

COLLABORATIVE SOCIAL LEARNING: SOCIO-TECHNICAL MODULE DESIGN IN UK HIGHER EDUCATION – A CASE STUDY

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ABSTRACT

The Web and its associated mobile devices have significantly impacted Higher Education (HE) over the previous decade, yet HE curriculum and module design has often been slow to reflect this. Learning theories emphasising the distributed, networked aspects of learning have developed (e.g. Connectivism), which reflect the emerging social paradigm of networked individuals living, working and learning in a network society typified by far wider access to people and information than ever before. Consequently, the development of digital literacies and networking skills have become increasingly important. Furthermore, the Web has also provided new opportunities to enact HE pedagogies in module design, such as authenticity, learner-centredness and flexibility in where and when we learn.

This paper will present an undergraduate module entitled "[Living and Working on the Web](#)" at the University of Southampton; a module with no lectures, no essays and no exams. It will explore the module's theoretical framework and socio-technical approach to design, which is based within the network paradigm on the principles of collaborative social learning, the co-construction of knowledge, self-reflection and digital literacies development.

Thematic analysis of official student feedback statements suggests that the development of digital literacies, the engaging nature of the module, the opportunity for Authenticity and Flexibility in learning, and the speed and usefulness of feedback from tutors were valued and students rated the module, on average, 4.6 out of 5 overall. However, there remain challenges in scaling up this module from cohorts of 45 or less to much larger cohorts.

The Living and Working on the Web module occupies an innovative space within the curriculum, is grounded in educational theory and HE pedagogies and recognises the modern, networked student. This informs its online learning and assessment cycle and focus on digital literacies and Personal Learning Network development. As such, it may indicate a role for socio-technical module design as one route to meet the challenges of future HE curriculum and module development.

Keywords: Collaborative Learning; Innovation in HE; Personal Learning Networks, Engagement, Best Practice, Socio-technical Module Design

1. INTRODUCTION

Throughout the ages new technologies have regularly shaped, and been shaped by, society. The World Wide Web, together with mobile internet technology, smartphones and 2.0 software, is one such transformative technology. Indeed, the Web has become so critical to modern social practice that it must be conceptualised not as a technological artefact, but as a socio-technical machine [37; 38; 22]. As such, the Web can be characterised by the interdependence of people's behaviours and goals with the material affordances of its technology. Each fundamentally affects the other in a cycle of "mutual shaping over time" [24] as they co-evolve and become ever more entwined [3; 21].

This co-evolution has led to dramatic transformations in the way we live, work and learn. The modern Higher Education (HE) student may best be viewed as a networked individual [30] operating within a network society [4; 5]. Many modern HE students can be seen as positioned at the centre of an autonomously constructed Personal Learning Network (PLN), as using a range of preferred devices and services to access vast amounts of distributed information, as regularly interacting with wider social and professional communities, and as financially invested learners exploring more varied formal, informal and lifelong learning opportunities. This has led to an evolving educational landscape in which learning itself needs to be understood as a connected, co-operative and networked process.

As JISC suggests, "*With raised student expectations, institutions need to develop innovative ways to deliver the curriculum to maintain a high level learning experience. Technology has a key role to play in many innovative learning experiences.*" [18]. Therefore, HE module designers may benefit by

developing a socio-technical approach to innovation when attempting to address pressing HE agendas, such as teaching excellence and student engagement [39; 40]. Innovation in the socio-technical sense does not mean 'novelty', which implies transience or frivolity, but rather a pragmatic recognition of the relationships between the contextualised networked student and Web affordances. It can be argued that there has been a transformation towards "*students as owners, producers, and collaborators within their programmes of study*" [20], hyper-connected through their Personal Learning Network, and able to engage with learning and the creation of knowledge in directions, collaborations, times and places of their choosing. In large part this transformation has been enabled by the Web and its associated devices, which in turn has led to the need for digital literacies development [18; 19]. Therefore, further socio-technical innovation can occur through the successful incorporation of digital literacies development in HE module design. Indeed, the centrality of the Web to modern social and study practices has led an NMC Horizon Report [28] to identify "*online, hybrid and collaborative learning*" and "*social media use in learning*" as the key short term trends accelerating change in Higher Education.

However, change does not mean abandoning the need for module design to be grounded in established (and emerging) learning theories and HE pedagogies. The established Social Constructivist theories of Situated Practice and Communities of Practice [23, 44] in the co-construction of knowledge [42] have been added to by emerging theories of learning, including Networked Learning, [10; 11; 12; 24] and Connectivism [6; 7; 8; 32; 33; 34; 35; 36]. These theories contend that "*knowledge is distributed across a network of connections, and therefore that learning consists of the ability to construct and traverse those networks*" [8]. In addition, established HE pedagogies, including Learner-centredness, Authenticity and Contextual Sensitivity are complimented by emerging pedagogies such as Flexibility (in where and when we learn) [43] and Students as Creators [28]. Module design which is based on these foundations, but which also recognises the changing, networked HE landscape and the centrality of the Web within it, can help avoid the pitfall of 'novelty' and may therefore be one route to explore for future HE development.

This paper will take a lens to the 'Living and Working on the Web' module at the University of Southampton, which has no lectures, no exams and no essays, in order to explore a socio-technical approach to module design. It will firstly review the theoretical and pedagogical underpinnings of the module, before analysing student responses to it. Finally a discussion will be undertaken concerning some of the limiting factors connected with this module and how they may be addressed to encourage wider take up.

2. THE 'LIVING AND WORKING ON THE WEB' MODULE

The Living and Working on the Web module was developed as part of the Flexible Learning Programme, operating since 2011 at the University of Southampton, with the aim of offering new content, choices and options to students from all disciplines. The approach to curriculum design adopted by the Flexible Learning Programme allows students to personalise their learning by selecting the Living and Working on the Web module as an optional choice on many degree programmes. As a result module cohorts often consist of students from the Arts, Humanities, Social Sciences and Sciences. The module has now run 8 times for nearly 250 students so far, including two larger cohorts based at the campus in Singapore.

The Living and Working on the Web module is premised by the notion that "*the most authentic journey is that by a group of people working together with technologies in explorations which are not wholly predetermined*" [11]. It aims to socialise students into the use of the Web as an instrument for learning, networking and enhancing their online profile through the tools and strategies that the Web makes available to individuals in their dual role as consumers and producers. Therefore, the module has a focus on developing digital literacies and student's Personal Learning Networks, encouraging networked learning, and enabling the co-construction of knowledge through peer interaction.

2.1 The Theoretical Framework – Module Design

The Living and Working on the Web module design rationale is grounded in a Social Constructivist view of education [42] in which learning and knowledge creation involves meaningful social interaction between individuals. Although there remains debate concerning whether or not Connectivism [6; 7; 8; 32; 33; 34; 35; 36] is an extension of Constructivism for the digital age (in which the Web provides a new medium for existing interactions) [41], or constitutes a new learning theory in its own right (in which learning is the process of making connections between distributed information nodes) [36], it

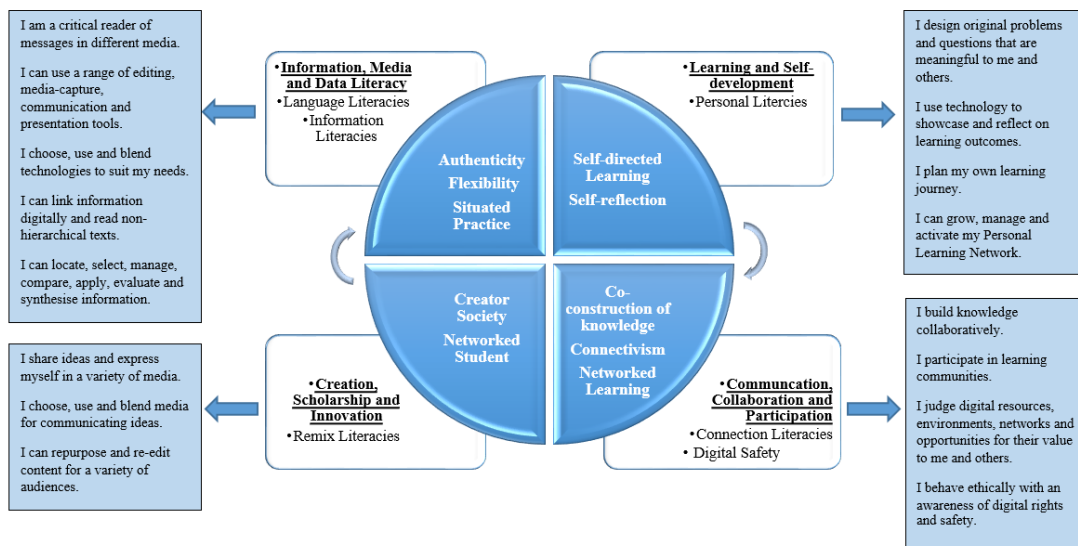
does accept the need for interactions while fully recognising that those interactions include ones with devices and the Web – socio-technical, rather than just social, interactions. Therefore, it seems reasonable that Connectivism as a socio-technical learning theory should provide the primary theoretical underpinning of the module design. However, the module design also recognises the role of more established learning theories, such as Situated Practice and Communities of Practice [23, 44], by encouraging peer collaboration in the co-construction of knowledge in a contextualised environment.

The module also recognizes the fact that the many modern, networked student already have an autonomously established Personal Learning Network (PLN). This network includes human contacts, technological devices, social networks, professional and academic networks, news and information networks, personal blogs, and more. Learners have established preferences over the devices, software and activation patterns that best suit their interaction goals. The emerging PLN research field considers all these networks as components of a single learning resource [15; 16; 26; 31], and this is reflected in the module design by making use of existing social media and Web services, and providing opportunities to grow, manage and activate student’s PLNs.

Furthermore, key to being effective in this digital environment is the development of Digital Literacies [19]. These include among others: *Language Literacies* (print, texting, hyperlinks, audio-visual-video, coding); *Information Literacies* (searching, filtering, evaluating, storing, curating, tagging, commenting); *Connection Literacies* (networking, digital safety and identity, personal literacy, [inter]cultural literacy, participation, collaboration, communication); and *Remix Literacies* (remixing, creating, synthesizing, reflecting) [1; 10; 11; 27; 29]. Both the module design and content reflect this reality as far as possible.

Finally, the process of developing effective, self-regulating students where “*learners are proactive in their efforts to learn ...[and]... monitor their behavior in terms of their goals and self-reflect on their increasing effectiveness.*” [45], means that the module design also allows for continuous self-reflection. Along with feedback, this has also been recognised as one of the key elements in the co-construction of knowledge. The relationship between all the above theoretical approaches can be visualised in the graphic below (see fig.1) where they are combined with a series of ‘can do’ statements which partly correspond to the module outcomes.

The Theoretical Framework for ‘Living and Working on the Web’



(Graphic amalgamated from: JISC, 2013; JISC Design Studios, 2014; Downes, 2005,2006,2007; Siemens, 2004,2005,2008; Wenger et. al., 2002; Goodyear, 2002, 2005; Pegrum, 2011; Gillen & Barton, 2009, 2014; Bretham, 2015 (JISC); NMC Horizon Report, 2014)

Fig. 1 The Module’s Theoretical Framework

2.2 The ‘Blog-Comment-Reflect-Feedback’ Cycle

Based on the theoretical framework explored in the previous section, Living and Working on the Web features a ‘**blog-comment-reflect-feedback**’ learning cycle, in which there are no lectures, no essays and no exams (see fig.2 below). Instead, the module combines mainly online interaction with

self and collaborative study, and face-to-face support workshops. There is a single introductory classroom-based session at the beginning of the course and weekly drop-in sessions thereafter. Interaction with tutors is 'always on' as it occurs primarily through social media via the module Twitter hashtag ([#UOSM2008](#)). Learners study five topics lasting two weeks each and follow the full learning cycle for each topic. Topics covered include, Digital Behaviour, Digital Identity and Well-being, Digital Profile Building, Ethical Use of Social Media and Open Access.

The Collaborative Social Learning Cycle



Fig. 2 The 'Blog-Comment-Reflect-Feedback' learning process

In the first two steps of the learning cycle students are given a broad question to explore in their chosen direction within a defined topic area. They are also provided with 'starter' source materials. They create and use their own university-hosted Wordpress blog (or their pre-existing personal blogs) to share their insights for the benefit of the group. They then read, comment on, learn from and challenge the insights of at least two peers. In part, this serves to recreate the practices that occur online within informal knowledge networks. Student blog posts are automatically reposted to the relevant topic page within the [module blog](#), which acts as a central repository for all posts (see fig.3).

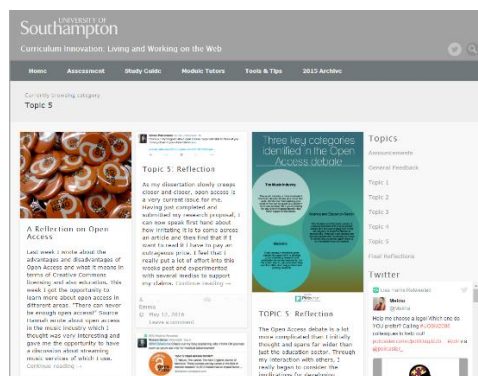


Fig. 3 The module blog homepage – all student posts are automatically reposted here.

The third step, and a key feature of the module, is the self-reflection that the learners are required to undertake. Having explored their own ideas and challenged those of their peers, students undertake a reflective blog post in which they critically examine both how their own understanding of the topic and their own digital literacies have developed during the learning process. Finally, step four involves targeted, specific feedback from tutors on student progress against a set of pre-defined criteria. This feedback is provided 'live' on a shared Google Docs page within forty-eight hours of submission in order that it be successfully incorporated into the following topic (the document is shared only with the individual student).

The module also features a continuous assessment process. Topic 1 is formative, but thereafter, fifty percent of the marks are devoted to content produced in student's blogs, comments and reflections during topics 2 - 5 (total 1,000 words per cycle). Marks are awarded for the relevance and depth of understanding and sources, the understanding and questioning of other blogs, the extent and quality of the reflection, and the appropriate use of digital media tools such as images, video, and hyperlinks. The remaining fifty percent of the marks are awarded for a final module reflection post (500 words) in which the development of the student's own digital portfolio, digital literacies, and subject knowledge is reviewed.

3. ANALYSIS OF THE MODULE

3.1 Official End-of-module Student Feedback

It is important to reflect on how effective the module has proven to be according to its design rationale and intended outcomes. Firstly, formal student feedback at the end of modules has been an established feature of module assessment in HE institutions for some time and a thematic analysis of student's comments can provide some evidence of effectiveness. The available data covered three cohorts from 2014-2016 in the UK. There were 29 respondents replying with 68 positive statements and 22 neutral or negative statements to the questions:

1. What were the best features of this module?
2. How could the module be improved?
3. Any other comments?

Over these modules the students rated the course as, on average, 4.6 out of a maximum 5 overall.

Student's statements were grouped according to common themes as arising from the data and then assigned to a module design area for both positive comments (see figs. 4 & 5) and neutral & negative comments (see figs. 7 & 8). Where a single statement was not always clear, for example it contained two separate themes, decisions were made as to which was the 'dominant' theme or whether to separate the statement in two.

Positive Feedback (Ranked by frequency) and associated module themes

Student Statements	Frequency of comment	Module design themes
Constructive feedback returned very promptly	7	Feedback
Extremely relevant / useful for future	6	Pedagogy - Authenticity
Really enjoyed the module	5	Engagement
Very good / great / fantastic course	5	Engagement
Very interesting topics	5	Content
Innovative/unique/different approach/teaching style	5	Innovation
Integration of Twitter / speed of teacher replies on social media	4	Digital Literacy Development
Interact with / learn from others	3	Pedagogy - Collaborative social learning
Really engaging	3	Engagement
Clear aims	3	Module structure
Loved it online	3	Digital Literacy Development
Creating blogs and use for assessment	3	Digital Literacy Development
Developing a professional profile	2	Digital Literacy Development
Use of different online sources	2	Digital Literacy Development
Helped me gain confidence online	2	Digital Literacy Development
Use of 1 st topic as trial	2	Module structure
Independent study	2	Pedagogy - Learner-centredness
Interactive	1	Digital Literacy Development
Challenging	1	Content
Perfect module	1	Engagement
Freedom to be creative and innovative	1	Pedagogy – student creators
Wish it could be longer	1	Engagement
Learning about social media	1	Digital Literacy Development
Total	68	

Module Themes	Number of positive comments
Digital Literacy Development	18
Engagement	15
Pedagogical approach	12
Feedback process	7
Module Content	6
Innovation	5
Module structure	5
Total	68

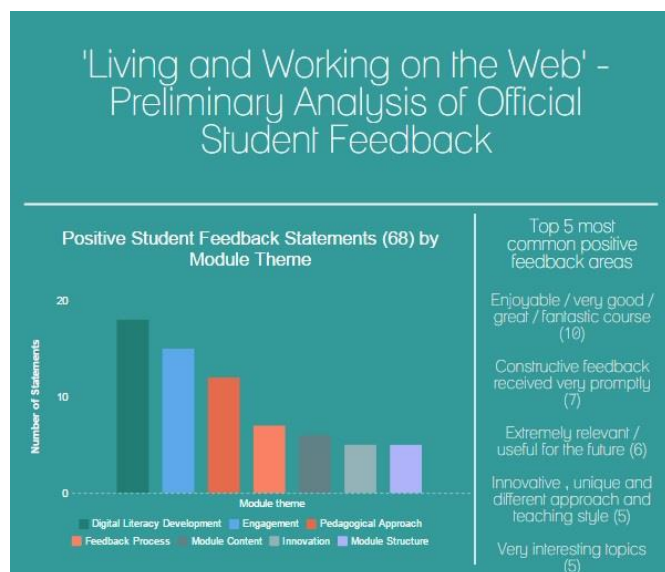


Fig. 4 Table of aggregated positive student statements

Fig. 5 Analysis of positive student statements

The most frequent positive single comments related to the speed and usefulness of the feedback, the real-world relevance of the content and how enjoyable the module was. The module design themes most positively commented on were the value of digital literacies development and how engaging the module was. This would suggest that the module 'blog-comment-reflect-feedback' learning cycle and the authenticity of both the content and the learning process did promote greater student engagement and that the digital literacies development inherent in the content and design of the module was valued. Some examples of specific student statements can be found below (see fig. 6).

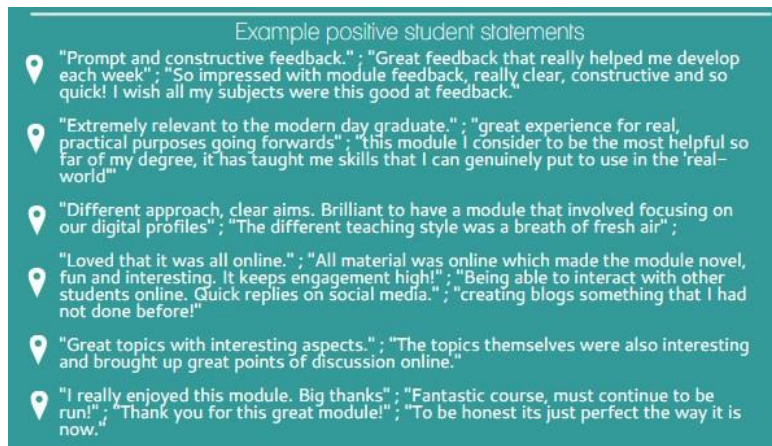


Fig. 6 Examples of specific positive student feedback comments

There were, of course, also some neutral (14) or negative (8) student comments, although these numbered less than a third of the positive statements in total (22).

Neutral & Negative Feedback (Ranked by frequency) and associated module themes

Student Statements	Frequency of neutral comment	Frequency of negative comment	Module theme
Blogs should have more weighting for marking	5		Module Structure
More help with using online tools	4		Digital Literacy Development
Cover more topics	2	1	Module Structure
Fewer topics	1		Module Structure
Module more for less tech/web-savvy people	1		Digital Literacy Development
More clarity in topic questions	1		Module Structure
Discourage from commenting only on blogs of others in their social group		1	Pedagogy - Collaborative social learning
Would like one formal lecture per topic		1	Pedagogy - Collaborative social learning
More critical feedback		1	Feedback
More clarity		1	Module Structure
Workload high		1	Module Structure
Relatively little covered		1	Module Content
Focus less on developing online profile		1	Module Content
Total	14	8	

Module Themes	Number of neutral and negative comments
Module Structure	12
Digital Literacy Development	5
Module Content	2
Pedagogical Approach	2
Feedback	1
Total	22

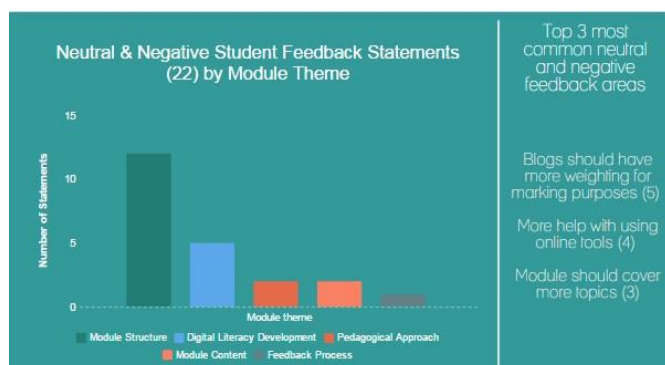


Fig. 7 Aggregated neutral/negative student statements

Fig. 8 Analysis of neutral/negative student statements

The most frequent neutral/negative student statements related to issues concerning the weighting of the assessment marks, with some students feeling that the blog posts should carry more than fifty percent of the marks, and to wanting more help with the online tools students are encouraged to use (such as [Powtoons](#), [Piktochart](#), [Canva](#)). The only other area to receive more than a single neutral/negative comment concerned the desire to cover *more* topics. Some sample neutral/negative statements can be seen below (see fig. 9).

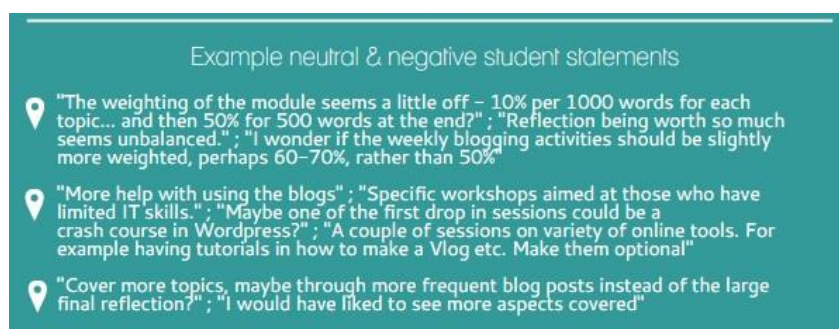


Fig. 9 Examples of specific neutral/negative student statements

3.2 Student Blogs

Some further light may be shed on the effectiveness of the module through an examination of the content of the student's final reflective summary. It is important to bear in mind that unlike the official feedback forms, here the reflections are a summative assessment task which carry marks towards the final module grade. Hence there is a danger that students feel it necessary to write more positively or to include what they think the tutors may want to hear. Nevertheless, the reflective posts can provide a resource for module evaluation when approached thematically.

The first main theme which emerges from the reflective posts is the value of the social, collaborative, co-constructive nature of the learning process. Students found it refreshing and helpful, with comments such as: *"I've really enjoyed the interaction with other students and feel like I've learnt a lot from them, it's been really refreshing to see others' takes on an issue"* or *"My favourite part of this module was the ability to view and discuss the work of my peers when taking on the same topic myself, it has allowed me to view the topic from different perspectives"* being representative of the group.

The second common theme to emerge from the data reflects the value of the digital literacies development. The following sample comments are typical: *"I put up a vlog of myself for the final topic which was something I would NEVER have done before, and it was actually quite well-received!"*, or *"One of the most important things that this module has taught me is how vital it is to participate in online communities if you want your own content to get noticed. During the course of the module it has been those who have been sharing useful content on twitter or who have made the most insightful comments on other people's blogs that have in turn received comments, and so the module as a whole has been a valuable lesson in online communities, on top of all the knowledge I've gained researching each topic."*

The results from both the official feedback and the reflective posts indicates that the module design, the learning cycle, the collaborative, social, peer-led co-construction of knowledge and the module content are effective in improving student engagement and developing digital literacies in an authentic, flexible and learner-centred way. This may be even more the case if issues concerning the marking weighting can be properly addressed in the future. It should also not be forgotten that factors such as age, gender, disability and country of origin have an impact on student engagement and that socio-technical module design is only one step towards high quality HE teaching and engagement [2]. However, overall, the feedback results suggest that innovative curriculum design, a socio-technical approach to module design, a focus on PLN and digital literacies development, and relevant module content can be an engaging viable alternative to the 'standard HE model' of weeks of lectures followed by an exam or long essay.

4. DISCUSSION

Before it is possible to propose this module design model as appropriate for mainstream, large HE cohorts a number of factors need to be addressed. Firstly, it can be argued that the module content itself is one of the main reasons for the success of the module design. Simply put, a course about how to live, work and learn on the Web is a 'natural fit' for a module based mainly online and which uses social media. While there is some truth in this, the design decisions were not primarily driven by course content considerations, but were based on established learning theories (see section 2.1). It can be argued that these learning theories are applicable across a range of subjects and content, and have indeed been applied in this way for many years. What is more recent is the ability for such discussions and creative work to be carried out in the open, and also to benefit from the networking and engagement potential offered by social media. Furthermore, the module design also employs technology in order to enable HE pedagogies, especially concerning flexibility in where and when students learn, learner-centredness and the authenticity of the learning process, all of which are also non-subject specific. Finally, digital literacies development, given the criticality of the Web to life, work and study, ought to be a feature of all HE modules regardless of subject or content. However, it is also the case that this model does not suit all disciplines or subjects, for example, those courses requiring lab work, and that '21st Century skills' are still likely to be dependent to some extent on domain knowledge.

Secondly, some researchers have raised the issue of the ethics surrounding the use of social media in education [17]. They would argue that the use of social media blurs the boundaries between personal and private because student's learning activities become a public performance (e.g. their blogs) and tutors are 'always on' via Twitter and linked to student's accounts. In addition, issues of plagiarism and the 'repurposing' of someone else's material without their consent can arise. However, the authors are mainly discussing these matters in relation to primary and secondary education. The HE context is more adult in nature and issues of inappropriate online behaviour are therefore openly addressed during the initial lecture. The module also has a dedicated Twitter hashtag to which students post, and which is useful for administrative communication (e.g. forthcoming deadlines etc). In addition, the module involves growing, managing and activating a student's Personal Learning Network, of which connecting with tutors through social media in an appropriate way forms a part. Finally, the feedback step is actively used to focus attention on the need for academic rigour concerning referencing sources correctly, and the course content covers areas such as Open Access and Creative Commons licencing.

Finally, and most importantly, this model is challenging for tutors due to the need for rapid, repeated and detailed feedback every two weeks, and the ability of students to ask questions via Twitter at any time. The single largest cohort for this module to date has been 45 students, which had a team of three tutors to facilitate. While it can be argued that all HE modules should be adequately resourced, with cohorts in some modules nearing 200 students the feedback process could become prohibitively resource intensive. Currently, there are active explorations into the integration of a peer assessment process into the module design to help address this scaling issue. This would sit well with the overall module approach of putting students at the centre of their learning journey. However, research suggests several significant factors are required for this to work effectively, including that it works best in single assessment areas and when used formatively [9]. Therefore, scaling the module to large cohorts remains a challenge.

5. CONCLUSION

In many cases, the modern, networked student values the ability to learn where, how and with whom they prefer and to focus on areas which are of personal interest with a real-world relevance. Their learning needs to be connected, collaborative, social and networked if it is to be seen as relevant and the effective inclusion of PLN and digital literacies development is of increasing importance in this.

A socio-technical approach to HE module design recognises the importance of learning theory and pedagogy and applies it within a networked, Web-centric HE landscape. The 'Living and Working on the Web' module at the University of Southampton provides a model of this socio-technical approach by being mainly (but not exclusively) online, following a 'blog-comment-reflect-feedback' learning and assessment cycle, and incorporating PLN and digital literacies development.

Students report that the module is enjoyable, engaging, and relevant, and that the collaborative, social learning process and peer interaction is positive and beneficial to their learning. They also recognize the value and relevance of developing their digital literacies and the engaging and interesting nature of the course content. However, some structural adjustments to mark weighting could be made, and the module feedback process continues to face scalability issues. Nevertheless, this module indicates that a socio-technical approach to module design, based on learning theory and pedagogy and recognising the full impact of the Web on education, could be one, potentially productive, avenue of exploration for future HE developments aimed at ensuring teaching excellence and improving student engagement.

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