

The Effects of Automatic Feedback in Asynchronous Video-Based Recording Class

Boyue Jing^{1, †}, Zixu Li^{2, *, †}

¹Hebei Normal University Hebei, China

²Ocean University of China Shandong, China

*Corresponding author: 18180021009@stu.ouc.edu.cn

[†]These authors contributed equally

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Abstract: Based on previous theories, we find that there is insufficient research on how automatic feedback affects video-based learning. However, video-based learning without teachers has many problems which may disturb study such as the lack of interactivity, whereas automatic feedback can provide immediate assessment and an interactive environment. Thus, it is essential to figure out how automatic feedback affects video-based learning to help us design the automatic feedback for video-based learning to enhance students' learning. There are some suggestions based on the theories of how to design effective feedback and the features of video-based learning. First of all, the feedback should be detailed and all-around which means that it could point out the specific mistake and give reasonable explanations so that learners could realize their weakness directly encouraging them to do positive changes about learning plan and learning contents. Then, it would be helpful for students if educators could give feedback in different ways since it would be attractive so that students could pay more attention in class. Lastly, heuristic feedback is encouraged to be used.

1. Introduction

With the general acceptance of Technology-Enhanced Learning and universal demand for online learning during COVID-19, there are increasing needs about the effectiveness of educational videos. Besides, effective automatic feedback can provide students with assessment and suggestions immediately to correct their wrong answers and improve themselves. For video-based online learning, it is essential to improve the effectiveness of automatic feedback to enhance students' online learning. However, there is not much previous review research on the significance of automatic feedback of video-based online learning, which is a research gap. This paper stresses that automatic feedback is necessary for video-based online learning and provides some suggestions about how to design automatic feedback based on the features of feedback and video-based learning.

2. Automatic feedback

2.1 An introduction of automatic feedback of video class

Nowadays, due to the rapid development of education, numerous educators, teachers and professors have devoted themselves to combining technology with lessons. Knowledge acquisition is not just limited to the traditional classroom [1]. It can be seen that video class as educational technology has become a convenient way for people to gain knowledge. Since they could not only know about knowledge, but they will also receive feedback from the system. The automatic feedback is given by the system providing students reasons, explanations, and suggestions for them to correct their wrong answers and improve themselves. For example, China Moocs, a cutting-edge educational platform offers people various video classes including math science art and whatever subjects they want. For each class, there are professional teachers teaching and explaining the specialized knowledge with attractive teaching methods. After watching video classes, students could also do some tasks or

practices such as raising some open or closed questions. The system will give scores and feedback as soon as students submit their answers. The feedback includes detailed reasons about why that answer is correct and why that answer is right. Then it will show people where you can find certain knowledge from the video class. Last, people would gain some other related classes or practices about your unfamiliar information. Automatic feedback includes some suggestions, explanations, or some other information about the certain knowledge provided by the system according to the performance of students.

2.2 The importance of automatic feedback of video-based class

Feedback is powerful which plays a vital role in the process of video class learning. The importance of automatic feedback includes many aspects. For one thing, students will be beneficial from detailed and professional feedbacks. In such a computerized learning environment, students can get immediate feedback according to their performance [2]. After they submit their answers, they could realize their mistakes and after the guiding and explanation of feedback, learners will correct their wrong answer in that way students will also realize that after watching the video class, they are disadvantageous in certain knowledge urging them to watch the video again or just do some related practices. Therefore, automatic feedback is a useful tool for students to enhance and improve their learning and understanding. For example, after watching a chapter lesson from the China Moocs platform, students will be suggested to do an exam, after submitting their answer, they will gain a score and some feedback immediately. Therefore, from the suggestion and explanation, students could locate the knowledge to the video class so that they could listen to the teachers' explanation to enhance their learning and understanding. After that, according to their mistakes, the platform will also provide some related practices like some multiple-choice questions, fill-in-blanks or just a short video which is an explanation about their mistakes.

For students, this is a good way to improve learning and strengthen memory. For another, reading the feedback will guide students to do a self-evaluation. Students could realize the gap between his or her current limited understanding and an ideal and complete understanding. Expert feedback in the online environment is a kind of metacognitive support that encourages self-reflection and monitoring, leading to changes in future behaviors [3]. It can be seen that when students gain the feedback, they will also see an accuracy especially when they do multiple-choice questions, which will show other students' ability about this subject so that students could realize the differences and they will be encouraged to work hard and explore much more knowledge. In an online environment, professional feedback provided by experts to students is useful to identify learning and pedagogical gaps, foster self-awareness about their learning, reflect on behaviors and self-assessment [4]. According to the feedback, students may receive confidence and promote more positive emotions for learning. This kind of learning that is watching video class to gain knowledge and reading feedback to improve understanding could promote the education of the whole world especially this kind of learning could positively encourage people to study to gain knowledge especially those who could not go to school to receive education and when people could not go out to study like the epidemic period.

3. video-based online learning

3.1 Features and characters of video-based online learning

With the general acceptance of Technology-Enhanced Learning (TEL), video is integrated into class to provide more effective instruction [5]. Numerous educators who explore current instructional technology prefer employing video as a powerful complement to instruction [6]. They always utilize academic videos to provide some additional information or illustrate complex abstractions to enhance students' understandings of knowledge and help failing students to catch up by providing some specific fundamental recording courses [7][8]. Moreover, some new forms of instruction, such as flipped classrooms with a series of benefits embracing student-centred learning and scaffolding, which increases the investigation of video-based learning [5][9]. Thus, there are an increasing number of input contents in the video, and educators design videos as real courses to ensure they can enhance

students' understanding effectively. As a result, videos have become the main medium in many online courses, students even can obtain credits after video-based online learning [7][10].

The use of video-based learning is limited by devices. For instance, in the 20s century, videotapes and CDs are the main teaching media which means that students only watch numbered educational videos in a few specific places, such as classrooms, homes with corresponding appliances [9]. However, the diversity of the devices has increased (e.g., phone, tablet). It provides a lot of conveniences that students can watch videos everywhere and they can choose study time flexibly [11]. More and more students prefer educational videos in online platforms such as Mooc, Khan Academy and Coursera to the traditional courses in school and the function of videos in these platforms is dominant medium instead of the supplement of traditional instruction. Blockade and online learning have become a trend due to the global covid-19 epidemic. Hence, video-based online learning is indeed worthy to be investigated.

Various educational videos are uploaded to online platforms. Some of them are popular science or separate knowledge, this kind of video is always shown on video sites such as YouTube. The video producers always make these videos very interesting and easy to understand, because the purposes of the learners are simply to apprehend this science knowledge or just for fun. Teachers also integrate these videos into their instruction to facilitate learning and provide visual study tools [9]. However, the function of these videos is still the complement to instruction, they are not formal courses. Thus, most of them do not have a complete course structure. The lack of feedback and assessment is general. In other platforms such as MOOC and Khan Academy, there are ranges of academic videos forming complete curriculums. Most of these platforms contain online discussions and interactive functions such as simulations and evaluations. Students not only watch videos but also complete the previous tasks and receive the tests [7]. Video-based online learning has all part of a whole course. The platforms providing an interactive online learning environment are online schools. Hence, students can get credits and various certificates from these platforms.

Millions of students participate in video-based online learning, they come from all over the world, and they have very flexible learning schedules [7]. The interactive videos allow students to stop or play videos anytime with minimal efforts [12]. The question from students may come from any point in the video lecture. Different students always have individual situations, even though they begin the same course at the same time. They have different understandings of the concepts in a lesson during they are watching the academic videos [10]. Thus, it is impractical to employ sufficient teachers to answer all questions and provide feedback to promote learning for every student immediately. The general solution is creating a community that students can discuss with each other and ask community assistants for help [10]. The communication with companies and solving their individual issues in time can stimulate their motivation effectively.

3.2 How does automatic feedback affect video-based learning

One of the advantages of video-based online learning is that it can reach a diversity of assessment tools conveniently [13]. For instance, online learning platform designers can integrate digital assessments into courses without additional devices being applied. Students only need to use one device to obtain the video lectures and assessments instead of extra electronics in a traditional classroom. In addition, many online learning platforms such as Khan Academic provides individual analysis of the learning process by recording students' variety of effective indicators. Students know where they are and how much knowledge they have learned directly through visual tools like bar charts and forms of learning records. Any behaviors related to learning and outcomes of the assessment are recorded and feedback to students immediately, and the online learning platforms provide synchronized visual formative feedback that allows them to know their individual progress and where they need to modify it clearly.

Interactive videos always produce a more satisfactory result than non-interactive videos [14]. The reason is that the interactive videos allow students to choose a specific way to watch videos based on their situation. For instance, students always have different levels of starting points; they have individual existing knowledge before they watch educational videos for study, or they may just want

to figure out one of the concepts in the video lesson. Thus, the part of the introduction may not be necessary for every student, then they can skip it and watch the specific parts. However, how do students know what knowledge they have obtained and what they should focus on in this video? Automatic feedback plays an important role in an interactive distance learning environment which supports students getting immediate feedback according to their performances [2]. Thus, students can learn according to their individual needs and enhance their learning efficiency. Additionally, there is always little assistance from teachers and companies during video-based learning, the self-motivated and self-directed are very important for video-based learning [14][15]. In this case, the immediate automatic feedback stimulates students by providing personalized analysis and encouragement.

4. how to design automatic feedback for video-based class

It is suggested that students should receive effective feedback that can assist them in engaging with the knowledge learned and the skill required to scrutinize and maintain permanent learning [16]. Therefore, educators and teachers illustrate more effective, helpful and useful feedback to assist students to improve learning and enhance understanding. However, the fact that students may have difficulty understanding feedback or knowing how to act on it and are not necessarily receptive to the feedback provided underscore the importance of including the learner perspective in feedback practices [17]. Therefore, it is very essential to develop student feedback literacy which means that understanding, capacities, and dispositions need to make sense of information and use it to enhance work or learning strategies [18]. There are four features of student feedback literacy which are appreciating the feedback process, developing capacities in making judgments, managing effect and taking action to use feedback. These four elements can be used to frame student responses to feedback and advance feedback research and practice [18]. Therefore, the following are proposals about how to design automatic feedback for the recorded video class according to the four features of student feedback literacy.

First of all, the feedback should be detailed and all-around which means that it could point out the specific mistake and give reasonable explanations so that learners could realize their weakness directly encouraging them to do positive changes about learning plan and learning contents. Educators could not give feedback to those high error rate questions because students are in different educational levels, students will benefit from each detailed explanation when they make mistakes. Through feedback, students seek to hone some inadequate or poor knowledge or skills that hinder their learning progress [19].

Then, it would be helpful for students if educators could give feedback in different ways since it would be attractive so that students could pay more attention in class. For example, written feedback is normal for a video class, which could directly illustrate mistakes and suggestions. Video feedback would be more attractive. An expert professionally explains just a certain knowledge which would be much clearer to understand enhancing students' learning and understanding. Different kinds of feedback will also be attractive for learners so that they could pay more attention on recorded video classes. Meanwhile, peer feedback is also suggested, which provided by equal status learners [20]. It means that students give online feedback to those who also watching the same video class because sometimes maybe the explanation from experts would be a little difficult to understand, but peers who may be at the same educational level have their own views which could be easy to be understood. Giving feedback is also a process to use knowledge and practice knowledge since students act as both assesses and assessors [20].

Heuristic feedback is helpful. One of the most important purposes for educators is to establish students' critical thinking. Therefore, after reading or watching some heuristic feedbacks, students would be inspired to think to discover and practice positively. It cannot be ignored that students should be monitored to act about feedback.

When designing feedback for the video class, educators could add some activities to monitor students to correct their mistakes from the feedback. For example, during the video class in MOOC, the screen of students will appear one or more questions sometimes they are multiple-choices questions

which are about the former information. When students submit their answers and correct their mistakes the class should be broadcast again. In this way, students could reflect themselves if they pay attention to this class or not and if they should change their way of learning. Feedback should also be relevant to some related practices. It is suggested that providing practice tasks could promote the understanding of feedback [17]. Therefore, it is vital to monitor students to do these practices like if they do not finish, they will lose the chance to watch the following video.

To sum up, people who are creating video classes should devote themselves to showing better feedback so that it could benefit those who want to gain knowledge and from the feedback, students will be confident and positive to take action to deal with mistakes and they are desire to do more practice to enhance understanding and they are promoted to learn persistently.

5. Conclusion

In conclusion, automatic feedback of recording video class is essential, since watching video class has become a popular way of learning among students, and the feedback plays a great important role in efficient video classes. A rigorous structure of the recording class will be helpful for students to gain knowledge and enhance learning. Meanwhile, detailed feedback will be much more helpful for students to realize their weaknesses and reflect on themselves so that they could make great progress. In this paper, there is a detailed introduction of automatic feedback and recording video class. The importance of automatic feedback and the ways of automatic feedback affect video-based class is illustrated carefully, which aims to lay a foundation for the suggestion of how to design automatic feedback. The purpose of this paper is to help people realize the importance of automatic feedback of video-based classes. Then people could gain some suggestions and ideas after reading the fourth part of this paper, especially those who are devoted to creating perfect video classes. The development of technology inspires teachers and educators to make great efforts to combine education and knowledge with educational techniques. It seems that there are not enough research and papers to show the importance of automatic feedback of video-based class. This paper only presents some immature and incomplete ideas, and there is still a long way to go. Future research should be devoted to the development of the video-based class and how to improve automatic feedback to help students gain knowledge conveniently and freely.

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