

# Teaching Millennials: A Three-Year Review of the Use of Twitter in Undergraduate Health Education

*Basia Diug and Evie Kendal*

The term ‘Web 2.0’ was first coined in 2004 and described a dramatic shift in how people interacted with online platforms and web-based information.<sup>1</sup> This primarily involved a move away from passive consumption to active, participatory creation of online content. A major contributor to this change was the rise of social media networking sites such as Facebook and Twitter. Each minute it is estimated that 695,000 Facebook status updates occur and 98,000 ‘tweets’ are sent.<sup>2</sup> A tweet is a micro-blog limited to 140 characters, and unlike most Facebook pages, Scanfeld et al. note that the majority of Twitter accounts—94% as of August 2009—are public.<sup>3</sup> Twitter currently remains one of the fastest growing social media platforms,<sup>4</sup> and according to Robillard et al. is one of the top ten most visited websites on the internet with over 500 million global users.<sup>5</sup> Research on the use of social media in healthcare

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B. Diug (✉) · E. Kendal  
Monash University, Melbourne, VIC, Australia  
e-mail: basia.diug@monash.edu

E. Kendal  
e-mail: evie.kendal@monash.edu

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indicates that Twitter is the most commonly used platform for disseminating public health information,<sup>6</sup> and has been used effectively when dealing with emergencies, such as natural disasters.<sup>7</sup>

Social media provides access to a vast online audience and offers the opportunity to engage various stakeholders involved in public health services and information provision. For Robillard et al. one of the major advantages of using social media to disseminate health knowledge is the fact that web and mobile-based applications ‘reach a broad audience in a very short period of time, are easy and affordable to access and use, and cater for a wide variety of audiences.’<sup>8</sup> A study of the use of social media in health promotion in the United States indicated that local health departments predominantly used Twitter to ‘inform, educate, and empower people’ to make positive health choices.<sup>9</sup> A secondary use was as a complement or substitute for other disease surveillance mechanisms, owing to the unique advantage of providing geo-located data and trends in real-time (e.g. tracking the progress of a flu epidemic by mapping related social media posts). While it is less developed than its use in health promotion, Stooze and Pedrana claim the use of social media analysis in disease surveillance provides timely information, contributing to what has come to be known as the ‘infoveillance’ or ‘infodemiology’ of an outbreak.<sup>10</sup> Rather than relying on delayed data collection methods and self-reported questionnaires, this use of Twitter global positioning system (GPS) data allows for rapid location monitoring.<sup>11</sup> It also provides qualitative data regarding the population’s attitudes and behaviours toward a health crisis or intervention and allows for wide-scale health communication.<sup>12</sup> This is particularly valuable in light of a 2009 Pew Research Center study that found 37% of American adults reported being influenced in their health-related decision-making by ‘user-generated health information.’<sup>13</sup> This shift from seeking ‘top-down’ disclosure from health professionals and organisations, to peer-based user-created content as a source of health information has both positive and negative potential, as not all online health-related material is reliable or safe. This indicates a need to develop critical thinking skills among patients and health professionals who may be exposed to such information or hope to harness some of the power of social media in disseminating accurate health information.

The educational potential of Twitter is the primary focus of this chapter. The current cohort of tertiary students predominantly belongs to ‘Generation Y,’ a term used by demographers to refer to people born

in the 1980s and 90s whose characteristics include high-level computer literacy.<sup>14</sup> Also known as ‘digital natives’ or ‘millennials’,<sup>15</sup> this generation uses the internet as a primary communication method and source of useful information.<sup>16</sup> Sue Peattie notes this cohort are likely to respond better to health information they can access online, as they control their own exposure and level of engagement, as opposed to feeling like they are just being ‘told what to do.’<sup>17</sup> As such, she claims internet-based public health campaigns are more empowering for the younger generation, as they provide the relevant health facts and then leave young people to make their own decisions. However, it is not just Generation Y who are seeking health information online, with a 2011 Pew Research Center survey in America indicating 80% of adult internet users now source health information on the web, a population including 85% of 50–64 year olds and 58% of over 65s.<sup>18</sup> When it comes to social media in particular, 15% of adult users directly report receiving health information from social media sources, with a further 23% following the personal health stories of their friends through these platforms.<sup>19</sup> A study by Stroeve et al. looking at how well social media sources of health information were trusted by populations for whom traditional health communication methods were more difficult to achieve, indicated that if social media sites were run by ‘university, government, or nonprofit organizations’ this increased the perceived credibility of the information.<sup>20</sup> Given the potential to reach a vast audience and impact health behaviours, there is a clear need to train future health professionals on the most effective way to engage online audiences in health-related dialogue.

Our previous work investigated whether Twitter can, or should, be used as an educational tool.<sup>21</sup> This study indicated that in a structured format there are benefits to using Twitter-related activities in a tertiary curriculum, specifically in terms of enhancing access to staff and engagement with learning content. Therefore, we aimed to longitudinally evaluate the effectiveness of a Twitter-related assessment across a three-year period, and identify its effectiveness in increasing student engagement with public health concepts and facilitating staff and peer interactions.

## METHOD

In order to evaluate the benefit of exposing students of health-related disciplines to Twitter as a public health tool, a social media task was embedded as a graded assessment within a core first year public

health unit in the Bachelor of Biomedical Science (BMS) degree at an Australian university. Students were given the choice of completing the assessment on a standard learning management system (Moodle) or using Twitter, and could further volunteer their data to be collected for this study if they chose (see Appendix). Participation involved the completion of a questionnaire after the end of semester regarding students' attitudes toward the social media task. This methodology was repeated on each of the first year BMS cohorts from 2014 to 2016.

The assessment consisted of six activities, with students instructed to tweet using the hashtag established for the unit so their contributions could be tracked:

1. Students were first instructed to download the app 'Dumb Ways to Die,' a game developed for Metro Trains in Victoria, Australia, as a public safety awareness campaign. The aim of the game is to survive as long as possible while engaging in a series of risky activities—for example, poking a grizzly bear with a stick—drawing analogies between these 'dumb' ways to die and being unsafe around trains. Students then tweeted their 'death,' final score and opinion of the game.
2. For the 'Public Health in Daily Life' challenge, students identified a public health issue in their everyday life and posted a photo or link to a newspaper or journal article about it. Examples included photos of hand sanitisers in hospital corridors, road safety signs and posters encouraging the use of stairs instead of lifts, to name a few. Students then had to explain their choice and why it was significant.
3. For the challenge entitled 'It's in the Media,' students posted on a public health issue they'd encountered in the media, including recent disease outbreaks, fad diet scandals, celebrity health promotion campaigns and so on. Students were encouraged to re-tweet assessments from trusted sources, such as the World Health Organization, or state health authorities.<sup>22</sup>
4. Following on from their experience identifying a relevant media article, students were next required to tweet the title and main findings of a peer-reviewed journal article on any health issue.
5. For the 'You Said, I Think' challenge, students had to comment on a peer's tweet, noting why they thought the topic chosen was

important. This was intended to increase collaboration across the student cohort.

6. Finally, students had to complete the 'I Can Do Better' challenge, in which they designed a health promotion campaign related to the topic of their media or journal article. They were required to write a brief overview of the strategy, target audience and method of dissemination.

Students who opted in to complete the research questionnaire were first asked to report their contributions, whether they engaged on Twitter more than the minimum required for the assessment and whether they had prior experience with social media, and if so, which platforms they used (Appendix: Student self-report). They were then asked to judge whether they thought the assessment task achieved its objectives, including promoting awareness of public health, whether they thought Twitter could support any other objectives in the education setting, and finally, whether they thought Twitter was an appropriate medium for this kind of assessment. Those students wishing to provide further feedback were asked to supply contact details for a follow-up focus group session.

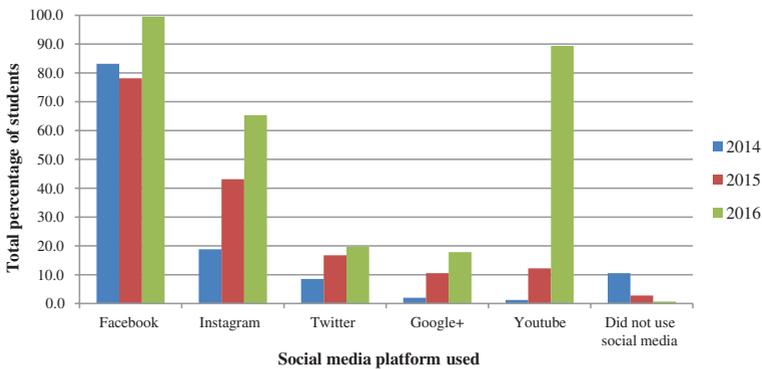
All students had to complete an online professionalism agreement, with the 2016 cohort provided specific training in e-professionalism. This training outlined how to use social media in a professional and personal capacity, noted possible limitations regarding the use of Twitter as a professional tool, and detailed relevant behavioural and privacy matters. Students were moderated across all three years with any cases of unprofessional online conduct managed in line with university policies. Ethics approval for the study was provided by the Monash University Human Research Ethics Committee.

## RESULTS

In total, 1303 out of 1447 eligible students completed the questionnaire across the three years, yielding an overall response rate of 90% (Table 7.1). As the cohort size increased each year, the proportion of students completing the Twitter-related activity and questionnaires also increased. In 2014, 332 students completed the questionnaire out of the 398 students enrolled in the unit, representing a response rate of approximately 83%. In 2015 this increased to 424 of the 466 enrolled students, a response rate of approximately 91%, and finally in 2016 this increased

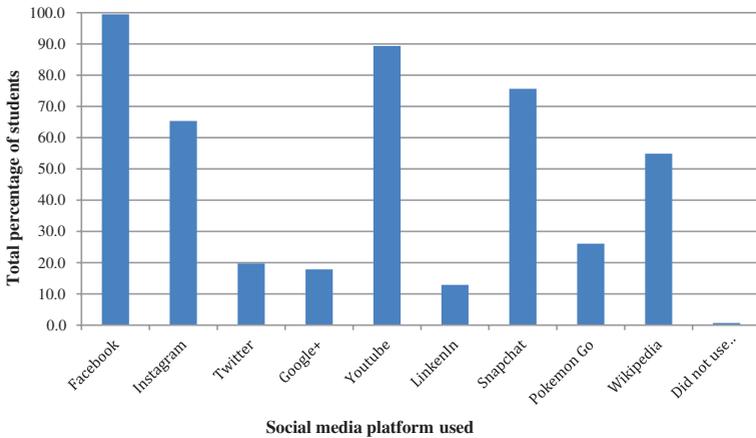
**Table 7.1** Cohort demographic characteristics across the three-year period 2014–2016

| <i>n</i> (total students)   | 2014<br><i>n</i> = 398 (%) | 2015<br><i>n</i> = 466 (%) | 2016<br><i>n</i> = 654 (%) |
|-----------------------------|----------------------------|----------------------------|----------------------------|
| Completed                   | 332 (83.4)                 | 424 (91.0)                 | 583 (93.8)                 |
| Incomplete/did not complete | 66 (16.6)                  | 47 (10.1)                  | 36 (6.2)                   |
| <b>Gender</b>               |                            |                            |                            |
| · Males                     | 172 (43.2)                 | 198 (42.5)                 | 221 (37.9)                 |
| · Females                   | 226 (56.8)                 | 268 (57.5)                 | 362 (62.1)                 |

**Fig. 7.1** Reported use of social media platforms prior to the study

to 547 of the 583 enrolled students, representing approximately 94% of this cohort. The gender split within the cohort was approximately 40% male and 60% female across the three years.

We compared across the three years the types of social media platforms that were utilised in this cohort (Fig. 7.1). During the three-year study period, Facebook remained the most popular social media platform used in the student cohort, with similar rates of adoption evident in 2014 and 2015, at 83 and 78% respectively. However, in 2016 there was a large jump in prior usage of Facebook to include almost the whole cohort, at 99.5%. Other significant changes in social media usage across this time period included the increased adoption of the photo-sharing app Instagram, with only 18.8% of the cohort reporting previous use of



**Fig. 7.2** Comparison of prior use of social media and other online tools for BMS students in 2016

this platform in 2014, but 65.4% of respondents in 2016. Twitter also showed growth, doubling from 8.5 to 19.7% from 2014 to 2016. Use of the video-sharing platform YouTube demonstrated the most significant increase from 1.3 to 89.4% in 2016. Notably, those who did not use any social media decreased from 10.6% in 2014 to 0.7%—just four students—in 2016.

In 2016, additional data was gathered regarding other online tools and new social media platforms, including LinkedIn, Snapchat, Pokemon Go and Wikipedia (Fig. 7.2). Snapchat was the most popular, with 75.6% of the cohort using the ‘self-destructing’ photo- and video-sharing platform, whilst the global collaborative encyclopaedia website, Wikipedia, was used by 54.9%. The new Pokemon Go mobile app game was used by 26.1%, whilst only 12.9% used LinkedIn, the professional profile service.

Students were asked to appraise the Twitter-related activity for its appropriateness in the course (Table 7.2). In 2014, 86.9% found it appropriate for the assessment task, whilst in 2016, 90.2% of the cohort found it appropriate. In 2015 only 62.0% of the cohort found the task appropriate. Regarding whether students contributed and engaged more than the assessment task required, in 2014 almost 74.6% made additional posts, which decreased to 19.7% in 2015 and then increased again in 2016 to almost half the cohort. Across all three years, over 75% of

**Table 7.2** Student self-report thoughts on appropriateness and engagement across the three years

| <i>Variables</i>  | <i>2014</i><br><i>n = 398 (%)</i> | <i>2015</i><br><i>n = 466 (%)</i> | <i>2016</i><br><i>n = 654 (%)</i> |
|---|-----------------------------------|-----------------------------------|-----------------------------------|
| Consider Twitter-related activity an appropriate assessment medium                    |                                   |                                   |                                   |
| · Yes   | 346 (86.9)                        | 289 (62.0)                        | 550 (94.2)                        |
| · No  | 52 (13.1)                         | 104 (24.5)                        | 48 (8.2)                          |
| Posted more than the minimum requirements for the assessment                          |                                   |                                   |                                   |
| · Yes   | 297 (74.6)                        | 92 (19.7)                         | 293 (44.8)                        |
| · No  | 86 (21.6)                         | 301 (64.6)                        | 361 (55.2)                        |
| Reported feeling more aware of everyday public health issues as a result of the tasks |                                   |                                   |                                   |
| · Yes   | 356 (89.4)                        | 346 (74.1)                        | 51 (79.1)                         |
| · No  | 22 (5.5)                          | 125 (26.8)                        | 75 (11.5)                         |

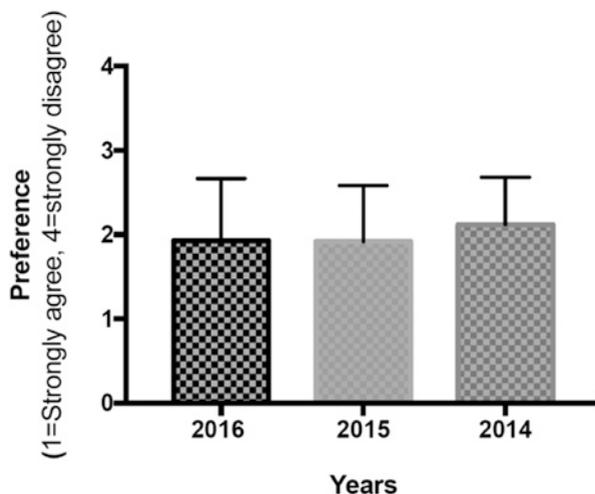
respondents felt that the Twitter-related task made them more aware of public health issues in their daily lives.

Regarding whether the activity impacted perceptions of staff accessibility, there was no significant difference between the three groups with mean scores of 2.1 ( $\pm$ SD 0.56) in 2014, 1.9 ( $\pm$ SD 0.66) in 2015 and 1.9 ( $\pm$ SD 0.73) in 2016, indicating that all three cohorts reported that the task made teaching staff more accessible (Fig. 7.3; Table 7.3).

When asked to self-report on how the Twitter-related activity impacted on their peer collaborations, there was again no significant difference between the three groups, with mean scores of 2.1 ( $\pm$ SD 0.53) in 2014, 2.3 ( $\pm$ SD 0.74) in 2015 and 2.3 ( $\pm$ SD 0.73) in 2016, indicating that all three cohorts agreed that the task had increased peer collaboration (Fig. 7.4; Table 7.4).

## DISCUSSION

Our findings highlight that students are vast consumers of social media and are willing to engage with social media platforms in the higher education setting. This is clearly seen in the response rate of 90% across the three cohorts. Further, our undergraduates have continued to be strongly engaged in social media platforms and are increasing the different types of platforms they are using, with 99.5% of the 2016 cohort using Facebook and 75.6% of that cohort using the newer platform Snapchat. The only reported decrease in the three years was the number



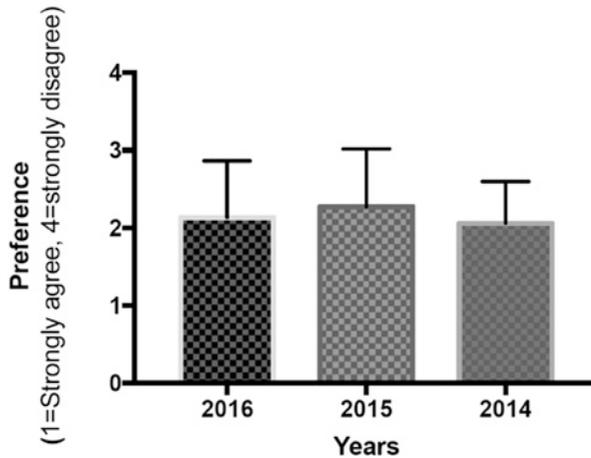
**Fig. 7.3** Students' perception of staff accessibility and Twitter-related assessment (Likert scales where strongly agree = 1, agree = 2, disagree = 3 and strongly disagree = 4)

**Table 7.3** Percentage of students' perception of staff accessibility

| <i>Staff accessibility improved?</i> | 2014 (%) | 2015 (%) | 2016 (%) |
|--------------------------------------|----------|----------|----------|
| Strongly agree                       | 6.8      | 13.1     | 24.4     |
| Agree                                | 73.6     | 61.2     | 60.4     |
| Disagree                             | 10.8     | 6.9      | 9.1      |
| Strongly disagree                    | 3.5      | 3.2      | 4.8      |

of students who did not use social media. In general the vast majority of students found that using Twitter-related activities was appropriate in this context and reported that it increased their engagement with the course content. Overall, students also reported that this assessment increased their access to staff and peer collaboration across the three years.

In 2016, the Australian Sensis social media report was released. It confirmed our longitudinal three-year evaluation that the digital landscape continues to grow rapidly, with more than 87% of Australians



**Fig. 7.4** Students' perception of peer collaboration and Twitter-related assessment (Likert scales where strongly agree = 1, agree = 2, disagree = 3, and strongly disagree = 4)

**Table 7.4** Percentage of students' perception of peer collaboration

| <i>Peer collaboration improved?</i> | 2014 | 2015 | 2016 |
|-------------------------------------|------|------|------|
| Strongly agree                      | 10.6 | 8.6  | 15.6 |
| Agree                               | 69.3 | 50.6 | 59.2 |
| Disagree                            | 15.3 | 18.5 | 18.7 |
| Strongly disagree                   | 0.5  | 6.4  | 4.8  |

accessing the internet daily.<sup>23</sup> Of the social networking sites, Facebook remained the most used, with 95% of the study population using the platform, growing from previous years.<sup>24</sup> This is in keeping with our findings, with a decline in those who did not use social media and a steep increase over the three years of students using multiple social media platforms. The popularity of Snapchat across the Australian population was only 24%, compared to our cohort in which 75.6% used the platform. It was difficult to compare Snapchat in previous years as applications and networking sites are always changing in both popularity and usage. This is one of the key challenges when implementing and capturing the use of social media platforms in the classroom. Changes in student engagement

in this domain are not necessarily consistent with population averages, owing to the higher proportion of younger people in the tertiary environment. Educators need to be aware that their choice of social media platforms requires clear scaffolding in the curriculum, with an understanding of the longevity and potential evolution of the platform. Our choice of the public health campaign app ‘Dumb Ways to Die’ bridged the gap between gamification and student learning outcomes. The application’s popularity also paved the way for further engagement with gamification strategies in tertiary teaching, including the development of a card game for exam revision tutorials.

The assigned Twitter tasks were refined over the three years of the study, incorporating feedback from previous students about how best to integrate the activities into the unit to achieve the learning objectives. This involved repeated mentions of what was happening on Twitter in the lectures, tutorials and online discussion boards for the unit, embedding the Twitter feed for the unit’s hashtag into the Moodle site and arranging for ‘live tweeting’ of lectures throughout the semester, including in one panel-style lecture fashioned in the style of the ABC television program, *Q&A*. In this lecture, students could ‘live tweet’ questions for the panel on a variety of pre-arranged topics, including the Belle Gibson celebrity diet scandal. Another refinement made to the Twitter assessment over the three years was increasing the number of challenges and the marks associated with the task from 2% of the students’ final grade to 5%, which may account for some of the increase in completion rates between 2014 and 2016. It was consistent across the three years that student perceptions of increased staff accessibility and peer collaboration were a clear outcome of the Twitter-related activity.

Based on the questionnaire responses, most students welcomed the alternative assessment mode and felt it complemented the other, more traditional, assessment tasks in the unit. Most importantly, regarding the potential for Twitter to be used as a public health education tool, the majority of students reported this task made them feel more aware of public health issues. Whether this awareness will translate into greater uptake of Twitter and other social media platforms for their future work in public health education and promotion is yet to be seen, but it is hoped this early exposure will have an impact in this area. Furthermore, the additional training in e-professionalism is expected to have long-lasting benefits for millennial students, who are the first generation to grow up with social media profiles. In a 2010 interview for *The Wall*

*Street Journal*, then Google CEO Eric Schmidt claimed that lack of awareness among young people of the extended reach and long-term impact of social media use would leave many seeking name changes later in life, particularly when attempting to enter the workforce.<sup>25</sup> Coupled with the potential impact of using social media in health communication discussed at the beginning of this chapter, this supports the idea that university educators can fulfil a much-needed role for students within the health and medical fields, by exposing them to the power of social media as a public health tool and training them how to use this tool in a professional manner.

One of the most important outcomes of this project was the need to train students in e-professionalism and appropriate online behaviour in the educational setting. After some concerns regarding unprofessional behaviour, an e-book resource was developed for students that outlined how employability and future opportunities could be impacted by a poor online presence or ‘brand.’ This resource was then embedded into the curriculum of both this unit and others at the university. Since then, no instances of inappropriate behaviour have been observed and reported. Nevertheless, this experience highlighted the need for close monitoring of online engagements related to curricula, even when such engagements are typically public, as in the case of social media posts.

The key strengths of this study include the longitudinal nature and the large sample size of participants. This is further supported by the 90% response rate and task completion over the three years. However, limitations of this study include limited prior exposure of the cohort to Twitter, and the need to develop clear e-professionalism training, which was only discovered part-way through the project. These risk management areas are requirements when using an open access application such as Twitter with a student cohort. Further, despite the implication that these students are ‘digital natives,’ it is necessary to support them when using a new application so that they can benefit from this interaction.

## CONCLUSION

The use of social media is part of our everyday lives and therefore also in the lives of our student cohort. Increased uptake of social media platforms, including Twitter and Facebook, amongst our students is a reality that has the potential to be translated and utilised as a positive educational tool. Despite the rapid uptake, we need to ensure that our cohorts

are guided to use these platforms in a structured manner that can support the development of key graduate attributes. E-professionalism that focuses online conduct is at the heart of our student development and is a necessity for any task that uses these platforms. Our longitudinal study found that students self-reported increased engagement with the unit content, increased accessibility to staff and an increase in peer collaboration as a result of the use of social media in the classroom. Additional research is required to evaluate whether this assessment has an impact on learning and student grades.

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## APPENDIX: QUESTIONNAIRE ASSESSMENT TASK: STUDENT SELF REPORT

1. Prior to this activity, did you use any online tools/social media? If so, select all that apply:
  - (a) No, I don't use social media
  - (b) Facebook
  - (c) Instagram

- (d) Twitter
  - (e) Google+
  - (f) LinkedIn
  - (g) Snapchat
  - (h) Pokemon Go
  - (i) YouTube
  - (j) Wikipedia
2. Do you think it was appropriate to use Twitter to complete this assessment task?
    - (a) Yes
    - (b) No
  3. If No, why not?
  4. Do you think the online participation task improved accessibility to staff? Pick only one answer:

| 1              | 2     | 3        | 4                 |
|----------------|-------|----------|-------------------|
| Strongly agree | Agree | Disagree | Strongly disagree |

5. Did you find the weekly posts from the staff helpful?
6. Do you think the online participation task promoted collaboration with peers? Pick only one answer:

| 1              | 2     | 3        | 4                 |
|----------------|-------|----------|-------------------|
| Strongly agree | Agree | Disagree | Strongly disagree |

7. During semester did you post more than required for the online participation task? If yes, please estimate how many times?
8. True or False: I feel this activity positively influenced my educational experience:
  - (a) True
  - (b) False
9. True or False: I feel that the Twitter activity made me MORE aware of public health in our daily lives:
  - (a) True
  - (b) False
10. True or False: I found the Twitter feed on Moodle a good way to see what other students are posting and engage with them:
  - (a) True
  - (b) False

11. True or False: I found the Twitter activity in the tutorial a good way to see what other students are posting and engage with them:
- (a) True
  - (b) False

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