Social media: Insights for medical education from instructor perceptions and usage

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Abstract

The popularity and utility of social media in medical education have progressed dramatically during the last decade. Social media are increasingly used for educational and professional purposes and are known to be both theoretically beneficial and practically effective. We have investigated the perceptions and usage of social media by educators across multiple disciplines, roles and demographics in order to determine the present situation regarding social media as educational tools. We show that discipline and demographics have limited impact on perceptions of the value of social media. As medical educators, we consider our findings to be broadly pertinent to undergraduate medical education. Results presented here indicate that many educators at UK universities consider social media to be educationally valuable. However, this is not always directly translated into usage due to the presence of certain barriers. This finding is characterised by a disparity between the extent of positive perceptions of social media and the amount of practical usage within the context of medical education and other undergraduate disciplines. Our work has shed some light on the reasons why educators may choose not to use social media, in addition to how and why they do use it, which can provide a basis for developing strategies for training medical educators in approaches to social media in learning and teaching, and for encouraging appropriate usage of these valuable educational tools.

Keywords: social media, technology enhanced learning

Introduction

Social media and Web 2.0 in higher education
Social media (SoMe) are websites, applications and online tools that are primarily used by individuals to facilitate connections with other users and to present a managed public profile of themselves (Meshi, Tamir, & Heekeren, 2015; Nadkarni & Hofmann, 2012). SoMe can be classified as social networking sites and applications (SNS) such
as Facebook, Twitter and LinkedIn or media sharing (MSS) platforms including Instagram and YouTube (Boyd & Ellison, 2007). However, on many current sites both networking and sharing activities are utilised to some extent (Meshi et al., 2015). Web 2.0 is defined as the ‘read/write web’ (Ajjan & Hartshorne, 2008) and SoMe are often considered together with Web 2.0 applications such as blogs, Wikis and communication or video and text messaging software including Skype and WhatsApp. Learning management systems (LMSs) or virtual learning environments (VLEs) including Blackboard and Moodle, have also be categorised under the broad classification of social media by some authors (Schroeder, Minocha, & Schneider, 2010; Veletsianos, Kimmons, & French, 2013). Worldwide, there are more than one billion active users of Facebook (Facebook, 2017) and YouTube (YouTube, 2017), and over 300 million active monthly users of Twitter (Twitter, 2017). These figures include high levels of SoMe activity among undergraduate students for educational as well as social purposes (Ali, 2016; Guraya, 2016; Knight-McCord et al., 2016; Roblyer, McDaniel, Webb, Herman, & Witty, 2010; Tess, 2013) and such usage parallels the availability of remote SoMe access achieved through uptake in smart devices (Buchholz, Perry, Weiss, & Cooley, 2016; Evrim, 2014; Gökçearthlan, Mumcu, Haşlaman, & Çevik, 2016; Ozdalga, Ozdalga, & Ahuja, 2012; Ponce, Méndez, & Peñalvo, 2014). In the early to mid-2000s, SoMe and Web 2.0 arose as new, exciting and innovative technologies (Boyd & Ellison, 2007) that instructors began to incorporate into educational activities (Booth & Hultén, 2003; Mazer, Murphy, & Simonds, 2007) and the increasing interest in SoMe during this period is reflected in the volume of educational literature on this topic (Asiri & Househ, 2016; Aydin, 2012; Kakushi & Evora, 2016; Lafferty & Manca, 2015; McAndrew & Johnston, 2012; Pander, Pinilla, Dimitriadis, & Fischer, 2014; Schuster et al., 2016; Tess, 2013), and includes several systematic and other reviews regarding usage in medical education (MedEd) (Cartledge, Miller, & Phillips, 2013; Cheston et al., 2013; Guraya, 2016; Whyte & Hennessy, 2017). However, SoMe integration into higher education (HE), including undergraduate MedEd, as with other technologies, has been met with practical and institutional barriers, with many educators now abandoning their use (Shelton, 2016).

Educational value versus practical barriers

The widespread integration of SoMe into HE and MedEd are not based on cultural popularity alone, and many practical and theoretical qualities have been identified which underpin their usage. Practical teaching approaches can be aligned with social cognitive learning theory (Bandura, 2001; Bandura & Walters, 1977), constructivism (Ausubel, 1980, 2012; Piaget, 1970) and social constructivism (Vygotsky, 1978). These theoretical underpinnings have been described extensively elsewhere in terms of the advantages of SoMe for active learning, collaboration, communication, interaction, building on experience, self-efficacy and the sociocultural context of learning (Ajjan & Hartshorne, 2008; Bonzo & Parchoma, 2010). SoMe can also provide a platform for the educationally important concepts of informal and incidental learning (Cain & Policastro, 2011; Marsick & Watkins, 1990, 2001) and can facilitate connections between formal and informal learning (Dabbagh & Kitsantas, 2012). SoMe can provide a method of delivering transformational teaching, defined by shared qualities of enhancing relationships between teachers, students and learning through simultaneously developing knowledge, skills and attitudes (Slavich & Zimbardo, 2012). Educational research findings have highlighted the advantages of using SoMe in learning and teaching (L&T). SoMe have been successfully utilised for information sharing in HE (Forkosh-Baruch & Hershkovitz, 2012) and significant improvements in student engagement and educational performance have been identified (Arquero & Romero-Frias, 2013; Junco, Heiberger, & Loken, 2011). There are also compelling findings with respect to the value of informal out-of-class interactions on student learning and experience facilitated by SoMe (Sarapin & Morris, 2015), the educational value of which has been previously described (Cuseo, 2008). However, studies investigating educator experiences of SoMe in L&T have identified numerous frustrations related to technological and pedagogical issues (Manca & Ranieri, 2016a, 2016b; Veletsianos et al., 2013), including engaging students in usage for educational purposes (Jones, Blackey, Fitzgibbon, & Chew, 2010), concerns surrounding workload, ownership and reliability (Schroeder et al., 2010); student attention span and distraction (Paul, Baker, & Cochran, 2012), blurring of the staff-student boundary (Mazer et al., 2007); unprofessional usage (Kitsis et al., 2016); and impacts on lecturer credibility (Hutchens & Hayes, 2014). Barriers can also exist at the institutional
level in terms of a culture in HE that has been described as resistant to the uptake of new technologies (Bonzo & Parchoma, 2010; Roblyer et al., 2010; Selwyn, 2007).

**Rationale and aim**

In light of such theoretical advantages and supportive research findings contrasted with the negative perceptions of some educators and institutions, it is important to investigate how these observations translate into modern teaching practice. This can be achieved by identifying *if, how and why* educators are currently utilising SoMe to enhance student learning. While much of the educational literature addresses student usage, experience and perceptions, relatively few studies have considered instructor and faculty perspectives (Sarapin & Morris, 2015; Veletsianos et al., 2013) and a limited proportion have approached this from a post-positivist stance (Ajjan & Hartshorne, 2008; Manca & Ranieri, 2016a, 2016b). The aim of this study is to investigate important aspects of SoMe from the perspective of a sample population of educators in MedEd and across HE more widely, in order to provide insights into the current status of SoMe in L&T, with a view to identifying strategies for encouraging widespread use of these valuable educational resources in undergraduate MedEd.

**Methods**

**Theoretical perspective and conceptual framework:** Survey methodology within a post-positivist paradigm has been utilised to collect findings regarding the current perceptions and usage of SoMe by medical educators and other educators in UK HE institutions, specifically in the North East of England. Methods, methodologies and data analysis are coherent with the theoretical perspective and approach.

**Educational and institutional context:** Intended participants were academic and support staff from universities in England, UK, who were actively engaged in the delivery and development of teaching and in pedagogical research in MedEd and in other HE disciplines. The questionnaire instrument was administered at L&T events in spring 2016. An internal Newcastle University conference was attended by Newcastle University staff (n = 100 approx.) and a regional L&T conference at Northumbria University was attended by delegates (n = 200 approx.) from four HE institutions in the region (Newcastle University, Northumbria University, Teesside University and Sunderland University). The questionnaire was also administered to colleagues (n = 2) during a study visit to Brighton and Sussex Medical School and to Newcastle University staff (n = 30 approx.) participating in an L&T continuing professional development (CPD) activity. The presence of a number of medical educators at these events was confirmed in advance.

**Population and sampling:** A non-random captive convenience sampling approach was utilised (Charles & Fen, 2007). While it was appreciated that this sample would not be representative of all UK educators active in HE and MedEd and would be biased towards the participating institutions, it was intended that the sample would allow us to study a population of HE educators sharing characteristics of active engagement in teaching and pedagogy.

**Questionnaire instrument:** The instrument was developed and designed by the authors, based on established principles (Oppenheim, 1993; Peterson, 2000) and modified based on a pilot questionnaire. Five point-Likert-type items (Leung, 2011) were utilised to obtain the extent of participant perceptions. Post-hoc Cronbach’s alpha reliability analysis for barrier Likert-type items (Q3 below) identified a value of 0.66, where values > 0.6 are considered acceptable (Jakobsson, Danielsen, & Edgren, 2011). Free text items were included to more deeply explore responses. It was assumed that participants would understand and be able to respond to questionnaire items. It was assumed that any variations in perceptions and understanding of the definition of SoMe would be reflected in participant comments. Questionnaire items are provided below:
(1) How do you use social media (please select all that apply): I do not use social media; I use social media for personal and social reasons; I use social media professionally (e.g. for networking, for communicating at conferences); I use social media in my teaching practice.

(2) I consider social media to be a valuable tool for use in learning and teaching: Strongly agree; Agree; Neutral; Disagree; Strongly disagree [Likert-type item]. Please comment on the value of social media as a tool for use in learning and teaching [Free-text item].

(3) Barriers to your use of social media in your teaching practice. Strongly agree; Agree; Neutral; Disagree; Strongly disagree [Likert-type items described below].

- 3A: I am concerned about the teacher-student relationship when using social media
- 3B: I am concerned about social media being a distraction to students when used in teaching
- 3C: I am concerned about student professionalism when using social media
- 3D: I am concerned about my own professionalism when using social media
- 3E: I do not consider the use of social media to be necessary in learning and teaching
- 3F: I do not have time to effectively use social media for learning and teaching purposes
- 3G: I do not know how to use social media for learning and teaching purposes
- 3H: I have not considered using social media for learning and teaching purposes.

Please specify any other barriers to your use of social media in learning and teaching [Free-text item].

(4) Items for users of social media in learning and teaching

- Which social media sites do you use for learning and teaching? Facebook; Twitter; YouTube; Other (please specify).
- How often do you use social media for learning and teaching? (Daily; Weekly; Monthly; Less often).
- How do you use social media for learning and teaching (please give specific examples) [Free-text item].
- Why do you use social media for learning and teaching (please specify your reasons) [Free-text item].

(5) Future social media events. Would you attend a workshop at Newcastle University about how to use social media professionally and in learning and teaching? (Yes, no).

Data analysis: Mean and standard deviation of individual and categorised (by age, job role, discipline and gender) responses to Likert-type items were calculated. Statistically significant differences between responses to different Likert-type items were identified by paired t-test or by two sample-unequal variance paired t-test as appropriate. Analysis of variance (ANOVA) was used to determine if statistically significant differences existed between responses to more than two Likert-type items (Sullivan & Artino, 2013). A value of p < 0.05 was considered to be the threshold for statistical significance and a value of p < 0.01 was considered to be highly significant. Thematic content analysis was carried out as per previous work by the authors (Backhouse, Fitzpatrick, Hutchinson, Thandi, & Keenan, 2017), based on earlier work (Franzosi, 2008). Systematic and objective coding of themes was performed.
by identifying and counting the frequency of content units that arose. Themes were independently double-coded before final themes were collaboratively agreed upon by the authors. Statistical analysis was conducted using IBM SPSS Statistics for Windows version 22 (IBM Corp., Armonk, NY) and Microsoft Excel 2013 (Microsoft Corp., Redmon WA).

**Ethical assessment:** Ethical assessment was conducted in February 2016 and submitted to the Newcastle University Faculty of Medical Sciences Ethics Committee. Preliminary review determined the project to be low risk to human participants and therefore further assessment was not required. Educators were given a the incentive of a prize draw to participate in the research. Participants gave written, informed consent and were informed regarding the secure storage and research usage of their anonymised data.

**Results**

**Sample population demographics**
Having administered the questionnaire instrument to the sample population (n = 62), the majority of participants (76 %) were found to be affiliated to Newcastle University (Figure 1A), as would be expected given that two of the sampled events were held there. The distribution of participant age (Figure 1B), job roles (Figure 1C) and subject disciplines including medicine (Figure 1D) were also identified. Of the total sample (n = 62), 16.13% (n = 10) were found to be medical educators. Non-discipline specific, support staff involved in teaching, pedagogy and/or teaching development, e.g. library staff and teaching development services staff, were categorised as 'General Support'. Discipline-specific support staff were categorised within each respective discipline.

**Impact of demographic factors on lecturer perceptions of SoMe**
Having identified our sample population of educators, it was then of interest to identify to what extent particular groups or sub-populations of educators perceived SoMe as a valuable L&T tool, and to identify any differences between medical educators (n = 10) and other educators (n = 52). To investigate this, the impact of demographic factors of age (Figure 2A), job role (Figure 2B) and gender (Figure 2C) on participant perceptions were identified. It was also of importance to identify the impact of subject discipline on perceptions in order to compare medicine with other subjects in terms of both the value of and barriers to SoMe usage. Due to the importance of professional conduct in medicine, it was proposed that student professionalism would be a greater concern for medical educators than for other disciplines, so a comparison of educator perceptions regarding this aspect was specifically identified (Figure 2D).

**Social media usage**
Having identified that medical educators and educators from other academic disciplines had similar perceptions with respect to SoMe in L&T, the next step was to identify the perspectives of the total sample of educators (n = 62) in terms of the value of SoMe in L&T (Figure 3A) and the general purposes for which they use SoMe (Figure 3B). The activities of a sub-population of participants (n = 28) using SoMe for L&T activities, all of whom used at least one of the three most popular SoMe sites (Facebook, Twitter and YouTube), were then considered. Of the three most-used SoMe sites, the video streaming and sharing platform YouTube was shown to be used more often by educators than were the social networking sites Facebook and Twitter (Figure 3C). A proportion of responders (25%, n = 7) also indicated that they used other social media platforms in L&T, including Slideshare, Pinterest, Tumblr, Instagram, Flickr, LinkedIn, WhatsApp, Periscope, WordPress, ShowMe and the educationally-focused Peerwise. Two responders indicated that they used VLEs and considered them be social media platforms. Of the responding population of current social media users (n = 27), usage frequency varied between every day and less often than every month (Figure 3D).
Perceived value of social media use in L&T

Having shown that there is variation in general SoMe usage among educators, it was important to establish the extent of the value that educators assign to SoMe for L&T, in addition to how and why educators use SoMe specifically for L&T activities. Of the participant population responding to the free-text item ‘Please comment on the value of social media as a tool for use in learning and teaching’, (n = 50) almost half of responding educators (46%, n = 23) mentioned themes relating positively to the value of SoMe in L&T. Specific themes also arose regarding general and specific aspects of SoMe that educators considered to be educationally valuable (Figure 4A). Examples of free text comments relating to each theme are shown in Table 1.

Perceived barriers to social media use in L&T

Once it was evident that educators considered SoMe to be valuable for educational purposes, it was also important to establish any barriers they perceived. Student usage and professionalism as well as staff awareness and motivation, in addition to the actual pedagogical value of SoMe, were found to be key themes in terms of barriers perceived by educators (Figure 4B). Examples of free-text comments under each theme are provided in Table 2. Educator perspectives of specific barriers were also identified (Figure 4C). A mean value >3.5 for each item was considered to indicate overall agreement by the responding population, while values <2.5 were considered to indicate overall disagreement. It was determined that, overall, educators considered that student professionalism was the major barrier to SoMe use. Time, distraction, and the teacher-student relationship were considered less important, having generated mean responses of >3, ANOVA showed a highly significantly (p < 0.01) greater variance between educators responses regarding barriers to SoMe use compared to variance between the individual responses to a given barrier. Responses to the item ‘I am concerned about the teacher-student relationship when using social media’ (Item 3A) were significantly (p < 0.05) or highly significantly (p < 0.001) different to responses to other items, with the exception of item 3B and item 3F. Responses to the item ‘I am concerned about social media being a distraction to students when used in teaching’ (item 3B) were significantly (p < 0.05) or highly significantly (p < 0.001) different to responses to other items, with the exception of Item 3A and Item 3F. Responses to the item ‘I am concerned about student professionalism when using social media’ (Item 3C) were significantly (p < 0.05) or highly significantly (p < 0.001) greater than responses to all other items. Responses to the item ‘I do not have time to effectively use social media for learning and teaching purposes’ (Item 3F) were significantly (p < 0.05) or highly significantly (p < 0.001) different to responses to other items, with the exception of Item 3A and Item 3B.

How and why do SoMe users utilise it as a tool in L&T?

Having identified the perceptions of the total sample population of educators in terms of their perspectives on the value of usage and SoMe, it was important to then focus on how and why the educators who do use SoMe in L&T currently use it. In terms of the specific usage of SoMe by educators (how they use it) for L&T purposes, thematic content analysis found that video-sharing and streaming was used by the highest proportion of educators, which would be expected given the extent of YouTube usage identified above. Educators also responded that they utilised SoMe in order to provide a forum for communication with and between students, and for the posting of course-specific material (Figure 4D). Examples of free text comments under each theme in response to the questionnaire item ‘How do you use social media in learning and teaching?’ are provided in Table 3. The major pedagogical purposes for which educators utilised SoMe (why they use it) were found to involve enhancing the student experience by providing variety to their teaching approaches, forming connections and facilitating engagement with students. The usability, immediacy and modernity of SoMe were also mentioned (Figure 4E). Examples of free text comments under each theme in response to the questionnaire item ‘Why do you use social media in learning and teaching?’ are provided in Table 4.
Figure 1: Educator demographics

Participating educator demographics. From the participating population of educators (n = 62), all but two were based at Universities in the North East of England, with a large majority based at Newcastle University (A). The age of participating educators (n = 62) were distributed between categories comprising a minimum of 25 years old and a maximum of 65 years old. The mean, median and mode age group of participants was found to be 36-45 (B). The job roles of participants (n = 62) were identified and categorised from educational support and stages of academic seniority, showing that the majority of participants were junior or mid-career academics (C). The subject disciplines of participants (n = 62) were reported and categorised, showing a distribution across several subject areas (D). Gender distribution of the participating population (n = 62) was identified as 65.5% (n = 40) female and 35.5% (n = 22) male (data not shown).

Figure 2: Impact of demographics on perceptions
Figure 2. Impact of demographics on educator perceptions of social media. The influence of demographic factors on the attitudes of the sample population of educators (n = 62) regarding the value of social media in learning and teaching were investigated statistically by identifying the mean response of participants categorised by age group (A), job role (B), and gender (C) to the Likert-type questionnaire item ‘I consider social media to be a valuable tool for use in learning and teaching’. No significant difference (p > 0.05) between subgroups across all demographics analysed were noted. All but one demographic sub-population agreed overall that SoMe were valuable for L&T (mean >3.5) (Figure A-C). The perceptions of educators affiliated with medicine compared to those from other disciplines were also investigated (D) by calculating mean responses to the Likert-type questionnaire item ‘I consider social media to be a valuable tool for use in learning and teaching’ (Value), the combined mean responses to Likert-type questionnaire items ‘Barriers to your use of social media in your teaching practice’ (Barriers) and mean responses to the Likert-type questionnaire item ‘I am concerned about student professionalism when using social media’ (Student professionalism). In each case, no significant differences between responses of medical educators and other educators were noted (p > 0.05).

Figure 3: Perceptions and usage
Figure 3. Social media perceptions and usage by educators. From the participating population of educators (n = 62), the majority (64.5%, n = 40) agreed or strongly agreed that social media are valuable tools for use in learning and teaching. A greater proportion of the population (87%, n = 54) indicated that they would attend a social media workshop (A). Fewer than half (45.16%, n = 28) of the participating population (n = 62) indicated that they currently use social media in their learning and teaching practice (B). Of the sub-population of social media users identified (n = 28), YouTube was the most commonly used social media platform, followed by Twitter (C). Of those reporting SoMe usage for L&T purposes (n = 27, there was one non-responder to this item), around two-thirds (63%, n = 17) use SoMe in L&T at least monthly, while almost half (48%, n =13), use SoMe for teaching at least every week (D).

Figure 4: Value and barriers
Figure 4. Perceived value of social media in learning and teaching. Semi-quantitative thematic analysis of free-text responses of responding participants (n = 50) generated three major themes relating to the value of social media in learning and teaching (A). Semi-quantitative thematic analysis of free-text responses of responding participants (n = 43) generated five themes relating to barriers to social media usage in learning and teaching (B). Statistical analysis of responses of the participant population (n = 62) to Likert-type items identified the extent to which educators are concerned about each proposed barrier to social media use in learning and teaching (C). Semi-quantitative thematic analysis of free-text responses of responding social media user participants generated themes relating to how (D) (n = 25), and why (E) (n = 23), educators use social media in learning and teaching.
Table 1: Value of social media

<table>
<thead>
<tr>
<th>Engagement: Reaching students inside and outside of the classroom</th>
<th>Utility: Familiarity and immediacy</th>
<th>Sharing: Collaboration and dissemination</th>
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<tbody>
<tr>
<td>[Social media] can be of significant value in drawing out ideas and assisting engagement.</td>
<td>[Social media are] the main way people communicate now. Facebook is checked more regularly than e-mails.</td>
<td>Social media such as Twitter and Facebook can provide students with capacity to share thoughts, examples of work and useful information in real-time. As information and learning resources outside of those provided by the university become more easily and readily accessible, having the means to share such information and signpost to it is very useful.</td>
</tr>
<tr>
<td>Social media can be a useful way to signpost material before, during and after a session.</td>
<td>[Social media is] a medium students today engage with comfortably and regularly.</td>
<td>[Social media are valuable] principally as a network builder and as a way of facilitating partnership working and collaborative learning.</td>
</tr>
<tr>
<td>Social media is a way to communicate with students inside and outside the classroom.</td>
<td>Social media has potential to engage a lot of students – possibly more easily than via Blackboard/e-mail.</td>
<td>I feel that social media is better for peer-peer engagement, where students can set up private discussion groups for their programmes.</td>
</tr>
<tr>
<td>I don't think Facebook and Twitter are valuable because I question student engagement with these tools as learning tools, as opposed to social tools.</td>
<td>Students can relate well [to social media] as they are using it all the time.</td>
<td>[Social media are valuable for] reaching a wider range of students, e.g. those with disabilities or learning difficulties, or those on placements, using distance learning, or studying abroad.</td>
</tr>
<tr>
<td>[Social media] can be used to help engage students in learning but if not done carefully can also be a distraction</td>
<td>[Social media allow a] fast response to questions posed</td>
<td>[Social media are valuable for] communication, increasing networking support, and sharing information and ideas.</td>
</tr>
</tbody>
</table>

Table 1. Examples of free text comment responses to the questionnaire item Please comment on the value of social media as a tool for use in learning and teaching that have been categorised into themes of Engagement, Utility and Sharing by thematic content analysis.

Table 2: Barriers to social media

<table>
<thead>
<tr>
<th>Educational value</th>
<th>Professionalism</th>
<th>Staff knowledge and experience</th>
<th>Staff motivation</th>
<th>Student usage</th>
</tr>
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<tbody>
<tr>
<td>Some [students] prefer the 'classical' way of teaching – strict and highly professional lecturers, hand-written work, etc.</td>
<td>One major hurdle was the separation of professional and personal profiles online, especially when the providers of services require the use of a real name and complete personal transparency.</td>
<td>Lack of experience/expertise.</td>
<td>The time to learn to use the most relevant social media and keep up with the continual changes in the social media most used by our students.</td>
<td>It is a distraction from hard work tasks that students must do in order to be good professionals.</td>
</tr>
</tbody>
</table>
I don’t use social media because I’m happy with the range of techniques I currently use and question the added value of sites which are normally used socially.

I have considered using Facebook as a medium for dialogue with students about module but am concerned about appropriateness plus sense of intruding on student’s space.

I don’t have enough knowledge of how best to use social media, e.g. examples of best practice. I do not have [sufficient] technology skills – feel I need support with the technical elements.

Perceptions of colleagues who have a ‘traditional’ view of learning and teaching approaches. It is often viewed with contempt, and to be beneath the professional standards expected of staff.

[There is a] need to develop student literacy in finding and interpreting information.

Social media do not add anything to the existing online tools in use at Newcastle – [VLE] discussion forums, resource sharing, etc. are excellent.

If I allow comments on posts then I retain moderating control as I am concerned about inappropriate comments/language. The vast majority of students who use social media to engage with library/our teaching are building their own professional profiles so do not abuse it.

I need more training in order to feel confident and to develop automaticity.

Institutional politics – IT acquisition; usage politics; training and staff.

Not all learners necessarily have access to social media, e.g. some learners have never used Twitter.

[I am concerned about the] quality of information and resource.

Socialising with teachers in a non-lecture environment may prove very helpful. I think professionalism is the key to this.

[It] would be useful to have ‘how to’ or ‘best practice’ examples.

Time to consider literature and evidence of how to best implement social media and time to best incorporate it.

[I have] concerns over alienating those [students] not using it.

Table 2. Examples of free text comment responses to the questionnaire item Please specify any other barriers to your use of social media in learning and teaching that have been categorised into themes of Educational value, Professionalism, Staff Knowledge and Experience, Staff Motivation and Student Usage by thematic content analysis.

Table 3: How social media are used

<table>
<thead>
<tr>
<th>For tutorial support and consultation</th>
<th>As a forum for student discussion</th>
<th>For sharing and streaming videos</th>
<th>For networking, dissemination and research</th>
<th>To provide awareness of current topics and recent literature and subject specific material</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use online [VLE] forum to answer questions about assessments I run.</td>
<td>[I use] WhatsApp groups for student discussion.</td>
<td>[I] embed and signpost students to YouTube videos.</td>
<td>[I use social media for] disseminating teaching and learning innovation projects.</td>
<td>[I use a] subject-specific twitter account [which] keeps students and staff up-to-date with arts, humanities and education news.</td>
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<td>[I use social media to] occasional contact with ex-tutees (long after they graduate).</td>
<td>[I use social media for] student interaction, [it is an] unstructured and student-led way of informal and continued conversations.</td>
<td>I use YouTube videos to help students conceptualise topics.</td>
<td>[I use social media] to connect students with practitioners and academics in the professional field or discipline.</td>
<td>[I] tweet things related to the courses I teach, mainly links to articles but sometimes linked to specific events I run.</td>
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<td>[I use] Skype for alternative support tutorials.</td>
<td>[I] use Facebook for students using discussion boards, they are generally more responsive to this, rather than [VLE].</td>
<td>[I use social media for] sourcing and sharing YouTube videos.</td>
<td>[I use social media for] dissemination of information (some academic, some information about events in the local area.</td>
<td>I use Twitter with a specific hashtag for students to generate conversations inside and outside the classroom. I also use Twitter to illicit questions and responses from students in real-time in class.</td>
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<td>[I use social media for] giving advice [on] instructions, logistics and housekeeping.</td>
<td>[I use social media] to engage others into the discussion topic.</td>
<td>[I use] YouTube clips with tasks, discussion points, to illustrate a point [for] supporting incidents, interview clips, etc.</td>
<td>[I] explore social media as a source of evidence for students seeking [to evaluate] media or public opinion.</td>
<td>[I use] module-specific groups on Facebook [and] curriculum initiatives to support social learning on Facebook and Twitter.</td>
</tr>
<tr>
<td>[I use social media for] answering questions, confirming knowledge and testing knowledge (using polls).</td>
<td>[I use social media] to initiate and contribute to dialogue.</td>
<td>[I use] YouTube videos for stimulus prior to discussion or project work.</td>
<td>[I use social media] to enable students to collect market research.</td>
<td>[I use social media] to record moments of teaching sessions which are shared via twitter to raise the profile of students’ work and engagement.</td>
</tr>
</tbody>
</table>

**Table 3.** Examples of free text comment responses to the questionnaire item *How do you use social media in learning and teaching?* that have been categorised into themes of *For tutorial support and consultation, As a forum for student discussion, For sharing and streaming videos, For networking, dissemination and research* and *To provide awareness of current topics and recent literature and subject specific material* by thematic content analysis.

**Table 4: Why social media are used**

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<thead>
<tr>
<th>Current and usable</th>
<th>To reach, connect and engage students</th>
<th>To provide variety and range of learning approaches and resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated feeds make keeping up-to-date much easier and showcase organisations and researchers publishing in academic discipline [therefore providing] international reach.</td>
<td>I use social media to] outreach to distance students [and provide] extension of class contact time.</td>
<td>[Using social media in learning and teaching provides] another approach, it is good to be diverse.</td>
</tr>
<tr>
<td>I use social media] to remain current in [a] changing learning context.</td>
<td>[I use social media because they are] important [for connecting] groups that meet infrequently.</td>
<td>I use social media to provide] authentic videos and use of multiple perspective from topic areas to increase student awareness of topic and its complexity.</td>
</tr>
</tbody>
</table>
Table 4. Examples of free text comment responses to the questionnaire item **Why do you use social media in learning and teaching?** that have been categorised into themes of **Current and usable**, **To reach, connect and engage students** and **To provide variety and range of learning approaches and resources** by thematic content analysis.

**Discussion**

**Perceptions of educators from other disciplines can be applied to medical education**

Findings here demonstrate that the demographic and background factors of this sample population did not significantly impact upon the perceptions of educators regarding the value of SoMe in L&T (Figure 2). While there are clearly advantages and barriers to the use of SoMe in HE and MedEd, the factors described (Figure 4B, Table 2) appear to be broad and widely applicable and therefore not unique to particular disciplines. Additional findings presented here comparing medicine with other disciplines would appear to support this (Figure 2D). We therefore consider our findings here, despite being collected from educators from multiple disciplines, to be directly appropriate for a discussion of the implementation of SoMe into undergraduate MedEd. However, it must be noted that our findings are in contrast to previous work, where variation in SoMe usage was found to exist across educational disciplines (Dahlstrom, Walker, & Dziuban, 2013; Manca & Ranieri, 2016b; Moran, Seaman, & Tinti-Kane, 2011).

**Impact of age and gender on educator perceptions of social media**

As SoMe are relatively recent technological phenomena, it could be assumed that age would influence perceptions. Individuals in more senior job roles are more likely to be involved in institutional-level decision-making and therefore may have views as to the value of SoMe beyond localised learning activities. However, while there is a widely held view that older individuals are more resistant to technological advances, and both age and seniority have
been shown to impact upon SoMe usage (Manca & Ranieri, 2016b), the available evidence does not always support this premise, at least where educational technologies are concerned (Crabb & Hanson, 2016; Fleming, Becker, & Newton, 2016). Findings presented here (Figure 2A, 2B) also do not support this presumption.

Research findings suggest that there are gender differences in the motivation for SoMe usage, primarily in terms of the type of material sought. Where males tend to utilise SoMe as a source of general information, females have a propensity towards more social usage (Krasnova, Veltri, Eling, & Buxmann, 2017). While this difference does not appear to extend to usage of SoMe as an educational tool within the parameters investigated here, it would be of interest to further explore this area. While gender may influence the particular SoMe platforms used (Manca & Ranieri, 2016b), the purpose of SoMe usage also warrants investigation. For example, female educators may be more likely to use SoMe to connect students, while male educators may use them primarily for delivering content.

**Educators perceive general value and specific advantages in SoMe**

Findings here are generally consistent with the widespread use of SoMe in HE and MedEd (Cheston et al., 2013; Manca & Ranieri, 2016a, 2016b; Tess, 2013) and provide further support for the educational and practical value of SoMe tools in L&T from the lecturer perspective. Establishing overall usage by educators (Figure 3B) has highlighted that the majority of this sample (88.71%) are active to a similar extent as their students (Roblyer et al., 2010; Tess, 2013) and more active on SoMe when compared to estimates of the UK population (63%) (Office for National Statistics, 2016), suggesting that educators appreciate the value of using SoMe generally, if not educationally. As expected, Facebook, Twitter and YouTube were identified as the most popular SoMe sites used by educators (Figure 3C), with a variety of other sites achieving limited usage. This observation aligns with worldwide usage of Facebook, Twitter and YouTube and is reflected in the volume of educational literature devoted to these particular sites (Asiri & Househ, 2016; Pander et al., 2014; Snelson, 2011). Specific advantages of SoMe include ease of use, immediacy and staying up-to-date (Figure 4E, Table 1, 3, 4), demonstrated by daily usage by some educators (Figure 3D). The finding that 48% (n = 13) of the SoMe user population use it either daily or weekly (21% of the total sample population, n = 62), suggests that it is possible and viable to integrate the use of SoMe into L&T practices, despite the time pressures and other commitments experienced by modern educators.

Three major themes of engagement, utility and sharing emerged from the perceptions of SoMe in L&T by the sample population (Figure 4A, Table 1). These specific aspects of value of SoMe in education align with previous research findings (Forkosh-Baruch & Hershkovitz, 2012; Junco et al., 2011; Manca & Ranieri, 2016b; Salomon, 2013), but they also reflect key theoretical aspects with respect to learning in HE and MedEd in terms of social constructivism, which includes principles of active interactions that result in the collaborative creation and dissemination of information (Bonzo & Parchoma, 2010).

Connecting with students and engaging them in active learning (Theme 1) is important for enhancing student performance (Freeman et al., 2014; Hake, 1998), and SoMe can be a valuable tool for facilitating such engagement (Junco et al., 2011; Rutherford, 2010; Salomon, 2013). As noted by responders here and previous work (Gikas & Grant, 2013; Paul et al., 2012; Tess, 2013), the situation in which students can distracted from the educational aspects of SoMe by their powerful and inherent social elements is unfortunately the other side of this particular coin.

**Utility** (Theme 2) is also crucial, as educators may be unlikely to utilise technology with which both they and their students are unfamiliar. SoMe usage is widespread among students and the population at large, so prior training or time spent learning how to use the chosen SoMe tools is unlikely to be required. The popular concept of students as digital natives and educators as digital immigrants (Prensky, 2001) has been largely discredited (Bennett, Maton, & Kervin, 2008; Selwyn, 2009), but SoMe currently constitute a major part of both everyday professional and personal
activities and it is therefore important that both educators and students are adequately prepared to incorporate SoMe into ongoing educational activities. With appropriate dissemination of such advantages, non-user educators seeking to engage and connect with their students in a medium they are all familiar with could therefore be convinced of the value in using SoMe for these purposes. However, with the exception of VLEs, social media were not designed as educational tools and so user interfaces therefore do not necessarily provide utility in terms of optimally facilitating educational usage.

Sharing (Theme 3) is another aspect of SoMe considered important by educators here and elsewhere (Manca & Ranieri, 2016b; Moran et al., 2011). In the modern environment of large student cohorts with multiple teaching staff delivering different topics, students and staff may feel disconnected and isolated from each other as well as from their peers. In addition to purely disseminating course content, SoMe can provide an important link and alleviate this sense of isolation and disconnection (Rutherford, 2010; Yu, Tian, Vogel, & Chi-Wai Kwok, 2010). SoMe also provide a less formal method of communication and can provide a link between teaching sessions and learning outside of timetabled teaching (Sarapin & Morris, 2015). Furthermore, peer-assisted L&T have been proposed to be important for sharing in education (Burgess, McGregor, & Mellis, 2014) with or without SoMe, which, as noted by respondents here (Table 1), can bypass and circumvent the need for the educator to be directly involved in the process. However, that is not to say that the educator does not have a place in encouraging peer assisted learning via SoMe through demonstrating the educational value of the tool in other meaningful ways.

Although SoMe are not perceived as valuable in L&T by all educators, the majority do consider them valuable and an even higher proportion are open to attending a SoMe workshop (Figure 3A). Interest in workshop participation may indicate that educators consider that they do not currently possess the necessary information to judge the practical value of SoMe or identify how they could successfully incorporate it into their teaching. However, caution must be exercised when making assumptions regarding the motivation of staff to attend such CPD events. The themes of staff knowledge, experience and motivation (particularly with respect to time availability for researching and utilising SoMe) have been identified as key barriers here (Table 2). This highlights the existence of factors that can limit SoMe usage in L&T and also the importance of disseminating the value of SoMe, not only through specific academic conferences and journals and but also through more general sources and practical teaching courses. For example, in terms of time availability, peer-peer SoMe discussions have been described as more effective than those facilitated by the lecturer (Shelton, 2016), a simple practical consideration which may provide an advantage to educators by allowing them to reduce their time involvement in the SoMe-mediated learning process. Some solutions to further barriers described here (Table 2, Figure 4B, 4C) could be addressed through educator training in a workshop situation.

Specific advantages and a range of approaches and purposes

Having identified the perceptions of the entire responding population sample of educators, it was also important to identify how and why those who actively do use SoMe in their teaching do so in terms of the educational value of this approach (Figure 4D, 4E, Table 1). As described above, SoMe is just one of many L&T approaches that can be effectively offered to students to provide variety, a quality that educators consider valuable (Figure 4E).

As the authors previously described (Backhouse et al., 2017), developing approaches to enhance L&T in the modern context of MedEd and HE are vital for improving both student achievement and the overall student experience. While the authors are predominantly anatomy and surgery educators, and variety is known to be important in anatomy learning (Eagleton, 2015; Ward & Walker, 2008), this factor is considered a key component in MedEd and HE more widely (Coffman, 2017). The use of technology, and SoMe in particular, in L&T design can enhance the student experience (Berger & Wild, 2016) and ensure variety of instruction in addition to encouraging higher-level thinking and reflection through active learning (Coffman, 2017) However, educators should be mindful that diversity
within the student population necessitates awareness of planning and implementing teaching around blended learning (Porter, Graham, Spring, & Welch, 2014), so that learners are able to utilise technology in the intended manner.

**Practical barriers eclipse perceived value and restrict usage**

Findings presented here support previous work which has identified that practical barriers can prevent academics from maximising the advantages of SoMe in their teaching (Manca & Ranieri, 2016a, 2016b; Rogers-Estable, 2014; Shelton, 2016). While SoMe are considered valuable by educators, there is a shortfall between the proportion of educators who perceive value in SoMe in L&T (Figure 3A) and those who are actually using it (Figure 3B). When taken together with the finding that more educators are using SoMe for professional use than for L&T (Figure 3B), this would seem to support previous similar observations (Rogers-Estable, 2014). While educators may be aware of theoretical and pedagogical advantages of SoMe, there are practical barriers specific to L&T situations and environments which prevent usage of SoMe and, in turn, prevent students from experiencing these valuable tools within the context of their education.

Such barriers may have resulted in educators not taking up this approach, (Bothma & Cant, 2011) while others may have abandoned the use of SoMe having previously, with varying degrees of success, utilised SoMe in their educational practice (Shelton, 2016). Alternatively, there may be a greater awareness or value associated with academic usage of SoMe with respect to networking, dissemination and even career progression (Cabrera, 2016; Donelan, 2016; Fuller & Allen, 2016; Manca & Ranieri, 2016b), which again is suggested by findings here (Figure 3B). While SoMe usage is not essential for good teaching to occur, it is important to disseminate not only the educational value of SoMe to educators, but also that such approaches are available and how they can actually be used both efficiently and effectively in teaching. This is due to the likelihood that such awareness among educators may be limited (Figure 4B, 4C). By presenting alternative educator perspectives here, it is hoped that educators will be able to identify their own solutions by considering the usage and views of their peers.

Despite the breadth of literature supporting the educational value of SoMe, the merits of these technologies are not appreciated by all educators (Figure 3A, 4B, 4C). Findings here implicate satisfaction with current resources and the view that VLEs are sufficient as being major factors in educator resistance to SoMe (Table 2). A key driver behind the abandonment of technologies is their replacement by newer technology (Shelton, 2016). However, if the functionality and student engagement in VLEs is sufficient from the educator perspective as described in the comments above, then they may see no need to change their usage of such technologies to include alternative SoMe-based platforms.

The importance of inclusivity and prevention of the alienation of portions of the cohort with respect to student access to devices is a concern of educators (Table 2) and it is important to consider whether this misgiving is supported in reality. With only a small proportion of students not having access to appropriate technology (Buchholz et al., 2016; Gikas & Grant, 2013; Gökçearslan et al., 2016; Ozdalga et al., 2012), it may not be access that prevents student usage, but rather student willingness to register with particular SoMe accounts and then to engage with them for learning. VLEs are considered compulsory resources by institutions and can be accessed through the same devices, so citing technological availability may not be a fair justification for not using SoMe in L&T.

It may also be important to offer students a variety of learning resources from which they are able to choose based on their individual personal learning preferences, and more importantly, that are appropriate for the task (Lodge, Hansen, & Cottrell, 2016). Students are exposed to a wide variety of resources in MedEd and HE and it is practically unhelpful to expect them to make use of every resource that is provided. Rather than making learning methods compulsory therefore, educators can inform their students of the advantages of the variety of supplementary approaches they implement and, with appropriate training, encourage learners to take responsibility for their own
learning. Students would then be able to metacognitively develop their own life-long learning approaches through experiencing a variety of learning approaches, resources and environments (Burger, Cote, Dhanushkodi, Stolk, & Zastavker, 2014).

Distraction to student learning caused by SoMe is also a concern (Figure 4C, Table 2). That students are likely to be using the same sites for both personal and educational purposes suggests that students could easily be distracted from their educational focus by alerts or notifications within their SoMe newsfeed or equivalent interface, which could in turn result in impaired performance (Gikas & Grant, 2013; Kirschner & Karpinski, 2010; Paul et al., 2012; Schroeder et al., 2010). Encouraging educators to request that their students create entirely educational accounts may therefore be appropriate, if perhaps practically unrealistic in some circumstances. However, the opposite could simultaneously be true, in that there may be an educational presence within students’ online social environments that may serve to influence informal or incidental learning (Cain & Policastro, 2011; Dabbagh & Kitsantas, 2012; Marsick & Watkins, 2001).

Professionalism and the staff-student boundary is a barrier described here which is also supported by previous work (Mazer et al., 2007; Sarapin & Morris, 2015). A key issue here was the perceived inability to maintain personal-professional and staff-student boundaries due to the need for the use of educators’ personal profiles on SoMe (Table 2). Providing information to educators regarding the availability of e.g. separate professional Twitter accounts and Facebook pages that are not linked to the individual’s own profile may circumvent these particular concerns. This is again simple practical information that could be disseminated in a training scenario. In turn, encouraging students to act professionally and responsibly when using SoMe can be taught and monitored at a curricular or institutional level.

While concerns about one’s own professionalism when using SoMe in L&T are not high on the list of educator concerns, responders did view student professionalism as a barrier to SoMe usage (Figure 4B, 4C, Table 2). In the UK, particularly so in medicine, there are professionalism demands on students, while concerns that SoMe activity deemed unprofessional could damage the profession and institution concerned. That SoMe has pervaded all aspects of society is a given, but awareness of ethical concerns are culture-specific and the boundaries of professional and unprofessional posts remain unclear (Kitsis et al., 2016). While blurring personal and professional boundaries can be a major barrier to educator usage of SoMe, there can be educational value in non-academic online interactions between staff and students in terms of enhancing student perceptions of their performance and experience (Sarapin & Morris, 2015), adding to the rich interaction available only via connections within the digital arena. SoMe usage remains largely unrestricted and unregulated, which is where many of the perceived negative aspects of SoMe usage can arise. However, it is the elements of freedom and informality that make SoMe a suitable platform for introducing variety in L&T, by allowing exploration of new learning frontiers and in doing so, inspiring students to engage with the L&T process.

The key area that may lead to educator reluctance in SoMe use is with respect to their own motivation to do so (Figure 4B, Table 2). This factor appears to stem from their knowledge and understanding of the tool, in terms of the time available to research, learn, experience and finally utilise SoMe in teaching. It is therefore unsurprising that this extensive process would negatively impact upon the motivation of teaching staff to utilise the tool on a regular basis, if at all. It has been proposed that there is a ‘digital disconnect’ between the initial enthusiasm for uptake of new technologies and the eventual educational value they possess (Selwyn, 2007, 2010) and so it is possible that many educators who previously used SoMe have now ceased to do so. Educators may discontinue using technologies including SoMe if such tools are not accompanied by research informing the decisions surrounding the adoption and implementation of such technology, particularly within specific contexts (Shelton, 2016) and may be influenced by the discipline being taught (Manca & Ranieri, 2016a).
Educators may be concerned about perceptions of their colleagues and recognition of their time and effort by their institution. Barriers to integration of SoMe on the institutional level are likely to be similar to those experienced when implementing a blended learning strategy (Porter & Graham, 2015; Porter, Graham, Bodily, & Sandberg, 2016). Such obstacles may concern hierarchical structure, accreditation and quality, formal and informal learning, the institutional the position that social media are 'unknown' and the view that they can be 'disruptive' (Bonzo & Parchoma, 2010). Institutional decisions can influence lecturers decisions to use technology (Shelton, 2014). However, as SoMe become more commonly utilised within MedEd, HE and within society more generally, institutions may alter their views as to their value. This may be vital to the wider integration of SoMe into MedEd, as overcoming barriers described above may be most effectively addressed by adopting institutional-level recommendations. It is important that any such guidelines are informed by the latest research and demonstrated as good practice. For example, case studies and vignettes can be presented to illustrate how SoMe can be utilised widely in a variety of MedEd teaching scenarios. A national L&T framework for utilising SoMe in educational interventions may also further its scholarly usage in MedEd and across HE disciplines.

Limitations

While it was important not to influence the perceptions of participating educators, it may have been effective to have collected responses regarding their own perspectives relating to which sites and platforms they consider to be defined as SoMe. A larger population sample of medical educators and a larger sample overall from all individual subject disciplines would have achieved increased validity of the findings from a more representative sample. Caution must be maintained when interpreting findings from the smaller population subsets. A wider sample of medical educators beyond the North East of England, also encompassing further subject disciplines, would also have provided a more representative sample. It should also be noted that the sample included only educators who were actively involved in pedagogy and teaching development, and who may therefore be more enthusiastic about introducing technological innovations or relatively novel approaches into their teaching. It may be a greater challenge to reach academics with a primary focus on non-educational research.

Conclusions

While SoMe are prevalent and pervasive within modern society and culture, it is important to provide the tools that both educators and students can utilise effectively in educational contexts. Here, a snapshot of educator usage and perspectives has been captured, which contributes to the wider current conversation surrounding SoMe in MedEd. Findings here will support the identification of insights into good practice using SoMe, and the rationale behind why harnessing these tools for educational purposes can be practically valuable. This work has also shed further light on reasons why educators may choose not to use SoMe, which can provide a basis for developing strategies for training and encouraging the use of these valuable tools.

Technologies can be abandoned due to their replacement with newer versions (Shelton, 2016). In the future, SoMe may be discarded, both in society and in education, in favour of alternative technologies or methods that can replace or fulfil the equivalent theoretical and practical advantages of SoMe. While it is not currently known if and when replacements for SoMe will arise and become adopted, such technologies may not even be the greatest threat to SoMe use in MedEd. While there are many theoretical, evidence-based and practical advantages of using SoMe in MedEd, many educators simply are not willing to embrace them because of their own perspectives of the value and utility of the approach. Easily accessible recommendations and practical tips for medical educators in the use of
SoMe, such as the Social Media Toolkit (Kilis, Gülbahar, & Rapp, 2016) and the Synthesis of Qualitative Evidence questionnaire instrument (Tondeur, van Braak, Siddiq, & Scherer, 2016) are recommended to improve the efficiency when identifying how to use and apply this tool in MedEd.

**Take Home Messages**

- Perceptions and usage of social media in learning and teaching by educators across multiple higher education disciplines can provide insights for the implementation of social media in undergraduate medical education.
- While the majority of educators consider social media to be valuable educational tools, the presence of certain barriers results in a much smaller proportion of educators who are actually using social media for learning and teaching purposes.
- Through exploring the approaches used by those educators actively using social media in learning and teaching, strategies for overcoming such barriers and encouraging wider usage of social media in undergraduate medical education can be identified and disseminated.

**Notes On Contributors**

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Appendices

Declaration of Interest

The author has declared that there are no conflicts of interest.