

The Role of Social Media in Higher Education

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Abstract—The use of social media technologies in higher education have played an important role especially in both the formal and informal aspect. In this paper, we delve deeper into the pedagogical connotations of this phenomenon as we identify three social media characteristics and trace them back to established learning theories as we document evidence of their manifestation in real academic scenarios. We conclude that social media technologies are no random manifestation of pedagogical solicitation, but a natural and inevitable occurrence that fulfilled and satisfied a societal and human need and that was only possible through advances in information and communications technology.

Index Terms—social media technologies, higher education, learning theories, e-learning concerns

I. INTRODUCTION

Social media have taken the world by storm as their overwhelming adoption and success surpassed that of radio, television, phone and Internet by more than a hundred times [1]. By far the most popular social network is Facebook [2] as it dwarfs other social media and continues to dominate this global online revolution [3]. If Facebook were a country its current 1.79 billion monthly users would make it the largest country followed by China and India. People no longer search for the news or for products or services, but expect such information to find them via social media. The impact that such media has and it still rubbing off onto education has also been investigated and documented [4], however more research is required into the pedagogical effects and repercussions onto informal learning. In this paper we are particularly interested in the role of social media in higher education rather than education in general. The reason behind this delineation is intentional as we focus on how adults, as mature and experienced learners, take full advantage of this medium, and thereby ideal to investigate the philosophical aspect of the social media's academic influence. We are not interested in the way schools, colleges or universities are taking practical advantage of this communication medium, nor into the administrative or logistical possibilities that have been expedited and rendered effective through the same use of social media [5], but we are interested in the epistemological and philosophical connotations underpinning this phenomenon.

The rest of the paper is organized as follows. Social media technologies are formally defined and expanded in some detail in the next section to explicitly render their relevance through the rest of the paper. Section III is divided into three sections as three characteristic features identified in the previous section are traced back to three distinct learning theories and respective epistemological representations. The implications of these three pedagogical features that we argue are inherently ingrained in social media are further discussed with a view into the future in the final section as we close this paper with our conclusions.

II. SOCIAL MEDIA TECHNOLOGIES

Several researchers have given different definitions of what social media technologies stand for or what they originated from. Joosten [6] for example broadly describes them as any number of technologies that are correlated to collaboration and community. Others [7] have difficulty giving a straight definition due to the dynamic nature of such technologies and prefer referring to specific examples. Boyd and Ellison [8] define social media technologies as web-based networks where users have a personal profile and can communicate, create and share content and messages while also socializing with others. From a technological point of view we subscribe to a definition of social media technologies that others like Hemmi, Bayne and Land [9], Kaplan and Haenlein [10], and Gruz, Staves and Wilk [11], that refer to the term Web 2.0 to justify the rise and popularity of social media around the world.

Web 2.0 refers to the technology whereby users are provided with tools to interact with the web in a slightly more intelligent way [12]. A Web 2.0 web application facilitates participatory information sharing, interoperability, collaboration and has a user-centred design [13]. Such characteristics motivate users to use the application and encourages them to collaborate with other users, constantly persuading them to generate user-generated content, in contrast with systems that make users passively view corporate generated content. The Web 2.0 concept has helped the Internet flourish and unleash its full potential. This is our interpretation of social media technologies that have evolved from the static Web 1.0 where users are simple consumers of content and whereby no two-way interactivity existed. As technologies in the late 90s and early twenty-first century evolved and enabled users to participate, author, curate, and actively contribute to the same content of the web a

new era in web technologies began. Every era brings along an additional layer over the standard web as depicted in Fig. 1, bringing innovation as a new technology alleviates the previous ones and adds new value to web.

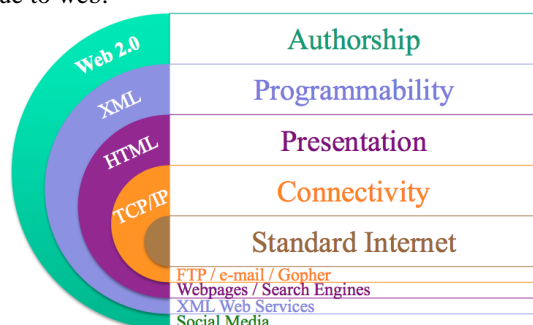


Figure 1. Evolution of Web technologies

Our view of web technologies shows an incremental functionality that incorporates even more the role of the user. Through this definition of social media technologies, as a new stratum in the evolution of web technologies, we also envision this development as a way of how the web transformed itself from a simple medium to share information amongst researchers to a multi-media platform whereby standard web users contribute to the massive knowledge-base we traditionally refer to as the World-Wide Web (WWW). We further postulate that this user-centered version of the WWW fosters and generates the best education environment to date that the web has to offer through the e-learning medium. In an effort to demystify this assertion, that a number of researchers [14] [5] [15] [4] subscribe to, we deconstruct social media technologies into a number of factors that collectively make up the significant characteristics of social media according to these same researchers.

III. DISSECTING SOCIAL MEDIA IN HIGHER EDUCATION

Social media have been described and attributed a number of terms that repeatedly appear in academia [4], [5], books [14], [16], and official reports [17], [18] that functionally praise this medium. Social media technologies are distinguished as incredible enablers that empower connected users to communicate and participate in networks where they can create and distribute content that they come across or curate while browsing, seeking or interacting with while engaging in a social celebration of communication over the Internet. Our take on all of this is educational too but from a pedagogical and philosophical point of view whereby it is clear to us that these social media characteristics by no coincidence subscribe to learning theories and epistemological beliefs that justify their academic relevance and success.

A. *Connect, Communicate and Participate*

The first three descriptive terms that traditionally describe social media technologies [19] highlight the multiple possibilities of online users to connect over the web and communicate as they participate in virtual social gatherings. At an academic level especially at the higher

education domain this functionality allows adults to fruitfully take advantage and learn through their interaction with each other. This social aspect of this medium addresses an important e-learning issue that numerous e-learning critics [20], [21] identify as learner isolation. Isolation refers to the learner's lonely experience during an e-learning course without any contact whatsoever with other learners or educators. Bousaaid, Ayaou, Afdel, & Estrailier [22] investigate this phenomenon and conclude that the simple act of participating within a network of like-interested persons within a social network assists e-learners and renders the entire process more effective. They argue that latest Web 2.0 technologies actually promote even more communal practices whereby learners are able to participate, connect and communicate freely with others. Similarly, Davies & Merchant [23] highlight the ability of Web 2.0 to enrich and transform the educational experience. Leone [24] emphasises the importance of a learner support system made up of social connections and online resources. Such learning networks are unique to individual learners as they evolve over time and through continuous interaction that will eventually contribute to the personal and professional development and knowledge. Personal Learning Networks (PLNs) are firmly set within the connectivism learning theory and their ultimate goal is to empower learners and educators by building a personal community of peers and knowledge providers online in a way to share, collaborate and source information, ideas and knowledge. The potential of having a massive online knowledge base at one's fingertips is intense and overwhelmingly powerful that is sometimes overlooked and not taken advantage of. To build such a network a person needs the adequate tools, social networking tools, to be able to connect and interact with other web users who likewise are developing their own personal network. Every individual can decide on the way to go about extending one's network while at the same time defining the way to learn, what to learn, and at which pace. Such networks automatically promote collaboration and sharing thereby fostering a communal sense of belonging and non-isolation. Developing a private learning network is not a simple task or a decision following an impulse to do so, but a mind-set and a way of life. It is a conscious choice of continuous learning, a dedication to search, collect and curate interesting information, and a passion to create, distribute, share and collaborate with other like-minded people while employing the Internet as a communication medium. Typically a minimal set of tools and activities required for a personal learning network require one or more social networking accounts to link up and communicate with other social networkers who have similar interests and needs; follow, contribute and distribute content discovered or generated over a blog, a wiki or any other social bookmarking online tool; join and participate in discussion groups, fora and other social gatherings to acquire new information while at the same time sharing personal knowledge with others. Much of these online tools have been made available and are possible through the advent of Web 2.0 technologies [25]

[26] that characteristically present dynamic rather than static websites displaying user-generated content.

To such extents the connectivism learning theory has been coined as a “learning theory for the digital age” [27], and is considered the predominant grounding theory as it has been associated with the use of social media in education [28]. This learning theory puts into context the online reality of learners making use of social networks as it “dismisses the three dominant learning theories, behaviourism, cognitivism, and constructivism”, according to Wheeler [29]. The educational process is envisaged external to the learner within a personal network of technologies, communities and social media. Closely related to this definition also lies the social-constructivism theory that according to Vygotsky [30] learning occurs as a result of interactions between individuals influenced by the cultural and societal environment. Whereas this learning theory takes into consideration the role of others within the learning process as mediators to acquire novel information and knowledge, connectivism takes it a step further and highlights the importance of the networked information whereby the learner and the mediators contribute and receive in a mutual beneficial learning community. Within this model the connectivism learning theory significantly contributes to this social paradigm as it highlights the importance of learners identifying the source and the content itself of what interests them and what they need to learn. This places the responsibility directly on the learner who is required to bring together a cohesive set of personal learning tools within an environment that is socially networked and academically healthy within which learners can store their knowledge. A number of educational studies have been reported that directly refer to the learning theory of connectivism. Loureiro and Bettencourt [31] investigated how to enhance the educational process by focussing on optimising such process within higher education by integrating Web 2.0 tools and subscribing to connectivism. Robson [32] took a step further to investigate the next generation of online courses by scrutinising the content and processes of initial generations of e-learning courses. He draws the conclusion that e-learning content is experiencing a shift in its underlying pedagogical theories from cognitive, instructive, and behaviourist to social, constructivist and connectivist. Even Duke, Harper, & Johnston, [33] argue that connectivism’s diversity through different networks is ideal to assist learners in the new generation to learn. They encourage educators to continually evaluate how connectivism in conjunction with other learning theories can be used in the online learning process. Furthermore, Hung [34], makes extensive use of ideas from this same learning theory to design new models in an effort to optimise the movement of connected knowledge, expanding learning spaces and structures, and employing open technology to connect people.

In a case study held with a group of first-year undergraduate students at the faculty of ICT, university of Malta, these social media concepts were placed in

practice as the assessment part of the course specifically required the students to collaborate together to achieve a common goal. To such ends the use of social media technology was proposed as they were required to propose an original idea of a useful gadget or program that will assist human users in some task. The class was divided into groups of four students on the first day and each member had a specific task to complete. One member had to create a Facebook group, while a second member had to video log how this was done by employing Jing, and post the video on the Facebook group page. Each member in the group was required to individually propose and post an idea of what the software system to be developed would be. The proposed idea was to be either a gadget or a piece of software that performs a useful job that is required and desirable by the public. After two days, each member within the group was required to comment on the proposed ideas of the other group members by posting Facebook comments on how to enhance or improve it, followed by counter-arguments and discussions. A third member had to create a poll to be used by the members to vote for the best idea. Again, the second member had to video log how this was done and post the video on the Facebook group page. After that every member participated in the poll created to vote for the best idea in the group, a winning idea was identified by the end of the fourth day. At this point the group had to work together on the winning idea by discussing over a chat medium (Facebook messenger, Skype, Google hangouts, or WhatsApp) that the fourth member of the group had to set up. The setting up of the chat session was also video logged and posted on the group page. Finally, the proposed system was polished and finalised on the last day in a 1-hour recorded group chat using Flash meeting group chat to document the meeting and what was decided during this meeting. An assessment rubric, grading scale, and assignment rules were given beforehand. These included a scale for comments posted, levels of participation and interaction, as well as frequency of communication and use of social media technologies.

The outcome was outstanding as individual groups efficiently communicated over social media in an effort to optimise their efforts as they competed against each other. The participation within the groups was well defined to ensure that each member had a specific job to do and which was explicitly reported on their social network page. This same page was the final deliverable of their course assessment and which together they managed to proudly deliver and document each step of the way.

B. Seek, Interact and Engage

The beauty about social media technologies lies in their complexity as they offer a plethora of capabilities and not just connectivity over a network. This innovative and exciting medium inspires and nurtures learners to take initiative and engage with information that is either pushed, sought, or altered in some way. To these ends we strongly believe that engagement and the learning theory

of self-determination highlight this aspect of social media in higher education. Studies have clearly shown that there exists a direct correlation between social networking and engagement. Junco, Heiberger, and Loken, [35] have statistically confirmed, through analyses of Twitter communications, that “students and faculty were both highly engaged in the learning process in ways that transcended traditional classroom activities” (Pg.1). Their study provided “experimental evidence that Twitter can be used as an educational tool to help engage students and to mobilize faculty into a more active and participatory role” (Pg.1). Similarly, Rutherford [36] has shown that there is a positive correlation between student use of social media and the quality of their educational experience. The study gave positive insights into the impact the use of social media can have on the level of pre-service student engagement. Other studies [37]-[39] have also shown that leveraging social networks during the educational process enhances student engagement. They provide the required connections between users thereby facilitating communication, collaboration, and collective learning at the same time.

In line with this philosophical stance whereby learners are motivated to conduct themselves in an optimal way in order to maximise the benefits they can extract is in line with the self-determination learning theory. As a matter of fact, Deci & Ryan [40] distinguish between different types of motivation in their self-determination theory, based on different reasons or goals that give rise to an action. Human motivation is imperative in the effectiveness of e-learning, be it intrinsic as in doing something simply because it is inherently appealing and enjoyable, or extrinsic as it leads to a separable outcome. One way to extract information regarding what exactly motivates a person is to identify and point out patterns and characteristics within the profile of the same learner. This direct relationship between motivation and self-determination [41] conveniently fit in with these social media characteristics that address and influence the cognitive state of learners. Other self-determination learning theorists like Linnenbrink & Pintrich [42] focussed specifically on social cognitive models of motivation that apart from restating the dynamic nature of motivation, they highlight the fact that a learner’s current interests, situation and context play an important role in the levels of motivation and eventual academic achievement. In line with the self-determination learning theory is also the association that Wheeler [29] asserts between personal learning environments with self-regulated learning. Additionally the author believes that such personal technologies do encourage learners to be self-determined in their learning approach. Such a view is corroborated by others [43] who conceptualise self-determined learning, referred to as Heutagogy, to contextual formal and informal learning whereby they accentuate self-directed and non-linear learning. Wheeler [29] further argues, in line with this self-determination learning theory and other digital age theories, that the impetus lies on the ‘learning to learn’ which eventually brings in the issue of learner motivation and knowledge sharing.

To further emphasise this point a case study is hereby documented where social media have been used to foster student engagement as they interact and seek information. A second-year undergraduate Sociology course at the faculty of Arts, university of Malta, made use of the engagement attributes of forums in encouraging students to discuss, argue and justify different point of views. In terms of self-regulated learning students are given the option to pick any topical issue that they are interested in and state their position. They are free to make use of any medium they prefer and which best represents their arguments including text, hyperlinks, video, audio, academic documents, slideshows, and still images, to name a few. On the other hand all other students are urged and impelled to interact with their peers’ positional statements by seeking to counter-argue using again any method that maximizes their successful argumentation. A rubric to assign marks was given beforehand so students were aware of how to optimize their interaction while engaging within the forum. Tutors continuously monitor the progress and development of the discussions while facilitating any difficult situations that might develop. While forums offer an ideal situation for learner-learner interaction [44] it is important to minimise the tutor intervention not to disrupt student engagement [45]. The students went out of their way to seek counter-arguments in an effort to discredit their peers position and to justify their own. This also reflects similar studies [44], [46] whereby the majority of the learners were more than comfortable engaging online as they interacted more than they would have in a face-to-face scenario or online chat. Additionally, this conclusions drawn from the case study reflect Kadagidze [44] opinion when he states that “some students also mentioned that they liked to read what other students posted in online forums” (Pg. 259).

C. Create, Curate and Author

The final category of social media technologies characteristics reflect the creative aspect of learners and the appeal and allure that humans find in being productive and fruitful. This address the static nature of e-learning courses that tend to bore learners as their creative and imaginative abilities are not challenged enough. Social media technologies foster and promote the creation of content as learners are encouraged and nurtured in contributing new material, augmenting and boosting with additional content. The learning theory of creativity [47] characterizes the ideological stance of these capabilities within learners through the use of social media technologies. Allen *et al.*, [48] highlight the importance of creativity as an essential dimension for education and point out that new social media tools democratise creativity as they allow online learners to be productive in new ways as they author, create and propagate educational content. The authors add that by “using these tools to facilitate learning activities in higher education can promote creativity and many other related capabilities: digital literacy, independent learning, collaboration and communication skills, and critical thinking” (Pg. 15).

Csikszentmihalyi [49] systematically interprets creativity as a product of an ideal environment that nurtures innovation and imagination with learners that are motivated and inspired to do so. These personal qualities of learners are heightened through social media as they predispose students through natural enquiry and a disposition to investigate, venture and persevere. Other capabilities that relate to a disposition for creativity are independent learning, communication, critical thinking, problem-solving and inter-disciplinary practice [48].

A case study was conducted using a blended learning environment for student-teachers at the faculty of Education, university of Malta, combining their face-to-face micro teaching practice with an online Virtual Learning Environment (VLE) where social media were integrated. The study required the students to populate the VLE with relevant and suitable multi-media resources while being creative with assessment course work. These resources were to be used during the micro teaching but were also to be assessed in isolation. The student-teachers had to author an original task that involved the use of a survey, quiz or poll. The assessment task was accompanied with a complete rubric to ensure that every component was duly assessed and that all potential outcomes were covered. The creativity component was evident when the different assessments by the student-teachers were posted on their individual VLEs. Some employed social media to author attractive data collection instruments, while others created content like presentations, comic strips and videos to present the educational material. This went out to show that the medium employed created a fertile environment for the student-teachers to creatively author and present exceptional content.

IV. FUTURE IMPLICATIONS AND CONCLUSIONS

The implications that this paper sought to bring out will continue to develop and evolve as future social media technologies keep on emerging. This paper also presented an innovative way to analyse and investigate the characteristics of social media technologies as they apply to higher education. This was done with specific focus on the learning theories that symptomatically feature the identifiable social media features.

We identified three categories of social media features that resonate with three interrelated concepts identified by Selwyn [50] to underline the success of social media technologies in higher education, namely learners that are connected, collective, and creative. These three concepts underline our three identified categories that were expounded in some detail, associated to a respective learning theory, and argued that each category addresses a previously identified e-learning concern.

In the first instance, we associated the learning theory of Connectivism to the social media characteristics that enable users to connect, communicate and participate. These turn out to be the most notoriously documented features of social media and with which Connectivism particularly fits well. We argued that learning occurs as a result of interactions between individuals as issues of

isolation by online learners are addressed as they each learner develops a personal learning network of human and academic resources.

When users employ social media to seek, interact and engage they require a degree of self-regulation where their motivation to learn plays a crucial role. We correlate the learning theory of self-determination to these characteristics as issues of motivation associated with e-learning are addressed and alleviated. We argued that motivated students who were competitively challenged tended to be more productive and resourceful.

Finally, the learning theory of creativity encapsulates the last three features we grouped together under the title of create, curate and author. Issues of boredom and lack of imagination have been argued to be overcome by creative occurrences that social media technologies exhibit. In this case we argued that social media technologies promote and stimulate learners to author original and inventive content in an effort to outdo themselves.

These social media technologies characteristics are no random manifestation that happened to trigger pedagogical connotations when employed within an academic environment. We have shown on three occasions that these features address specific e-learning concerns that have been documented and which social media technologies fit an appropriate solution. We have also seen that social media technologies satisfied a need that society embraced and adopted as they fulfilled specific and natural tendencies and needs, like the human need to connect and form part of a community, to discover and engage with others, and to be productive and extract satisfaction from accomplishments. Social media give these opportunities in a highly accessible way and thereby facilitate and expedite such processes. When this is applied to higher education where adults have the experience and maturity to take better advantage of such attributes, then the relevance of these characteristics are even more exposed and magnified.

All this was possible due to the technological advances that assisted the WWW to evolve over the years in a very short period. We have shown and explored how Web 2.0 is another technological layer that brought about a richer set of technologies and web applications as it changed the role of the Internet from an international network of research academics to a global community of online users who not only consume knowledge spread over the web but also contribute and proliferate content.

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