

The availability of open-access videos offered by dental schools

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Open access videos and dental schools

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Background

The internet has become an established learning tool in dental education where students can access online videos on a range of dental subjects. However, finding reliable peer-reviewed content is not straightforward.

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Aim

Evaluate the video content offered by UK and Republic of Ireland (RoI) Dental Schools on their YouTube channels and public websites.

Methods

Free videos offered on UK and RoI Dental schools websites and YouTube channels, were watched and set according to its purpose, as educational or non-educational. The number of views, length, category and date of publication were analysed.

Results

A total of 627 videos offered by dental courses were evaluated. Videos were available on 83% of the websites, but only 9% was educational content. Dental courses YouTube channels received more than 2.3 million views, but less than 5% of the material offered is educational. Instructional videos found on the websites (3.2 min) were shorter than those found on YouTube (8.5 min) ($p=0.03$). The majority of the videos, provided by Universities, were not educational and focused on promoting the dental courses. Most websites have demonstrated a password protected area where quality content may be offered.

Conclusion

Students wishing to watch instructional videos will find limited educational content provided by UK and RoI dental courses. Therefore they are likely to access course related material elsewhere on the Internet that may not be necessarily peer-reviewed.

Introduction

Dental students expect open access to lecture recordings and other digital content provided by their universities.¹ Students favour learning materials that are in either an audio or video format as this is an attractive learning medium.^{2,3} The popularity and ease of use of sites such as YouTube allow them to find material which will supplement their own learning portfolios. The drawback with sites such as YouTube is that many dental students do not possess robust critical reasoning tools and they will not be overly concerned whether the content comes from a formal or informal

source.⁴ If the video matches up with their perceived learning needs then they will be happy to access those materials that are on offer, but YouTube dental educational content is usually considered unreliable, biased or misleading.^{5,6,7}

Producing high-quality peer-reviewed content is time-consuming. Also clinical video material will have restrictions on its use and distribution. As a consequence of such regulations, many Universities publish video material within a password protected virtual learning environment. It is likely that all schools will produce similar variations of video content. This is done independently and there is limited sharing amongst institutions. The outcome is that dental students will often supplement their learning with online content, even if it is not officially provided by the University or suggested in their dental courses.²

Content reliability of available educational materials is based on several factors and these may be listed as follows:⁸

- the reputation of the publisher,
- the intended educational purpose the content was made for,
- relevance to the field,
- how often it is updated,
- the bibliographic references to other material,
- the existence of an internal peer-review system.

An experienced educator or practitioner will follow such criteria by instinct, but students will not perform the same critical analysis.

There is a conflict between what is publically available and the material that is password protected and hosted on internal servers. Content provided by dental courses, based on their curricula and reviewed by their own teachers, in theory, should be better quality than the content provided non-reliable or biased sources. It is not known how much material is available via open access and distributed by recognised dental learning establishments in the UK and RoI. Therefore, the aim of this study was to evaluate the open video content offered by UK and RoI Dental Schools on their YouTube channels and open access websites.

Methodology

1. Video content on University websites

The list of undergraduate dental courses was obtained by cross referencing and checking the information held on both the Association of Dental Education in Europe (ADEE) and Dental Schools Council websites. The access of UK and RoI universities websites was via the links provided by these websites. In those instances where the web links were not working, a web browser incognito function and “duckduckgo.com” based searches were used to find the dental course websites using the university name followed by the terms “dental course” or “dentistry”.

The keywords “video + dental school” or “video + dentistry” were inserted in the search box of each university website. The first ten results of each university website search were checked and all video content found was watched and categorised as educational or non-educational. Any occurrence of university exclusive content was also noted. For the purposes of this study, the quality of the content was not considered. The length and the provider of the displayed content were documented. All website evaluations were made from November 2017 to February 2018.

2. Video content on YouTube University Channels

The existence of official YouTube channels was checked by clicking on a link provided on the university website or typing the name of the university on the YouTube search tool. The terms “dental school” or “dentistry” were typed on the University YouTube channel search tool. The first ten videos of each search were watched and categorised as educational or non-educational. Data concerning the number of views, length, the provider, and updating were documented. No filtering or restrictions were implemented during the searches. This procedure was done to simulate how a layperson would search for such materials using YouTubeGB.

All the search procedures were performed: 1- not using an account with a login; 2- using a new incognito window; 3 - using a cache clean browser; 4 - using default settings for sorting by relevance; 5 - by a single reviewer; and 6 - in English.

Data were set into groups and submitted for ANOVA One Way and Tukey test (Minitab18®). Correlations among the length (0-3min; 3-5min; more than 5min), the

number of views, the uploading date and the viewing rate (number of views/number of months since upload) were tested.

Results

Dental courses websites

Eighteen UK and RoI undergraduate dental courses were appraised. All dental schools from the UK and RoI had a website. Only two of them presented a specific area for dentistry videos. Eleven clearly had a “restricted area”, accessed only by members with a University password.

Our search strategy recorded 282 videos of which 88% offered by six universities. It was observed that 67% of the dental courses do not offer any free educational video content on their websites.

Both the number and length of videos offered by the six universities identified as A to F are shown in Table 1. Only 26 videos were instructional and one university provided 65% of them. The average length of the instructional videos was 3.19 minutes. The shortest was 18 seconds and the longest 15 minutes. The majority of the videos showed non-educational content such as the university facilities, students' opinions, and other forms of merchandising.

Official YouTube channels

All evaluated universities had official YouTube channels. Within these 345 videos were selected and watched. The content on the University YouTube channels was seen more than 25 million times, but, only 15 videos presented dental education content (Table 2). The average number of views of the educational videos on YouTube was 3,611 ($\pm 5,441$). The average length of the university educational videos was around 9 minutes. The educational content was provided by eight of the courses (identified as I to VIII within Table 2) and was uploaded, on average, 1100 (± 470) days ago. Also, on occasions, the same video was used on both platforms (Website and YouTube). No significant correlations were observed when the length, the number of views, the uploading date and the viewing rate were evaluated.

In average dental educational videos on YouTube are longer (2.8x) than the videos posted on the website ($p=0.03$). Almost half of the dental courses did not offer free educational content on YouTube or the website. The presence of password protected virtual learning environments was observed in ten out of the eighteen dental courses websites visited.

DISCUSSION

The benefits of video in dental education has been demonstrated in basic science, preclinical and clinical areas.⁹⁻¹³ Dental students not only favour the use of video but also prefer such online content over other media formats.^{4,14} Therefore applications using video format are bound to be popular with students.

To understand the participation of University dental courses in the offering of free online video content, we visited the websites of all UK and RoI dental schools. Less than a third of the UK and RoI universities websites provided free access to educational videos for dental students. In addition, among all the videos published, less than 10% was instructional.

Searching for educational content offered by universities on their YouTube channels resulted in similar results. A University will use YouTube channels to publish general content such as advertising material about their undergraduate and postgraduate courses. This is very popular and, at the time of our observations, had received more than 25 million views. However, only 15 out of the 345 videos watched were considered to be for the purposes of dental education.

The use of videos is an influential and important dental learning tool. Carefully designed videos improve individual reflective learning, helping students to understand the concept of whole patient care.¹⁵ High-Definition audio-visual technology and clinical scenario videos of real-life dental situations improve students' basic sciences knowledge and learning experience.¹⁶ Animations in 3D improve visual comprehension and health care outcomes in dental education.¹⁷ Video-assisted clinical instruction enriches student understanding and performance in operative procedures such as access cavity preparation.¹⁸ A flipped classroom approach will benefit from videos as students familiarise themselves about clinical

procedures prior to undertaking them on patients.¹⁹ However, this study shows that such videos are limited to internal consumption only and are not available via open access to other learners, preventing access to external viewers.

Universities use virtual learning environments (VLE) as curricular tools and provide exclusive content to their students. The use of VLE has many advantages for the course teachers including standardising the material and finding out which material is seen to be most useful for their students. It allows teachers to know when, what, and how students are accessing the content.²⁰ However, VLE usage will vary according to its pedagogical focus, the material available, accessibility characteristics and consideration to individual needs.²¹

Creating online content is challenging and time is required to create innovative educational materials. In an attempt to increase the amount of content available, lectures are recorded with some institutions making this mandatory.¹ However, it may be argued that this is often not the best way of providing online content as the video medium may require a different approach in order to make it more attractive to the learner which in turn leads to better learning outcomes.¹

YouTube is an attractive medium with material readily available online that can be accessed quickly. Whilst many videos are eye-catching and informative, some of the clinical procedures that are portrayed may not be clinically correct and contain potentially harmful content which should not be practised on patients. A previous study has shown that less than 5% of dental educational content found on YouTube is from a recognised dental course.²²

There is a conflict taking place when students access online materials. Students wish to access information that is readily available. Institutions such as dental schools are cautious about releasing their material, especially in a competitive environment where schools wish to generate their own password protected material for their students. In contrast, online open access platforms are readily available and entice students into their sites. Undergraduate students mistakenly believe that they are able to critically evaluate the material that is available and may encounter outdated or unregulated clinical procedures that may impair their judgement.^{23,24}

The solution is that staff within institutions should be aware of the availability of online conflicts and train their students accordingly. Another solution is that dental schools enter into a consortium to provide a greater breadth of online materials.

This may be password protected but it would provide an excellent vehicle for advertising UK and RoI dental teaching if some of the material was open access to a larger population of students. Videos, simulations, and demonstrations provided by dental courses would serve as a quality baseline for students to check content reliability, improving the learning experience overall.^{25,26} Educational content created and provided by dental courses focuses on its curriculum and reflects its teacher's opinions and certainly are also related to its assessment tests, attracting dental students attention. An increase of open access dental courses sourced videos online will match student's interest and expand the international recognition of the dental courses. Engagement of the commercial publishing sector is another way forward although this may not lead to development around an Open Access model.

Finally, this area may open up to the participation of specialist societies and dental associations who have the resources to offer high-quality educational videos both at undergraduate and postgraduate levels. Such an organisation will be able to facilitate the need for peer-review systems within online content, therefore, improving its reliability.

Limitations and Further research

We understand the importance of checking the content from the specialist disciplines. However, the aim of this research was to bring some light on why it is so difficult to find reliable educational videos online, not to find and compare different subjects within the dental area. To do so, specific words, related to each discipline, need to be used during the search process and this would expand hugely the number of videos to be viewed. Within the limits of this research, most of the content found was related to restorative dentistry. But, we found 17 videos of restorative dentistry in one website and that might just mean that some of the teachers of this course are keener to use technology or had more institutional support to do so. All the material evaluated was produced, suggested and published by reliable sources within their official webpages or YouTube channels. This material

matches most of the reliability criteria, including being published by reliable sources, aim dental students and be based on an approved dental school curriculum. Further research will look at other international dental schools sites.

The quality of the content was not evaluated once it fits criteria determined by each dental course or teacher. Dental courses publications, in all subjects, should be stimulated instead of qualitatively evaluated, at least for now. When the participation of the dental courses on providing open educational content increase; evaluations may start to take place. Perhaps, even a form of peer-review process could be discussed. It is important to realise that dental courses are already producing high-quality content, but such videos are password protected. Further research could focus on checking the analytic data of content offered in dental courses virtual learning environments comparing video usage within different dental courses.

Conclusions

There is limited availability of educational video content related to dentistry on UK and RoI dental university websites or YouTube channels. Dental institutions should take steps to either produce more open access materials or provide tools that allow their students to critically evaluate online material.

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Dental Courses	A	B	C	D	E	F
Characteristics						
Number of educational videos offered	17	3	2	2	1	1
Average educational video length (seconds)	116	213	658	480	201	92

Table 1. Content characteristics from the six UK and RoI dental courses offering educational material on their website.

Dental Course	I	II	III	IV	V	VI	VII	VIII
Characteristics								
Number of non-educational videos	20	10	20	16	20	20	20	20
Number of educational videos	3	2	5	1	1	1	1	1
Average educational video length (seconds)	213	901	489	515	155	1.5K	996	175
Views	3.5K	4.9K	5.6K	519K	140	880	1.4K	6.5K
Average Updating (months)	35	41	32	143	14	44	20	16

Table 2. Content characteristics from the eight UK and RoI dental courses offering educational material on YouTube.