Sveučilište u Rijeci
Pomorski fakultet Rijeka

University of Rijeka
Faculty of Maritime
Studies Rijeka

IAMU
International Association of Maritime Universities

TECHNOLOGY AND SOCIAL MEDIA IN THE MARITIME CLASSROOM

Cross, John, F.*; Tucker, John, R.

Marine Institute of Memorial University
Canada

*Corresponding author

Phone: +1 709 778 0451
        +1 709 778 0659
e-mail: john.cross@mi.mun.ca

Abstract. When it comes to the use of technology in marine education, a pragmatic approach has been taken. While there are areas where technology is integrated and considered essential (such as bridge and engine room simulators), there have been recent advances that have provided learning opportunities which marine educators have not taken advantage of. Unfortunately, the typical new student these days has been exposed (and in many cases exposed for years) to these technologies and has come to rely on them.

Recent statistics show that in many countries, the number of cell phones outnumbers the number of people indicating a high level of penetration. For example, in Russia there are about 1.5 cell phones per person and in the Philippines there are about 1.1 cell phones per person. This high rate of usage combined with enhancements in the capabilities of smart phones indicates that their use will continue to grow as will student reliance on them.

In this paper the authors look at the opportunities provided by the integration of new technology, an enhanced communication infrastructure and social media. Applications such as Facebook, YouTube and Blogs are assessed based on two matrices. The first matrix looks at the applications in terms of their utilization in marine education. This covers things such as "will it be useful to the student", "will it enhance the goals of the class" and "will it provide an educational benefit". The second matrix looks at these applications from an Institutional point of view and will assess things such as security, privacy and potential institutional policy issues.

We hope that the information in this paper will allow maritime instructors to either enhance their use of educational technologies in their courses or at least assess whether there is a place for these technologies in their areas of expertise.

Key words: E-Learning, social media, modern technology, online culture

1   BACKGROUND

Students entering post-secondary education come equipped with tools and knowledge that is relatively unknown to many instructors. In addition they come with a mindset that encourages them to rely and use technology, and in particular hand held technology such as tablets and smart phones. As Szwed (2014) noted, "There is mounting evidence that digital technology impacts brain development". In addition it can be arguably said that the student use of hand held technology is the first example of students driving change in class room technology.

In maritime education, technology has been relatively slow to be adopted. There are good reasons for this. The operation of ships is a critical function where even a small error can lead to catastrophic losses. When training for these conditions it is natural to rely on established technology (e.g. navigation and engine room simulators).

The casual observation of an increased use by students of hand held technology (as seen in the classroom by the authors and their colleagues) can be backed up by statistics. The date when the cell phone entered public usage is somewhat subjective, however it was 1987 when the total cell phone users topped 1 million. The extraordinary growth of cellphones can be noted from the fact that the number of users is estimated to top 9 billion by the end of 2015.

One of the most interesting aspects of this growth is that the highest growth rates take place where there is not as strongly developed telecommunication infrastructure. This seems somewhat surprising since it would seem logical that a country with highly developed telecommunication infrastructure like Canada would see high cell phone usage. However Canada is quite low down the list of cell phone usage per capita with 79 cell phones per 100 people ranking it 59th out of 70 countries. Table 1 shows the popularity of cell phones for selected countries (Wikipedia 2015).

Table 1 Cell phone ownership for selected countries

Country	Number of cell phones per 100 people
Panama	203
Russia	156
Malaysia	144
Poland	124
Philippines	114
South Korea	112
United States	103
China	93
Canada	79

While the communications provided by cell phones is important, it appears to be the information access provided by smart phones that seems to be providing the greatest growth. Smart phones provide a great deal more in the way of services than regular telephone service. Email, access to the internet and apps (applications or programs that provide a range of functions) provide enhanced communications.

2   TOOLS OF SOCIAL MEDIA

With the idea that cell phones and in particular smart phones are prevalent in our culture and will only become more so in our educational facilities, we need to examine some of the tools available.

The term social media is somewhat subject to interpretation. In fact some find the term Web 2.0 to be a more formal description. Bennet (2012) states that the criteria to be considered Web 2.0 are that the application or tool must exhibit most of the following:

– Collaborative and distributed authorship
– Active, open access :"bottom up" participation
– Continuous production
– Openess of content and distributed ownership
– Lack of finality
– Taking place on the WWW or internet resources.

In this paper, the terms Web 2.0 and social media are used interchangeably.

There are a large number of social media tools available (literally hundreds); some are country specific and some have an international audience, but for the most part they are similar to one of the eight examples shown below.

– Facebook: An open application that can be used by anyone to set up a presence and connect with friends, family, students, etc. As described by Facebook, "[it] facilitates the sharing of information through the social graph, the digital mapping of people's real world social connections."

– Twitter: A source of instant information (in a social context) provided by friends and family. The format restricts posts to a limit of 140 characters. (To give some context of this limit, this sentence inside the brackets contains about 100 characters.) However the mandated short length makes updating easier and quicker.

– Blog (web log): A site maintained by an individual or a group. The site can be open to the public or restricted to certain individuals. Content can be almost anything digital although generally it is comprised of formatted text supported by images and sometimes sound or video.

- Wiki: A site that allows easy and collaborative creation of content. The content (usually text, images or videos) is usually centered around a theme and is linked to other pages of the wiki.

- Pinterest: This is similar to a blog except it is designed to make it easier to post pictures and graphics. Can be supplemented by a small amount of text.

- Youtube: This is the largest collection of video clips available on the internet. Generally the clips are original, although there are a number of already broadcast items from old movies to documentaries.

- LinkedIn: A social network but designed more for business and employment. Users can enter their professional information and then build a network of professional contacts of people they know and trust.

- Khan Academy: Not really a social network site but it provides a large amount of educational material and allows an educator to set up a small network of students and monitor their progress (while not really a social media site, it is included due to the educational nature of it).

The open nature and the fact that the apps above or similar ones are already being used by many students entering our educational institutes would, in theory, make them good candidates for inclusion in many educational programs. However, as will be seen in the next section, this does not seem to be the case.

3 SOCIAL MEDIA IN EDUCATIONAL SETTINGS

With the growth being experienced with smart phones and the suite of tools that the current generation of students is familiar with, it becomes imperative that social media tools be considered in an educational context. It is certain that social media provides an informal educational tool, and this is indeed the case in the author's experiences. The Authors both have high school age children who routinely discuss homework

and assignments with their friends through various tools. However it is necessary to examine whether social media needs to be integrated into regular delivery. As Tess (2013) puts it, considering integration of these tools requires an examination of "… the theoretical framework for implementing the technology as a learning resource".

The theoretical framework is undoubtedly important but we are faced with the usual problem when education and technology intersect, i.e. the pace of the adoption of the technology falls far behind the pace of the technology development. As has been noted, it is hard to maintain the status quo when the status is no longer quo. The rapid adoption of the technology by our clients has forced the issue front and center and consequently we need to review the use of social media in the context of class use and educational administration.

One limitation that was introduced into this study was that we decided to not cover the social media-like tools found inside learning management systems (LMSs). There were two reasons for this. The first is that LMSs are still not found at all Universities while the tools listed above can be. The second is that the specific tools found inside an LMS are system dependent, so some tools are offered on one system and others on a different one.

In regards to class room use, the eight social network tools identified in the previous section are reviewed based on the criteria laid out in Table 1. The first 3 criteria are related to content; the last is related to the potential for interactive communications. The first content criterion is abundance and is a measure of the quantity of relevant information available on the tool. The second content criteria, "accuracy", is a measure of the technical exactitude of the content. The third content criterion is "timeliness" and is a measure of how recent the information is likely to be. The non-content criterion is interactivity and is an indication of the amount of feedback or discussion that a student can expect using the tool. By necessity, the measurements in both Table 2 and Table 3 are somewhat subjective.

Table 2 Classroom criteria for social media tools

Social Tool	Content abundance	Content Accuracy	Content timeliness	Interactivity
Facebook	very low	low	high	very high
Twitter	very low	low	very high	very high
Blog	moderate	moderate	low	very low
Wiki	high	moderate	high	moderate
Pinterest	low	moderate	moderate	low
Youtube	high	moderate	moderate	very low
Linkedin	moderate	high	moderate	high
Khan	high	very high	low	low

Table 3 Administrative criteria for social media tools

Social Tool	Copyright	Security	Appropriateness	Infrastructure
Facebook	moderate	low	high	low
Twitter	very low	low	high	very low
Blog	moderate	moderate	moderate	low
Wiki	moderate	moderate	moderate	moderate
Pinterest	high	moderate	very low	moderate
Youtube	moderate	high	low	high
Linkedin	low	moderate	very high	moderate
Khan	very low	high	very high	high

The category of educational administration has a different set of priorities and consequently a different set of criteria. It is concerned, not with the learning involved, but instead with ensuring that the rules (if any) are followed. For example copyright is a significant issue in many Universities these days. Where digital content is so easily copied and can be so widely disseminated, universities must be vigilant to protect themselves from legal issues involving intellectual property. Security is a category that is of critical importance as can be witnessed by several recent examples of large amounts of information being stolen. Appropriateness is a measure of the potential for the app to display content that would not be acceptable. What is acceptable would of course vary from country to country and even region to region. Finally infrastructure is a measure of the bandwidth that each tool would require.

Tables 2 and 3 provide some guidance regarding the potential use of and possible hindrances when looking at social media in the classroom. One important observation is that the more interactive a social media tool is, the lower the richness of the content. Thus for ideal use in the class room, instructor must strive to provide strong content but also encourage student engagement. Another point that can be seen is that most popular social network tools all produce high volumes of content but the quality may be questionable. This is the opposite of teaching where we strive for the highest quality but at a cost of lower volume.

The items in Table 3 are generally related to policy issues. Unfortunately this is an area where there is little guidance. While most Universities do have a policy for employees using social media, the policy covers personal use as use of social media in a non-teaching manner.

Seaman (2013) stated that the two main concerns of faculty in regards to adopting Web 2.0 into the classroom are 1) people not associated with the course gaining access and 2) the integrity of student submissions. Most Universities have policies in place for dealing with printed submissions and these can be extended to social media, but there are still concerns.

As was mentioned above, this study excludes LMSs. LMSs are set up to provide a protected learning environment, often with their own internal email systems. The restrictive nature of an LMS provides a much more controlled environment, but at the expense of potential content and student interaction. Applications, in their current state, provide none of these protections for the learning environment but do greatly enhance accessibility of the course content and discussions.

4   EXAMPLES OF SOCIAL MEDIA IN THE CLASS ROOM

The use of social media in university settings has been going on for several years. For example in 2009 Birmingham City University began offering a Master's Degree in Social Media. However that program seems oriented towards business uses, not teaching. In fact examples of social media in formal class room settings at a university level are scarce in the literature.

It is possible that this is because the adoption of social media by University Professors is so recent that there has not been enough time to migrate the use of social media into the classroom in a formal way and assess it (Hew 2013). If this is the case then we should soon start seeing more examples. However, there are some notable examples of social media being adopted that we can review now.

Bennett (2012) reported that a large first year chemistry class implemented a system where students were encouraged to take pictures of every day chemical reactions or chemistry related incidents that highlighted a principle shown in a recent class and post the photos on a common site. The students would also provide a brief description of the chemical principle involved and tag the image with an appropriate label. By the end of the class, 1894 images were posted. It is easy to see how this could be applied to a marine training program. Pictures of ships, engine parts, navigational aids etc. could make interesting and useful exercises and help link classroom theory with real world examples.

Bennet (2012) also provided an example of a first year university psychology class where the class was engaged in creating an wiki. The students were instructed on how to create an appropriate wiki style entry, complete with links to other wiki entries and to outside content. Students were also required to review entries besides their own and correct as appropriate. Again, it is easy to see how this type of tool could be used in marine education. A wiki set up to create entries on shipping accidents with causes and consequences would be educational and provide a tool that could be used for examination purposes or for reference.

A final example comes from Hung (2010) who points out that there is a social aspect to learning and used social media to enhance the "sense of classroom community". He and a colleague used social media to encourage students to share experiences from both inside and outside the classroom. Content shared could be text, video, images and even research. At the end of the course the students were surveyed and over 80% found the experience useful and indicated that the use of social media enhanced the sense of community and consequently learning.

As the policies become clearer and educators gain more comfort with the media, it is expected that a majority of classes will eventually be seeing some form of social media in their classrooms.

5   HANDHELD TECHNOLOGY

As was mentioned at the start of this paper, one of the drivers of social media is the rise in hand held devices (i.e. cell phones and to a much lesser degree tablets). The Authors envisage a time in the near future when it will be possible to provide complete distance deliveries of courses using handheld devices. The entire course can be accessed, worked through and completed using nothing but handheld devices.

Several online course content authoring packages now provide responsive authoring options to permit the creation of content for multiple platforms simultaneously. When using a responsive authoring software package (e.g. Adobe Captivate), content such as text, graphics, interactions and audio are simultaneously created in two or three instances of the project. Each instance may then be customized with respect to the size and quality of graphics, the size and type of font and the position of all visual elements so that the same content on each 'slide' of the presentation are optimized for viewing and interaction on a suite of devices.

The devices that each instance of the project are authored for are defined very precisely in terms of screen size, screen resolution, interaction (e.g. Is the screen a touchscreen) and audio capability. The final output of the authoring software is smart enough to detect what device the learner is using to access the content item and to provide the correct version for the learner to access using their particular device.

The authors have created responsive projects such that the same interactive learning element may be accessed using either a PC, a tablet or a cellular phone.

6   CONCLUSIONS

The main goal of this paper is to begin a dialogue about the use of social media in the maritime class room. The demographics and current trends show that the use of cell phones in University students is high and will only become more. In addition students come with a familiarity with social media that allow them to communicate with each other through a number of options and media (i.e. share pictures as well as text). Their expectations are also beginning to drive a demand for social media in the classroom (as was asked of one of the Authors when instructing a technical topic, "Is there an app for that?").

The ease with which students use social media has both promise and danger for classroom activities. As educators, we generally want a strong link and easy communication with our students. At the same time we must be aware that classroom information should be kept confidential and must ensure the integrity of any graded work.

This paper has also highlighted several examples of how social media can be used the classroom. It is anticipated that as social media becomes more accepted in the future there will be more examples, including ones from maritime educations.

REFERENCES

[1] Facebook. Press Release "About Facebook". Accessed June 17, 2015.

[2] Hew K.F. Cheung W. S. "Use of Web2.0 technologies in K-12 and higher education: the search for evidence based practice", Educational Research Review 9 pp. 47-64 (2013).

[3] Hung H. Yuen S. "Educational use of social networking technology in higher education", Teaching in Higher Education 15:6, pp. 703-714 (2010).

[4] Seaman J. Tinti-Kane H. "Social Media for Teaching and Learning", Pearson Learning Solutions Publication, Boston USA (2013).

[5] Szwed, P.S. "Adapting Maritime Education and Training (MET) Courses to the Digital Brains of the Millennial Generations". Proceedings of IAMU AGA 14, Launceston, Tasmania, (2014).

[6] Tess P A, "The role of social media in higher education classes (real and virtual) – A literature review", Computers in Human Behavior 29 (2013) A60-A68.

[7] Wikipedia contributors. "List of countries by number of mobile phones in use." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 7 Jun. 2015. Web. 17 Jun. 2015.