

Students' perspectives of the use of scenario-based videos for studying pharmacy law

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Abstract

Background: Living in a 'digital-era', it is important to introduce new technological formats to support student learning.

Objective: This study aims to investigate participation in, perceived usefulness of, and future opportunities for animated videos.

Method: Using Videoscribe software, nine animated, scenario-based videos on pharmacy law topics were created during a summer internship, and then made available to second year Master of Pharmacy (M.Pharm.) students (n=135). Questionnaires and interviews were used to assess the objective.

Results: Seventy-nine percent (n=82/104) had watched at least one video with 59% (n=48) watching all nine. All videos ranked over 4 out of 5 for usefulness. Students (82%, n=73/89) intended to use the videos for revision and 98% (n=86/88) agreed the content was relevant for learning. Interviews showed that students mainly used the videos as 'quick revision tools'.

Conclusion: Animated videos are well received for supporting learning content and revision. Creating additional videos and resources for students should be further explored to increase understanding.

Keywords: *Pharmacy Law, Educational Videos, Animated Videos, Scenario-based Videos, Technology in Teaching*

Introduction

Pharmacy law is a term used to define laws and legislations that regulate the way pharmacy premises and pharmacy professionals can operate, as well as the handling of medicines. It also covers the professional conduct pharmacists are expected to abide by (Appelbe, 2014).

The Department of Pharmacy at Kingston University (KU), in London, United Kingdom (U.K.), teaches pharmacy law throughout the undergraduate four-year Master of Pharmacy (M.Pharm.) course, however more emphasis on the subject is in the second year of the M.Pharm. through the module 'Pharmacy Law, Ethics and Practice'. Lectures are a principal source of basic knowledge whereas workshops, seminars and dispensing practicals allow the development of students' cognitive skills. The Pharmacy Law, Ethics and Practice module comprises of nine dispensing skills practicals that mainly take place in a dispensing lab and nine workshops where students tackle scenarios in groups, led by two or three pharmacist members of staff. To educate students on pharmacy law, several resources are available in the U.K. such as the Medicine Ethics and

Practice (MEP) Guide, The British National Formulary (BNF) and National Institute for Health and Care Excellence (NICE) guidance.

Pharmacy law has traditionally been taught didactically and the use of technology has been limited to presentation slides, primarily using Microsoft PowerPoint (Gallagher, 2011). Rapid technological advances and increased use of technology requires a shift in learning to adapt to these changes. Several initiatives have been used at KU to increase engagement in the pharmacy law module, including the use of Snapchat (Micallef & Slater, 2017) and Peer-Assisted Learning (PAL) where a select few third-year and fourth-year pharmacy students become PAL leaders and sessions are organised for second year students to learn about pharmacy law in a rather informal student-led session. (Ahmed, 2015)

The current generation of students are often referred to as 'digital natives', as they have a greater desire and preference towards technology; because it allows the use of different learning formats as well as increased engagement and access to information. Technology has been introduced into education to fulfil that difference in

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learning preferences of students, and to allow them to have additional interaction and involvement to the learning process (Lam *et al.*, 2014).

Educational videos have been a widely used format of technology, and nowadays they are more accessible than ever with platforms such as YouTube. An example of a well-known channel that provides educational videos is Khan Academy, where various topics on Science and Maths are taught in a free hand drawing style on a digital tablet (Guo, 2014).

It is important to make an effective educational video, and there are several factors to be considered during creation. This includes ensuring that data is sectioned into smaller increments to allow control over the amount of new information that is taken in, as well as having the right visual and auditory cues to ensure educational videos have a lasting impact (Brame, 2015).

A study made in Shenandoah University by Stolte *et al.* (2011) in the United States (U.S.), showed that pharmacy students found electronic presentations the most beneficial resources for their learning, and video resources were also found useful, particularly for mature students (aged 25 or over).

When looking at other taught topics of the pharmacy degree, (*e.g.*, pharmacology and pharmaceuticals), there are variable resources available online to aid the learning of students, including visual technology such as videos, available on platforms like YouTube. The resources currently available for pharmacy law do not have the same visual impact and are often in the forms of articles and guidance.

Pharmacy law is often seen by students as very fact-heavy, and due to regulatory requirements in the U.K., requires a higher pass mark than other modules. Therefore, it is important to engage students in the topic, and increase their interest in, and learning of the subject in innovative ways.

Due to limited current resources available, the aim is to introduce a new format of technology utilising videos, to enhance interest and understanding of pharmacy law focusing on investigating participation in, perceived usefulness of, and future opportunities for animated videos.

Method

Videos (n=9) were developed by the researcher using a programme called Videoscribe that allows whiteboard style animation to be created. The videos were made on the following pharmacy law topics due to their importance, and to cover areas that students requested help with:

- Controlled drugs (CD)
- Emergency supply at the request of the patient
- Emergency supply at the request of the prescriber
- Labelling of medicines

- Legal requirements of prescriptions
- Patient group directions (PGD)
- Responsible pharmacist (RP)
- Safeguarding (confidentiality)
- Veterinary prescriptions and labelling

Figure 1: Captions from the 'Emergency supply at the request of the patient' video



Each video that was created comprised of a pharmacist encountering a scenario and showed how to lead or resolve that scenario, as seen in Figure 1. All information used to make the videos derived from the MEP and NICE guidelines. Creating each videos took between 10 and 20 hours. The final videos ranged from 1 minute 5 seconds (Legal requirements of a prescription), to 3 minutes 17 seconds (Veterinary prescriptions) in length.

They only contained visual components as no sound, including voiceover or any audio adjunct, was added due to time-restraints during the video production period.

The videos were made available through the University online storage and sharing platform for files with links from the virtual learning environment (VLE). They were also shown at the appropriate lectures and workshops.

A mixed method approach was used including completion of a questionnaire and interview. Questionnaires were used to evaluate the interest, likeability, and to receive possible feedback on the quality of scenario-based videos. A 23-question survey consisting of 5 score Likert scale questions, multiple choice questions and free text responses was created covering three sections.

Multiple choice questions and ranking scales were used in Section A (five questions) exploring the resources used to study the Pharmacy Law, Ethics and Practice module and the frequency of students accessing the university portal for course material.

In Section B (13 questions), students were asked about the scenario-based videos, looking into more details at the students' perceived usefulness of each video and their usability, using 5-point ratings and Likert scale. A 5 score Likert scale where 1 was 'Not useful at all' and 5 was 'Very useful' was chosen instead of a 4 score to not introduce bias measurement, allowing the participant to respond with neutrality.

At the beginning of Section B, if the participant stated that they did not watch the videos, they were redirected to Section C for additional comments and demographic information without having to complete the entire Section B.

The final Section C (five questions) requested the sample group suggest which other pharmacy law topics they would like to see future scenario-based videos to be created on, using free-text responses. Demographic information including age, gender and ethnicity was requested to be able to meet the objective: 'Identify if there is a link between demographic factors such as gender or age and preference of using videos to study'.

The minimum calculated target sample size to achieve a 95% confidence level for the questionnaire was 101 from the total of 135 students in the cohort.

A pilot study of ten students from the cohort was carried out with positive feedback given, so no changes were made to the questionnaire. The pilot responses were included in the final data.

The data were collected and coded into a Microsoft Excel spreadsheet. *Chi* square calculation, or paired *t*-tests were also completed using an online *chi* square or paired *t*-test calculator where results were significant if *p*-value was less than 0.05.

An eight-questions interview *pro-forma* was created aiming to receive feedback on the quality of the videos and how to improve them, as well as personal experience using them.

In order to gain more feedback for future work, the video on 'Labelling requirements of a prescription' was chosen and made into additional versions. One version included background music and another had a recorded voiceover for a section of the video. Participants were asked to watch the original version with no audio, as well as the two additional versions and asked to choose which version they preferred along with their reasoning.

To recruit students for the interview, at completion of the questionnaire students had the option to provide an email address if they were willing to participate in the follow up focus group. These students were emailed to express interest in the follow up interview.

The interviews were recorded with written consent given beforehand and were later transcribed *verbatim*. Content analysis was used where frequency of statements said by students was identified.

This work was carried out during a summer internship and final year project between May 2017 and March 2018. Ethical approval was approved by the Kingston University Ethics Committee.

Results

Questionnaire

The response rate for the questionnaire was 77% (n=104/135) thus achieving a 95% confidence level (n=101).

Not all respondents answered all the questions, therefore different number counts for each question are given where necessary.

Section A

Looking at the preference of resources used to revise for the Pharmacy Law, Ethics and Practice module, there was higher preference for paper version of resources compared to online (Table I). The exception to this was lecture slides where the online version was preferred over paper copies. A link between preference for online resources and frequency of VLE access was sought. It was not significant as the *p*-value attained was 0.47.

Table I: Response rate for different resources used to study/revise for PY5020 divided between paper and online version

	Paper		Online		Total
	n	%	n	%	
Lecture slides	58	47.9%	63	52.1%	121
Medicine, ethics and Practice (MEP)	99	87.6%	14	12.4%	113
Extra reading book (Dale and Appelbe's)	36	59.0%	25	41.0%	61
BNF	96	86.4%	15	13.5%	111
Workshop and Practical booklets	103	100%	N/A	/	103

Certain students (n=22) mentioned multiple other resources they used to revise (Table II). The most mentioned were videos, websites and YouTube. YouTube and videos could be included in the same category; however, four responses included videos available from the University online storage facility, and four responses did not specify whether the mentioned videos were from the ones available from the University online storage facility or from other platforms such as YouTube.

It was found that most students accessed the VLE on a regular basis to view Pharmacy Law, Ethics and Practice content, with most accessing VLE 'four to five times a week' (37%, n=38) and no link was found between frequency of access and number of students that watched the scenario-based videos (*p*>0.05).

Section B

Of the respondents, 79% (n=82) had watched at least one of the scenario-based videos, during lectures, workshop or online on the University online storage facility:

- 24.4% (n=20) in lecture or workshops only
- 19.5% (n=16) on the university online storage facility only
- 25.6% (n=21) on all three platforms

Table II: The word count of other resources mentioned by students used to study/revise for PY5020

Resource	Count
Videos	13
Websites	6
YouTube	5
BOX	4
Extra-Notes	3
Recordings	2
Google	1
Study-groups	1
Online-research	1
SCRIPT	1
Tutorial	1

The most watched video was 'Legal requirement of prescriptions', which was viewed by 98% of the students (n=80); the least watched was 'PGD' with 71% (n=58) having viewed this; 58.5 (n=48) students had watched all the videos.

The video with the highest rate of usefulness was 'Emergency supply at the request of the patient' with 88.3% (n=68). The lowest rated was 'PGD' with 67.2% (n=39). When comparing the responses of those students who rated the video as useful (4 or 5 on the Likert scale) versus the number of times a video had been watched, it was found more watched videos were perceived as statistically more useful ($p > 0.0001$).

Views and number of downloads were compared with statistics from the University online storage facility. The most viewed and the most downloaded video was 'Controlled drugs' (n=133) and the least viewed was 'Responsible pharmacist' (n=17). When comparing perceived usefulness and number of downloads, this was not seen to be statistically significant ($p = 0.2223$).

In addition to usefulness ratings, through a series of statements (Table III), it was assessed that students had an overall positive attitude towards the videos that were produced. Even though participants answered through a 5 score Likert scale, results were divided into 3 scores, where 'Agree' included 'Strongly Agree' and 'Agree'; whereas 'Disagree' included 'Strongly Disagree' and 'Disagree'. Of the respondents, 86 out of 88 (97.7%) agreed that the videos were relevant to the module content, with 76 out of 89 (85.4%) agreeing that the videos helped them to understand the module content. A total of 82% (73/89) stated their intention to use the videos for revision.

The 21% (n=22) of students who had not watched the videos were asked to give their own reasons. The most common was that students did not find the videos to be useful.

Table III: Response rate from statements students responded to in questionnaire

Statement	Count	Agree n (%)	Neither n (%)	Disagree n (%)
I intend to use the scenario based videos to study for the PY5020 exam	89	73 (82.0)	10 (11.2)	6 (6.7)
I find the videos help me understand the pharmacy law topic better	89	76 (85.4)	10 (11.2)	3 (3.4)
I believe the videos are useful to support pre-reading before a lecture	89	67 (75.3)	17 (19.1)	5 (5.6)
I would watch the videos more than once	89	68 (76.4)	12 (13.5)	9 (10.1)
The content of the videos is relevant to PY5020	88	86 (97.7)	2 (2.3)	0 (0)
There is not enough information in the videos	87	23 (26.4)	25 (28.7)	39 (44.8)
Most of the videos are too long	88	9 (10.2)	18 (20.5)	61 (69.3)
It would be better if there was sound	88	58 (65.9)	20 (22.7)	10 (11.4)
The speed that the videos play is appropriate	88	63 (71.6)	15 (17.0)	10 (11.4)

Section C

Demographic information discovered included age, where that range was 19 to 35 years with a median and mean of 21 years (± 2.7) out of the 92.3% that disclosed such information (n=96).

Majority that completed the questionnaires were female (63%, n=65) and the main ethnic background that was surveyed were of Asia descent (48%, n=50).

No significant correlation was found between any of the demographic factors and responses given to any question as all p -values were above 0.05.

When asked about topics to be covered for future videos, 29 different topics were mentioned by the 40 students that commented and 'Calculations' was the most requested (16.3%, n=13).

Additional comments made by 28 students were mainly positive as words such as 'Good' and 'Great' were most mentioned; however, the need for sound was also highlighted.

Interview

A total of seven interviews were conducted, which was the total number that had expressed an interest. It was found that all interviewees preferred the voiceover version of the scenario-based video shown compared to the silent and background music only. Students were also asked if they would prefer the silent version against the background music and six out of seven chose the silent version as they felt the music was distracting.

When asked about what to improve, there was a variety of answers; three interviewees talked about the need for sound as they felt it would contribute to their learning. Other feedback was that the videos were too 'cartoony'. Only one student did not have any negative feedback to give. Other comments included the need to add interactions and emphasising the important aspects of a video with pauses.

Positive comments about the videos included 'concise', 'useful' and 'summary' and all seven participants said that videos were good to watch before an assessment as a form of summary, echoing results seen in Table III.

Discussion

The age of the participants were all within a small standard deviation (± 2.7), meaning most students were around the median age of 21 and it was not possible to observe if students over 25 had a higher preference for video as found in the study made in Shenandoah University (Stolte *et al.*, 2011).

Around double the number of female participants completed the questionnaire than the male counterparts. This is representative of the population of females and males studying 'subjects relating to medicine' at Kingston University as they compose 79.1% and 20.8% respectively (Kingston University, 2018). Additionally, as stated in 2013 by the U.K. pharmacy regulator, the General Pharmaceutical Council (GPhC), the percentage of pharmacists that are female in the UK are 60.4% compared to 39.6% males (GPhC, 2013). The gender population for the questionnaire represented that, and no significance was found between gender and the number of students that watched the videos.

Looking at the results, students had a higher preference for paper version of resources compared to online, as their first source of information on a topic. This might be due to several factors. BNF are provided by the University for students to use and they are assessed using the paper version therefore students familiarise themselves with the paper BNF. MEP is a resource used for workshops and students are advised to have the paper version with them at all times. Workshop and practical booklets are also provided, and students are examined based on these workshops and no online version is available. The most used online resource was lecture presentations. This was most likely because they are originally available online on the VLE and students must pay to print lectures.

Use of print versions of resources is most likely encouraged by the Department of Pharmacy at KU to allow familiarity and for practice for the pre-registration examination.

A few topics chosen for the scenario-based videos may only be applicable to community pharmacists, for example 'PGD' and 'Emergency supply...'. However, the majority of pharmacists work in a community setting (72%) and 13% of non-community pharmacists have

more than one job that may be in a different setting, including community pharmacy (GPhC, 2013).

Most importantly for pre-registration assessment, students are required to have knowledge of all sectors.

The perceived usefulness of the videos was positive as the overall mean average was 4.39/5; putting the videos in the 'Useful' category. The views count based on the questionnaires were compared with the views collected from the University online storage and sharing platform. and there was obvious difference in views. This might have been due to some students who completed the questionnaire, watching the videos only during workshops and lectures.

When participants were asked to suggest topics for future videos, it was surprising to find 'Calculations' as the most requested as it is not considered a pharmacy law topic, however PY5020 is the module used at KU for students to practice calculations during workshops and assessments. This might be a possible reason for students associating calculations as part of pharmacy law. Another reason might be that certain scenario-based videos did include calculations (*e.g.*, Veterinary labelling), which were explained step by step and students might have found those beneficial and therefore wanted more calculation-focused videos.

The requested topics seemed to indicate a higher desire to use the scenario-based videos to learn and/or revise skills that the participants are assessed on during the degree rather than on basic knowledge, with topics such as 'Calculations', 'How to counsel patients', and 'How to use the BNF', as some of the most wanted future videos.

From the 21% of participants that did not watch the videos, the most common reason given was that they did not find the videos useful. Respondents did not specify if that was their pre-conception or they watched the videos during lectures and found them not useful, possibly meaning that the students did watch the videos but misinterpreted the question.

Some reasons were given that implied that students did not have the opportunity to watch the videos rather than choosing not to, which maybe not having access to the University online storage facility, or not being aware that the videos were available to view.

The overall perspective of educational videos can be compared with the study by Park and Shrewsbury (2016) where pharmacy students in the U.S. were given access to 61 videos on pharmaceuticals. This study was conducted across three years groups, meaning that the students' previous knowledge and experience prior to watching the videos would have varied, as only 5 out of 61 videos were animations, the remaining being live action. The students found the videos easily accessible and useful, similar to this study. In the U.S. study, higher preference to video for initial learning, rather than textbook was observed.

Inclusion of 'Active learning' was mentioned as feedback from the interviews, as it was felt that not enough interaction was included to allow further processing of information. A study by Barford (1997) where staff

members at Robert Gordon University were surveyed on their incorporation of videos during lectures, found that lecturers felt videos were not useful if they were not followed up with exercises. Brame *et al.* (2015) suggested that active learning in educational videos is required to allow self-monitoring of own understanding with the use of guiding questions and incorporating the videos as part of larger assignments. However, this article focused on making educational videos that could be incorporated into teaching sessions, and through interviews it was found that the videos were thought to be beneficial as revision aids rather than teaching tools.

This project concentrated its sample group to second year M.Pharm. students; future studies could possibly look at making the scenario-based videos available to other years. These videos might be useful to first year students just starting the degree, who may desire background knowledge, and may also be useful to third and fourth year students, as pharmacy law topics are not taught in depth and students are expected to have knowledge from previous years when assessed. Further limitations include the length of time to create the videos and the specific nature of the information, which may change over time, so the videos will need to be regularly reviewed and updated.

This study focused on students' preference and perceived usefulness, meaning that the impact of the educational videos on performance in knowledge acquisition was not measured.

Conclusion

Regarding pharmacy law, few engagement tools are available, and the usage of paper resources is highly encouraged for preparation towards the pre-registration assessment.

In conclusion, the videos were well received as an aid to revise for pharmacy law. Content was found to be relevant and useful to the students' learning, however, the need for voiceover was highlighted. The scenario-based videos were an attempt to increase engagement in pharmacy law and they seemed to be successful. Even though performance was not measured, it is a possible beginning to introduce more technological tools for an aspect of pharmacy that is still taught very didactically.

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