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Review Article

Social Media and "E-Learning" as a Technology Enhanced Learning Platform in Dentistry

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Abstract

The use of social media and "e-learning" has greatly expanded in the last decade, with the widespread use of smart phones and the internet, with online forums and websites available to enhance learning. This review highlights the use of these technologies in higher education, healthcare, as well as in the dental profession. It explores the types of learners, and learning styles, to assess whether there is a more efficient form of learning available, and if "e-learning" caters to this. It also discusses the future of technology enhanced learning, as well as the risks and benefits to healthcare professionals and patients.

Keywords: *Social Media; E-Learning; TEL*

Introduction

What is TEL?

The term technology-enhanced learning (TEL) is defined as "the application of information and communication technologies to enhance teaching and learning" [1]. Another technical definition of TEL has also been described by Walker et al as 'any online facility or system that directly supports learning and teaching' [2]. The use of technology enhanced learning has greatly expanded in the last decade, and although there is plenty of evidence that technology enhanced learning has a place in healthcare education, in this review, social media and "e-learning" will be discussed synonymously with TEL.

What is Social Media?

Social media has been defined in many forms according to the literature, but has mainly been associated with the being "computer mediated", allowing people to exchange information [3].

However, in the literature, further definitions have been portrayed by Solis and Selwyn [4-6]. All of the descriptions of social media follow specific trends:

- Social media involves the collaboration and interaction of many users
- Most of the interactions happen online
- Interaction can occur via audio, visual and textual content
- It involves a sense of community, rather than individual people [7]

Increasing popularity of Social Media

The attitude of the general public towards social media has changed over the last decade, with an increase in the use of Social Media is the last 5 years [8], with sites such as Instagram®, Twitter®, YouTube®, and LinkedIn® having millions of users. Being in the 21st century,

most dental practices have internet access, and most health professionals have smartphones, so these technologies are widely accessible to physicians.

Social media has been seen to be more engaging and collaborative in learning than traditional methods, and it has been suggested that it can be useful to not only train undergraduates, but to also enhance learning in qualified clinicians [9].

Oakley has discussed surveys amongst health care professionals which have shown that 94% of clinicians use smartphones to manage their personal and business workflow [10]. Although a survey can be very much subjective and based on opinion, this evidence supports that as there is already widespread use of these technologies, there is a wide scope for learning.

Asynchronous online discussion

"E-learning" has been described as asynchronous, i.e. it can be accessed in the users own time rather than to a schedule. For example, distance learning and forums, where students can view resources at any time. This is very similar to social media, as is flexible learning with online discussion. However from the literature it seems that asynchronous online learning seems to have more structure, e.g. modules and tasks. Moreover, it has been proven to be effective in higher education [11,12], and may allow reflection [13]. E-learning may be a form of education where sources of information are more evidence based, and this is something that educators may wish to take into account, as having a set structure allows more time to explore the validity of sources.

It has been shown that asynchronous online discussion provides a palatable amount of information for learners who may be limited by location or work schedules, as well as catering to different types of learning styles and levels of knowledge. In paediatric medicine, it was proven to improve knowledge independent of clinical teaching [14].

Uses of TEL

Technology enhanced learning, "e-learning", and social media have a widespread use in many aspects of education. The main 3 categories being:

1. Higher education
2. Healthcare
3. Dentistry

Higher Education

Social media has been shown to be used in higher education on a larger scale than previous years [6], but no longer as a one-way system, but one which allows multiple users to interact with each other. Selwyn proposed that social media has been seen to be increasingly useful amongst students entering university, for adaptation to university life, interacting with peers and with faculty [6,15]. Relating this to healthcare education, studies have shown that around half of the academic staff in the UK use some form of social media occasionally for work, however, it is more as readers rather than creators [16]. Nowadays, many universities now have profiles and groups on social media websites, such as Twitter and Facebook, where students can interact with each other, share resources, in one study, 53.79% of colleges/universities had an official Facebook page [17], and that Facebook has proved very popular with Pharmacy students [18]. In addition, Twitter has been shown to have a positive effect on college student grades and interaction [19], as well as YouTube videos being useful for teaching for faculty staff [20]. Although all this evidence has been gathered through surveys and questionnaires, which can be subjective and biased, it still conveys the widespread use of social media, especially at the undergraduate level. Nevertheless, even at Postgraduate level, a study by Pearson showed that over 90% of faculty used some form of social media in either their own education or teaching, and 70% of faculty agreed that "video, podcasts, blogs, and wikis are valuable tools for teaching" [20].

Healthcare

TEL has a widespread use, not only for physicians, but for patients too, who may use Twitter or Facebook to contact other patients, or LinkedIn or Twitter for professional networking and marketing [21].

Uses of TEL in healthcare:

- Healthcare research (31.7%) [21]
- Community Activities - fundraising/memory preservation
- Customer Support/Virtual support networks/communication
- News and patient education
- Advertising new services [22]

Dentistry

Dental educators have started to use social media to educate students, but more research is needed to try to incorporate this into tradition learning [23].

Henry., *et al.* conducted a study of dental practises in 2012 that reported that 51% of practises used social media, 91% for marketing, and 73% to increase online presence. Some respondents also used social media to gain information on prospective employees [24]. This shows that there is value in social media in a dental setting. Podcasts, a form of social media defined by the GDC, have also been seen to be useful in prosthetic dentistry for undergraduates [25, 26]. In this particular study, Facebook and YouTube proved to be most popular amongst students.

Evidence also suggests that mobile apps have been useful to access textbooks, and regular updates from organisations and royal colleges [27]. These smartphones have been shown in maxillofacial surgery, to improve efficiency for diagnosis, triage, and patient care, as they are not limited by a computer [28]. One particular statistic showed that 94% of British maxillofacial trainees owned a smartphone, 89% of whom had downloaded medical apps, and used them regularly [29].

What are the advantages of TEL over traditional approaches?

Traditional educational approaches, such as lectures, have significant disadvantages compared to TEL approaches. TEL:

- Is quicker
- Is easier to access from multiple locations at any time
- Allows fast interaction and conversation
- Does not require lecture room space
- Allows the user to alter images, and access audio and visual resources
- Is cheaper, and more economical
- Allows updating of information, without the need to have a physical lecture space

Learning theories in education

There are many types of learning theories in the literature, which can be useful in assessing the most effective form of learning. The first learning theory proposes 3 types of learners, participatory, independent, and collaborative.

1.Participatory

a. Actively like to participate
b. Like to voice opinions

2.Independent

a. Prefer learning independently
b. Have discipline, and are self-directed

3.Collaborative

a. Prefer group work and discussion
b. Team Players
c. Can exhibit leadership, and prefer "face to face" interaction [30-32].

Another more technical definition of learning can be categorised as visual, auditory, and kinaesthetic.

1.Visual

a.Learning visually, e.g. by charts and pictures

2. Auditory

a.Learning by listening to lectures, and reading

3.Kinaesthetic

a.Learn by action - by "doing" [33]

Moreover, the third most popular learning theory has been coined by Honey & Mumford, 1992, using Kolb's theory (1984) that identified 4 types of learners: [34]

1.Activists

a. Enjoy new experiences
b. Make decisions intuitively
c. Don't like structured learning

2.Theorists

a. Think logically and systematically
b. Learn with structure and planning, rather than intuition

3.Pragmatists

a. Prefer group work, debates
b. Like to risk take
c. Dislike reflection and deep thinking

4.Reflectors

a. Like to observe and describe
b. Prefer to reflect and understand meaning

What is the best theory of adult learning that can be applied to learning from social media?

When discussing education, the different types of learners have to be considered. It has been well versed in the literature that everyone has a different style of learning, which is also dependent upon many factors, such as age, and previous learning experience. However, social media and e-learning allows users to learn in the way which they are comfortable. Asynchronous online discussion has the scope to cater for all types of learners, who can learn independently from clinical teaching. This is a good protective environment for undergraduates.

The Social Learning Theory (SLT), which has proposed that learning is most effective when participants can engage with each other, and learn in groups, compared to traditional lectures [35], which is something which has become popular with the increase in social media. Nevertheless, "e-learning" and social media allow learners the freedom to experiment with multiple styles of learning, which is something more traditional forms may be limited in [36].

Conclusion

This review has demonstrated that technology enhanced learning is an ever increasing and valuable tool in enhancing education in healthcare. Social media particularly can come in many different forms, and depending upon the learning style of the individual user, it can be customised to fit the needs of the particular student in question. It allows flexible and structured learning, opportunities to challenge peers in discussion, as well as the freedom to reflect.

Future updates

Further research is required to assess if there is a particular TEL framework which could be applied for healthcare education. This could combine both traditional and more modern forms of learning, to deliver the best possible educational system. There may also be scope to expand this to have differing platforms, dependent upon the type of learner accessing the material. At the same time however, these platforms would be built upon evidence based education. This provides the most valuable TEL experience, moving "e-learning" forward into the new age.

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