

ICED 2020 proceedings: Enhancing reflection skills with social video learning

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Abstract

In this article we use two cases to demonstrate how instructors can successfully deploy a new interactive video player in their courses to optimise student learning, especially the development of reflection skills via social video learning.

1 Introduction

One 21st-century skill is metacognition (Bialik et al., 2015). Because reflection processes play a significant role in instructor training (Guskey, 2002), the latter is a good opportunity to develop reflection skills deliberately. Awareness of one's own reflection processes is vital for adapting to ever-changing circumstances in a world which features increasingly complex problems.

Video has huge potential for bringing complex situations and processes into learning and teaching situations. However, because it is a densified, complex and fluid medium it is important for the instructor to consider features that promote active learning and help students process information and monitor their own understanding. For this reason ETH Zurich has created a specialised interactive video player, called the "Interactive Video Suite" (IVS), for its Moodle learning management system. Using the IVS, students can add comments and

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graphical marks to videos and answer questions within the video context. Here the potential of situational reflection and social discourse are combined via a method called “social video learning”, which has been in use at various departments at ETH Zurich since 2018.

2 The Interactive Video Suite (IVS) – Concept and functions

The topic of "interactive videos" has become increasingly important in recent years. However, the functional possibilities of most available interactive video tools are limited. ETH Zurich was keen to provide sophisticated features that offered students and instructors multiple possibilities for understanding, analysing and discussing video content in detail. To achieve this, they collaboratively developed and adapted Ghostthinker's "edubreak" tool.

In the IVS, instructors receive detailed reports on all student comments and answers. They quickly gain an impression of their students' reflections, and of their prior knowledge and/or misconceptions regarding a topic or concept.

The functions of IVS can be divided into three parts: comment mode (“Comments”), question mode (“Questions”) and editing mode (“Editing”).

2.1 Comment mode

Students can place comments, questions or graphical marks directly in the video at any point. They can share these asynchronously with other participants, and compare and discuss them. Students can react to each of their peers' comments directly. In this way participants receive direct feedback on their observations.

In addition, instructors can trigger reflection processes by inserting a so-called “trigger question” for students to answer and discuss.

2.2 Question mode

The instructor can insert questions for students to answer using simple editing functions. Three types of question are available:

1. Single-choice: Find the right (or the best) answer. Specific feedback can be displayed for each answer option.
2. Click question: Find a zone in the image (i.e. a dangerous situation).
3. Free text: Enter the answer to an open question.

2.3 Video editing mode

Simple editing functions are provided in the video player itself (e.g. the possibility to insert text or marks into the image or to zoom in). These can help to make existing videos easier to understand or to focus on certain aspects in the image.

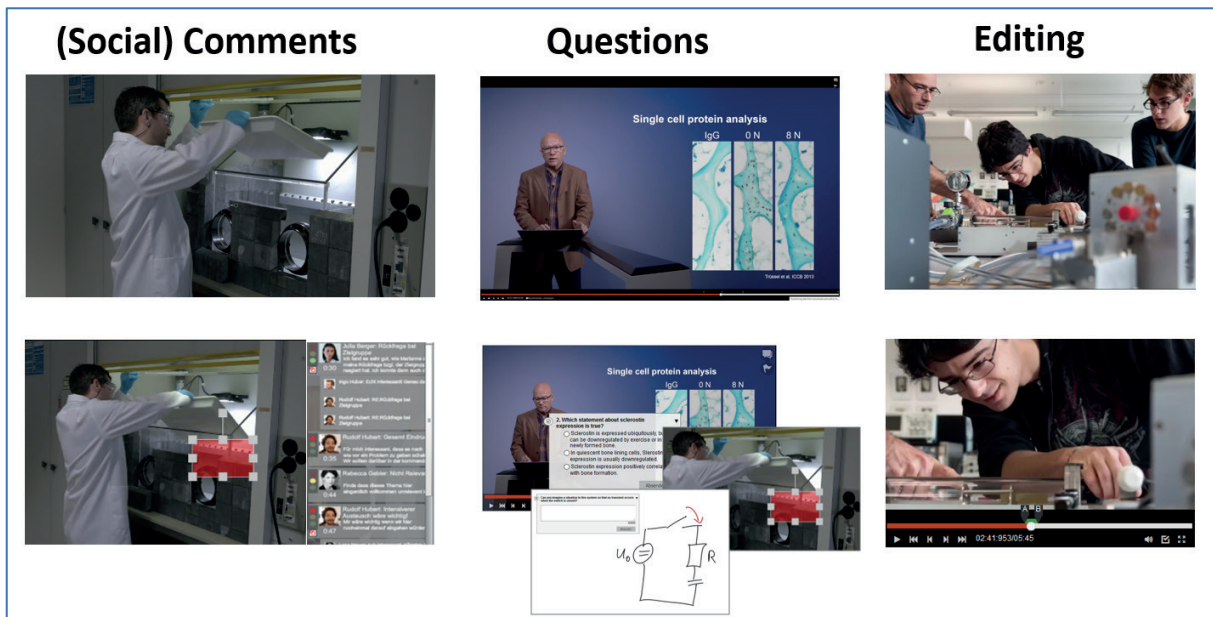


Figure 1: The three functions of the Interactive Video Suite (IVS): Comments, Questions (single-choice, click question, free text) and Editing

3 Case 1: Use of IVS in a biomedical engineering course at ETH Zurich

The course Imaging and Computing in Medicine offered by Prof. Ralph Müller, Dr Patrik Christen and Dr Caitlyn Collins, with approximately 140 students, introduces established fundamental and modern methods of imaging and computing in medicine. It is structured as a seminar with three 45-minute parts. In the first part students study basic concepts via short video lectures in Moodle, after which they post several questions in the videos using IVS. These questions are addressed in the second part, where the instructors may prepare additional teaching material to answer the posted questions and perhaps discuss further questions in a Q+A session. In the third part students form small groups to acquire additional knowledge online or from distributed material and present their findings to the rest of the class following a flipped classroom concept.

IVS allows students to enter questions in a context-specific manner because they add them directly in the videos next to the relevant images. It also fosters peer support through social video learning. The screenshot in Figure 2 displays how comments and questions are embedded in a specific context, and social video learning, where a student's question is answered by another student. Through the Show Comments function, which lists all comments and questions, IVS also offers efficient preparation for the Q+A session.

Simple 1D Cellular Automaton

Grid: [] [] [] [] [] [] [] [] [] []

States: [1] [0] [1] [0] [1] [1] [1] [0] [0] [1]

Neighbourhood: [1] [0] [1] [0] [1] [1] [1] [0] [0] [1]

State-Transition Function	000	001	010	011	100	101	110	111
	↓	↓	↓	↓	↓	↓	↓	↓
	0	1	0	1	1	0	1	0

Source: Shiffman2012

Comments (11/11)

Search.. Filter

I don't really get the neighbourhood array. What's the difference between that one and the states array?

09:31

I think they just want to show you, that each cell (with its state) has neighbours -> the cell to the right and left.

Create comment

09:31:982/16:26 x1.00

Figure 2: Example of embedded comments and questions using social video learning

Students entered questions in IVS in all course videos and commented on, discussed and answered other students' questions in most videos. Collecting the questions via IVS's Show Comments function was very useful in gaining an overview and preparing for the Q+A session. If present, social video learning can easily be included in the Q+A session, which then becomes more efficient because questions are linked to the relevant images.

One might consider entering the Q+A answers directly into IVS, but this would limit the instructors to text input only. Images are helpful for answering questions, and thus we will still use additional slides in the Q+A. Many student questions posed in IVS received answers which were in some cases discussed by fellow students. Thus, we conclude that IVS fostered social video learning in the course.

4 Case 2: Didactic basics for Student Teaching Assistants (TAs)

At ETH Zurich we offer an online course for novice Student TAs. We use the Interactive Video Suite to trigger reflection processes using videos (Vohle & Reinmann, 2012). The unique feature of the tool is that it is user-guided, e.g. the young instructors can comment on and discuss sequences such that their thought processes become visible. The videos show what is going on in class from two perspectives: from the instructor's point of view, and from the angle of students' actions (Dror et al., 2011). For educational developers this presents a great opportunity to deliberately trigger thought processes which may enhance TAs' metacognitive skills.

To identify effective video sequences that promote the competences targeted, we collected comments from a course piloted in 2019/2020 with 89 Student TAs and analysed the answers to the questions posted. The answers were richer when students saw a direct connection to their own teaching and learning experience (Figure 3).



Montag, 20. Januar 2020, 14:25

If you think of your own studies and courses. Was it usually clear what you were supposed to be able to do at the end of the course? How did you know what you are able to do after class or after the semester?

Donnerstag, 19. März 2020, 15:43

Mostly, learning objectives were only partly mentioned in the first few lectures, where professors give the general overview and motivation for the course. I think learning objectives were mostly not concretely mentioned, but rather hidden later on the lectures.

Donnerstag, 27. Februar 2020, 18:31

That very much depended on the course, but often it was not mentioned specifically, especially in introductory courses. I often used old exams to know what exactly I was expected to know.

Samstag, 22. Februar 2020, 21:24

This greatly depended on the course, some lecturers made it very clear whereas others simply said that everything was relevant that was taught. Looking at older exams or cheat sheets often gave a good insight into what the course contained.

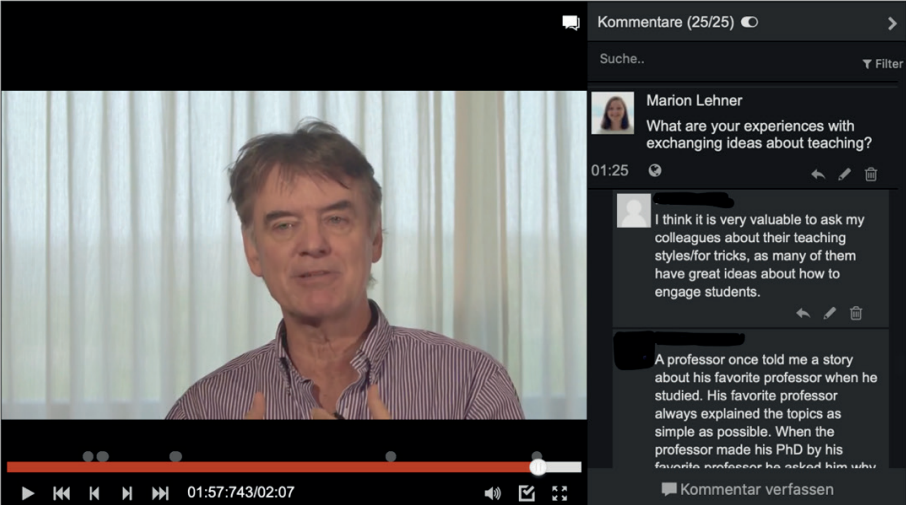
Sonntag, 23. Februar 2020, 11:24

Usually we were not informed about this in the beginning. Old exams give a pretty clear insight whether you know enough. I use them and midterm exams (if available) as my only fitness measure.

Figure 3: Example of embedded answers to an instructor's trigger question using social video learning in *Didactic Basics for Student TAs* (report view for teachers)

Using classroom videos which show the performance of instructors in training can potentially trigger thought processes by exposing threshold concepts, e.g. when participants are exposed to alternative arguments (video comments) about how to teach (Vohle & Reinmann, 2012). These can then be compared to and change existing conceptions of teaching (Johannes & Seidel, 2012). “[The] student instructors’ conceptions of teaching thus emerged from a coherent integration of experience and knowledge” (Entwistle et al., 2000, p. 21). The instructor in Figure 4 asked for comparisons with students’ own experience and Prof. Hattie addressed how to improve learning in the classroom.

Prof. Hattie - How to improve learning in the classroom



Kommentare (25/25)

Suche.. Filter

Marion Lehner
What are your experiences with exchanging ideas about teaching?
01:25

I think it is very valuable to ask my colleagues about their teaching styles/tricks, as many of them have great ideas about how to engage students.

A professor once told me a story about his favorite professor when he studied. His favorite professor always explained the topics as simple as possible. When the professor made his PhD by his favorite professor he asked him why

Kommentar verfassen

01:57:743/02:07

Figure 4: Example of embedded answers to an instructor's trigger question using social video learning in *Didactic Basics for Student TAs* (student view in Moodle)

The challenge in facilitating online/blended instructor training based on classroom videos is to produce or select suitable video sequences that potentially expose these thresholds and foster the development of reflection skills.

5 Conclusions

The above interactive video use cases at ETH Zurich demonstrate that instructors can use student comments and answers to gain important, detailed insights into students' previous knowledge, lingering misconceptions, understanding of principles and reflection skills. It is very important to select video sequences which will potentially trigger reflection processes. Videos closely connected to participants' real-world practice will prompt the most student comments.

At ETH Zurich interactive videos are being deployed more and more. Instructors who use them see their many benefits and are recommending them to peers.

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