher training is essential for effective and learning-supportive use of recording technologies (O'Callaghan, Neumann, & Jones, 2017).

Teachers need technical training covering equipment and software use, including microphones, recording tools, and editing platforms. While many teachers adopt technology quickly, technical support alone is insufficient. Without pedagogical support, some teachers may feel insecure while recording and may limit creativity or interaction in their teaching (Freed, Bertram, & McLaughlin, 2014).

Pedagogical training should help teachers design instruction with recordings in mind, focusing on clarity, structure, and the use of visual aids. Witthaus and Robinson (2015) highlight the need for subject-specific approaches. For instance, math teachers may benefit from guidance on capturing board work, while language teachers require support for vocal delivery and nonverbal communication.

Teacher education should also address attitudes toward technology. Banerjee (2021) notes that positive attitudes and experiences support technology adoption, while concerns about student passivity or declining instructional quality can hinder uptake. Also, opportunities for teachers to share experiences and learn from peers are essential. Barokas, Ketterl, and Brooks (2010) emphasize that without proper support, teachers may feel that technology distracts them from their core activities, namely teaching.

In summary, lecture capture can function as a valuable and effective tool to support teaching and learning, but its implementation must be context-sensitive and guided by teacher perspectives. In high school education, where developmentally appropriate pedagogy, student-teacher relationships, and institutional structures differ considerably from the norms of higher education, teachers' voices are essential to the successful adoption of this technology. As this perspective has received limited attention in recent empirical research, this paper explores how Finnish high school STEM teachers make sense of and navigate the use of lecture capture technology in their classrooms, and what kinds of institutional support or challenges shape its long-term use.

2. Methodology

The research data was collected through interviews conducted in 2012, 2017, and 2022. Two interviewees remained the same in the 2012 and 2017 interview rounds, but in the last interview round, six other STEM teachers were interviewed. However, the first interviewed and later retired teachers were frequently mentioned as pioneers of lecture capturing at the case high school. Some of the interviews were done in pairs due to the teachers' preferences and schedules.

The semi-structured interviews included factual questions concerning, among other things, the duration of the teachers' teaching experience, the use of lesson recordings in teaching, and training related to the use of recordings. Most of the questions focused on the teachers' goals, experiences, and evaluations regarding the use of lesson recordings as a support for teaching and learning.

A temporal dimension was added to the second and third interview rounds, in which teachers were asked, for example, how the use of lesson recordings had changed over the past five years. In the most recent interviews, teachers were also asked about their experiences of possible changes in the use of lecture recordings caused by the COVID-19 pandemic. However, this topic is beyond the scope of this paper.

The recorded interviews were transcribed and carefully read before more systematic analysis using the Atlas.ti analysis software (cf. Robson et al. 2022). We focused on teachers' motivation for and understanding of lecture capture and their personal attitudes towards it. The open codes of the first inductive analysis round were later classified into 18 sub-categories and further into five categories: service, value creation, external motivation, organizing, and capabilities. All of these categories are summarised and explained with quotations in the next section.

3. Findings

3.1 Lecture Capture as a Service for Students

Teachers treat lecture capturing as a service for their students that they are willing to do without an extensive financial reward. Although lecture capture was highly automated at the high school in this case, requiring only starting and stopping the recording, teachers still invested time in editing and sharing it. Some teachers uploaded captures to the blog, where they also provided more information and homework for those who have been absent. Even teachers who made only minor modifications to the capture wrote some corresponding messages for their students.

"Well, let's say if it's just one assignment [one teaching hour capture], then it's about 20 minutes and everything's done. That includes the written message and all. I've done a few of those this winter too. Just trying to support the students that way." (interview 2/2017)

All teachers tried to share lecture captures in the same day.

"Usually I upload it, or 90% of the time, right after the lesson, so it's available to watch immediately, because the [absent] student is at home and might only be able to study between eight and four." (Interview 4/2022)

The volumes of lecture capture were tremendous at the case high school. In 2012, teachers reported that both of them had captured 300 hours of lectures a year. By spring 2012, both interviewed teachers said they had systematically recorded their teaching for about three years. What had changed during the years was that at first, teachers tried to capture the same lectures separately for each student group, although the content remained the same. The teachers justified this overlap, among other reasons, by noting that students preferred their own teacher's instructional style and recordings specific to their class.

"You can't use the old recording because it doesn't quite fit. It's different. Each group has its own, even if it's just a presentation in front of the class, there's still something about it. You really have to make a separate one for each group." (Interview 2/2017)

By 2022, teachers said that they made several recordings, chose the best one and shared that with all the students regardless of their group. Sometimes, teachers also encouraged students to watch recordings from a parallel course taught by another teacher.

"And then students might ask, if they've gotten used to a certain teacher's style, they might say, like, hey, did you teach this course last year too?" (Interview 5/2022)

However, teachers were not willing to share their videos with teachers of other schools although it was technically possible.

"It might partly be because there's such a high threshold for putting something out there — like, 'This is my teaching, my remote lessons,' and feeling like it's not good enough, like it's just silly stuff. So the teacher doesn't feel comfortable sharing it." (Interview 1/2012)

3.2 Value for the Students

Lecture capturing was, for the most part, a voluntary initiative on the part of the teachers.

"I do it more because some students find it helpful, so that's why I keep doing it. I've never really thought of it like, "I'm publishing this because I think it's great" or "this is a really good video of mine." I've seen it more as if some students benefit from it, then I'll upload it so that those who find it useful can take advantage of it." (Interview 4/2022)

The value for students varied due to their personal needs. For some, the value was realized so that they did not have to take notes during the live lesson. For others, it covered absences due to sickness or for athletes, absences due to training or competition trips.

"Just today, I had a student who had been in Portugal for a week and a half, two weeks, on a training camp, and they said it was nice to come back and feel like they'd still been part of the teaching the whole time. In the old system, you could say the course would've basically ended there for them." (Interview 1/2012)

Teachers, however, reminded that lecture captures are only supplementary means for students, and cannot cover the whole course. By 2017, teachers said that the frequency of watching captures decreased with one exception: Some athletes watched all the lecture captures and did not participate in live sessions. The number of users, however, was not important for teachers.

"Ultimately, if even one student benefits greatly from this, then it's worth it." (Interview 6/2022)

3.3 Motivation to Capture and Share Lectures

Teachers' willingness to serve students and their learning was not the only motivation for teachers to record their lectures. The recordings also served as background material for teachers if they had to be absent.

"And what if we think of a scenario where there's a one-day or one-week training session, and a substitute teacher comes in to teach the same material. The teacher still thinks, 'I'll make sure to provide a recording too, just in case.' Even if the substitute is good, the students can watch my explanation afterwards to see if it helps them understand even better." (Interview 1/2012)

Lecture captures diminished the need for remedial instruction. The monetary compensation for recording lectures was first based on the costs for remedial instruction hours, but changed into a fixed payment over the years.

"So yeah, the monetary compensation, well, I think it's at a pretty reasonable level. It's not exactly a goldmine, but it doesn't have to be. It's just a small extra on the side of teaching, and that's fine." (Interview 5/2022).

Teachers were happy with this change because it decreased bureaucracy. Still, the money was not reason to record lectures but a nice bonus for the job they might have otherwise do.

"I had been at this high school for a couple of years already and had been recording like crazy. Then at some point, [another teacher] just came up to me and said, 'You know, you get paid for those recordings.' --- These days, I'm the one who makes sure to tell the new people right away 'Did you know you can get compensation for this?" (Interview 5/2022)

Although lecture capture is widely used these days, in the 2010s, it was also a way to attract high-quality students to the case high school. This was seen in student surveys about their criteria to choose a high school over others.

"46% of the students said that it partly influenced their decision to apply to this school that we advertised the active use of videos to support teaching, including lecture capturing and so on. I'd argue that it's still one of the key factors behind our school's popularity." (Interview 2017)

3.4 Organizing the Lecture Capturing to Meet Expectations

Teachers wanted to serve their students by providing "full-service package" (Interview 1/2023) that included a lecture capture, written description of the content, related homework and sometimes other additional material. Individual teachers, however, used different media to deliver this content such as a blog, an online platform provided by the case high school, or the comprehensive digital learning platform widely used in the Finnish education system. Teachers gradually started to record only the more concise theoretical parts with few examples, rather than the entire lecture as in the 2010s. As a result, the need for tagging the thematic content declined over time.

Similarly, teachers spent more time in editing their lecture capture videos and adding new features between video clips.

"When I made those videos for Chemistry 1, I enriched them using H5P tools to include things like interactive multiple-choice quizzes. The idea was to activate the student a bit — to give them some kind of feedback on how they're doing and what they might need to focus on. Good multiple-choice questions help check whether the previous topic has been understood." (Interview 6/2022)

This transformed teaching more towards a self-study direction. Previously, teachers kept it rare to study the whole course from the videos, but later attitudes changed. This might have been due to better technology and the fact that students were more capable of utilising video-based teaching after COVID-19.

On the other hand, teachers had changed their lecture structures to capture.

"I've also started to think a bit more about the structure of the lesson from the perspective of the recording. I aim for a concise, teacher-led segment of about 20 minutes at the beginning and that's the only part I record. Once the students move on to independent work, that part is not included in the recording." (Interview 4/2022).

After tightening data security regulation and introduction of GDPR, teachers also became conscious to students' visibility and voices in recordings. At the beginning of each semester, students or their parents if they were underage, signed consent form allowing lessons to be recorded. However, many teachers reported edited out individual students from the recording.

All this editing was to support their self-studying and reviewing for exams.

"I just saw from the stats on the math course that students had been regularly watching the videos right before the matriculation exams — they were clearly using them to revise for advanced math." (Interview 5/2022)

3.5 Teacher Training and Technical Capabilities

Teachers were sorry that they did not have enough time to watch their own or other teachers' captures as often as they wanted to.

"Mainly, I just check whether the audio on the video is working, if it's clear, poor, or missing altogether. That's about as much as I've reviewed the videos. I'm sure it would be valuable for my professional development to watch them more thoroughly, but honestly, there just isn't time for that." (Interview 4/2022)

All the interviewed teachers reported that they continuously wanted to develop as teachers and lecture recordings enabled that.

"As a teacher and educator, of course, I would also like to develop professionally— to take the time to watch my videos calmly and carefully, and pick out the parts that worked well. To reflect on what I consider, pedagogically, to be effective," (Interview 1/2012)

In addition, recordings provided didactical freedom to teach same issues through different practices, or to memorise and evaluate the previous years' experiences.

"I use the recordings for two purposes. One, of course, is that students can go back and watch them whenever they need to. But I also use them myself when planning my lessons for the next school year — I go back and watch how I taught the lesson the previous year." (Interview 5/2022)

Although teachers were allowed to watch each other's videos, they rarely did that.

"It could be generally allowed to watch other teachers' recordings and use them as a source of ideas, as training material for teaching a particular topic. You could, for example, take a specific example from a recording and reflect on how the teacher approaches the subject. That, too, could be a potential way to make real use of these recordings." (Interview 6/2022)

Peer teachers, however, were the best support when teachers faced troubles with capturing technology or video pedagogy in general. The first two interviewed teachers were treated as pioneers of lecture capturing, and they helped many take their first steps in video pedagogy.

"The support definitely came from within our own school. When [the first two informants] were getting started with it, I followed, the rest of us followed along after them." (Interview 8/2022)

The technical training had been minimal, and teachers were left to study technology mainly on their own. Thus, some of the features may have not been fully utilised as one of the teachers complained.

"I feel like there are so many features in there that I don't even know about. Maybe a short training session wouldn't have been a bad idea. I just upload the recording, add some explanations, and do a bit of editing, but even that took some digging to figure out." (Interview 4/2022).

4. Discussion

Our analysis brought forward more optimistic views on lecture capturing than was expected in previous literature (e.g Dommett, Gardner, and Van Tilburg, 2019; Dommett et al. 2020). Lecture capture was seen as a service provided by teachers for their students. It serves as an alternative means of course completion, for instance during absences, but also as an option enabled by a familiar teacher when a student is required to transfer to a group taught by another instructor. For students, the value of lecture captures was shaped in a student-centred manner, according to their individual needs. At its simplest, merely being aware that a lecture was being captured was enough for students to focus on following the teacher's instruction during the lesson, rather than taking notes in haste. This potentially indicates that students rely on the recordings and thus develop their study strategies with better timing and precision, identifying the parts where they need clarification (see Kukkonen & Palo-oja, 2014).

Although teachers got a minor financial compensation for lecture captures, the biggest motivation was driven by the willingness to provide students the best possible learning opportunities. Some even recorded their lectures without asking for payment for it. Just as lecture captures helped absent students keep up with the course, they also served as backup material during teachers' absences. Recordings from previous years or parallel courses ensured that teaching could continue even if a substitute teacher was not immediately available. These aspects about clear benefits for teachers themselves were not identified in previous studies.

Recordings were also used for capability development. Teachers were willing to watch their own recordings to develop their pedagogical and didactical skills. Especially in technical skills, they relied on their peer teachers since formal technical training was very limited. The interviewed teachers were experienced, so video pedagogy was either rare or absent from their teacher education. However, there is clearly need for both technical and pedagogical training for lecture capture and other video-based teaching especially if no peer support is available.

Some timely changes were also identified in our study. Teachers aimed to make recordings more concise and engaging as technology advanced in the 2020s. The lesson structure was adapted to meet the demands of recording, and capturing only the teacher-led theoretical part at the beginning of the lesson also aligned with

the tightened data protection regulations in the 2020s. This readiness to change the lecture structures was radically changed from the findings by Freed et al. (2014) and Hall and Ivaldi (2017). One explanation might be that technology, in general, and editing, in particular, have become easier, so reacting to students' requests did not force teachers to change their teaching practices too much. Over time, teachers' use of lecture capture has shifted from recording entire lessons to more intentional video teaching, with edited and curated content tailored for student use, as our longitudinal study shows.

5. Conclusions

The widespread adoption of social media has significantly reshaped the role of video in students' lives, potentially influencing how they engage with educational video content as well. Compared to the literature of lecture capture from the 2010s, our findings provide more flexible and positive insights into the current high school context. Teachers want to serve their students by offering diverse and effective ways to learn, with lecture capture being one of them. On the other hand, capturing the entire lectures has changed into producing shorter and more concise, theoretically driven videos that enable more time for teacher-student communication and training during the lessons. When we conceptualise videos as a form of pedagogical service from teachers to students, we can approach the scaffolding nature between technology and pedagogy with greater detail. As with any service development, iteratively refining the concept and process allows us to meet students' expectations and harness technological opportunities without compromising teachers' pedagogical autonomy. In future research, we need more understanding about both how teachers can guide and inform students to fully benefit from the lecture captures, and second, what teachers can learn from how students watch and use lecture recordings.

Ethics Declaration

This study did not require ethical approval, as it did not involve sensitive personal data or vulnerable groups. Informed consent was obtained from all interview participants prior to data collection.

AI Declaration

The artificial intelligence tool Grammarly was employed to support language editing and assist with reference formatting in accordance with the required style guidelines. All intellectual contributions, including interpretations and critical analyses, are solely the work of the authors. The use of AI tools had no impact on the research design, data collection, analysis, or conclusions.

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