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Use of Screencasting for Delivering Lectures and Providing Feedback in Educational Contexts: Issues and Implications

Abstract

There are a variety of factors that affect learning and teaching in educational contexts. Among these factors, teachers play an important role in student learning. Teachers not only deliver materials to learners but also guide learners in their learning experiences. While doing this, teachers allow learners to notice the progress they have been making and motivate them to further improve their skills. Teachers also benefit from the tools technology provides to them, such as screencasting. A screencast is a digital recording of the computer screen output, including audio narration, which was first implemented in order to show learners how to use computer software through demonstrations. Since then, it has also been used in educational contexts e.g. to deliver lectures and to provide feedback. This chapter aims to review the utilisation of screencasting in educational contexts and issues which can potentially emerge in the course of it. With this aim in mind, a brief discussion of screencasting is provided, followed by a review of studies within two streams of research which focus on the use of screencasting for delivering lectures and giving feedback. On the basis of the findings presented, several implications and suggestions have been proposed.

Keywords: screencasting, feedback, educational contexts

1. Introduction

Learning and teaching are affected by numerous factors, such as learning contexts, materials used, and teachers. Among these, motivation gains great importance. As Dörnyei et al. (2015: 72) state, "It [motivation] provides the primary impetus to initiate L2 learning and later the driving force to sustain the long, often tedious learning process; indeed, all the other factors involved in SLA presuppose motivation to some extent".

There are several issues that need attention while trying to increase students' motivation since a variety of factors can affect learning and teaching. As stated by Harmer (2007: 99), learning and teaching a foreign language may be influenced by "the society we live in" and by "the people around us". Teachers act as one of the most prominent motivational stimuli because they are involved in any stage of the

learning process. Teachers' attitudes towards the target language and students play a crucial role in a teaching and learning setting as they are considered a precondition for success and an anxiety-free atmosphere in the classroom.

It is generally acknowledged that motivation is to be created, fostered, and maintained by enthusiastic and well-prepared teachers. Teachers have a variety of social functions that help students achieve learning outcomes. Lewis (2002: 30) states that teachers may have such roles as "baby-sitter", "student resource", "language advisor", "dictator", and "motivator". Certain roles, e.g. "motivator" and "language advisor", are highly valued in language classrooms, while others, such as "representative of author", are not.

Another important source of motivation for both underachievers and high achievers in the language classroom is the feedback provided (Henderson et al. 2014). Feedback on learners' progress seems to be a key factor in keeping learners motivated; as Williams et al. (1997:136) state,

When feedback actually provides information to learners that enable them to identify specific aspects of their performance, it should prove both motivating and helpful to them to move into the zone of next development. If, on the other hand, the feedback fails to provide this kind of information, it could have entirely the opposite effect.

2. Ways of providing feedback

Providing feedback to language learners is crucial as it not only allows learners to notice the mistakes and progress they make but also motivates them to further improve their level of target language competence. Learners need feedback, including corrective feedback, particularly while they are dealing with writing and speaking activities in the target language. They need teachers' comments, suggestions and corrections to improve their proficiency in the target language. Teachers can provide feedback to learners in various forms. It may be provided to individual students, a group of students or the whole class. For written work, feedback may take the form of written comments and suggestions on paper, and while students are speaking, it might be oral. In either case, the main aim of providing feedback is to help learners, by any means possible, notice the language points to be improved and make them act upon the problematic areas accordingly.

With the emergence of technological tools, the ways of providing feedback have changed. Technological tools, such as word processing software, have paved the way for teachers to provide detailed responses to learners' written work (Walker et al. 2013). Furthermore, screencasting, which for years was mainly used to teach how to use computer software through demonstration, has recently changed the

direction in giving feedback (Stannard 2008) and gained importance in educational contexts, especially in providing feedback to learners on their written work.

Traditionally, teachers provide feedback by making handwritten comments on students' work by highlighting the mistakes, underlining the unclear points, and making suggestions regarding both the content and the mechanics of writing. However, by using a screen recorder, teachers can record a video in which they comment and make suggestions on students' typed and/or handwritten work. The main advantage of this type of feedback is that the video including comments, corrections or suggestions can be played, paused or rewound by students as much as they like while they are revising their work based on the oral and visual feedback. It is also possible for teachers to provide more information to students about their work compared to the written commentary.

3. Screencasting

Screencasting is basically a digital recording of the computer screen output, often including audio narration. Screencasting is different from screen shooting or screen capturing in that the former contains video captures – visual components similar to a movie – of the computer screen activity accompanied by audio, while the latter provides images of the screen content at a particular time. There are a variety of tools available that can be used to create screencasts (Stannard 2008; Seery 2010; Hynson 2012; Kiliçkaya 2012; Stieglitz 2013; Siegle 2014; Luongo 2015). Some of them are commercial; however, others are freely available on the Internet, as presented in Table 1.

Table 1. Tools/websites to create screencasts

Tool/Website	URL	Basic Description
BB Flashback Express	http://www.bbsoftware.co.uk/ BBFlashBack_FreePlayer. aspx	It allows recording the screen, with sound and webcam footage, in Flash and AVI formats. It is provided free of charge.
Camstudio	http://camstudio.org	It records screen and audio activity in AVI format. It is provided free of charge.
Camtasia Studio	https://www.techsmith.com/camtasia.html	It is a professional tool used to capture and record activities on the computer screen. Moreover, it is also equipped with a video editor. The price is around \$300.

Tool/Website	URL	Basic Description
Freescreencast	www.freescreencast.com	It is free software with which to create quality screencasts. It also hosts the screencasts.
iSHOWYOU	http://shinywhitebox.com/ ishowu	It is a screen recorder for Mac computers. The basic version can be purchased at \$20.
Jing	https://www.techsmith.com/download/jing	It captures images and records video on the computer, adding visual elements. It is provided free of charge, but the output is limited to five minutes worth of recording.
Open Broadcaster	https://obsproject.com/	It is open source software for screen recording and live streaming, which is provided free of charge.
Screencast-o- matic	http://www.screencast-o-matic.com/	It captures the screen on Windows or Mac computers. It is possible to record online without downloading the software, or alternatively, with an installable application. The free version has recording time limitations.
ScreenFlow	http://www.telestream.net/ screenflow/	It is screencasting and video editing software for Mac computers, which costs around \$100.
Screenr	https://www.screenr.com/	It is a Web-based screen recorder that can be used without installation. The screencasts are hosted on the purveyor's website, and the recorder is provided free of charge.
Wink	http://www.debugmode.com/ wink/	It is primarily aimed at creating tutorials and presentations. It allows saving a variety of outputs and is provided free of charge.

4. Studies on the use of screencasting in educational contexts

Several studies have been conducted on the use of screencasting in educational contexts, which fall into two streams: the studies which focus on the use of screencasting for delivering lectures and those that examine the utilisation of screencasting for providing feedback. Particular studies within the former stream of

research focus on students' academic achievement (Oehrli et al. 2011; Mohamad Ali et al. 2011; Green et al. 2012; Lloyd et al. 2012; Tekinarslan 2013; Guerrero et al. 2013; Morris et al. 2014; Snyder et al. 2014), while others explore students' perceptions towards screencasting (Ford et al. 2012; Marriott et al. 2012; Sadik 2015). Within the latter stream, the studies investigate the effects of screencast feedback as well as students' perceptions of this form of feedback (Haxton et al. 2011; Edwards et al. 2012; Mathieson 2012; Séror, 2012; Thompson et al. 2012; Vincelette et al. 2013; Ahmat et al. 2013; Langton, 2015; Harper et al. 2015). Table 2 provides the aim of these studies as well as the tool used to create screencasts.

Table 2. List of studies on the use of screencasting in educational contexts

Authors	Year	Focus of the Study	Tool/Website	Use
Oehrli et al.	2011	To determine whether screencasts based on library resources facilitate student learning	ScreenFlow	Lectures
Haxton et al.	2011	To explore the perceptions of the students enrolled in a chemistry class where model answers and feedback were provided through screencasts	Camtasia Studio 7	Feedback
Mohamad Ali et al.	2011	To compare materials created using Camtasia Studio, with/without narration	Camtasia Studio	Lectures
Thompson et al.	2012	To explore students' perceptions of the use of screencasts provided as video feedback	Jing	Feedback
Green et al.	2012	To explore students' perceptions of the use of screencasts	no data	Lectures
Mathieson	2012	To explore students' perceptions of audio-visual feedback provided through screencasting as a supplement to traditional feedback (text-only)	Jing	Feedback
Ford et al.	2012	To explore students' perceptions of the use of recorded lectures and the effect of this on students' academic performance	Echo360 classroom capture system	Lectures

Authors	Year	Focus of the Study	Tool/Website	Use
Marriott et al.	2012	To explore students' perceptions and preferences regarding the feedback provided through screencasts	CamStudio	Feedback
Edwards et al.	2012	To explore the use of audio-visual screencasting to provide feedback on student assignments in a distance learning course	Jing	Feedback
Lloyd et al.	2012	To determine the effects of screencasts on learning outcomes in a psychology course in statistics	iShowU & iMovieMaker	Lectures
Séror	2012	To reflect on his own experiences on giving screencast feedback	Jing	Feedback
Guerrero et al.	2013	To investigate the effects of screencast lectures before and after the class in a mathematics for elementary teachers course at university level	no data	Lectures
Ahmad et al.	2013	To investigate the effects of instructor-developed screencasts on students' learning in a mathematics course at a higher education institution	no data	Lectures
Vincelette et al.	2013	To determine students' and instructors' perceptions of feedback provided via screencasting and to compare this form of feedback to traditional written or digital text-based comments and suggestions in a writing class	Jing	Feedback
Tekinarslan	2013	To determine the impact of screencasts on undergraduate students' achievement in a course in spreadsheet applications	Camtasia Studio	Lectures
Snyder et al.	2014	To study the effects of the screencasts developed by a social studies educator on students' engagement in three ninth-grade world history classes	ScreenFlow	Lectures

Authors	Year	Focus of the Study	Tool/Website	Use
Morris et al.	2014	To investigate the impact of screencasts on knowledge acquisition	PowerPoint slides synchronized with audio	Lectures
Langton	2015	To determine the benefits and drawbacks of providing feedback through screencasts in a Japanese class	Mediasite	Feedback
Harper	2015	To analyze the effects of screencasts created for individual feedback on foreign language students' written assignments	Jing	Feedback
Sadik	2015	To determine students' preferences regarding lecture captures and screencast recordings as supplements to classroom lectures	HD Video and Presentation Tube	Feedback

4.1. Screencast lectures and student academic achievement

Oehrli et al. (2011) investigated whether students as inexperienced library users could learn from screencasts basing on library resources. The study included a pre- and post-test including a series of three tasks, such as clicking on the image, where the participants would begin search for an appropriate library database to find resources for an assignment. The study suggested that screencasts facilitate student learning as most students learnt how to complete a multi-step research process by using instructional screencasts.

In another study, Mohamad Ali et al. (2011) used screencast software *Camtasia Studio* to teach Flash animation software functions, such as timeline and drawing tools. The participants in one group studied a screencast series without narration, while those in the other group watched the screencast series with narration. The results of the study indicated that short instructional materials with narration promote learning better, especially for students with little prior knowledge on the course content. The results also indicated that instructional materials prepared by using screencasting software can support online self-paced learning.

Green et al. (2012) explored through a survey engineering students' perceptions of the usefulness of screencasts. The study focused on how and why students used, or did not choose to use, screencasts. The findings of the study indicated that the participants using screencasts seemed to have increased their understanding

of the content, as indicated by the exam results. Lloyd et al. (2012), on the other hand, aimed to determine the effects of screencast tutorials on learning outcomes in statistics. The study included students from four sections of a statistics course offered in the Department of Psychology at a public university. The students were randomly assigned to two groups, where one group followed the traditional approach, while the other was exposed to video tutorials created as screencasts by using iShowU and iMovieMaker. The task required the students to solve a novel statistical problem. The results of the study indicated that the video tutorials based on screencasts proved to be an efficient and effective tool as they enhanced learning. Screencasts were found to be particularly useful for higher order conceptual statistical knowledge.

A recent study conducted by Tekinarslan (2013) investigated the impact of screencasts on undergraduate students' achievement in spreadsheet applications. The study used experimental design, where the participants in the experimental group benefited from screencasts published in a social networking environment, while those in the control group were not provided with digital records of screen activities in the spreadsheet applications in question. Both groups were given the same multiple-choice and practical post-tests. The results showed that the students from the experimental group scored higher on the multiple-choice and practical post-tests than their counterparts from the control group.

Guerrero et al. (2013) investigated the effects of screencast lectures before and after the class in a university level course entitled Mathematics for Elementary Teachers. The participants were students enrolled in that course, and they were divided into two groups. In one group the students were exposed to screencast lectures, while in the other they received traditional non-digital instruction. The data collection instruments included a pre-post context exam, an attitude survey as well as student responses to an open-ended prompt regarding the use of video lectures. The students who received screencast lectures were found to be more successful considering the examination scores which they obtained compared to the others who had not been exposed to digital lectures. Moreover, the findings revealed that screencast lectures saved class time for student-centered and problem-solving activities, leading to positive student attitudes.

In a more recent study, Morris et al. (2014) analyzed the effect of screencasts on undergraduate students' knowledge acquisition. The screencasts were used as a supplement to classroom lectures, rather than a substitute for them and featured a set of PowerPoint slides that were synchronized with the audio recordings of the lecturer. Additionally, they included subtitles whenever important points required highlighting. The students from the experimental group were encouraged to ac-

cess the screencasts through the Blackboard website, while the students from the control group did not access the screencasts at all. The examination consisting of multiple-choice questions on the lectures and practical handbooks revealed that the screencasts had a significant impact on knowledge acquisition in favor of the experimental group. The results also suggested that the students in the experimental group highly valued the use of screencasts.

In an action research study, Snyder et al. (2014) explored the effects of screen-casts developed by a social studies educator on students' engagement in three ninth-grade world history classes offered in a public school. The screencasts included PowerPoint slides with images and documents. The educator talked to the students through a thumbnail-sized video in the PowerPoint slides. The results of the study revealed that the students watching the screencasts were more engaged in the activities in the classroom. The students also mentioned several benefits of the screencasts, e.g. the ability to pause the videos to take notes at their own pace. Moreover, the results also indicated that the educator could devote more time to student-centered and inquiry-based learning activities in the classroom.

The studies briefly overviewed in this section clearly indicate that lectures and/ or tutorials delivered through screencasts facilitate learning. Short instructional materials with narration have been found to better promote learning, especially for learners with low prior knowledge of the course content. Moreover, ensuing self-paced learning is highly valued by learners as screencasts enable them to watch and listen to the lectures as many times as they wish at their own pace. Another common benefit of screencasts is that learners retain more knowledge through screencasts. When screencasts supplement in-class activities, it has been observed that classroom time can be saved for student-centered and inquiry-based learning activities.

4.2. Screencast lectures and student perceptions

Ford et al. (2012) investigated the benefits of screencasting technology as a supplementary resource in a traditional lecture-based class. The study implemented the Echo360 classroom capture system in order to record lectures delivered by an instructor with the use of a whiteboard and PowerPoint presentations. Out of the four student groups under investigation, two were allowed to access the recorded lectures through a course management system, while the other two were not exposed to the recordings. The results suggested that recorded lectures led to positive student perceptions. However, these positive perceptions were not reflected in the course grades. In other words, no association was detected between the use of recorded lectures and the level of student achievement.

Marriott et al. (2012) aimed to explore students' perceptions and preferences regarding feedback provided via screencasts. The participants of the study were students enrolled in a compulsory 15-credit Managing Finance module, covering the fundamental concepts of management accounting for business. As a requirement of the module, the students worked in pairs, prepared coursework and shared it electronically with their tutor by uploading it to the university network. The coursework submitted was then evaluated by the tutor, who recorded feedback in the form of video footage by using CamStudio, the free screen recording software. The students who received the feedback through screencasts were then invited to participate in an online quiz. Moreover, focus group meetings were held with selected students. The results of the study revealed that the majority of the students had positive attitudes towards feedback provided through screencasts and they enumerated several benefits of this form of feedback e.g. its more personal/individualised character and the ability to follow a combination of audio comments.

A very recent study conducted by Sadik (2015) investigated students' preferences regarding the use of lecture captures and screencasts as supplements to classroom lectures. The participants of the study included undergraduate students registered in two courses: distance education and evaluation in educational technology. The classrooms where students studied traditionally were recorded by the lecturers using a single HD video camera, while the PresentationTube screencasting software was used to simulate classroom lectures. These two types of recordings were shared with the students and their views were analyzed. The findings revealed that both types of recordings proved to be useful as supplements to student learning; however, the majority of the students considered screencasts better than lecture captures for a number of reasons, including the quality of the audio.

The common finding of the studies reviewed in this section is that the majority of the students exposed to screencast lectures had positive attitudes towards the solution and valued screencasts highly.

4.3. Screencast feedback

Haxton et al. (2011) studied the perceptions of students enrolled in a chemistry class where model answers and feedback were provided through screencasts created with the use of Camtasia Studio. The level of feedback was limited to only the key points and uncommon errors made by the students. The key finding of the study was that the production of screencast feedback was found to be time-consuming by the tutors. However, the students found the experience invaluable

as they felt that the screencast feedback was equal to, or better than, written feedback in terms of quality and quantity.

In another study, conducted by Thompson et al. in 2012, screencasts were prepared using the Jing software in order to share the instructors' feedback on the students' written essays. The students were surveyed about the feedback provided through videos which included the instructors' comments and suggestions. As the results of the study revealed, the participants were positive about the use of digital feedback and they highly valued the comments delivered electronically. The results also indicated that video feedback was found to be effective, especially during the revision process, as the students tried to make global changes to their essays, rather than simply apply changes to specific lexical or grammatical items.

Edwards et al. (2012) explored the use of audio-visual screencasting to provide feedback on student assignments in a distance learning course. The participants of the study were students enrolled on a communication ethics module. The screencast feedback was provided on student assignments using Jing. The results of the study suggested that screencast feedback provided was viewed more positively compared to the written feedback, as the visual cues and explanations included in the screencasts reportedly increased the students' understanding of the information provided.

Mathieson (2012), on the other hand, explored students' perceptions of audiovisual feedback through screencasting as a supplement to traditional, text-only feedback. The study was conducted on undergraduate students enrolled on a statistics course and a research methodology course. All the students were exposed to both text-only and text-plus-audio visual feedback and the students' perceptions were analysed through an open-ended survey. The results showed that the students considered text-plus-audio-visual feedback effective as it allowed them to interact with the instructor in a more real and personal way. For example, as one of the participants stated, "For me the more effective way of interacting with the instructor was the text-plus-audiovisual because it gave me a classroom-like feel listening to my instructor with both my visual and hearing senses working at the same time" (Mathieson, 2012: 150).

Séror (2012), based on his own experiences with students in his classes, stated that the students' responses were positive towards screencasting as a feedback tool. Although some of his students found screencasts long to listen to, they valued this form of audio-visual feedback. A similar study, conducted by Vincelette et al. (2013), aimed to determine both students' and instructors' perceptions of feedback provided by using screencasting and to compare this form of feedback to traditional written or digital text-based comments and suggestions. The study

involved 39 college students enrolled on one of the two entry-level compulsory composition classes. The course instructors created five-minute screencasts using Jing in order to deliver their comments and suggestions on the students' written work. The results of the study revealed that the students perceived screencast feedback on their written papers as more effective than traditional feedback provided through written comments and suggestions. It occurred that the students attended to revisions delivered electronically more effectively. The instructors also felt that screencasts changed the way they provided feedback in terms of length and the level of detail, while the students' responses to the comments and suggestions were also more positive. As one of the instructors involved in the study stated, "They [students] liked the personal attention, they felt they understood the feedback more than just the written comments, and they felt a little more personable towards me." (Vincelette et al. 2013: 266) However, the instructors were found to worry about technical issues, such as using and editing the program to create screencasts as well as the time spent on creating screencasts.

Ahmad et al. (2013), in a case study which they conducted, investigated the effects of instructor-developed screencasts on students' learning of mathematics in a higher education institution. 47 screencasts were developed by the instructor and uploaded to a Moodle site for students' access. The participants of the study provided their views on the screencasts through an online open-ended survey, and their responses were analysed by using thematic content analysis. The analysis of the responses indicated that the majority of the students used these screencasts for a variety of purposes, such as material review, exam revision, and learning key maths concepts. As it turned out, the students valued the multimodal support provided by the screencasts. The findings also supported the idea that screencasts can be used to facilitate and enhance students' learning.

Langton (2015) conducted a case study in order to determine the benefits and drawbacks of providing feedback through screencasts. The study focused on two students of different levels of proficiency in English. They were asked to submit their drafts and revised essays on two different topics over the course of a term. Conventional written feedback was provided on one assignment, while screencast feedback was utilized on the other. The feedback in both forms focused on grammatical accuracy, style, and organization. The responses obtained indicated that one student believed that screencast feedback provided more detailed explanations and examples compared to conventional feedback, while the other student favoured conventional written feedback as it was easier for them to see the written feedback, rather than watch it.

In a recent study Harper et al. (2015) investigated whether screencasts created for individual feedback on foreign language students' written assignments would make any difference to the tutors' and students' experience. The study also focused on how error correction and written feedback could be enhanced through the use of personalized screencasts. The screencasts containing feedback on the students' written assignments were created using the screencasting software Jing and were shared with the students. The findings of the study revealed promising benefits of screencasting. The students as well as the tutors found that the format facilitated student-tutor communication. The students particularly valued the opportunity to listen to the tutor while s/he was explaining the corrections, suggestions, and comments on the written work. The feedback provided via screencasting software was also found to be more detailed compared to the traditional written feedback.

The participants of the studies discussed in this section highly valued screencast feedback, stating several benefits of this form of feedback, such as more personal comments on their written work provided through both visual and auditory channels. However, the key issue raised by the instructors is that delivering screencast feedback requires a large amount of time.

5. Pedagogical implications

Based on the results of the studies reviewed and the literature on the use of screencasting for delivering lectures and providing feedback, the following suggestions can be listed:

- Mainly used for teaching how to perform operations on computers through
 demonstrations, screencasts also have the potential to serve as a means through
 which to deliver lectures, especially online lectures both before and after faceto-face classes, and to provide feedback on students' written work. Screencasts
 allow flexibility in the speed at which learners may want to progress through
 the content. Some learners may need to review content several times in order
 to learn it effectively. Therefore, screencasts play an important role in self-paced
 learning.
- As research indicates, screencast lectures should not be long, from five to 10 minutes, and should focus on major issues in the course content rather than minor ones. However, some students might prefer audio format to screencast lectures created with PowerPoint slides (Garner, 2008) as audio files can be played by a variety of devices, leading to flexibility in terms of use. Students might like to print the PowerPoint slides and play the audio files on their portable music players and review the notes at any time and in any place.

The solution, then, would be to provide both video and audio versions of the screencasts.

- Oral and visual feedback provided through screencasts, which is not available in written comments on students' works, enables learners to easily follow instructions, with the opportunity to revise comments and suggestions as many times as they need to. Screencasts may clarify the meaning and focus on more individualized feedback, thus, they permit students to have a strong connection with their teachers. This proves to be particularly useful for distance education programmes, where face-to-face meetings and individual writing conferences are not feasible. Educators teaching in face-to-face classrooms may also try to use screencasts as this form of feedback has been found to provide greater detail.
- Another important issue that should be considered is the habit of working on
 paper. Both teachers and students should be aware that getting used to different
 modes of delivery may take time as it may not be easy for teachers to get out of
 the habit of reading written work and providing written comments. Similarly,
 students may find it hard to get out of the habit of listening to lectures in the
 classroom and interacting with the lecturer.
- The main issue and challenge in creating screencasts for both delivering lectures and providing feedback is the time required to do so, which will depend on the lecture content and the type of written work being marked as well as the comprehensibility of feedback. Learning how to create screencasts might be very demanding and time-consuming for those who will use screencasting for the first time. Since the research shows that creating screencast feedback and sending recorded videos to learners may take more time than providing written feedback, it might be suggested that screencast feedback is not feasible for large classes.
- Another issue is related to the re-use of screencasts. The nature of lecture screencasts allows teachers to re-use them in future classes whenever they find it appropriate; however, it is not the same case with the screencast feedback, which is geared towards individual learners.
- Last but not least, selecting a screencast tool requires careful consideration (see
 Table 1 for a list of screencasting websites and tools). A benefit-cost analysis
 should be conducted before making the choice. While some of the tools are
 freely available, they may have certain limitations, and they may fail to provide
 more advanced features, such as output editing.

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