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**Social media-enabled learning and the
curriculum in Australian higher education:
A literature review**



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The DEHub Monograph Series No 1 Issues in distance and flexible learning is published as a deliverable under Diversity and Structural Adjustment Funding from the Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE). The aim of the monograph series is to promote the publication of research in the fields of distance and online learning and facilitate researchers and practitioners from many disciplines across the higher education sector, nationally and internationally, sharing their data, techniques, research methods, findings and ideas. This Monograph Series endeavours to be a professional publication that educational practitioners and researchers can use as a vehicle to extend and share knowledge, improve dissemination of research and practice, and stimulate discussion in the field of distance and online learning and other related areas. To ensure a professional approach, all submissions undergo double blind peer review.

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DEHub, based at the University of New England (UNE), was established in 2009 as a Federally-funded central agency for distance education research. It aims to promote knowledge transfer about best practice in distance education and support national and global collaborations on evidence-based approaches to effectively and efficiently employing new technologies in distance education. DEHub works to inform and influence policy and improve practice based on research outcomes, both nationally and internationally. DEHub has fostered an extensive, worldwide network of researchers in online and distance education so as to be able to facilitate connections between educators and other stakeholders in higher education.

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Keywords:

higher education, distance education, online learning, e-learning, instructional design, educational technology, educational development, curriculum development, online pedagogy, online curriculum design, information and communications technology, ICT, cultural anthropology, Web 2.0, social media, capacity building, professional development, social constructivism

DEHub Monograph Series 2012

No. 3

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DEHub
Innovation in Distance Education

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Abstract

This study is centred on the impact of social media-enabled learning on the curriculum within higher education in Australia and focuses on curriculum in relation to distance education.

The impact on curriculum design of the trend for rapid uptake of social media, but with less active contribution of user generated content, is discussed, as are the implications for higher education of other central ethical issues in relation to the protection of identity and development of trust in utilizing social media sites in higher education. The review explores the applicability of six curriculum models within a social media-enriched learning environment: curriculum as product, curriculum as a body of knowledge for transmission, curriculum as process curriculum, as praxis, curriculum as knowledge creation and community as curriculum. The importance of open and flexible design methodologies emerges; the conclusion being that social media-enabled learning moves higher education beyond a focus on content provision into a dynamic communal process of sense-making and knowledge.

1.0 Background

1.1 The Early Childhood Proposal

In 2009, the Early Childhood Education (ECE) team in the School of Education undertook a complete revision of the 16 units across the Bachelor of Teaching and Bachelor of Education in Early Childhood degrees at the University of New England (UNE). Their focus was the migration of teaching materials from a paper-based correspondence course to online teaching and learning. This migration process included a progressive redesign of the two courses informed by a strong, socio-cultural theoretical framework. This process forced the team to rethink content, assessment and learning tasks and activities. Their inquiry became an integral part of their own professional practice as teacher educators, helping them to evoke 'deeper understandings of the aims, methods, and outcomes of [their] work with beginning teachers' (Dinkelman, 2003, p. 8). This exploration of the academic literature, undertaken in the first half of 2010, reflects the commitment made by the team to further refine their understandings and development of curriculum and online pedagogy.

1.2 Overview

This review, with a focus on higher education, is trans-disciplinary in focus. It incorporates work undertaken in disciplines including education, instructional design, educational technology, information and communications technology, cultural anthropology, business and marketing. The research on the use of social media within higher education included in this review is largely comprised of small case studies, because this is where the bulk of the empirical work is occurring (Dron & Anderson, 2009). In most of the case studies cited in this review, the social media-enabled learning and/or curriculum innovations are less than a decade old, many are more recent, and a number of case studies report on innovations still in progress, or else report the initial design phase of an intended innovation.

The review also incorporates commentary on social media for e-learning (e.g. Allen & Long, 2009; McLoughlin & Lee, 2010) and more generally (e.g. Australian Communications and Media Authority [ACMA], 2009b; ACMA, 2009a; Stroud, 2008); theory development on learning in a Web 2.0 environment, including both peer reviewed articles (e.g. Chatti, Jarke & Quix, 2010; Cormier, 2008; Siemens, 2006) and recent conference presentations available through You Tube (Siemens, 2010; Downes, 2010b; Brown, 2010); along with syntheses of the literature on particular forms of e-learning, social media and/or assessment (e.g. Schroeder, Minocha & Schneider 2010; Means, Toyama, Murphy, Bakia & Jones, 2009; Zawacki-Richer, Baecke & Vogt, 2009).

The peer-reviewed literature on Web 2.0 and social media incorporated within this review invariably lags behind the process of sense-making occurring at the innovative edge of elearning. This lag between practice and research is not unusual. Bartunek (2007, p. 1328), for example, highlighted that across a range of disciplines, practitioners often identify a phenomena or issue, or have integrated a whole new approach into their practice well before it comes to the attention of researchers. With this review centred on the rapidly evolving field

of social media in relation to elearning within higher education, applying a standard definition of rigor, or quality (such as the quantitative controlled sample design and sufficient data for effect size), in the selection and inclusion of literature cited risked introducing rigor mortis, a review devoid of the liveliness of the very field of practice under examination.

This review began, therefore, with the peer-reviewed literature and, then, diverged from this path into an engagement with online resources and the 'grey' literature to improve the currency. This is a reflection of how social media is changing, not just within the learning landscapes of higher education, but the ways research on elearning is being presented. In his e-book, *Knowing Knowledge*, Siemens (2006) encapsulates the epistemological and ontological shifts in engagement that can accompany the use of social media, when he describes the difficulty he experienced in writing a report on knowledge. He found that transferring his online experiences in hypertext where '[c]oncepts relate to concepts – but not in a linear manner' into the lineality of a traditional print-based format required constant repetition of key points to show the same connections (Siemens, 2006, p.vii). In his YouTube (a social media application) presentation, titled the *Information Revolution*,. Wesch, (2007b), a cultural anthropologist, illustrates how Web 2.0 organises information outside the traditional hierarchical conceptualization of knowledge structures.

The number of people who have viewed Wesch's (2007a) multimedia presentation on YouTube were, 534,512 on the 24th of June 2010. Along with Wesch's (2007b) research-based YouTube presentation, *Web 2.0 the Machine is Using Us*, that had been viewed 11,003,525 on the 24th of June 2010, these figures demonstrate how the use of alternate formats in reporting academic research extends the reach of research far beyond a traditional academic journal or book. On his blog on distance education, Bates (2010) recently addressed the topic of academic publication, commenting that 'surely in this day and age we can find better ways of disseminating useful information that has a sound academic base, without trivializing it'. His comments led to a rich interchange among Canadians involved in academic work on elearning. This included a contribution from Mark Bullen: 'You should have been at the panel session at the CNIE conference earlier this week. The editors of Canada's three DE/ed tech journals (IRRODL, JDE, CJLT) discussed these issues'. This is indicative of the ways important academic discussions are occurring via social media.

Such examples help to illustrate how social media-enabled interactions are shifting and blurring the boundaries of both research reporting and formal, non-formal and informal learning, with both trends having important implications for contemporary higher education. It helps to foreground the ontological and epistemological dimensions of social media-enabled interactions and the consequences for the established knowledge structures underpinning higher education (Han, 2010; Luckin, Cook, Clark, Day, Ecclesfield, Garnett, Whitworth, Akass, Hamilton & Robertson, 2010; Beetham, McGill & Littlejohn, 2009).

2.0 Detailing the Research Process

2.1 Stage One: The Initial Search

The initial terms and phrases identified for use in the literature search included terms both implicit and explicit to the research question (curriculum, e-learning, social media and associated terms, higher education, tertiary education, evaluation). In addition, discussion between the authors and research assistant led to search terms associated with the theoretical framework adopted by the team in redesigning their course for an e-learning environment—social constructivism. Constructivism has been a dominant paradigm within writing on e-learning in higher education and, in particular, in relation to social media applications. However, there are also suggestions that constructivism has been more prevalent as rhetoric, or an ideal, than for its effective application within higher education practice (Allen & Long, 2009).

This current review includes a focus on the curriculum in relation to distance education, primarily because the Early Childhood degree programs at UNE are delivered in distance education mode (combined with short residential schools in most units). DEHub also suggested the need to incorporate a focus on theory and practice related to instructional design. The differences in the disciplinary perspectives and terminology that emerged within these discussions have creatively shaped the transdisciplinary focus adopted for this review.

In stage one the peer-reviewed academic literature was identified:

- 1 through searches of the Informat, Google Scholar, Metasearch, Proquest, Emerald, JSTOR and EDITLIB electronic databases.
- 2 via specific searches on the recent contents of journals with a focus on technology and education.
- 3 by following citation threads off individual articles to identify further articles of potential relevance to the research question.
- 4 via specific searches on expert-identified key authors in the fields of instructional design and / or e-learning.
- 5 Stewart of DEHub also provided a copy of her Endnote database compiled during a review on the impact of academic development on student outcomes and relevant entries were transferred across into the current study.
- 6 through searches on specific topics or terms identified within the review process.

In the initial literature identification stage, as documents were being added to the Endnote® database, they were sorted into Smartgroups via a search of the abstract. These Smartgroups, then, helped to define the ten themes used in the first step of the analysis in Stage Two.

2.2 Stage Two: Sorting the documents using Leximancer Software

In Stage Two, a total of 919 documents located during the initial literature search were analysed and sorted using the Leximancer Software lexical analysis and concept-mapping tool. This utilised a process designed by DEHub staff during an earlier research project. Stewart and Keith Woldolko had developed the sorting process based on a search methodology suggested by Cooper (2009). A similar use of Leximancer is evident in content analysis of new elearning instructional design strategies by Liu and Maddux (2008); although in their case, this sorting process included only 25 articles.

In the first step of the Leximancer analysis, the 919 documents were sorted into ten themes identified through the creation of Smart Groups by the Endnote program. These ten themes were article focus, social media, educational technology, technology, curriculum design, evaluation, higher education, postsecondary education, instructional design, learning environment, learning, and staff development. In this stage of the analysis, each theme was represented through a set of associated key words. The sorting process was based on the presence of at least three references to one or more of the theme's key words within the full-text of the document. Those documents in common across all ten lists formed the core group of 49 documents.

2.3 Stage Three: Questioning the Core Articles

The next stage involved an initial read-through and manual sorting of the core literature that had been identified through the Leximancer mapping process. It became apparent that this mechanical sorting process had failed to get to the core of the issues that were the focus of the study. Further documents were then identified to assist in better addressing the original research question. The first group of additional documents were found by following the citation trail of the core documents—particularly when the core documents referred to work-in-progress. The second group of additional documents included articles published during the first half of 2010, that were added to the Endnote® database following the Leximancer sorting process. The third group of additional documents included research that had been referred to within these new 2010 publications, but not identified through the original academic database searches.

In addition, as noted in the discussion in 1.2 above, further documents were identified through relevant discussions occurring via social media including on specialised blogs, via a connectivist group on Facebook and conference presentations available on You Tube. Examples of the process of reaching outside the boundary of traditional academic literature to incorporate discussions occurring via social media within this study included engaging with the:

- work of the cultural anthropologist, Michael Wesch on social media, in particular the implications for learning within higher education available through You Tube (<http://www.youtube.com/user/mwesch>),
- the podcast of a discussion recorded at the ELI 2008 Annual Meeting between Siemens and Wesch available on Educause.

- Dave Cormier's blog on curriculum as rhizome, (<http://davecormier.com/edblog/category/rhizomes/>)

This brought the total number included in this study to 96 items.

2.4 Endnote® Database and Annotated Bibliography

An integral part of this study has been the development of an annotated bibliography using an Endnote® database. This continued to expand throughout the project. The database now contains over a thousand journal articles, book chapters, electronic articles, conference papers, reports and theses. The vast majority (971 entries) are comprised of items published during the five-year period between 2005 and 2010, and more than half (581) of the items were published during from 2008 to the first half of 2010 when this review was undertaken). This is an indication of the level of academic activity occurring in the English-speaking literature within the field of elearning.

Additions to the Endnote® library, including grey literature and multimedia material added to the library was identified through following links off the core articles (see stage three), via discussions and links on email, blogs and other forms of social media, and specific searches undertaken on particular themes emerging through the literature. The movement into material located via social media reflects the boundary spanning qualities inherent to the three themes incorporated within the topic under consideration—i.e. curriculum, social media-enabled learning and higher education.

3.0 Setting the Scene

3.1 Defining Social Media

This study is centred on the impact of social media-enabled learning on the curriculum within higher education in Australia. Whilst there is no standard definition of social media, broad definitions tend to connect social media with Web 2.0 sites, the integration of applications such as RSS and AJAX, and highlight the crucial role of online social interaction and collaboration. The term Web 2.0 only entered the public domain six years ago as a loose concept and is generally attributed to O'Reilly (2005), who convened the first Web 2.0 conference in early 2004 in recognition of the potential of a new generation of social software tools for business. O'Reilly (2005) pointed out in his initial report on the Web 2.0 business market:

Like many important concepts, Web 2.0 doesn't have a hard boundary, but rather, a gravitational core. You can visualize Web 2.0 as a set of principles and practices that tie together a veritable solar system of sites.

Morgan, Jones, and Hodges (2010, p.1) on the topic of social media note that '[a] common thread running through all definitions of social media is a blending of technology and social interaction for the co-creation of value'. In their recent Australian study, Brun and Bahnisch (2009, p. 5) defined social media as '[w]ebsites which build on Web 2.0 technologies to provide space for in-depth social interaction, community formation, and the tackling of collaborative projects'. Kaplan and Haenlein (2010, p.61) specifically refer to user-generated content within their definition of social media as 'a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content'.

The web content generated by users on Web 2.0 social media applications, Kaplan and Haenlein (2010) suggest, has three basic characteristics: it is published on either a publically accessible website or a site accessible to a selected group (not email or instant messages); it shows creative effort (not merely the transfer or replication of existing content), and it is content created outside a commercial context. Bruns and Bahnisch (2009, p.7) specifically exclude from their definition of social media sites 'which build on Web 2.0 technologies but do so without making specific efforts to enable user communities to form and organise themselves', as well as excluding web sites that 'offer no space for meaningful longer-term interaction amongst authors and commentators'.

Social software applications, in particular, the bulletin board system, actually date from the very beginnings of the Internet back in the 1970's (Kaplan & Haenlein, 2010). However, most of the applications now encompassed within definitions of social media have emerged within the last decade (Kaplan & Haenlein, 2010; Schroeder et al., 2010). The social software tools commonly encompassed within the term social media include blogs, micro-blogs, wikis, social networking sites, virtual social worlds and virtual game worlds.

The Mashable (2010) website asked its readers in June 2010 ‘what is social media?’, requesting they answer in 140 characters or less (which is the character limit of the micro-blog Twitter). The themes of the top twenty answers submitted to the Mashable site reflect the interactive qualities of social media: collaboration, network, conversation, sharing, relationships, multi-dimensional, inclusive, information, community, personalization, empowering, radical shift in communication, real-time, people, content-distribution, self-expression, unity, dynamic, discovery, power of the crowd.

It is the combination of collaborative and dynamic interpersonal communication, alongside the sharing and creation of content (mash-ups), that forms the background for this discussion on curriculum in the context of social media-enabled learning. Yet, as social media is an extremely ‘active and fast-moving domain’, it is also important to recognize that what may be a current social media site or tool today, may also have ‘disappeared from the virtual landscape tomorrow’ (Kaplan & Haenlein, 2010, pp. 64-65). The level of innovation implicit in this constantly changing online environment is clearly an important consideration in relation to the curriculum models used in integrating social media within higher education explored further in Section 3 below.

Stroud (2008), a strategic marketer who specializes in emerging technologies, emphasized the importance in a Web 2.0 environment of distinguishing between the architecture (the tools and techniques used to create a site) and application itself (the value it adds to the individual or organization).

web 2.0 Architecture	
Inherently multimedia	Video and audio incorporated into fabric of the web site
Interface adapts to user	There are multiple design elements to enable site users
Fewer links, more actionable elements	There are multiple design elements to enable site navigation
Created using multiple technologies	Web sites are constructed using an array of technologies
web 2.0 Site Applications	
Users create, refine and share content	The web site ‘user’ can contribute information, thereby increasing the value of the site’s content.
A community rather than solitary experience	Applications are not limited to the interaction between the site and a single user
The scope of the application is extended by integrating data from multiple sources. This is often called a ‘mashup’	The functionality of the application is not limited to the resources of the site owner

Table One: *Web 2.0 site architecture and applications* Source Stroud 2008:295

It is the interactivity enabled through social media applications, rather than the technicalities of the architecture, that is central to any consideration of social media-enabled learning. O'Reilly and Battelle (2009) suggested that:

The fundamental lessons of Web 2.0 apply to any network application, whether web-or mobile phone-based (and the lines between the two are increasingly blurred) applications can be designed to get better the more people use them, collecting data that creates a virtuous feedback loop that creates more usage.

This leads on to another important concept in relation to the application of social media within higher education—the affordance it offers for learners. Affordance is a concept that draws attention to both the capabilities of those who are using social media, and to their goals, plans, values, beliefs, and past experiences. Affordance also refers to the qualities of an object or environment that allows an individual or group to perform an action (Affordance, 2010).

It is affordance in the emergence of community and collaboration that distinguishes social media from other Web sites (Bruns & Bahnisch, 2009). The interactivity of this online environment promotes the logic of openness and collective knowledge creation (Beetham et al., 2009). O'Reilly, the market analyst who first coined the term Web 2.0, noted that the academy can no longer ignore the ways social media-enabled learning environment is about interactivity as a form of collective intelligence, not merely individual achievement (O'Reilly & Battelle, 2009). Similarly, in their recent conference presentations Siemens (2010), Downes (2010b), and Brown (2010) have all emphasized the opportunities social media affords for a more active form of engagement by students as a collective learning experience. This points to a fundamental issue in the use of social media within a formal learning environment such as higher education. The interactive and collaborative qualities of social media-enabled learning means that finding the limits to any form of social media application will not be an issue solely related to the architecture of the site. It is, also, a matter of finding the limits to the meaningfulness of the interactions occurring between the participants (Stroud, 2008; Wenger, White & Smith, 2009, p. 189).

Kaplan and Haenlein (2010, p. 62) have classified social media through a set of theories related to media and social processes: social presence / media richness, self-presentation / self-disclosure arguing that these are the two key elements of social media.

Social Presence / Media Richness				
		Low	Medium	High
Self Preservation/ Self Disclosure	High	Blogs	Social networking sites (e.g. Facebook)	Virtual social worlds (e.g. Second Life)
	Low	Collaborative projects (e.g. Wikipedia)	Content Communities (e.g. YouTube)	Virtual game worlds (e.g. World of Warcraft)

Table Two: *Classification of Social Media Source: Kaplan & Haenlein 2010:62*

It is the combination of issues highlighted in this sub-section—site architecture, software applications, affordance, media richness and social presence—that is crucial in considering the impact of social media on the established processes of curriculum design, development and evaluation within contemporary higher education in Australia.

3.2 The Internet and social media in the everyday lives of Australians

Within the academic literature, a range of factors have been identified as likely to have an impact on an individual's level of online engagement. These factors include education level, income, family structure, work status, residential location, living arrangements and occupation, as well as cultural context, self-concept, gendered identity and disability (ACMA, 2009b; ACMA, 2009a; Androne, Dron, Pemberton & Boyne, 2009; Bradwell, 2009; Kaplan & Haenlein, 2010; Singh, 2008; White, Manton & Le Cornu 2009a; Zajicek, 2007). An individual's motivation in using technology has also been identified as having an effect on both their attitudes and behaviours towards social media (ACMA, 2009a; White et al., 2009a). Those learning to use new forms of technology, such as social media, need to be able to perceive that the benefit of learning to use it will outweigh the effort required in doing so (ACMA, 2009a).

The majority of Australians across all age groups regularly use the Internet: in a 2008 Roy Morgan survey, all the respondents aged 14 to 17 years had used the internet, and the lowest uptake was 56 percent of respondents aged 65 years and over (ACMA, 2009b, p. 8). Most users in the Roy Morgan survey described themselves as heavy-to-medium users of the internet (ACMA, 2009b, 8). A Nielson study reported that, during the month of April 2008, the average Australian had accessed the Internet 35 times and had visited sites that featured user-generated content eleven times (ACMA, 2009b). Contrary to generational stereotypes, half of the visitors to user-generated online content within the 2008 Nielson study were over the age of 35 years (ACMA, 2009b). The most recent Nielsonwire (2010) reports globally between December 2008 and December 2009, there was an 82 percent increase in the time spent online on social media sites. Australians actually led the world in the average time per person spent on social media sites, at nearly seven hours, on average, in December 2009 (Nielsonwire, 2010).

The question that arises in relation to the integration of social media within higher education is how many of these adult Australians who are accessing social media are actively contributing content to social media sites. Australians using broadband connections are most likely to be making use of emerging online applications (ACMA, 2009b, p. 29). Between January and June 2008, ten percent of Australian Internet users using a broadband connection had viewed or contributed to someone else's blog, 9.5 percent to an online forum, 4.8 percent had participated in online virtual communities, and only 3.6 percent had created and managed an online journal or blog (ACMA, 2009b, p. 29). In relation to contribution of user-generated content, an age effect among users becomes apparent, with twenty percent of 18 to 24 year old Australians using the Internet having read or commented on someone else's online journal or blog in April 2008, in comparison to only three percent of Australians aged 65 years and over (ACMA, 2009b, p. 26). In April 2008, younger social media users were the most likely to create a personal space online, whereas older groups were more likely to view or contribute to online forums (ACMA, 2009b, p. 26).

These trends in the rapid uptake of social media, but with less active contribution of user generated content have implications for higher education. As Androne et al. (2009, p. 43) point out: 'most people do not display all the traits that we associate with the term digital student to the same degree'. This is why it is crucial to consider, as White et al. (2009b, p. 9) identified through their research with distance students of Oxford University, not only which students are online, but also 'in what manner they are moving online'.

Bruns and Bahnisch (2009, p. 5) have identified four factors as crucial to the uptake of collaborative activities on social media sites:

- A low threshold to user participation which allows even unskilled and uncommitted users to take part.
- Highly granular participation tasks ranging from very minor to very major contributions.
- Equipotentiality: the assumption that regardless of skill level, each user can make a useful contribution.
- A sense of shared ownership in the content generated by the collaborative work of users.

An Oxford study by White et al. (2009b) examined the use of social networking within a distance learning program. The student sample were mature students, with most being over the age of 35 years: 37 percent aged between 35 and 54 years and 41 percent were aged 55 and over. As in the Australian ACMA (2009a) study, it was the underlying motivation in using online services, rather than age or even online skills, that distinguished students' online engagement (White et al., 2009a). The researchers identified two groups of users: Visitors and Residents, not as polar opposites, but rather located on a continuum (White et al., 2009a). Visitors were those students in the study who were reluctant to create a 'digital identity', even within the virtual learning environment of an Oxford University course. In contrast, Residents were those students who 'live a percentage of their life online' and make use of the web in all aspects of their lives: professionally, for study and for recreation (White et al., 2009a, p. 6).

Even though Visitors were found to be comfortable and competent in using 'the web as a tool whenever the need arises', the researchers found that they still 'don't feel the need to express themselves by participating in online culture' (White et al., 2009a, p. 5). The Visitors use of the web was a response to a 'focused need' rather than the creation of an online persona (White et al., 2009a, p. 5). Unlike Visitors, Residents were quite comfortable with creating an online persona and in using 'the web to socialize and to express themselves', as well as in actively contributing to a virtual learning environment (White et al., 2009a, p.6). This distinction is obviously an important one to consider in relation to the design and implementation of social media-enabled elearning applications in higher education.

These findings by White and his colleagues foreground a central ethical issue in relation to the protection of identity and development of trust in utilizing social media sites in higher education. As Bruns and Bahnisch (2009, p. 15) note in relation to the design of successful social media sites:

it is important to users to at least feel in control of their content, contributions, profiles, and personal information. This sense of control must be carefully managed by site operators, and any limitations to such control must be clearly noted and justified in order to avoid community misgivings.

This point on the retention control by the participants over not only their identity online, but also over user-generated content is a crucial one for the design, development, assessment of student participation in social media-based practice within higher education. However, it is also important to place such issues within the context of broader discussions around anonymity and identity online; as it has been discussed in the recent blog commentary on SkyBluePink (2010) by Alice, titled 'Rudeness is the weak man's imitation of strength...' (6th June 2010) and the associated clip from Foratv (2010) titled 'Is Civil Discussion Possible on the Anonymous Internet?'

3.3 Elearning in higher education

It was during the 1990's that higher education institutions across the globe began to place learning materials online in the expectation that it would allow them to extend their reach and create new revenue streams (Schroeder et al., 2010). However, the change to an online delivery mode did not prove as easy for the higher education sector as had been expected:

The common lesson learned by higher education institutions around the world is that using the online environment for teaching requires not just a digitization of the face-to-face delivery mode, but a whole new learning approach. (Schroeder et al., 2010, p. 549)

As Allen, and Long, (2009, p. 1) indicate, 'if knowledge work changes its character' then our approaches to learning in higher education 'must change'. Rather than imposing a knowledge structure selected by a few experts, in a Web 2.0 learning environment, Siemens (2006, p. 14) suggested, knowledge increasingly 'resides in the collective'. Such a shift away from a hierarchical expert-led learning environment obviously has profound implications for higher education. Yet, this study has identified that in higher education, rather than changing knowledge practices, social media is still being used to replicate traditional face-to-face and print-based approaches to learning. This means a shift beyond both technology-led and teacher-led approaches to learning within a social media environment.

Commentators suggest that the focus of elearning practice in higher education, both within Australia and elsewhere in the world, remains centred largely upon the transfer of content from a print format into an online context (Allen & Long, 2009; Siemens, 2006; Sims & Koszalka, 2008). Dondi & Szucs, (2009:2) lernovation project of the European Union, for example, found that technology continues to be used in Europe mainly 'to support existing teaching structures and traditional tuition methods' (Dondi & Szucs, 2009, p. 2). Indeed it has been suggested that what counts as useful knowledge within this content-driven online higher education environment is increasingly 'biased towards what can be represented in a digital form, and /or applied to immediate problems and situations' (Beetham et al., 2009, p. 17).

Despite this focus on content, changes to the online environment occurring outside the academy, mean that higher education institutions will need to prepare for an educational

environment in which '[a]cademic content is no longer a unique selling point' (Beetham et al., 2009, p. 17). However, there is a structural lag emerging between the innovative use of social media by organisations located outside the academy, changing the online environment in which the sector operates, and the ways in which the higher education sector is responding to these challenges.

In the Australian context, Allen and Long (2009) suggested that, while elearning may have been scaled up within the sector during the 1990's and 2000's (largely through the introduction of learning management systems), the level of innovation within these learning applications was actually being scaled back. That is, as the Internet became an integral part of everyday life, and new approaches and understandings developed in wider society use of the internet's 'utility and power', within Australian higher education the 'learning management systems and their associated affordances for particular kinds of education' have tended to largely remain the same (Allen & Long, 2009, p. 3). In particular, Allen and Long (2009) have suggested that Australian higher education has been slow to appreciate and respond to not only the opportunities, but also the challenges to existing educational practices, of the social media-enabled learning environment.

Research on technological innovation, more generally, has highlighted how a failure to include all the stakeholders in the sense-making process can be a significant impediment to successful technological adoption (Sneddon, 2008; Stroud, 2008). This failure has also been an impediment to the effective integration of social media within Australian higher education. Australian higher education case studies by Hannon (2009) and Holt, and Challis (2007) highlighted that it is not easy to achieve transformation in technology-enhanced teaching and learning in Australian higher education within organizational contexts constrained by more than pedagogical considerations. In particular, these case studies highlight how institutional sensitivity to student opinion associated with changes to established educational practices act as an impediment to innovation (Hannon, 2009; Holt, & Challis, 2007).

Holt and Challis (2007, p. 130) found in their study of the incorporation of online teaching and learning at Deakin University that the differing perspectives of members of the academy meant that change mandated through top-down policy directives did not lead to 'straightforward, predictable, and unproblematic teaching and learning outcomes'. In achieving and sustaining change to online practice, it was 'the organisation's perseverance and belief in the values underpinning the initial intervention', rather than setting prescriptive and detailed outcomes that mattered (Holt & Challis, 2007, p. 130).

The Hannon (2009) case study relevant to this discussion was around the implementation and subsequent abandonment of a wiki within an Australian higher education course. The academic concerned was a 'maverick', who developed his own wiki in response to the limitations he perceived in the institutional learning management system (Hannon, 2009, p. 19). Although the technical implementation of the wiki developed by the academic was successful, and the wiki was taken up and used by students, the breakdown in implementation occurred in the link between the innovation and the existing staff management and student evaluation systems of the institution. This breakdown was specifically related to two issues. The first was workload allocation—a lack of recognition by management of the increased workload involved in managing the wiki. The second was the process of student evaluation both 'materially as a survey of student responses to the unit, and as a token of the discourse concerning performance and improvement' (Hannon, 2009, p. 21).

In this context, it is important to highlight how the introduction of social media into higher education occurs on the boundaries of two sets of organizational relationships: formal and informal. These formal and informal networks reflect D'Agostino's (2006) conceptions of planned and improvised reason. Shifting engagement with knowledge work in higher education requires the active collaboration, not only of academic staff across disciplinary boundaries, but also instructional designers, educational technologists and students. It also requires those involved in the institutional management and administration to take a risk in creating the opportunities for innovation not only to emerge, but also to be sustained and diffused throughout the sector.

Beyond elearning, there has already been an increasing focus on the importance of improving the processes of trans-disciplinary collaboration across the academy (Córdoba-Pachón, 2008). Social media broadens this trans-disciplinary focus to include consideration of the types of collaboration required for successful innovation in elearning. One of the challenges for successful trans-disciplinary work in higher education has been identified as 'the difficulty that scholars or researchers who have been trained and socialized in one field experience when they attempt to talk or work with scholars trained and socialized in other fields' (Strober, 2006, p. 318). Even disciplines that may appear to be closely related can have significant methodological and language differences that can impede cross-disciplinary work (Aargaard-Hansen, 2007). These difficulties can be compounded when technology is added into the mix.

Networking learning adds to these cross-disciplinary challenges, for it frequently requires both staff and students to engage with unfamiliar technologies whilst simultaneously spanning the methodological and language boundaries both within and between their disciplines (Beaty & Howard, 2010). Yet, it is important to consider how it is so often at the intersections of various disciplinary and practice fields and subfields that innovation takes place and new knowledge emerges (Aargaard-Hansen, 2007; Gulati, 2007; Hawes, & Emden, 1999). At the core of this study, therefore, lie the implications for all stakeholders in higher education that emerge through the integration of social media within the sector, not just in relation to the curriculum.

Internationally, the implications of social media for higher education are receiving widespread attention. The e-learning experts consulted in a DELPHI process held as part of the European Learnovation project, for example, identified a need for universities to 'shift their core educational functions from the content area towards mentorship and sense-making, as well as evaluation and certification of learning outcomes' (Dondi & Szucs, 2009, p. 5). Siemens, (2010) also suggested in a recent European conference presentation (2010) that the integration of social media into learning within higher education requires an active process of sense-making.

What is the connection between sense-making, learning and education? Schwandt, (2005) noted that, even though sense-making and learning may have common roots in the cognitive processes that deal with the establishment and interpretation of meaning, they are best understood as complementary, rather than synonymous, constructs. He went on to highlight the subjective, action orientation of sense-making as providing:

a connection between cognition and actions –but not in the sense of a set of prescribed, functional or predicative formulas. Rather the connection focuses attention on subjective interaction, multiple socially constructed realities, and the imbeddedness (sic) of the process with its context (e.g. power, culture, and social structures). (Schwandt, 2005, pp. 182-183)

In his recent conference presentation on 'Thinking in Networks', Siemens, (2010) in relation to social media-enabled learning suggested that 'when learners have the tools of their sense-making under their own control they have the opportunity to shape the activities they find meaningful'. In this context, sense-making is conceptualized not simply as an individual process interiorized in consciousness, but also as communal. Sense-making incorporates non-linear technological forms that are understood 'in three distinct ways: the compression of meaning, speed-up and discontinuity' (Han, 2010, p. 206). Siemens, (2010) suggested that understanding sense-making means understanding connections and connectedness. In Siemens view, in relation to social media-enabled learning, it is connections, rather than networks, that are primary, for a network is simply an expression of connectedness.

3.4 Social media as an improvised process of wayfinding

The dynamics of a social media-enabled online environment introduces non-linear improvisational quality into the curriculum in higher education. Drawing on a story in the Atlantic Monthly by Andrew Sullivan that blogging is like jazz, Brown (2010) suggested in a recent conference presentation that social-media enabled learning is intimate, improvisational and very individual, yet also collective. This more fluid approach to elearning can be linked with the distinction between models of planned and improvised rationality explained by the philosopher D'Agostino (2006):

On the planning model, we are supposed to have made up our mind, antecedently, about matters that, actually, it would be either impossible or in many cases foolish to decide about antecedently. This suggests a way forward. Since we really have no choice about this anyway, we should, just as the theorists of constructed preferences suggest, act as a way of finding out how to act. Rather than looking through a plan into a situation the plan tells us how to deal with, we should look directly at that situation and develop, from our engagement with it, a sense of what we want and how we might get it. Such an approach makes a virtue of features of our situation which, while inescapable, nevertheless appear as vices when we have the planning model too much in mind.

This is why this study tries to avoid both the tendency, evident in some of the literature on elearning, towards a grand narrative of progress. Instead, this study recognizes that social-media enabled learning involves an active, improvisational and continual process of way-finding, to adapt an anthropological concept (Ingold, 2007). In undertaking this study, the author has been involved in way-finding within 'digital habitats' (Wenger et al., 2009), through not only engaging with the academic literature, but also through social media.

It has been important to consider the impact social media within the Web 2.0 environment has on the dominant expert-centred constructions and reification of curriculum design within higher education (Luckin et al., 2010). This also means recognizing how the interactional dimensions of social media-enabled learning shifts the central position, which has traditionally been occupied by instructional designers in the development of online learning, into a more collaborative relationship with all the stakeholders in learning (Luckin et al., 2010). This results in a situation in which the learner, rather than the institution, is increasingly at the centre of elearning (Sims & Koszalka, 2008). Such trends obviously have important curricula-related implications for higher education as explored further in Section 4.0.

In a discussion on how to prepare organizational leaders for a networked society on Beth's Blog, Anklam (2010) suggested the formal organization is:

represented by the (usually) hierarchical organization structure. The links, or ties, in these structures are reporting relationships. They represent commitments and obligations that go in both directions. Formal structures are essential for processes and tasks that require discipline, measurement, and decision-making. This formal organization provides the illusion of control; however it is the informal organization, the organization between the lines and in the white spaces that supports the scaffolding of the hierarchy. Leadership in a networked world implies being able to distinguish the formal and the informal and to understand how to balance the two.

It is important to consider how Anklam (2010) has reversed the common understanding of scaffolding within higher education: here improvisational practices are scaffolding the formal, rather than vice-versa. How these tensions between what is planned and improvised, inherent to the incorporation of social media-enabled learning within higher education, are playing out in relation to curriculum design, development, implementation and evaluation. In a social media-enriched environment, the very technologies that enable collaboration within online communities of practice are actively diffusing 'the arbitrary boundaries' key institutional players 'may want to place around those participating in such activities' (Beaty & Howard, 2010, p. 606).

Social media-enabled elearning tends to flatten the institutional landscape. Social media-enabled learning innovations inevitably disrupt the established hierarchical structures and administrative practices of higher education. It is a challenge to incorporate this paradigm shift in higher educational settings in which the disciplinary expert/acolyte hierarchy has long been a defining characteristic of education (Beaty & Howard, 2010). This is challenging the normative assumptions about curriculum design, development, implementation and evaluation in higher education, as explored in the next section.

4.0 Curriculum Design

WolframAlpha (2013) define curriculum as 'an integrated course of academic studies'. However, defining curriculum in the context of higher education is not as straightforward as this might suggest. This is because the design of a curriculum occurs within a complex organisational system. Markham (2008), for example, highlighted how formal education institutions encompass four interdependent sub-systems: the teacher subsystem, learner subsystem, delivery subsystem and administrative subsystem. All four of these subsystems are involved in the design, development and implementation of higher education curriculum, as are external systems such as professional bodies and government policy. Two decades ago, in acknowledgement of this complexity, Langenback (1988, p. 217) suggested that to seek to impose a single model of curriculum development within adult education would be an 'impudent proposition'.

Nor can student's learning within a higher education setting be fully encapsulated through their engagement with a curriculum:

We must not make the mistake of attributing all the benefits of education to those aspects under the direct control of teachers or the curriculum. Neither must we assume that the informal experience is identical for all students. As the student population becomes more heterogeneous, and as pressures on students from work and family increase, there will be increasing differentiation of the student experience and greater expectations on the formal aspects of courses. (Boud & Falchikov, 2006, p. 404)

The alternative to assuming there is a single object, to be called a curriculum, is to consider how different models or approaches to curriculum foregrounds different aspects of the learning process within higher education. This position has obvious links to the multi-metaphorical conceptualisation of learning (Chatti et al., 2010; Hager, 2005; Paavola, Lipponen & Hakkarainen, 2004; & Hakkarainen, 2005; Sfard, 1998). As Paavola et al. (2004, p. 573) explain a 'central function of delineating general metaphors of learning is to shed light on the basic, alternative starting points for understanding learning and human activity'. McLoughlin and Lee, (2008, p. 644) have suggested that social media challenges those involved in higher education to maximise the potential for learning through 'employing the right blend of metaphors, frameworks and paradigms that capitalise on contemporary social networking tools and ICTs used by people in their everyday lives'. In this process, as Young (2010) identified in a recent study, there is a need to avoid an assumption that particular approach to learning or curriculum model can be attached to a specific discipline.

In her recent review of curriculum design and evaluation within a South African higher education institution, McKenna, (2003) identified parallels between curriculum and four major research paradigms: positivist, interpretivist, critical and post-structural. There is a need to extend these four paradigms in the context of the incorporation of social media into higher education to include paradigms emerging out of research and theorising on organisational learning and development, elearning, and on technology more generally.

This section explores the applicability of six curriculum models within a social media-enriched learning environment, conceptualized as:

- a product (Mednick 2006; Smith 2000).
- a body of knowledge to be transmitted (Smith, 2000).
- a process (Mednick 2006; Smith, 2000).
- praxis (Mednick 2006; Smith, 2000).
- knowledge creation (Hong & Sullivan 2009; King, Duke-Williams & Mottershead, 2009; Scardamalia & Bereiter, 2006).
- Community as curriculum within a rhizomic conceptualisation of education (Cormier 2008).

4.1 Curriculum as product

The curriculum as product model refers to a set of documents prepared in advance for implementation by a teacher/lecturer and/or tutor (McKenna, 2003; Smith, 2000). The product model of curriculum in higher education involves the ordered approach to the development of a course of learning, delineated by disciplinary expert/s and controlled by the higher education institution. This model is particularly attractive to the administration of the higher education sector, which is increasingly under external pressure to make systems more efficient, within an environment of decreasing resources (McKenna, 2003).

Smith (2000) identified five steps in the development of curriculum as product:

- firstly, the need for a particular course of instruction is diagnosed by expert/s;
- secondly, learning objectives are formulated;
- thirdly, the content is selected and organised in response to these formulated objectives;
- fourthly, learning experiences are selected and organised to compliment and reinforce the curriculum content; and
- finally, the developer/s determine what is to be evaluated along with the ways and means through which is done.

In this model, a review of the curriculum requires the revisiting one or more of these design steps in order to produce new or updated curricula materials and/or activities.

The product model of curriculum is an instrumental institution-led, teacher-centred and credential-focused approach to higher education. It effectively leaves the student out of the curriculum design and development process (Mednick, 2006). This approach to curriculum design, and its underlying conceptualisation of learning as acquisition, has links to positivism, which can tend to be the default paradigm within both academic research and formal education (Hager, 2005; McKenna, 2003).

The e-portfolio, when conceptualized as a product or evidence of learning outcomes, is one example of the design, assessment and evaluation of learning within this curriculum model. Recent Australian research on the e-portfolio described it as 'a personal space where students can collect digital artefacts that present evidence of their experiences and achievements, articulating actual learning outcomes' (Hallam, Harper, McCowan, Hauville, McAllister, Creagh Van Der Lee, Lambert & Brooks, 2008, p. 16). The e-portfolio in this framework is a product within which evidence of learning, and the student's alignment with professional standards (Hallam et al., 2008). There are differences of expert opinion on whether the e-portfolio should be evaluated through coursework as evidence of learning. One group of experts have suggested that the assessment of the e-portfolio within coursework acts as an extrinsic motivator, another group that external assessment risks a culture of unreflective compliance with professional requirements among students (Hallam et al., 2008).

There are problems associated with the integration of social media-enabled learning within a product-based curriculum model. There are inherent tensions between the degree of external expert control over the design and assessment of a student's learning in this model and the loose control, collaboration and mash-ups within the user content inherent to engagement through social media. There are, also, concerns around the attribution of user-generated content on social media, which can lead to accusations of plagiarism.

4.2 Curriculum as a body of knowledge to be transmitted

The transmission model is both content-centred and focused on transmission of this content by the teacher to the student. Learning in this context is conceptualized through the metaphor of acquisition (Hager, 2005; Sfard, 1998); that is, the acquisition by the student of 'pre-packaged facts' (McLoughlin & Lee, 2010). In this model, knowledge is declarative and instruction expository, focused on what can be explicitly stated or demonstrated (Scardamalia & Bereiter, 2006).

In the context of distance education, as well as in blended learning environments, online engagement by the student occurs through the interface of a virtual learning environment (VLE), based upon a control model of education (McLoughlin & Lee, 2010). The VLE provides the student with access to learning content which has been composed, organized and packaged by the designer (McLoughlin & Lee, 2010). In addition, the VLE is used for the completion of some assessment tasks, including online quizzes, to test knowledge acquisition by students (Gonzalez, 2009).

The engagement of the student, in the transmission curriculum model, is essentially passive, focused on acquiring and reproducing expert-defined and pre-packaged knowledge. The level of teacher and instructional designer control over content and focus on transmission is why this approach to education is also called 'instructivism' (Tracey, 2009). In this model, the

informal learning characteristic of social media is 'hardly acknowledged, less still fostered and facilitated' (Attwell, 2007, p. 9).

Online learning in a transmission model is frequently conceived by the institution as simply another means, a potentially efficient and effective means, to deliver a structured education program to those who are unable to attend classes on the campus (Gonzalez 2009). The transmission model is evident in distance and blended learning settings where the instructional design replicates what would otherwise have occurred in traditional face-to-face instruction (Bechard & Gregoire, 2005; Tracey, 2009). Examples of the technological replication of face-to-face teaching include the provision of online course notes and podcasts or video presentations of lectures and demonstrations.

In the transmission model, the evaluation of learning, usually involves assessing the student's memorization and recall, along with reasoning, and reference to empirical findings and evidence base of the discipline (Metcalfe, 2005). Online assessment of the success of knowledge transmission tends to occur via the incorporation of tasks, such as tests and quizzes, along with the completion of off-line assignments and examinations. In their meta-review for the US Department of Education, Means et al. (2009) found no evidence that incorporating quizzes within online learning was effective. Nor, in the absence of scaffolding or scripts, did they find any definitive evidence on the effectiveness of online moderators or instructors to guide student's online engagement (Means et al., 2009). When virtual learning environments focus only on content coverage, multiple choice questions and short essays, this encourages surface learning, rather than engaging the student in the deeper reflective, analytical, inquiring and critical approaches to learning that are the goals of higher education (Mimirinis & Bhattacharya, 2007).

Until quite recently instructional design was conceptualised largely around a transmission model of the curriculum. Smith and Ragan (1999, p. 2), for example, suggested that instructional design involved 'the systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources, and evaluation.' It needs to be noted that, within this definition, reflection is identified as a process that is to be engaged in by the instructional designer, rather than the student, leading to static constructs of learner needs and preferences (McLoughlin & Lee, 2010). This approach to instructional design tends to assume not only what activities will take place in the student's learning, but also on the mental models that will 'govern these activities, and what information best fits these mental models'(Luckin et al., 2010, p. 9). Within this model of instructional design, both the learner and learning context are being placed in a subordinate position to the resultant 'technostructure, rather than active within it, and able to transform it if necessary' (Luckin et al., 2010).

An assumption underlying this curriculum model is that disciplinary knowledge is not only explicit, but it is also generic and universal. Eijkman (2008), for example, highlighted how the internationalization of higher education in practice tends to be anything but universal because of the lack of acceptance and incorporation of non-mainstream cultures and discourses within the curriculum. He suggests that any adjustment to the curriculum for cultural difference tends to be ad hoc and content-focused, rather than involving a systemic examination of the appropriateness of the transmission curriculum model for culturally diverse students (Eijkman 2008). This issue, the need for 'research on the role of culture and cultural differences in global distance learning programmes', was identified within a Dephi study of research in distance education (Zawacki-Richter, Baecker & Vogt, 2009).

In this model of curriculum, where a social media application is integrated into the curriculum, it is usually being accessed for novelty value. This is exemplified by Jin's (2010) use of a pedagogical/instructional avatar in Second Life to convey health messages to students. Jin (2010) assessed the effectiveness of the transmission of the health messages via the instructional avatar through a seven-point scale measuring post-intervention word recognition, alongside a measure of the student's enjoyment of the entertainment value of using a 3D approach in health education. In this context, it is worth considering the US Department of Education (Means et al., 2009, p. 40) finding that, where the online medium is 'simply a carrier of content', it is unlikely to affect learning either positively or negatively in comparison with other methods of content delivery. That is, in Jin's (2010) approach, in using a social media application, but not the affordances offered by Second Life, it becomes merely another means, albeit novel and entertaining, to convey expert-defined content.

4.3 Curriculum as praxis

In the praxis model, the curriculum is constituted as an active process, with planning, acting and evaluating all reciprocally related and integrated (Grundy, 1987). The curriculum as praxis model has roots in critical theory through which learning is conceived as a transformative process emerging through a dynamic of interaction and reflection (Belisle, 2007; Smith, 2000). In this model, attention is given to the ways in which learners both as individuals, and as a group, actively create not only understandings and practices, but also meaning (Mednick, 2006).

Interaction, within a praxis model of curriculum, has a goal of developing the higher order thinking skills of students through making the phenomenon or issue under investigation explicit within a process of reasoned debate or argument (Smith 1996, 2000). That is, the goal of critical reflection is the transformation of the learner's frame of reference, or way of knowing (Mezirow, 1991). It has been argued that this process of critical thinking is being poorly communicated and modelled through many of the online interactions occurring within higher education courses (Beetham et al., 2009).

The development of critical thinking involves metacognition and has two equally important goals: enhancing the capacity to reach a conclusion and improving the capacity to reason (Niewoehner, 2008). Critical thinking refers to the student's 'consideration of the evidence, attention to the context of their judgment, use of relevant criteria for making the judgment, attention to the methods or techniques for forming their judgment, and determining the applicable theoretical constructs for understanding the problem and the question at hand' (Critical Thinking, 2013, Para. 5). The UK-based Committee of Inquiry into the Changing Learner Experience [CICLE] (2009, para.99) noted the importance in higher education of steering the positive aspects of Web 2.0 behaviours involving 'experimentation, collaboration and teamworking' by students, whilst also 'addressing the negatives such as a casual and insufficiently critical attitude to information'. The UK CICLE (2009) recommended that information literacy be treated as a priority area within elearning in higher education. In particular, the Committee emphasized the need to enhance higher education students' ability to 'identify, search, locate, retrieve and, especially critically evaluate information from a range of appropriate sources' (CICLE, 2009).

Such digital literacies, it has been suggested, require 'flexible curriculum design processes' for in the online context literacy development emerges most effectively through 'authentic, well designed tasks within meaningful contexts' (Beetham et al., 2009, p. 7). However, to date, it has been argued that the focus on improving the student's fluency in information, visual and technological literacy and, in particular, beyond the media-related and creative disciplines, has seldom been a specific focus of curriculum design and development within higher education (Beetham et al., 2009; Dondi & Szucs, 2009).

The social media practices of higher education students, however, are actively destabilising traditional academic knowledge practices 'around originality, authority, depth of attention, historical paradigms, and attention to method' (Beetham et al., 2009, p. 13). As McLoughlin and Lee (2010, p. 32) state: 'there is an increasing gap between the formalised interactions which occur in educational establishments and the modes of learning, socialisation and communication youth experience and engage in'. However, as noted in Section 3.2, we need to be careful to avoid age-based assumptions about the uptake and use of social media, for it will not only be young students who are destabilising these practices.

Social media leads to a new kind of digital literacy; Brown (2010) has suggested, a literacy based on the meaning that emerges from the creation of context, as much as a focus on content. This literacy is an intuitive or improvised process and centred around provisional ideas, rather than only on explicit knowledge. This foregrounds the tensions between the everyday experiences of student's (and staff) in interacting collaboratively with others through social media, as well as the dominant knowledge paradigm and 'control culture' of higher education, which does not value these practices (McLoughlin & Lee, 2010, p. 31).

This is why curriculum as praxis within an online environment needs to encompass the concept of multi-literacies; that is, attention to the critical capacity to not only make use of a variety of media, but also a variety of forms, dialects, genres and, in some cases, languages (Traynor & Mavor, 2005). In some circumstances, students will be more comfortable with this process than academic staff, which can lead to role reversal in which students effectively tutor staff in the use of social media and, 'in the process, feed into improvements in course delivery' (CICLE, 2009, para. 71). This is part of the process of reconsidering notions of pedagogy in a social media-enabled learning environment, 'so that learners are envisaged as active participants and co-producers of learning resources' (McLoughlin & Lee, 2010, p. 31).

Traynor and Mavor (2005) have suggested that a combination of the introduction of new technologies into learning and the internationalisation of higher education:

by implication, involves a corresponding responsiveness regarding teacher development in relation to changing modes of delivery, approaches to learning and knowledge, interdisciplinarity, electronic literacies and international outlook.

That is, attention to the emergence of critical, digital and multi-literacies is at the core of the integration of social media-enabled learning into higher education. However, such a focus on literacy as an integral aspect of social media-enabled praxis does not only concern students, but also academic staff.

4.4 Curriculum as process

In the process model, the curriculum becomes a provisional specification, or plan, that is then adapted through the active engagement of the student with learning materials, questions and problems (Mednick, 2006; Smith, 2000). Knowledge within the process model of curriculum is conceived as what is being acquired by the student through processes of modelling, mentoring and experimenting (Metcalfe, 2005). The emphasis within the process model is on enhancing the student's self-efficacy, which is understood as 'instrumental in activating processes of human cognition, motivation, affect and action-event selection' (Schwandt, 2005, p. 180). This model can be linked to Dewey's concept of successful learning involving action in the world in which the learners and context are inseparable components of the phenomenon of learning (Hager, 2005).

This model has roots in both humanist, social learning and constructivist theory (Schwandt, 2005). Curriculum is aimed at creating self-efficacy through engaging the student in activities requiring judgement and allowing for individual meaning-making (Smith, 2000). The process model also has links to the metaphor of learning as participation through which it is the learner who moves, rather than the content of learning as in the acquisition metaphor (Hager, 2005).

In an example of a process centred curriculum, both self-efficacy and participation have been central to the approach of Canning (2010). She recognised that many early childhood education students in her Open University (UK) course were tending to enter the blended environment with pedagogic expectations based on their previous experiences of formal education. That is, the student's expectations for the course tended to be based around the transmission model of curriculum. In response, Canning (2010) designed the curriculum with the specific aim of moving her students from expert-led pedagogy, towards greater self-direction; at the same time, encouraging them to actively participate as a learning community of early childhood educators. The goal identified in design of the curriculum in the Early Childhood course was to 'encourage knowledge sharing rather than knowledge hoarding' among students (Canning & Callan, 2010, p. 74).

Canning (2010) drew upon three conceptualizations of adult learning to describe the shift of the learner towards greater personal responsibility from traditional pedagogy (referring to expert-knowledge), to andragogy (the shift in the responsibility for learning away from the teacher to the student) and finally heutagogy (direct personal learning involvement in knowledge creation). Heutagogical approaches to education place the ultimate responsibility for learning on the learner, linked to the expectation that individuals will need competencies in both learning and self-direction in order to succeed in the knowledge society (McLoughlin & Lee, 2008).

The e-portfolio conceptualised as a process contributing to the 'independence, initiative and confidence of the learner' (Hallam et al., 2008, p. 17) is another example of the application of the process curriculum model within professional higher education. The e-portfolio within this conceptualisation provides tangible evidence of the student's meaning-making, allowing 'students to move beyond the notion of what they have learned to consider how they have learned' (Hallam et al., 2008, p. 16 emphasis in original). Problem-based learning in professional coursework is another example of the integration of the curriculum as process model within higher education (Scardamalia & Beretier, 2006).

McLoughlin and Lee (2010) have argued that the learning experiences made possible by social software tools are active and process-based, as well as anchored in and driven by learners' interests. This means there is the potential to cultivate self-regulated, independent learning utilizing the capabilities social media introduces into formal education. The incorporation of social media within a model of curriculum as process, however, also raises issues related to the creation of an environment of trust within group interactions (Dron, 2007; White et al., 2010b). That is, some students can see contributing to a course forum or blog as a high-risk activity (White et al., 2010b, p. 17). Those students categorised as online visitors, rather than residents, want 'the security of knowing their contributions won't sail arbitrarily around the web', and look to the higher education institution to provide this secure, 'safe haven' (White et al., 2010b, p. 17). This can be linked to the conceptualisation of a personal learning environment (PLE) that embraces a learner-centred online environment incorporating social media applications, but still remains a provider-driven approach to higher education (McLoughlin & Lee, 2010).

4.5 Curriculum as knowledge and creation

The model of curriculum as knowledge creation is a learner-centred approach to higher education. It reframes the role of content in learning and refocuses the instructional design process away from the technostucture, or architecture, towards a focus on social interaction (Luckin et al., 2010; Tapscott & Williams, 2010). In the curriculum as knowledge creation model, learning and action are understood as symbiotic and non-linear, rather than sequential and linear as in the praxis and process models. This is a form of curriculum that fosters, encourages and permits the emergence of new and novel connections (Siemens, 2010).

The knowledge creation curriculum model requires an 'extraordinary paradigm shift' for those academic staff more familiar with the acquisition metaphor for learning that underlies the product and transmission curriculum models (King et al., 2009, p. 8). Knowledge in this curriculum model is no longer conceptualized as singular, nor is it conceived as fixed or static (Schwandt, 2005). Knowledge creation embraces a learner-driven approach that transcends the boundaries of the educational institution as higher education students begin to exercise ownership and control over their own learning experiences (McLoughlin & Lee, 2010, p. 30).

Knowledge creation draws on social, constructivist and connectivity learning theories. This is reflected in Brown and Adler (2008, p. 18) who make the point of the need for higher education to shift away from the Cartesian premise of 'I think therefore I am' towards a social view of learning in which 'we participate therefore we are'. This focus on participation helps to foreground the vital role that collaborative groups play in social media-enabled learning within the knowledge creation curriculum model (Tapscott & Williams, 2010). As Brown (2010) noted, this peer-based learning is often misunderstood within a higher education system based around individual achievement.

In an Australian context, McLoughlin and Lee (2008) advocated the term, 'Pedagogy 2.0', for the new social media-enabled learning environment, which they suggest:

integrates Web 2.0 tools that support knowledge sharing, peer-to-peer networking, and access to a global audience with socioconstructivist learning approaches to facilitate greater learner autonomy, agency, and personalization.

It is the communicative affordances of social media that provides 'new ways to adopt a social constructivist approach to teaching and learning' (Keppell, Au, Ma & Chan, 2006, p. 456). Social media allows for learning environments centred on discussion, social interaction, collaboration, peer feedback and group projects (Keppell et al., 2006).

Through the incorporation of social software tools into elearning, learners become 'both producers and consumers ("prosumers") of knowledge, ideas and artefacts' (McLoughlin & Lee, 2008, p. 645). This model is typified by a learning context in which students are involved in generating their own ideas for research investigations, in planning which activities they will pursue and in working together as a knowledge-building community (Scardamalia & Bereiter, 2006).

In the knowledge creation process, learning is based around authentic problems, involves self-organisation, monitoring and correction, along with collaboration and collective responsibility, discourse and the creation of artefacts to advance collective knowledge (Girvan & Savage, 2010; Scardamalia & Bereiter, 2006). The incorporation of a reflective process, at multiple levels of meaning, is also a critical component of knowledge creation (Schwandt, 2005). However, the goal of learning in the knowledge creation curriculum model is no longer to reach a definitive end-point, but rather to help learners to recognise that there is no end in sight as knowledge expands (Brown & Adler, 2008; Scardamalia & Bereita, 2006). This occurs as the knowledge-creating curriculum involves learners in:

not only developing knowledge-building competencies but also coming to see themselves and their work as part of the civilization-wide effort to advance knowledge frontiers. In this context, the Internet becomes more than a desktop library and rapid mail delivery system. It becomes the first realistic means for students to connect with civilization-wide knowledge building (Scardamalia & Bereiter, 2006, p. 98).

This curriculum model also has links to the connectivist theory of elearning as developed by Siemens and Downes. In connectivism, it is possible for learning to reside outside the learner, with learning focused on 'connecting specialised information sets and the connections that enable us to learn more than our current state of knowing' (Chatti et al., 2010). This theory is based on an understanding of knowledge as distributed:

the idea that if we expose a network to appropriate stimuli, and have it interact with that stimuli, the result will be that the network is trained to react appropriately to that stimuli. The model suggests that exposure to stimuli-the conversation and practices of the discipline of chemistry, say -will result in the creation of a distributed representation of the knowledge embodied in that discipline, that we will literally become a chemist, having internalized what it is to be a chemist.

But the need to 'have reasons' suggests that there is more to becoming a chemist than simply developing the instincts of a chemist. Underlying that, and underlying that of any domain of knowledge, is the idea of being an epistemic agent, a knowing knower who knows, and not a mere perceiver, reactor, or doer. (Downes, 2010a).

Another theoretical foundation in a curriculum model of knowledge creation is that of Communal Constructivism. This was the learning theory utilised by Girvan and Savage (2010) for their recent Second Life case study of e-learning in Irish higher education. Their approach was different to many researchers in the field of e-learning, in that they first determined the educational affordances of the technology to be used within their research and then looked for the theoretical model that most resembled those underlying processes. They chose communal constructivism in reference to a research methodology with a focus not only 'on constructing knowledge for current users but also future learners as well' (Girvan & Savage, 2010). In the knowledge building process, the learning artefacts created via the Second Life site by one group of learners were then left in the environment for the subsequent groups to use. The learning task for all five sequential groups involved in the Girvan and Savage (2010) case study was to create a book in Second Life.

The Girvan and Savage (2010) study followed the five groups of learners, all experienced users of Second Life, into their engagement with a purpose developed Second Life environment titled Murias, designed to explore issues in the field of development education including development, human rights, justice and world citizenship. The Murias design encouraged participants to move around, explore the map and interact with objects in the virtual environment to find information.

Evidence of learning at both group and individual level was assessed through multiple sources (Girvan & Savage 2010). The first source was a rubric developed by the researchers based on the six core features of communal constructivism: interaction with the environment to construct knowledge; active collaboration; engagement in knowledge construction; publishing of knowledge; transfer of knowledge between groups; and a dynamic and adaptive course. Chat logs, combined with the artefacts created by each of the five groups and semi-structured interviews with learners were also analysed for evidence of learning. The researchers found evidence of both in-group learning and of individual learning across all five groups for all but two of participants (Girvan & Savage 2010). They also noted that only the last two groups requested extra time to complete the task as they accessed, assimilated and built on the knowledge artefacts left in the environment by earlier groups (Girvan & Savage, 2010). This points to the increasing complexity of the learning environment within a knowledge creation process.

This is the curriculum model in which there is greatest evidence of research activity around social media-enabled learning. Recent examples are

- Butt and Budge (2009) on the integration of a wiki into cross-campus urban planning education;
- Harrer, Moskaliuk, kimmerle and Cress (2008) on wikipedia as a knowledge building community;
- Herrington (2009) on using a smartphone to create digital resources;
- McLoughlin and Lee (2010): an examination of the way teachers have enabled self-regulated and personalized learning using social software tools within several higher education case studies;
- Minocha and Roberts (2008) on the integration of 3D virtual worlds in distance education;

- Schroeder et al. (2010): a comparison of social software tools including discussion boards, weblogs, micro-blogs, podcasting, wikis, social networking sites and social bookmarking applications specifically in relation to their contribution to the educational experience;
- Smith (2010): epistemic challenges, trust and the online collaborative group in adult education;
- Weeks and Seymour (2009) on the integration of a wiki into business education; and
- White and Le Cornu (2009) on the use of Multi-user Virtual Environments in higher education.

Assessment of learning as an individual achievement, within a group process, is a challenge in this curriculum model. Smith's (2010, p. 41) study specifically focused on such processes and identified the need to pay attention not only to individual issues, but also the group as whole, for these issues 'point to the highly emotional and paradoxical nature of trust issues'. She recommended that any intervention by the instructor or facilitator within online groups focus as much on group processes as on content, but also shift beyond the application of rational conflict resolution techniques to enhance an online group's capacity to focus on the conflict that was an important aspect of epistemological change (Smith, 2010).

4.6 Community as Curriculum

The top-rated answer to the question, 'What is Social Media?', posed in June 2010 by the Mashable website came from Jonny Rose: 'Ask not what the Internet can do for you, but what you can do for other Internet users'(Mashable,2010). It is this sentiment that is at the core of the sixth curriculum model profiled here: Community as Curriculum. Cormier (2008) described a community curriculum model to reflect the 'rhizomatic' qualities of education within 'disciplines on the bleeding edge where the canon is fluid and knowledge is a moving target'. This has connections to a point made by Bruns and Bahnisch (2009, p. 12) that it is 'the community—not site operators acting either personally or through rules and guidelines—which is best placed to show new members the ropes and channel their energy towards the most productive forms of participation'.

The community curriculum model is an explicit rejection of a 'notion of knowledge as resident in a particular individual and frozen in time, reified by publication' (Cormier, 2008). Cormier (2010) suggests that learning within this curriculum model takes place on the top of, rather than replacing more traditional approaches to, curriculum, suggesting that 'a base amount of knowledge is required to be able to enter a community'. He goes on to describe the way in which a community forms on the base of digital literacy:

A learner acquires basic forms of literacy and associates with different peer groups. Networks begin to form and, occasionally, communities develop. Knowledge is created and sometimes discarded as the community interacts. Knowledge does not develop and spread from and through concentric circles. There are no “plastics” to be learned and no canon to consult to ensure that a new skill has been acquired. Knowledge is a rhizome, a snapshot of interconnected ties in constant flux that is evaluated by its success in context.

This is a curriculum model with particular applicability to disciplinary and cross-disciplinary fields of practice where knowledge can become rapidly obsolete. In this model, the curriculum is both ‘constructed and negotiated in real time by the contributions of those engaged in the learning process’ (Cormier 2008).

To refer to the qualities of knowledge and education, within this evolving online environment, Cormier (2008) drew upon the rhizome metaphor. This is a conceptualization of education in which there is no centre, and no defined boundary, and in which there are multiple semi-independent nodes each capable of expanding independently (Cormier, 2008; Learnovation, 2008).

Learning, in this environment, is bounded only by the limits of the habitat:

The “rhizome” includes a sort of fluid, transitory concept, the dense, multidimensional development and integration of several different sets of tools and approaches, appearing in diverse forms under separate settings using all the multidimensional networking information technology tools, the social web, etc. (Cormier, 2010).

The curriculum model responds to the issues of trust through a focus on strengthening the forms of engagement of community members. This is a specialized form of learning community ‘that inverts the normal pattern of responsibility from being responsible to oneself to being responsible for the learning of the people with whom one is involved’ (Cormier, 2010). Within an online community, the better embedded within the community that network users become, then ‘the harder it is for them to act against community interests without a substantial loss of social standing’(Bruns & Bahnisch, 2009, p. 12).

That is, the concept of community as curriculum is based on a commitment to responsible participation and mutual survival of the online community (Cormier, 2010). This level of engagement, and the underlying guild structure, means it is a curriculum model most applicable within higher education to specific professional communities of interest. This curriculum model involves a commitment to people, rather than to specific knowledge or information (Cormier, 2010).

4.7 Discussion

The six curriculum models explored in this section continue to co-exist within higher education. These six models help to highlight the diversity in the epistemological and ontological bases underlying curriculum design within higher education. Savin-Baden, Gourlay, Tombs, Steils, Tombs and Mawer (2010, p. 131) have highlighted in relation to the social media application of social immersive worlds the research to date has been 'ambiguous and insufficiently theorised'. There are also ontological issues in these environments with as White and Le-Cornu (2009) noted a 'high risk of failure' where students become disoriented and disillusioned within the virtual environment. The question for this study is to consider to what extent each of these curriculum models are applicable to a social media-enabled learning environment within the higher education sector.

The two most traditional models of curriculum as a product and curriculum as transmission are incompatible with the definitions of social media-enabled learning detailed in Section 3.1. This does not mean that technologies labeled social media may not be incorporated within these two models simply transposing traditional approaches into a new context as the example of the study by Jin (2010) illustrates, however, this is not learning that has been enabled by social media. Social media-enabled learning is centred on collaboration, the development or mash-up of user generated content and loose external control, creating an online environment that allows learning groups to form and organize themselves.

It is, also, not being suggested here that particular curriculum models are applicable only to particular disciplines. In his recent Australian study, Gonzalez (2009) challenged assertions that the approach taken by lecturers to elearning in higher education is discipline specific. He identified three approaches to online teaching among the seven lecturers he interviewed within the discipline of health sciences: teacher-centred, intermediate and learner-centred. As he noted, elearning is a dynamic field with 'no clear and stable set of conceptions and approaches to learning' (Gonzalez, 2009, p. 313).

Schroeder et al. (2010, p. 557) have highlighted the delicate position of the higher education teacher within social media-enabled learning a consequence of the tensions between the 'egalitarian principles' underlying social software applications, and the 'goal oriented nature, and limited time-frame of an university course'. They suggest that higher education is still in the process of understanding how this shifts the role of the educator and that the evaluating innovations currently underway within higher education are crucial to this process.

This focus on curriculum models helps to foreground the importance of explicit attention being paid to the underlying epistemologies, ontologies and curriculum models within such innovations. There is a need to move beyond the tendency towards a binary of traditional and constructivist higher education which has underlain some of the recent research and commentary in elearning. It is also crucial for research to develop more nuanced understandings of learner engagement within social media-enabled learning. The potential for such an approach is demonstrated through the recent work of White and his colleagues at the University of Oxford. Research needs to focus on how students and academic staff are engaging in learning within and through social media.

4.8 Implications of social media in higher teaching and learning

In the authors' work as teacher educators in higher education, they recognize that "[t]eacher education represents a unique form of teaching in which both the content of the teaching and the practice of the teaching form the basis of what is being taught" (Edwards, 2010, p. 10). Understanding the underlying epistemology of curriculum (or learning designs) implicates academics to engage in a close examination of their teacher education pedagogy. Like within any group of learners, individual lecturers have varying perspectives and philosophies. For example, following this literature review, the authors discussed, debated, negotiated and agreed on a shared philosophy for our course. One goal was to put pedagogy first and to use the tools of the university's learning management system (LMS) to enact a strong, socio-cultural theoretical pedagogy that aimed to open up more dialogic teaching and learning possibilities. The research team engaged in rethinking content, assessment and learning tasks and activities within the degree programs to reflect their theoretical pedagogy in the online environment.

The authors also recognize that social media-enabled learning demands a shift of perspective from a focus on the tools of technology to repositioning pedagogy ahead of technology. The findings of this literature review implicate academics to work from one's pedagogical stance to rethink the architecture and applications available in a LMS. For example, the research team's philosophy situates students as members of wider learning circles and the learning processes values students' previous experiences, understandings, beliefs and insights. They acknowledge the unique contribution of students' personal professional knowledge to each unit. Social interactions form a pivotal base to effective learning; so, interactions among students play a central role in their learning.

Based on this philosophy, the past LMS that was used did not allow for the kinds of interactions between students the research team wanted to facilitate. For example, blogs were individual and did not allow other participants to leave comments. With no wiki tool (or equivalent), the LMS also narrowed options in terms of the ways students could express and share their experiences, evolving philosophies and professional knowledge. The research team turned to an alternative LMS that supported their online pedagogy more effectively. All units (online/distance) are now reconceptualised to facilitate a more authentic form of interaction in which students experience learning as more meaningful and supportive. The intention is for students to feel purposefully engaged in the online learning environment, rather than because they have been required to do so. There are opportunities in the online environment for students to communicate, reflect, share and respond to and about their individual sociocultural-histories. Students share knowledge between peers and work together to problem solve and construct both group and personal responses to assessment tasks; they are supported to create and embody new knowledge, skills and understandings. Multiple ways for students to demonstrate their knowledge, abilities and understandings, and multiple ways of reflecting and communicating, are honoured throughout our course.

As mentioned before, the literature review identified concerns about the potential for claims of plagiarism in relation to attribution of user-generated content on social media. For example, recent communication at a university advised:

While online tasks often encourage information sharing, we need to be clear that this does not extend to the sharing of assignments. For example, a student might place a copy of their assignment online and state that it was: for the purposes of allowing others to compare formatting. As such, it may be advisable that one

of the first posts we make in our online units is that “assignments are not to be posted online” as this will be viewed as plagiarism/misconduct. Although our unit handbooks have a section: “Allowing another to copy work”, this is often not understood in the context of online assignments—something that we might look at further for our next production round of unit materials. In the meantime, making a post/statement about not allowing another to copy work online should make our policy expectations clear to students.

Social media involves the creation of digital habitats which will both define, and also be actively defined by, the learners who come to inhabit them. As the example highlights, this is a challenge for higher education systems based around varying paradigms. For the authors, the advice in the email demonstrates a lack of understanding of curriculum design principles of teaching and learning. Social media-enabled learning requires a curriculum design process that is not only collaborative, but also learner-centred. An understanding of the non-static, constantly changing, non-linear and rhizomic nature of students’ engagement, means that they take an active, responsible approach to their development, personally and as a professional. For example, rather than regurgitating the information they have received through lectures and readings, the research team now attempt to create online learning environments to allow students to simultaneously create their own learning contexts, access the unit content in multiple forms and, finally, represent their own interpretations of both the content and theory/practice in publishable and public forms (Edwards, 2010). Assignments and the tools in the LMS provide a context for the unit content. Students are expected to engage with the content and critically consider how it could be used within their practice.

5.0 Conclusion

The question posed for this study was what design methodologies are effective for the design, development, implementation and evaluation of effective teaching and learning for social media-enabled environments in the Australian education system? Through examining the academic literature and also engaging directly with social media, what has emerged is the importance of design methodologies that are open and flexible. Social media-enabled learning, is learning which moves higher education beyond a focus on content provision into a dynamic communal process of sense-making and knowledge creation in which answers, lead on to further questions. It is through integrating social media within higher education that the scope, not merely the reach, of higher education will be extended.

It is important to reflect on the point made early in this paper about the importance of paying attention to the difference between the architecture and application in the Web 2.0 environment. The focus on learning, rather than content or technology, means moving beyond a focus on social media applications to a consideration of the affordances and processes of sense-making that social media enables. The benefit and challenge for higher education institutions is that the functionality of the social media applications is not limited to the resources of the site owner; social media not only enables collaboration, it also allows for the integration of data from multiple sources.

The knowledge which emerges through the collaborative engagement of social media is not static, but rather constantly changing; is not lineal, rather it is rhizomic and non-lineal, not only explicit, but also tacit and embodied in both individuals and communities. The knowledge creation process of social media-enabled learning also breaches the boundaries between the formal and informal learning processes. This dynamic online environment requires a design process based upon an understanding of rationality as improvised, rather than planned. In social media habitats, it is the informal connections between people that scaffold the emergence of the formal, rather than vice-versa, that has been the understanding underlying traditional approaches to instructional design in higher education. This is why issues relating to trust and group processes are so central to social media-enabled learning.

Social media-enabled learning requires a curriculum design process that is not only collaborative, but also learner-centred. Social media involves the creation of digital habitats that will both define, and also be actively defined by, the learners who come to inhabit them. This is a challenge for higher education systems based around hierarchical control.

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