1 **Title:** Evaluating #VetFinals: can Twitter help students prepare for final examinations?

2 **Short title:** Twitter use as examination preparation

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Abstract

Twitter is increasingly used in education. In this paper, Twitter was evaluated for its potential to aid veterinary students in their preparation for final examinations. '#VetFinals' revision sessions were facilitated by experts on a variety of topics. The initiative was evaluated through consideration of potential participants, session content and student experiences. In analysis of nine sessions, 52 students participated from eight veterinary schools. During a session, the facilitator tweeted 66 times on average, primarily asking a general question. Students on average tweeted 84 times, mostly in response to facilitators. They also asked novel questions and responded to fellow students. Focus groups and interviews with 11 students suggested that: sessions are useful for preparation/self-testing to succeed in exams; the facilitator and session style impact on learning; the sessions feel like personalised learning; there are elements of safety and exposure leading to some fear of tweeting; peer learning promotes competition; a community of learners was formed; Twitter has become a part of normal professional life. Whilst not all students will take part in this type of social media use, many found it beneficial. The importance of the facilitator suggests the need for faculty development.

Introduction

Social media are increasingly utilised as teaching tools in a variety of ways. Their readily accessible nature, low cost and relative ease of use makes them appealing to teachers who wish to expand their armoury of delivery methods. However, there are challenges related to the use of any new technology, and the public nature of some social media tools is potentially off putting to users especially in medical education. It is therefore important to assess their effectiveness in a range of contexts, so that teachers can ensure they select the right tool for the right purpose, resulting in an effective learning experience.

Use of Twitter in teaching

The microblogging social media tool Twitter has been used in a range of educational contexts. The platform allows users to post ("tweet") short pieces of text alongside links to pictures or other online resources, and interact with other users posts which can be themed by the use of hashtags. A hashtag is a user generated keyword preceded by the symbol '#' included in a social media post, allowing other users to search via this keyword (Twitter 2016). Twitter has been used real-time within the classroom as an alternative communications channel, for example in accounting (Osgerby & Rush 2015) and pharmacy teaching (Dvorkin Camiel et al. 2014). It has also been utilised outside of the classroom to continue conversations between formally scheduled teaching (Junco et al. 2011) or whilst medical students are on clerkships (Reames et al. 2015). These uses encourage connectivity between learners as and when suits them.

Whilst Twitter can be used as a one-way transfer of information between teacher and student, it is the ability to utilise it for collaborative sharing and discussions which makes it a popular tool in medical education (Forgie et al. 2013), potentially encouraging student reflection and self-directed enquiry (Sandars et al. 2015), as well as expanding networks and emphasising precision in writing (Choo et al. 2015). Knowledge is created socially between Twitter users, aligning it with theories of social

constructivism, and communities of practice develop where experts share their knowledge with novices (Wenger 1999). The learning theory of connectivism is also helpful to consider how Twitter can be utilised (Siemens 2005), with individuals joined to each other and also to content about which they are learning.

Gurbani (2014) summarises various medical Twitter initiatives including #FOAMed and #twitfrg, which encourage resource sharing and collaborative learning. Recently, publications have begun to review the effectiveness of Twitter in medical education, and in a systematic review the majority of studies showed a positive effect on learner satisfaction (Cartledge et al. 2013). Student attainment after a Twitter intervention has not been measured extensively, but one study did show an improvement in grades with compulsory participation (Junco et al. 2013).

Negative aspects of Twitter use

As with any social media tool, there are potential negative consequences of using Twitter in teaching and learning. During classes it can be seen as a distraction (Forgie et al. 2013) and students may perceive teaching is being manipulated just to include Twitter (Osgerby & Rush 2015). The 140 character limit may be prone to misinterpretation and inaccuracy of complex medical tweets, and the ease of anonymity online is feared to lead to unprofessionalism (Choo et al. 2015). In the clinical context, this potentially has far reaching consequences including damaging reputations and limiting opportunities for employment (Kogan et al. 2015). Despite these fears, no studies have recorded issues of unprofessionalism occurring during academically focused social media initiatives (Cartledge et al. 2013, Mawdsley & Schafheutle 2015).

There are mixed views on the ability of social media to engage shy students. Students experiencing Twitter on a management course requested further use, specifically due to its ability to engage shy students (Menkhoff et al. 2015). In lectures with education students, Twitter appeared to enable shy students to tweet, but when the lecturer followed these Tweets up with a verbal question this

deterred the students from contributing again (Tiernan 2014). Junco et al. (2011) suggested that Twitter did facilitate individuals to tweet who might not have asked questions in a face-to-face setting, but identified that the tweets could be more rude or demanding than would be appropriate face-to-face.

Further evaluation of social media in clinical education

It is important to continue to evaluate the use of social media in clinical education, because outcomes will vary depending on application and context. The evidence base for the utilisation of different tools must be increased so that teachers can select appropriate tools and relevant guidance, and avoid using the technology for little reason other than novelty (Sandars et al. 2015). This paper aims to assess one such initiative: the #VetFinals exam study club which is hosted on Twitter. This project, run by two UK veterinary schools, aims to assist final year veterinary students in their preparation for their final examinations, as well as encouraging digital professionalism role modelling and the development of a community of veterinary Twitter users.

The initiative has been explained in detail elsewhere (Whiting et al. 2016). In summary, experts facilitate one hour sessions on a case or topic of their choice and post a series of questions or prompts. Students answer with tweets of their own. The #VetFinals website (https://VetFinals.wordpress.com/) promotes upcoming sessions and presents summaries of previous sessions via Storify, another social media tool. Sessions commonly involve veterinary students from across the UK. The initiative has been running since 2011 and sessions are conducted between January and June.

This study was specifically performed to evaluate this social media intervention, in response to calls to evidence this new and increasingly commonly used teaching method (Sterling 2015). It is hoped that the outcomes of this study will inform others utilising social media in medical education.

Methods

A sequential mixed methods approach (Creswell et al 2003) was utilised whereby "meshing" of data allows the distinctive advantages of each method to be retained (Mason 2006), working within a constructivist epistemology where understanding of students' lived experiences is generated in a social way. Analysis of the participants and content of #VetFinals sessions and resources informed a subsequent in-depth qualitative analysis of participants' perspectives of their learning during these sessions. Evaluation was undertaken during the most recent iteration of #VetFinals sessions, from March to May 2015.

Participant evaluation

The website Twitonomy was utilised to identify followers of @VetFinals, the account used to deliver the sessions, and locate them geographically. This analysis took place on June 30th 2015. From this list of followers, active participants were further identified by identifying accounts from which at least one Tweet with the #VetFinals hashtag had been sent during a revision session within the evaluation period. Information such as location and gender was recorded.

Session content evaluation

Content analysis was performed on Tweets in a similar approach to Tiernan (2014) and Lin et al (2013). All tweets using the #VetFinals hashtag were downloaded for the duration of three early sessions to enable codes to be generated which identified the types of tweets. No new codes were identified by the third session and therefore data saturation of codes was considered to be complete. The generated codes were then used to analyse the final nine sessions delivered during the analysis period. These codes were used to inform the next stage of the study.

Storify summaries of the 12 sessions were accessed to record view numbers on October 20th 2016.

Learner experience evaluation

A qualitative approach utilising focus groups explored participants' experiences and perspectives of the use of Twitter in this format. This method was chosen to allow interaction between students in exploring experiences relevant to social media in-depth (Stalmeijer et al 2014). One to one interviews were also utilised due to unavailability of some students who were away from university on placements or study leave.

Focus groups were held at the University of Nottingham and the Royal Veterinary College (RVC), London, as the two founding institutions and those with the most active participants (see Results section). Participants were purposively sampled to include students at different stages of study and with various #vetfinals levels of experience to provide a range of opinions for discussion. Experiences were categorised as: those who frequently attended sessions and repeatedly tweeted (range 18-37 tweets) and those who had only tweeted a few times (range 4-9 tweets). In total 10 students from one institution and nine from the other were approached via email to take part. No incentive other than refreshments were offered to participants.

All focus groups and interviews were conducted by TK, an independent researcher who led the evaluation of the project.

The focus groups and interviews were semi-structured with questions founded on previous explorations of learning within ICT-enabled communities (Ala-Mutka 2009; Dale et al. 2011) as well as the results from the session content evaluation. The prompts considered motivation (previous twitter experience, expectations of taking part), activities (what the students do in a session), benefits, barriers & challenges, and support. The focus groups and interviews were audio recorded, and transcribed verbatim.

Consent was obtained from all participants. This study was granted ethical approval by the Royal Veterinary College URN 2015 1350.

The transcripts were analysed according to Braun and Clarke (2006)'s six phases of thematic analysis for each question. The data were read and re-read to allow familiarisation, initial codes were generated, themes of codes were identified, reviewed, defined and named. Analysis was independently conducted by two researchers (TK and KM) who were not involved in the #VetFinals teaching to avoid bias and aid confirmability. The themes and codes were compared and demonstrated similarity in interpretation of the transcripts. Discussion allowed areas of difference to be resolved and the final themes to be named. Finally, the themes were refined through discussions between one researcher (TK) and a third researcher (LM), who was able to ensure credibility through experience with observing #VetFinals sessions. As the themes demonstrated much similarity between the focus groups, and as all criteria of participants were met, the initial quota of two focus groups and two interviews was not expanded.

The transcripts and initial analysis (themes and sub-codes) were emailed to the participants who were invited to provide feedback as part of participant checking. Two students responded and said that the transcripts and interpretations were a 'faithful representation' of their views.

Results

Participants

At the time of analysis, the #VetFinals account had 719 followers.

The locations of 95 recent followers were primarily from the UK and Ireland (76 accounts). Additional locations were identified as: USA (6), Spain (2) and one in each of Algeria, Australia, Brazil, Czech Republic, Egypt, Malaysia, Nepal, New Zealand, Romania, Slovakia and Sri Lanka.

In the nine sessions analysed, 52 veterinary students tweeted at least once, averaging 12 students per session (range 6-20). In total, 14 males and 36 females took part (plus one unknown). Participants were from at least eight veterinary schools, most frequently from the University of Nottingham and the RVC (totalling 75% of known locations). All student accounts were public.

Session content

Content analysis of all tweets during three early sessions identified three codes for facilitators (general question/comment, response to students and retweet) and four codes for the participating students (response to facilitator's question, response to fellow student, asking a new question, retweet).

In the remaining nine sessions, the average number of tweets per session was 150 (interval 81 - 238). The facilitator tweeted 66 times per session on average, primarily asking a general question or providing a general comment to all participants (Table 1). They also responded directly to students using the '@' function with praise, a follow up question or correction. Facilitators rarely retweeted a student's post.

INSERT TABLE 1

The student cohort on average tweeted 84 times with most being responses to facilitators. Retweets were rare, but responses to other students slightly more common e.g. agreeing, questioning, or highlighting errors:

"I was thinking we'd already done a PLT count, think you're right!"

"is that high enough to panic about?"

"we aren't talking about fluke"

Students sometimes asked a new question to the facilitator. These new questions were identified as they slightly changed the direction of the topic. E.g.

"how quickly should you see improvement? would you wait the 4wks to decide if it wasn't diet + more tests needed"

Analysis of the Storify records showed an average of 198 views per session summary (range 88-369).

Learner experience

Eleven students out of the 19 approached took part in the evaluation. Participants were equally divided between the two lead institutions and demographics, including reported Twitter use, are shown in table 2.

INSERT TABLE 2

Prior experience of all participants in using Twitter before #VetFinals engagement was variable ranging from none – individuals who joined specifically for #VetFinals (n=4), to those who had an account and used it sporadically for certain topics such as sport (n=5), to those who used it frequently and were big promoters of the technology (n=2).

Thematic analysis produced nine main themes relating to the learner experience.

In the following sections the main themes that formed inductively from the data are outlined with example quotes from student participants to aid credibility. Quotations are coded according to their origin: I=Interview, FG=Focus Group, followed by student identifier.

Driving exam success: revision and self-testing

A strong theme emerged around the sessions motivating revision and examination success. Students liked having a novel way to revise and were keen to participate in something they saw as potentially helping them to pass examinations.

"I was already looking for new ways to revise because I get quite bored quite quickly … being able to use Twitter which I consider a fun thing, and then being able to actually revise while I was on it, sounded like a really good idea" (I 1).

Whilst most students used the term revision when referring to their activity during the sessions, some students suggested it was a way to test knowledge and not just revise, with topics encouraging identification of weakness:

"I will do some revision in the day. Then I'll have a good six hours where I don't do anything, or I do something different, because I want to use #VetFinals to recall it…. I'll use #VetFinals as a recall not a revision" (FG2, S8).

"They prompt you to go, right, hang on this is a big hole in knowledge. Not only will I attend the Twitter session and learn it here, I also need to go over the notes in my own time." (FG1, S3).

Session topic choice also impacted on engagement, with assessment relevance strongly driving participation. There was potential for topics to cause stress if they were too in-depth for the level of knowledge required for upcoming examinations.

Facilitator impact on learning

The role of the facilitator was seen as crucial to the usefulness of the sessions and hence student engagement. The sessions were described as most helpful when a case was worked through sequentially, so that students could 'see' the facilitator's and other participants' clinical reasoning as the case developed, and integrate their own knowledge of the topic:

"When the format went: problems, differentials, diagnosis, treatment, that worked quite well … you're trying to work through a case … but if they weren't doing that it made it quite tricky to kind of follow" (FG2, S4).

"It's just really helpful to bring together a lot of the knowledge because if you're just revising lecture by lecture you don't always bring the stuff together." (I2).

The style of facilitation, including pace and session management, was viewed as crucial for successful learner engagement. In very small groups, the pace was slow and students felt forced to stay and try to answer for the sake of the facilitator, who they appreciated had put in a significant amount of work. In larger groups, the facilitator's questions were responded to at different speeds by participants. The

reasoning process was therefore disrupted for some, as responses occurred out of sync. One student identified the challenges of flow in online sessions as follows:

"You are aware [the facilitator is] waiting for something, but you are getting nothing back either, so it's like, I've given you what I'm thinking of, so we need to move on." FG1, S3).

"Personalised" learning in a large scale context

Students readily identified that whilst the sessions were being delivered to potentially hundreds of participants, they still had the ability to feel personalised because of the potential for timely feedback. A personal response to their interactions was valued by students, including their tweet being 'liked' or 'favourited'.

"It's not a one-on-one session, but it kind of is, at the same time, which is really nice. And I feel, when the clinicians do tweet you back and say, "yes, but…", it makes you really think about things." (FG2, S8).

Several students also saw it as an opportunity to ask their own questions:

"You can direct any of your questions; you pretty much have the clinicians' undivided time. And they're always very keen and quick to respond." (I1).

However, sometimes this feeling was lost if the session was flowing and students felt they should not interrupt, even if there was something fundamental they had not understood:

"When it's going so fast paced… everyone says that there's no such thing as a stupid question, but when you've got a question like that, you don't want to ask it whilst everyone else is like firing away with answers and you're a bit confused, but you can't really catch up with what's going on until you've kind of asked it" (FG1, S4).

Students suggested that facilitators could create rules around retweeting and 'favouriting' tweets to help with busy sessions, and that they should also include an open questions session at the end, for a limited time, in order to return to a more personalised learning experience.

Participating students also identified classmates who did not wish to engage in the "live" format, because of the approach required, but did choose to access the Storify resources of the sessions, and could be described as "lurkers" (Nonnecke & Preece 2000) who still benefitted from the initiative.

Safety and exposure

Social media provides a different learning environment and this appeared to both provide safety and expose students, depending on their perspective. The active users in this research clearly felt able to post, including typically "shy" learners:

"I've never asked or answered a question in lectures because I don't know, it's too scary, but I was more than happy to participate." (FG1, S4).

Some students used group-working to create one response to limit exposure. Active students primarily comprised final year students, with fourth year students posting only when confident, and third year students observing their future community, indicating that lurkers also existed during the live sessions.

Many students considered the challenge of speaking up online to be the same as that in a face to face teaching session, and that the use of social media does not change this:

"It's exactly the same pressures…. It's the fear of being wrong." (FG2, S8).

The use of a private Facebook group was suggested as an alternative format for the sessions. However, this was refuted by one student suggesting that the veterinary field should overcome the stigma associated with being wrong:

"We should be shattering this perfectionist complex that we have in the veterinary community." (FG2, S11).

The facilitator's, and other students', responses to wrong answers were very shaping to students who did tweet an incorrect answer. In one isolated event, this was also linked to different viewpoints across veterinary schools, which some found challenging.

Peer learning: Competition and Comparison

Whilst it was clear that peer learning was a benefit of this teaching format, there was also unease around this aspect including competition between participants from different universities. Some students viewed the intercollegiate nature of the sessions as primarily negative. They preferred to comment when surrounded by friends, disliked other students correcting their peers and were more likely to attend sessions run by their home institutions' lecturers.

"I've never really felt any competition… some people were taking it as a bit of a competition and sort of commenting on each other's quite a lot which it just kind of, got in the way a little bit … there was no need for it, … a 'let's show that I'm clever' type of thing." (FG2, S4)

Other students saw the benefit of learning from multiple universities' ways of teaching. They thought they 'bounced off' other student's posts and wanted to encourage inter-student posting (while appreciating this must be done with care). It seemed as if the sessions were as competitive as the individual participants wanted to make them, with many students rushing to get their answer in first.

" […] I like that, bouncing off other people, rather than going, that, that, that, that, that, done, [in reference to copying and pasting book answers] because then you're not learning." FG1, S8).

Most students read each other's posts and realised some knew more and some less than them, which was seen as reassuring. The responses of peers, however, were not taken to be the truth and the students wanted the facilitator to sum up each point with the 'right answer'.

A community of learners

A theme emerged around the sessions enabling learners to access and feel a part of a veterinary Twitter community, and all began to follow others including their peers, lecturers and veterinary organisations. As one student described:

"You're seeing who are your allies in the vet world on twitter … discovering, or realising, who's out there." (I1).

However, there was some concern about session participant numbers growing too large, and impacting on the community experience.

Part of normal professional life

Inevitably, issues around online professionalism were discussed by participants who demonstrated awareness of the public nature of Twitter. There was consensus that the topics were not controversial and unlikely to be of interest to the general public. The students seemed surprised that their peers were prone to poor online professionalism, due to the frequency with which they are informed about it by faculty. However, they identified times when they themselves had breached professional rules, for example, by tweeting about being inebriated. One student described how social media was now a normal part of many students' lives:

"You should probably already be aware of what you can't do even if you don't use [social media]… because social media is such a huge part of our lives … this is common sense to us. You put everything on Facebook; it's our version of common sense, but … I think we are aware of [client confidentiality] enough now that we shouldn't be making these sorts of mistakes." (I1).

The ability to discuss veterinary matters in an educational situation on social media was appreciated. One student summed this up:

"It was quite nice to be able to use social media in that way because you knew that it was okay to kind of use it like that." (FG1, S4).

However, not all students were confident with Twitter and they discussed the challenges of utilising new initiatives like #VetFinals when they weren't familiar with the technology.

Discussion

This analysis of a Twitter initiative for veterinary students adds to the literature with its specific analysis of social media use for group revision sessions, which has not been assessed previously.

The #VetFinals sessions aimed to encourage peer learning and self-direction, potentially engaging shy students as well as more confident participants. Facilitators aimed to demonstrate positive role-modelling in the use of social media, and to contribute to an expanding network of veterinary related Twitter users. The analysis aimed to investigate these aspects whilst remaining open to other benefits or challenges of using social media in this way, in order to consider future developments for this initiative and other similar teaching strategies.

"Types" of learners engaging with social media

The participant analysis shows that #VetFinals sessions have successfully engaged over 50 students through active participation in exam preparation sessions, in part due to the novel nature of this type of learning. With over 700 followers of the @VetFinals account, this is perhaps disappointing, although similar to findings in other studies of social media use in teaching (Lin et al. 2013; Reames et al. 2015). The qualitative analysis provides some clues as to why this may occur when using social media in teaching.

The theme of protection and exposure suggests that students are very divided on this topic. The number of followers compared to active participants suggests that potentially "shy" students are following but not actively engaging with the sessions, for fear of publicly being incorrect. One potential reason highlighted by the active students was that social media would not be attractive to shy people. In comparison to introverts who usually prefer to learn in isolation, shy individuals tend to desire social connections, but feel anxious about participating due to the potential for humiliation (Cain 2013). This

fits with the concept of following #VetFinals, but failing to post, through fears of being wrong, similar to a classroom setting. Root Kustritz (2013) also indicated that being shy was a reason why veterinary students did not post in a Facebook teaching tool. A notable exception in this study was one individual who stated they would never speak up in class, but was happy to do so via Twitter. While several studies have suggested that social media can promote engagement in shy people (Junco et al. 2011; Tiernan 2014; Menkhoff et al. 2015), their participation was related to a formal course. It is possible for #VetFinals to support shy people, especially through responding to wrong answers appropriately. However, it is unlikely that social media will be a revision tool chosen by introverts, although the high view rates of the Storify summaries suggest that this post-event format may suit a broader range of learners. Shy and introverted students' participation in optional social media learning opportunities is a complex issue which requires further study.

Non participants

The low number of active participants on average per session could be viewed as somewhat disappointing, although it is of note that this number represents approximately 2% of UK final year veterinary students. However, the effort of running these sessions is minimal, and the data strongly points to the benefits of the sessions to non-participants, either via observing the sessions or utilising the Storify records which were highly accessed. The focus groups demonstrated that some of the participants previously watched prior to posting, and that non-participant peers accessed the Storify records. These individuals are 'lurkers' (Nonnecke & Preece 2000), who may read and learn from posts passively, but do not actively take part via posting. Reasons emerging in this study via peers include disliking the pressure, lack of time and inconvenient timing, but the current study design did not access lurkers, and it is therefore not possible to make further judgements on their behaviour. It is however also likely that the cognitive load of fast Twitter chats is too much for some learners (Manca et al 2004).

Peer learning and dealing with uncertainty

#VetFinals aimed to provide an intercollegiate platform for exam preparation, and the facilitators expected it to rely on peer learning as much as facilitator leadership. However, there were some unexpected challenges associated with both the peer learning expectation and the use of facilitators from different institutions.

There was evidence of both direct and indirect peer learning occurring during the sessions. Interestingly, the challenges of peer learning in the context of social media use were remarkably similar to those reported in face to face teaching sessions (Channon et al. 2016). Some students enjoyed bouncing ideas off each other and showing their agreement with their peer's answers. Others relished the competitive nature of Twitter and the recognition achieved from peers, similar to Dvorkin Camiel et al.'s (2014) pharmacy students. However, some disliked the corrections some students offered, and viewed this as "showing off". This is perhaps concerning, because correcting colleague's potential mistakes is frequently a necessary part of being a professional, and fear of speaking up can allow errors and subsequent negative patient outcomes to occur (Kobayashi et al. 2006; Oxtoby et al. 2015). In order to achieve accuracy in online discussions, it is suggested that a Twitter community with a culture of correcting each other professionally should be encouraged (Choo et al. 2015), helping to alleviate concerns around the accuracy of social media posts. Even those students who tweeted corrections appreciated that this must be done with care, but this culture requires further facilitator promotion and support (Kind et al 2013).

Recognising the high stakes of the examinations these students were preparing for, it perhaps not surprising that some found learning about alternative case approaches from experts from different veterinary schools stressful, and also doubted their peers' contributions. They preferred the expert to sum up the conversation, echoing accounting students' lack of trust in the work of their peers on a Twitter leaning support tool (Osgerby & Rush 2015). Receiving knowledge from (certain) experts and a low tolerance for uncertainty is indicative of early stages of cognitive development (Horii 2007). Veterinary students must however learn to cope with uncertainty and the lack of one right answer, as

this is a common occurrence faced by veterinarians in primary care practices (May 2015). Facilitators of these sessions must be instructed to manage "wrong answers" appropriately (which failed to happen in one example given by participants), appreciating that the sessions are about dialogue and discussion. Teaching by humiliation is inappropriate in any setting (Stark 2003).

Self-directed learning

Twitter's promotion of a multi-way dialogue, as opposed to information transfer, fosters the ability for students' self-directed learning. Evidence of this was seen via the 'asking a new question' code which indicated a slight change in the direction of conversation. The sessions appeared to provide a personalised learning experience despite their large group nature, helping students become confident at posing questions, although some were still reluctant to interrupt the flow of the session, suggesting a facilitator-prompted final question section. In contrast to Osgerby and Rush's (2015) findings, these answers were clearly acknowledged as feedback, and importantly, timely feedback. The topics and content identified students' weaknesses and allowed them to self-direct their future learning to assess these areas, similar to medical students who received information tweets while on clerkships (Reames et al. 2015).

A community of professional Twitter users

All focus group and interviewees reported following other participants (friends and those who impressed them during the sessions) as well as the facilitators and veterinary organisations, suggesting development of a community of practice of users allowing a type of situated learning to occur (Lave & Wenger 1991). In the current era, a positive online profile and links to relevant colleagues can provide several benefits including collaborations, acquisition of new skills (Choo et al. 2015) and job opportunities, according to one participant. Following other veterinary users allowed students to role model appropriate use of social media and understand what it could bring to future professional development and there was no evidence of unprofessional Twitter use during the sessions similar to

previous studies (Cartledge et al. 2013; Mawdsley & Schafheutle 2015). Depending on the career they choose, veterinarians, and healthcare physicians alike, may work in remote or isolated locations. Isolation has been identified as a potential risk factor in veterinarian's emotional wellbeing and a precursor to stress and suicide (Mellanby 2005). The creation of an online community of practice of peers at similar professional stages may help to combat these negative emotions. Future work aims to consider the growing network of #VetFinals participants through the use of social network analysis, in order to map the emergence of the veterinary Twitter community of practice.

Limitations

Whilst the findings in this analysis are specific to this initiative, there is scope for generalisation across similar uses of social media in the revision and group learning context.

The inability to consult "lurkers" restricted understanding of the whole #VetFinals community within this analysis. The positive results of this study cannot therefore be generalised to the silent majority of participants, and further research to clarify how lurkers benefitted through watching the sessions or reading the Storify records would be valuable. Participant perception analysis is also limited; whilst sampling aimed to involve a range of students, inevitably it may be that students with mainly positive perceptions attended the discussions and interviews. It is quite likely that students who disliked or were not active on #VetFinals may be have been reluctant to take part in face-to-face evaluations of the initiative, despite invitations. This may have led to an overemphasis in the report on engaged students' views. However, a range of perceptions (both negative and positive) was gathered and are highlighted in this report.

The qualitative part of the study was also limited by student availability post-final examinations and the relatively few active students. Both focus groups had numbers slightly below those recommended (6-10 participants) (Stalmeijer et al 2004). However, through purposive sampling, it was ensured that a range of the desired criteria (#VetFinals experience, year of study and gender) were met.

Although participant checking was logistically challenging and also limited, it was encouraging to receive two positive responses, which help demonstrate the validity of the analysis.

This study only considers the usefulness of Twitter to UK students from two veterinary schools. However, international users were present, and some generalisation to their perceptions is possible. Further studies of international users would be useful. The authors hope that that findings from this study will encourage teachers from countries where Twitter is not available to investigate other social media tools, enhancing the learning experience for their students.

Conclusion

The use of social media in teaching should be considered in the same way as the adoption of any new educational tool. It will not appeal to all learners, and the type of learning occurring should be closely monitored. It was therefore important to perform this analysis and it provides helpful evidence for the use of social media in the examination revision context.

The findings indicate that the use of Twitter and the #VetFinals teaching events have been beneficial to the participating students in their final year examinations. Students engaged with the novelty of the tool and relied heavily on the facilitator to lead the session at the right pace and in the right way, with some evidence of peer learning. Unsurprisingly, motivation was based on upcoming assessments, but the lasting legacy of understanding the professional use of social media for learning is interesting and requires further evaluation. Whilst not all students will take part in this type of social media use, related resources can still be utilised as an additional method of examination preparation, expanding access across different learning approaches.

This analysis underlines the importance of the facilitator role in social media use. Faculty development may be necessary to ensure the facilitator engages with individuals as well as the group, sets an appropriate pace, deals with uncertainty appropriately, and role models supportive behaviour with

learners. These points will be added to the facilitator guidelines for this initiative, and it is suggested they may be useful for other discussion based Twitter uses.

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550 Table 1. Average tweets per session according to author and content code

Facilitator			**Students**			
General Question/ Comment	Response to Student	Retweet	Response to Facilitator's Question	Response to Fellow Student	Asking a New Question	Retweet
48	17	1	71	8	5	0

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555 Table 2. Demographics of students participating in the evaluation

	Total participants	Year of study			Gender		Twitter use	
		3	4	5 (final)	M	F	Frequent	Infrequent
Focus group 1	5	-	1	4	2	3	4	1
Focus group 2	4	1	-	3	2	2	3	1
Interview 1	1	-	-	1	-	1	-	1
Interview 2	1	-	1	-	-	1	1	-

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