

Student-Generated Videos as a Learning Tool in Veterinary Education

Mari van Wyk

<https://orcid.org/0000-0001-6142-1608>

University of Pretoria, South Africa

mari.vanwyk@up.ac.za

Linda van Ryneveld

<https://orcid.org/0000-0002-9909-9949>

University of Pretoria, South Africa

linda.vanryneveld@up.ac.za

Abstract

In spite of reported benefits of mobile devices, educational institutions criticise the use of mobile devices for learning because they are considered a distraction in class. Furthermore, researchers claim that the apparent mechanistic use of videos in classes does not contribute to deeper learning. To explore the affordances of videos and the possibility of deeper learning, a group of veterinary science students volunteered to explore the use of videos while attending theoretical and practical lectures. In this qualitative study, the participants tried out a variety of devices to take short videos of procedures and were actively involved with the learning content as they organised and reflected on the self-made videos. In spite of the critique against the use of mobile devices and the apparent shallow learning contribution of videos, participants self-reported that watching the videos again and the processes that took place after the videos were made contributed hugely to their learning experience. Participants demonstrated that mobile devices can be used constructively, and through a process of reflection deepen their learning experience. How the participants use the videos for learning can give lecturers new ideas on how they can use videos in their classes.

Keywords: constructivist; learning tool; mobile devices; reflection; veterinary education; student-generated video

Introduction

“Ban cell phones from school” is a slogan that is becoming more popular every day. In spite of the popularity, access, previous research conducted, perceived benefits and



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potential of using mobile devices in education, organisations and governments call for the banning of mobile devices in the classroom. Educational institutions advocate the restrictive use or banning of mobile devices, such as smartphones, based on the possible distraction they cause and hindering of learning (Ravizza, Uitvlugt, and Fenn 2017). Although researchers acknowledged the possibilities of using mobile devices for learning, students self-report, in a recent study, that over and above using their laptops in class, they also text and access social media (Ravizza, Uitvlugt, and Fenn 2017). The reality is that in some educational institutions, both parents and students agreed that mobile devices become a distraction during lectures as they keep the students from learning (Gao et al. 2017). While it seems as if mobile devices have lost their appeal to education, students continue to use them unceasingly in their daily non-educational lives.

One example of how students use mobile devices in their non-educational lives is videos. Fitzgerald (2018) claims that 64 million millennials will at least once a month either stream or download videos on their mobile devices. While the watching of videos is very popular amongst the youth of today (Humphrey 2016), many students also make video recordings during lectures, as an alternative to note-taking. However, researchers perceive the use of technology, such as mobile devices and videos, as a mechanistic way of taking notes, and therefore not contributing to the learning process (Bos et al. 2016; Mueller and Oppenheimer 2014).

Although research has been done on the video capturing of lectures (Bos et al. 2016; Witton 2017) and the use of videos in the classroom, little is known about the value of short student-generated videos for learning purposes, specifically as a reflection tool. With this in mind, student participants in the study on which this article is based tried out the recording of videos in a variety of educational settings. Their experiences were recorded during group interviews and analysed. From a constructivist viewpoint, this article reports on the students' experiences of using videos during theoretical and practical lectures and focuses on the value of student-generated videos as a learning tool.

Literature Review

Bring your own device, online courses, electronic books, and mobile educational applications are all trends that have manifested in higher education. Students use their mobile phones for more than just making calls and scheduling appointments (Zimmerman 2018). But do students in higher education have access to these higher-end devices? What do researchers say about videos in education and will learning take place when students use videos as learning tools, especially when students create their own meaning? This literature review further explores these topics.

Mobile Devices in Education

In the past decade, the use of mobile devices increased significantly. This trend of owning a smartphone also seems to apply to university students. For instance, more than 86% of students surveyed in the United States (Poll 2015), the United Kingdom (Deloitte 2016), Australia (Farley et al. 2015; Framp, Downer, and Layh 2015) and Saudi Arabia (Alfawareh and Jusoh 2014) either owned or have used a smartphone. Although in 2016 only 37% of the general population of South Africa owned a smartphone (Poushter 2016), compared with the 96% that owned a mobile phone (Statistics South Africa 2017), the penetration of smartphones at universities in South Africa reflects the worldwide trend (Potgieter 2015). Therefore, it can be assumed that students tend to have access to a mobile device and that the educational possibilities of using these mobile devices and their functionalities in teaching and learning should be explored.

Although mobile devices were not specifically designed with education in mind (Traxler 2010), they create untold opportunities and possibilities for education (Traxler and Vosloo 2014). Video recordings could be one way to use a mobile device to record, store and share lectures, practical sessions, and demonstrations, especially as mobile devices are nowadays equipped with good quality cameras and video cameras.

Videos in Education

The popularity of watching and downloading videos from the internet cannot be ignored. Video traffic comprised 75% of the global internet traffic in 2017 (Cisco 2019). Currently, 84 149 YouTube videos are being watched every second (Internet Live Stats 2020). In this new age where students grew up with technology, it is perhaps not surprising that millennials watch more videos than the average person (Heltai 2016; Humphrey 2016), as many as between two and 31 hours of videos per week (Morrison 2016).

Based on a literature review covering the eight years from 2002 to 2011, Kay (2012), supported by Lee et al. (2016) and Dong and Goh (2015), summarised the following benefits of using videos for education. These researchers emphasised that when using videos as learning tools, students can control the pace of their own learning as they can watch these videos anywhere and at any time. A particular section of the video can be paused, revisited, slowed down or made faster. Students also perceived watching videos as enjoyable, motivating and stimulating.

Videos are used with good results in the health sciences as well. Bowles et al. (2014), Dong and Goh (2015), Frentsos (2015) and Schwerdtfeger et al. (2014) found that videos are a flexible medium to use in patient education because it is a medium with which people are familiar. The videos on mobile devices provide easy access to information and help to prepare patients for procedures. Videos are used with great success to record rare, difficult to illustrate or staff-intensive procedures. In future, these

recorded video materials can be used repeatedly. The current researchers also experienced that videos are a valid and feasible option in the assessment of students.

Much of the research related to videos in an educational context that have been done to date revolves around topics such as access to information, assessing skills or reflection on practice, and video notes. When discussing access to information, researchers focus mostly on using videos to provide students with access to content to reinforce concepts, provide support, and supplement education (Frentsos 2015; Lancellotti, Thomas, and Kohli 2016; Roshier, Foster, and Jones 2011). These videos are usually recorded by the lecturer, not the students, and in some cases videos from popular channels such as YouTube, Khan Academy and Linda.com are used (Dong and Goh 2015; Jang and Kim 2014; Kay 2012; Lee et al. 2016; Schwerdtfeger et al. 2014).

In other cases, videos were used to assess students' skills, such as communication skills (Kiehl et al. 2014; Roshier, Foster, and Jones 2011), patient encounters (Epstein 2007), technical skills (Bowles et al. 2014; Dunne 2015), self-assessment (Framp, Downer, and Layh 2015; Vara et al. 2016), feedback (Perron et al. 2016) and decision-making (Webb et al. 2012). In these cases, the videos were either pre-recorded cases that were used repeatedly, or the students were recorded and assessed (Bowles et al. 2014; Nyström et al. 2014; Webb et al. 2012).

Another research topic is video annotation. By using various video annotation tools, notes are added to a video. In these cases, students used the tools after they had watched videos that had been recorded by the lecturer (Chatti et al. 2016; Lawson, Bodle, and McDonough 2007) to add to their notes. Merely watching videos of lectures that were recorded does not contribute to learning, but when it is used as a supplement to classes, the student's knowledge base increased (Bos et al. 2016). In addition, taking videos with mobile devices during a class can also be interpreted as a mechanistic action that is associated with the notion that using electronic devices instead of taking handwritten notes does not contribute to deeper learning (Mueller and Oppenheimer 2014).

Studies have shown that reflection plays a vital role in externalising students' thoughts about their behaviour. More specifically, if students reflect on their competency before and after watching a video, they experience deeper reflective thoughts than when not watching a video (Kong 2010). Although videos are useful tools for teacher and student reflection, Mann, Crichton and Edmett (2020) conceded that students' reflections also enable them to scaffold their learning. Moreover, students also have opportunities to review the videos of peers and it surprisingly encourages deeper reflection on their own practice (Mann, Crichton, and Edmett 2020). To support this notion, Cattaneo, Boldrini and Lubinu (2020) advocate that reflecting on your own professional practice is crucial for one's development. Therefore, healthcare professionals incorporated videos as part of their reflective practices (Cattaneo, Boldrini, and Lubinu 2020). However, the aforementioned studies all referred to situations where students made videos of themselves performing an action, and then reflected afterwards on their actions while watching their

videos. In this study, the students made videos of lectures, practical sessions or consultations with patients as part of their learning material and reflected afterwards on the learning content. Therefore, reflection was not done to improve their skills or practice, but to learn new information or skills. With that being said, the question arises whether videos can contribute to the students' learning or not.

Learning by Experience

This research was approached from a constructivist point of view where students were afforded opportunities to construct their own meaning from what they explored and discovered during the learning experience (Ally 2004). A constructivist viewpoint asserts that students are actively involved in their learning process and not merely passive receivers of knowledge (Duffy and Cunningham 1996). The way in which the participants in this study used and explored videos was studied in real-life scenarios during their studies. The participants constructed their own meaning from using videos while attending classes, practical sessions and patient consultations (Hammersley 2012; Mackenzie and Knipe 2006).

According to Mezirow (1990), learning involves making new interpretations by reflecting on what was learned in the past and determining whether it still applies in new circumstances. This is in agreement with Boud, Keogh and Walker (1985) who argue that learning flows as a response to the reflection of the student on an experience. In their model of reflection, Boud, Keogh and Walker (1985) identified three parts. In the first part, the student recalls the actual experience. After that, a processing phase occurs where the students recapture the experience and relive and evaluate it. Lastly, the student reconsiders the outcome and this can lead to changed behaviour or new perspectives. For example, during a practical demonstration in class of how to dress a wound, students observe, experience, and make notes of the procedure. Afterwards, they relive and reflect on the procedure by observing their notes and going through the steps of dressing a wound again. The actual learning happens when they visualise how these steps can be used first to dress a wound, but also what they will have to do or know if the type of wound is different from what was shown in the class. When a video is made of the steps, it can also add value to the learning process.

In spite of the apparent shallow processing offered by the use of mechanistic note-taking tools such as mobile devices, and the notion to ban cell phones from educational institutions, students were asked to explore and create their own meaning in this study with videos in both their theoretical and practical classes. Therefore, this study illustrates how students use student-made videos as learning tools.

Methodology

This qualitative research study is explorative in nature and meets the requirements of a case study (Yin 2009). It is based on the MobiTech project, which explored the use of mobile devices in higher education.

Participants

The study was conducted in two separate phases in the natural learning environment (Creswell 2007) of students at a South African traditional contact university that offers a bachelor’s degree in veterinary science. The mode of delivery of this degree is full-time, contact. In Phase One, the whole group of second-year to fourth-year pre-clinical veterinary science students ($n=365$) was invited to participate in the study. Of these students, 179 completed an electronic questionnaire about their current access to and use of mobile devices for learning purposes.

The last question in the questionnaire invited students to participate in the second phase of the study and provided them with background information on the MobiTech project. In response to this call, eight ($n=8$) students self-selected (Daniel 2012) to participate. These eight students, all of whom self-identify as being passionate and enthusiastic about the use of their mobile devices, experimented with their own mobile devices in their various learning environments.

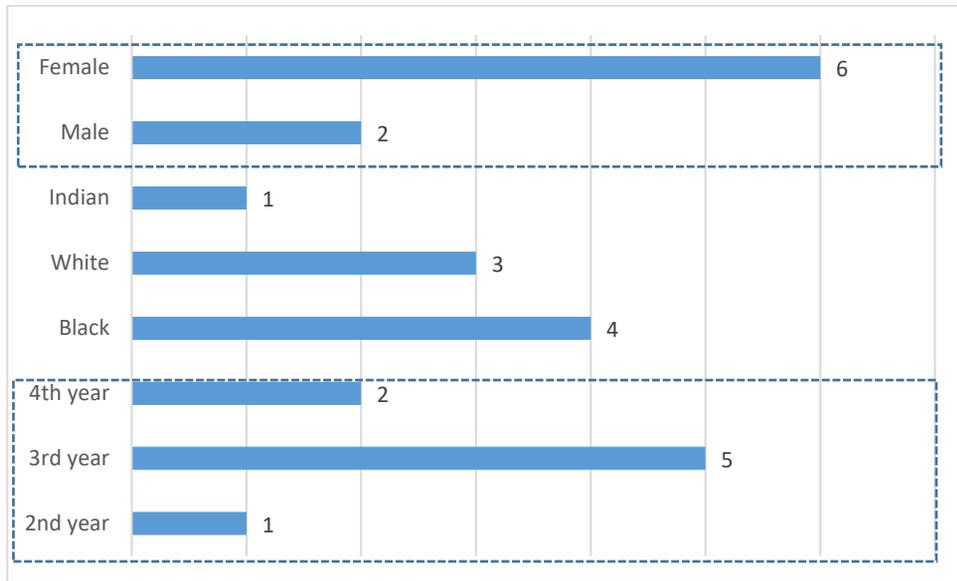


Figure 1: Cohort diversity in terms of gender, social background and year of study

Since the participants were diverse in terms of their year of study, social backgrounds, and gender (Figure 1), all were accepted as voluntary participants.

Research Design

As mentioned, this research is part of a bigger project (MobiTech) and was designed in two phases. In Phase One, an electronic questionnaire was used to determine what mobile devices the students have access to, and how they use their mobile devices for

both social and academic purposes. After the electronic questionnaire was completed, eight students volunteered to continue with Phase Two. This phase consisted of a series of group interviews intended to provide qualitative insights to the quantitative results obtained through the questionnaire in Phase One. Phase Two consisted of six one-hour group interviews, spread over five weeks.

The eight students who participated in the group interviews indicated that they all (100%) owned a mobile device (a laptop, smartphone or tablet). The participants were challenged to use the functionalities of their mobile devices as a learning tool during their theory and practical lectures. True to the constructivist nature of the study, no guidelines were given regarding the specific devices they had to use, or how they were supposed to use them. The researchers were interested in how they use the devices' functionalities intuitively. They were challenged on a weekly basis to use more functions of their mobile devices. For the purposes of this article, in Week 3 they were tasked to use the camera and video camera functionality of either their mobile phone, tablet, or other mobile recording devices that they had. The specific task and group interview guiding questions are indicated in Figure 2.

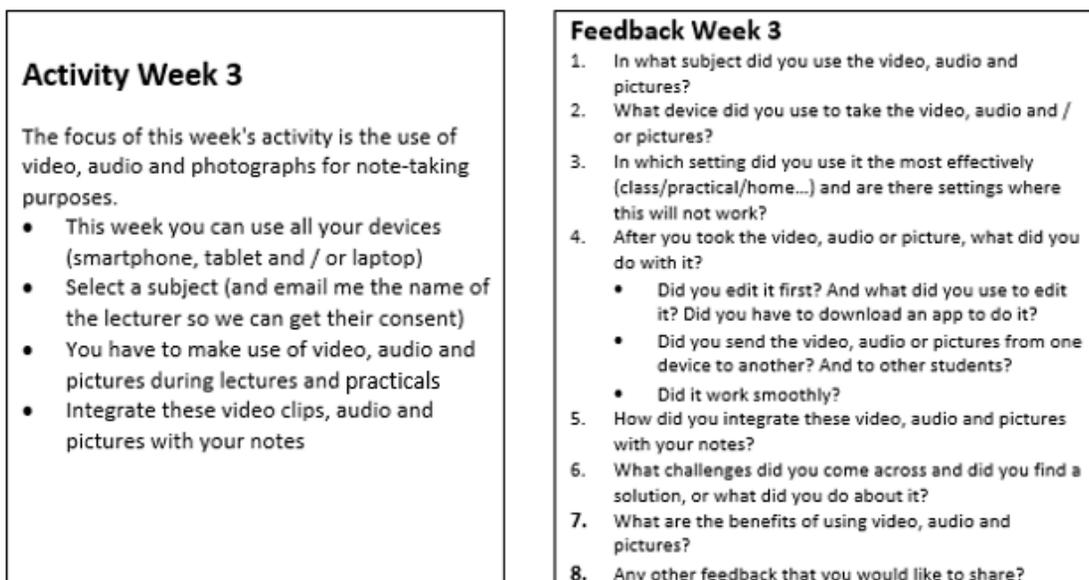


Figure 2: Activity and group interview guiding questions

The activity of Week 3 took place during their theory and/or practical sessions. No instructions were given as to who must do the recording, what to record, when to make the recording or the duration of the recording. Participants had to use their own initiative. For example, some participants decided to record a video of a full lecture, while others recorded short bursts of skills training or short demonstrations during

lunch-hour sessions. In addition, some participants used an action camera and recorded a consultation with a patient.

To ensure that all the participants contributed to the discussions, each of them was given an opportunity to give initial feedback. However, participants were allowed to interject and add their own experiences to the reflections of their fellow students. The session ended when no further feedback was offered and the researchers had asked all their questions related to the devices used, the setting in which they were used, how the students used and/or edited the videos, how they integrated the videos with their other notes and the challenges and benefits they experienced while making the videos.

Although the use of mobile devices to record videos formed part of the activities of the third week only, participants regularly referred to the way in which they used videos in the group interviews in other weeks as well. Therefore, participant feedback on the use of videos was extracted from all six sessions (including the introduction session).

Data Analysis

The researchers' representation of the use of videos as learning tools was built from the rich reflections of the participants after they had explored the use of videos in various educational settings (Daniel 2012; Miles and Huberman 1994). The participants' authentic experiences in using their mobile devices to take videos, without external interference of any kind, were recorded during the group interviews and transcribed. The text was analysed to determine trends and recurring patterns as described by Henning, Van Rensburg and Smit (2004). This was not done with specific themes in mind, but themes were derived from the data (Easterby-Smith, Thorpe, and Jackson 2012). The participants' feedback was coded according to a group and participant number. For example, the code G1P5 represents feedback given by participant number five in the first group interview.

Results

In the online questionnaire, the participants specified that they either own or have access to at least one mobile device. The distribution of mobile devices used by the participants can be seen in Figure 3. According to these figures, a large number of participants have access to more than one device.

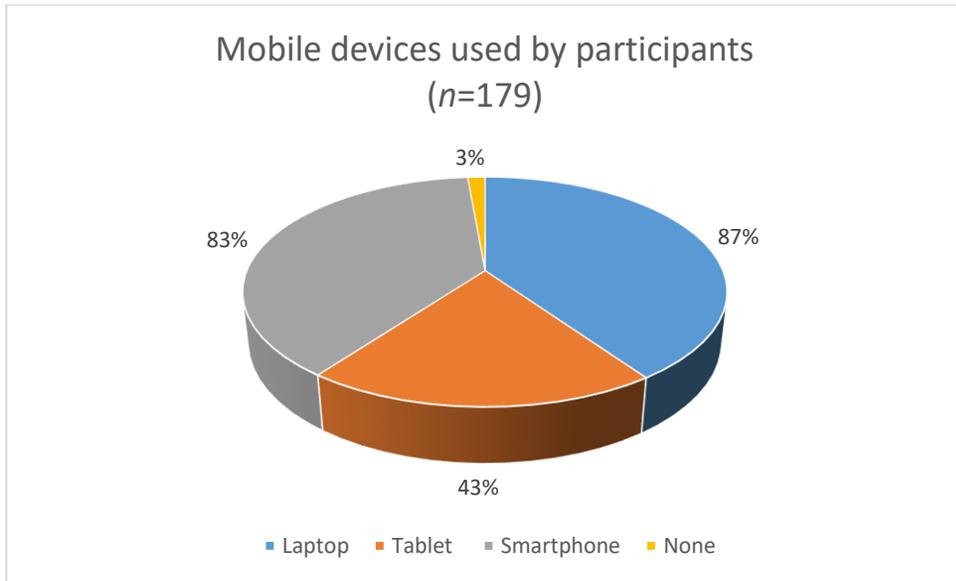


Figure 3: Mobile devices used by participants

Participants further indicated that they have used their mobile devices for educational purposes with or without instruction from the lecturers (Figure 4).

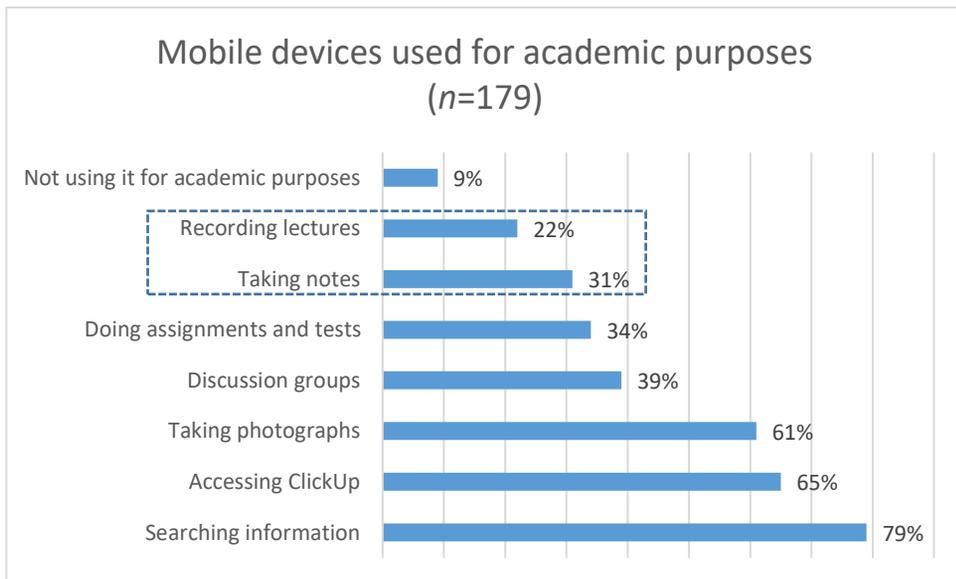


Figure 4: Mobile devices used for academic purposes

While the majority of participants use mobile devices to search for information, surprisingly only 22% make video recordings. This is in contrast with the self-proclaimed 74% use of videos in their social life (Figure 5).

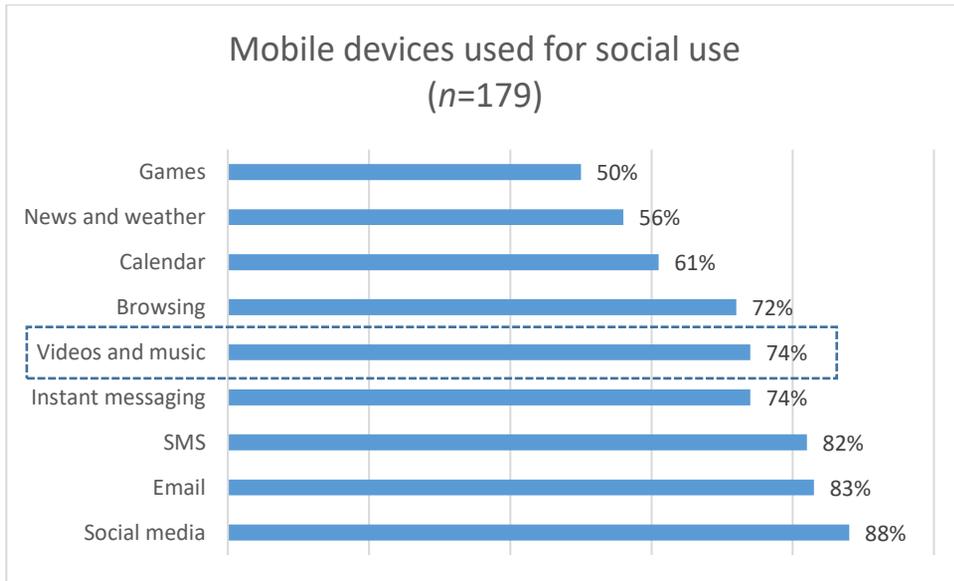


Figure 5: Mobile devices used for social use

Based on the group interviews of Phase Two, the results show that participants used a variety of video-enabled devices such as a tablet, mobile phone, handheld video camera, and an action camera to make video recordings. They either recorded a whole lecture or made shorter video clips of practical demonstrations in an attempt to see what worked best in the different educational settings they were exposed to.

When participants recorded a whole lecture, they complained that either the video quality was not good or the sound was not audible (G1P1, G3P2, G3P3, GP4). Even though they took the trouble to make the video recording, the participants claimed that they will never watch the recording again (G3P1, G3P2, G3P4). While one of the participants in Phase Two regarded the making of videos as pointless, the majority of the participants did see the value of making short videos of practical sessions. These recordings give them opportunities to repeatedly watch the video clips of procedures until they are familiar with them (G2P4). They preferred to watch the video clips rather than read through text in their prescribed material (G3P3), especially before a test or an examination. Because the practical demonstration is not performed in a big lecture hall, the video camera capabilities of the mobile phone are sufficient to make fairly high-quality videos that can easily be shared amongst students. These short videos can easily be downloaded to a laptop and shared through popular applications such as WhatsApp. The omnipresence of mobile phones allows participants to watch videos at any time, anywhere (G1P6).

Student-generated videos seemed to have a valuable impact. During the training period of a veterinary student, they are exposed to a variety of cases in the academic hospital. However, it is not possible to predict what cases will present themselves during a

training period and, therefore, it is important to record a rare or scarce case for the benefit of future students.

Participants also reported that they work together on note-taking in their practical class. While the one took video notes and photos, the other one typed notes, and after class, they combined their notes as the evidence of their practical class that day (G1P6), creating small packages of information. One student mentioned: “That really helps to go back to the video and just check how the procedure has been done” (G3P4).

Other participants reported that they sometimes assisted with surgeries, watched specific medical procedures performed by a skilled clinician and attended practical demonstrations on live animals (G3P2). Because the groups that observe a particular procedure are often large, some students are not aware of the details simply because they cannot see the procedure being carried out. Some participants suggested that each group should appoint their own videographer and that such a student (after being trained) would then be responsible for making the video clips available to the rest of the group.

While the majority of the participants used well-known and well-established mobile devices, one participant used an action camera (G1P1). The action camera is designed to make recordings of activities such as extreme sports and activities where participants’ hands need to be free, and therefore it is typically built so that it can be mounted on bicycles, helmets or surfboards (Furchgott 2014). This device was not designed with education in mind, but it seems to be very useful. In practical sessions, the camera is mounted on the student’s body and could be worn the whole day. Because it is designed for extreme sports, it can be used outdoors and in wet and dirty environments, which are typical for a veterinary student. Although it is a hands-free device and mounted on the body, the camera’s mobile application allowed the participants to view, adjust, control and record procedures (G1P1).

The action camera opens up many opportunities for training. Because a video lasting hours can be recorded in a single session, everything that a prospective veterinary doctor does can be recorded and assessed even when a supervisor is not present. As for training and demonstration, the participants suggested that it might be a good idea to mount an action camera on the body or the forehead of a clinician or surgeon (G3P2) so that the best possible view could be captured.

From the above, it is clear that participants use videos in two ways. The first way has to do with the recording of information and cases. Participants make short videos of their practical so that they can watch it repeatedly, especially before examinations. They also watched videos that were made by previous years’ students of rare cases and they expressed a need to save videos for future generations of veterinary students. But, they also used videos as part of their learning process. Participants demonstrated that making videos during their practical classes and reflecting on them afterwards contributed to

their learning process. This supports findings by Anderson and Armbruster (1986), Boud, Keogh and Walker (1985), Bui, Myerson and Hale (2013), Bui and Myerson (2014) and Cohen et al. (2013). When students create their own videos, they need to incorporate them with their other notes when they summarise, add information and create links. One participant mentioned that when she was asked to create videos and organise her notes as part of this research project, it was the first time that she went back to the videos she had previously taken and incorporated the video notes and pictures she had taken into a PowerPoint slideshow. So, for this participant, the videos suddenly formed part of her study method. She had to spend more time on her work when she used both the videos and her other notes, which eventually resulted in higher marks (G5P2).

Issues Raised

During the discussions, participants mentioned that some ethical concerns might arise from recording certain practical cases. What would be the ethical issues around video notes and how could the identity of lecturers and patients be protected (G4P5)?

Another issue raised by the researchers is the possible decrease in class attendance if all lectures are eventually recorded. However, in this study, one participant made the following remark with regard to class attendance: “I would not skip class because a video is available” (G3P4).

Discussion and Conclusion

Despite the attempts to ban mobile devices and the claims that using video does not contribute to higher order thinking (Bos et al. 2016), participants in this study reported that they made extensive use of the ability of their own mobile devices to take videos. In this study, the participants were actively involved with their learning content when they organised and integrated the self-made media with their existing notes. Participants recorded, watched again, reflected on and added their personal meaning to the content, which enhanced their learning processes (Boud, Keogh, and Walker 1985; Russell et al. 1983). Therefore, in this study, participants not only demonstrated how they use videos to take notes or record cases and procedures but also how they use videos to strengthen their learning.

The participants agreed that there was no one-size-fits-all device that would work well in all educational settings. Some devices are better suited to a classroom-based environment whilst others would work better in a practical environment. This finding is not unique to this study, as Mueller and Oppenheimer (2016) came to the same conclusion when they investigated electronic note-taking in various environments. What is noteworthy, though, is the possibilities that are created by the action camera. Procedures can be recorded (hands-free) while doctors operate or while lecturers and clinicians demonstrate delicate procedures that would otherwise not be visible to all

students. Thus, for taking videos in class, a good quality mobile phone coupled with an action camera might be to the advantage of veterinary students.

When students take videos with their mobile phones, those videos are always available and can be viewed at any time, since students are very seldom far from their mobile phones (Lee et al. 2016; Roshier, Foster, and Jones 2011). In addition, students need to be trained to take and quality assure their own video notes (Roshier, Foster, and Jones 2011), while making sure that they do not obstruct each other's view and the person in charge of making the video clips has the best view (Jang and Kim 2014).

The participants also confirmed that they never chose to watch lengthy videos. When students make videos, they need to be short so that they can be easily shared on popular platforms such as WhatsApp or YouTube. This confirms what McNulty et al. (2009) found related to lectures captured on video; if video clips are short, participants use them to reinforce information, to do revision before an examination, and to refresh their memory about work done in previous years. The increase in the number of times a video was accessed before a test or when participants needed to practise their practical techniques (Roshier, Foster, and Jones 2011) was made possible by their mobile devices. The easy access to the videos stimulated opportunities for reinforcement and recall, which is in line with what Van Scoter (2004) and Lias and Thomas (2003) observed. While watching the videos repeatedly, participants increased their knowledge base (Bos et al. 2016). However, for learning to take place, students need to not only record and watch videos but incorporate them in their study units. They need to watch, reflect on and integrate the videos into their study content.

Participants also emphasised that videos helped them to form a clear picture in their mind before they studied the written text. In view of the fact that the students of today are bombarded with visual material, this is not surprising. The use of videos also improves the visualisation of specific techniques (Roshier, Foster, and Jones 2011).

While in some subject fields detailed video clips of good quality are already available, participants indicated that they often find that existing video clips available on the internet are either too basic or too advanced for what is needed in a particular module. Therefore, students still preferred videos to be made from their own subject material, either by them, by students of previous years or by lecturers who know what work is relevant and what the students need to know. In doing so, a repository of common and rare cases is built and made available to future students.

Although this study was conducted from a student perspective, the ideas and suggestions obtained could also be of value to lecturers, in that the length of a video, its quality, and its interactivity should be taken into account. The purpose for which videos were created determined whether students would watch the videos repeatedly. Furthermore, the researchers believe that the discussions in this research will be of value not only to the medical education sector but also to other fields of study in higher education. However,

the results might be somewhat biased, as most of the students who participated in this study had shown an interest in using mobile devices and therefore volunteered to be part of the project. One student volunteered to participate because she was eager to learn more about the creation of video.

Before mobile devices are banned completely, the researchers suggest that processes and policies need to be put in place to explore the possibilities of how mobile devices and videos can be used in the different educational disciplines and environments. The researchers acknowledge that the application and use of mobile devices and videos might be different in various disciplines and they suggest that each discipline needs to decide how mobile devices could be used for the benefit of students. There is a need to better manage the creation of educational videos instead of implementing a ban on mobile devices as this would amount to underestimating the power of videos in achieving deeper learning.

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