

Designing Creative Learning Environments.

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Abstract. Designing creative learning environments involves not only facilitating student creativity, but also modeling creative pedagogical practice. In this paper we explore the implementation of a framework for designing creative learning environments using mobile social media as a catalyst for redefining both lecturer pedagogical practice, as well as redesigning the curriculum around student generated m-portfolios.

Keywords: SAMR, rhizomatic learning, heutagogy, collaborative curriculum design, mobile social media.

1 Introduction

The authors of this paper have collaboratively explored the application of mobile social media across a variety of contexts since 2011 and this has informed the development of a framework for creative curriculum design using mobile social media. We have utilised this framework to design a series of four elective courses across a three year bachelors degree [1], and have tested the design with the implementation of a six week elective course that ran twice during semester two of 2014 [2]. Our framework is based upon modeling and brokering active participation within authentic learning communities. We leverage several foundational concepts to inform the design of the framework, including the concepts of building learning communities [3],[4], rhizomatic learning [5] involving the design of triggering events, student-determined learning or heutagogy [6], the SAMR (Substitution, Augmentation, Modification, Redefinition) framework [7],[8], three levels of creativity – from reproduction to incrementation and reinitiation [9],[10], and collaborative curriculum design as a design science [11]. Two of the keys to our framework are redefining pedagogical practice, and focusing upon cultivating student creativity. Practically this means moving beyond a reliance upon content delivery and Powerpoint presentations (for example) to the modeling of the use of mobile social media for interaction and collaboration, and redesigning the curriculum around active student participation within authentic online global learning communities. Luckin et al., [12] apply the concept of heutagogy within a three stage continuum of pedagogical transformation (the PAH continuum): from pedagogy (P) or teacher directed to Andragogy (A) or student centred to Heutagogy (H) or student determined learning. In our framework we align the pedagogical transformation sign-posted by the

PAH continuum to corresponding levels of creativity and educational technology adoption that support this transformation. Sternberg, Kaufman and Pretz [10] define three types of creativity that we align with the SAMR framework of educational technology adoption: replication (Substitution), incrementation (Augmentation), and reinitiation (Modification and Redefinition). In order to achieve a shift along this three level continuum we agree with Danvers [9] who argues that designing transformative learning environments involves cultivating a sense of supporting and encouraging student creativity.

Creativity thrives in an atmosphere that is supportive, dynamic, and receptive to new ideas and activities. The learning environment has to encourage interactions between learners in which: action and reflection are carefully counter-balanced; open-ended periods of play and 'blue-sky' thinking alternate with goal-oriented problem-solving; stimulating inputs and staff interventions are interwoven with periods in which learners develop ideas and constructs at their own pace; critical thinking and robust debate co-exist with a supportive 'space' in which risk-taking, imaginative exploration and productive failure are accepted as positive processes of learning and, the development of meanings and interpretations is inseparable from material processes and production. [9, p. 52]

Developing a creative learning culture can be achieved by using an ecological approach to curriculum design that identifies the key components required to support the graduate outcomes of a course. Cormier [5] has proposed an ecological model for enabling self-determined learning communities (cMOOCs) based upon a rhizomatic analogy. In this model of learning students and lecturers collaborate in determining the direction of learning communities. The role of the teacher becomes the designer of triggering events facilitating learning community interaction based upon an ecology of resources. This ecology includes the brokering of professional community participation for the students within lecturers' pre established networks. This is very similar to Wenger's [13] concept of legitimate peripheral participation leading to active participation within communities of practice. Pachler, Bachair and Cook [14] have also linked the concept of an ecology of resources model for enabling learner-generated contexts via mobile learning. Within our framework for creative curriculum design we use an ecology of resources based upon mobile social media to facilitate triggering events for cultivating student creativity. The paper explores how this was achieved and provides student feedback on the implementation of two iterations of the design framework.

1.1 A Framework for Creative Pedagogies

An effective framework creates a link between theory and practice, providing practitioners with a theoretically informed guide for curriculum design. Laurillard [11],[15] argues that curriculum design should be treated as a design science and become a collaborative process, rather than an ad hoc solo pursuit undertaken by lone

educators. The authors of this paper have found that a collaborative curriculum design process that is informed by a chosen set of theoretical pedagogical frameworks is a creative way to breath new life and fresh ideas into course design. The framework is therefore useful in stimulating learning design as a creative process as well as producing creative learning environments and assessment ideas. We have detailed the development of a mobile social media framework for designing creative pedagogies [1],[16], and summarise the latest version of our framework in table 1.

Table 1. A mobile social media framework for creative pedagogies (modified from [12]).

	Pedagogy	Andragogy	Heutagogy
Locus of Control	Teacher	Learner	Learner
Course timeframe and goal	Initial establishment of the course project and induction into the wider design community	Early to mid-course: Student appropriation of mobile social media and initial active participation	Mid to end of course: Establishment of major project where students actively participate within an authentic community of practice
Cognition Level (Danvers, 2003)	Cognitive	Meta-cognitive	Epistemic
Knowledge production context	Subject understanding: lecturers introduce and model the use of a range of mobile social media tools appropriate to the learning context	Process negotiation: students negotiate a choice of mobile social media tools to establish an ePortfolio based upon user-generated content	Context shaping: students create project teams that investigate and critique user-generated content. These are then shared, curated, and peer-reviewed in an authentic COP
SAMR (Puentedura, 2006)	Substitution & Augmentation Portfolio to ePortfolio PowerPoint on iPad Focus on productivity Mobile device as personal digital assistant and consumption tool	Modification Reflection as VODCast Prezi on iPad New forms of collaboration Mobile device as content creation and curation tool	Redefinition In situ reflections Presentations as dialogue with source material Community building Mobile device as collaborative tool
Supporting mobile social media affordances	Enabling induction into a supportive learning community	Enabling user-generated content and active participation within an authentic design COP	Enabling collaboration across user-generated contexts, and active participation within a global COP
Creativity (Sternberg, et al., 2002)	Reproduction	Incrementation	Reinitiation
Ontological shift	Reconceptualising mobile social media: from a social to an educational domain	Reconceptualising the role of the teacher	Reconceptualising the role of the learner

The framework maps a three stage continuum across several key theoretical foundations, including the conception of three levels of creativity (reproduction,

incrementation, reinitiation), providing simple guidelines to design activities for each level. This three stage representation also aligns with a meta analysis of the growth and maturity of mobile learning through three phases [17],[18]:

1. A focus upon mobile devices (pedagogy – representing reproductive creativity)
2. A focus upon learning outside the classroom (andragogy – representing incremental creativity)
3. A focus upon the mobility of the learner (heutagogy – representing reinitiation or new creativity)

The framework therefore provides a filter or guide for identifying the appropriate design of mobile learning environments according to a pedagogical goal. For example – a focus upon the redevelopment of course materials or content as ebooks or ibooks aligns with a teacher-directed pedagogy and a focus upon devices as a substitute content delivery platform, representing a reproductive mode of creativity. A focus upon the use of interactive ebooks or ibooks to enhance a pre-defined learning experience such as a fieldtrip or museum visit aligns with a student-centred andragogy resulting in creativity that is based upon incrementation of prior ideas. In comparison, a focus upon students using mobile devices to capture and share a negotiated learning experience and critical reflections on these experiences by the development of their own ebooks or ibooks aligns with a phase three student-directed heutagogy resulting in creativity as reinitiation or the production of new and fresh ideas.

2 Case Study

The framework was used to guide the design of a six-week intensive elective course that focuses upon students developing professional online profiles and digital literacies. The elective was run twice with two different cohorts of second year bachelor degree level students in the second semester of 2014. The description of the elective course was designed to provide an overview of its purpose:

By the end of 2014 there will be more active mobile phones on the planet than people (ITU, 2014). Daily smartphone screen time has now surpassed TV usage also. This elective will help you to design for this rapidly developing *Mobile Social Media* in an environment where there is an App for everything (1.2 billion Apps are now in the iTunes Store). In it you will create an ePortfolio utilizing the unique affordances of smartphones and/or tablets that will help you to launch your Design career. You will be introduced to some of the theory of *Mobile Social Media*, and how it can help you to establish effective ePortfolios, as well as to using Web2 tools through online collaborations and case studies. (Course descriptor, 2014)

The ecology of the learning community for the semester two 2014 Communication Design elective course was based around Google Plus (G+), Behance, and Twitter. Google Plus provided a community hub for the course members (Students and lecturers), while Behance provided an online platform for student eportfolios with a specific focus on participation within a wider global visual design community. Twitter was used as a global networking and communications channel. Google Plus Communities provide a more professional host for discussion forums, sharing, and integration with Google's suite of online productivity tools than students prior social networking within Facebook. Behance has established itself as a social media hub and community for professional visual design portfolios. Since the acquisition of Behance by Adobe – the defacto owner of the most widely used professional visual design software such as Photoshop and In Design – Behance has been integrated into Adobe's software suite and has developed a solid mobile App for sharing visual design portfolios. Twitter has become an asynchronous hub for global collaboration and is integrated into both iOS and Android mobile operating systems.

The elective course is designed as a taste of the experience involved in a mobile social media minor that includes four courses over the length of a bachelor of design degree – comprised of one introductory course in first year, followed by two courses in second year and a final course in third year [1]. The elective course follows a six-week format as shown in table 2, where each week introduces topics as triggering events to initiate creative explorations for participants as a learning community.

Table 2. Overview of the communication design mobile social media elective course.

Topic	Triggering event	Activity design	Conceptual shift	SAMR	PAH and creativity
Week 1: Introduction to mobile social media	International guest (UK) via Hangout: "The power of social media and curation"	Students create the following social media accounts: <i>G+</i> , <i>Google Hangouts</i> , <i>Google Drive</i> , <i>YouTube</i> , <i>Vimeo</i> , <i>Twitter</i> , <i>Storify</i> , <i>Bambuser</i> , <i>Behance</i> , and are invited to join a G+ community for the course	Teacher modeled educational use of mobile social media and G+ Community participation	Redefinition of course LMS as a collection of student owned mobile social media – building a learning community	Pedagogy, Reproduction
Week 2: Brand yourself	Guest speaker from Journalism Department: "The power of an online profile"	Students showcase their creativity via a six second Vine video	Teacher guided exploration of digital identity	Redefinition of social media as an educational platform	Andragogy, Incrementation
Week 3:	International	Students explore	Teacher	Augmentatio	Andragogy,

Contextual affordances of mobile social media	guest (Colombia) via Hangout: “The power of mobile video”	geolocation by creating a collaborative interactive Google Map with embedded video	guided exploration of contextual affordances of mobile	n of mobile video	Incrementation
Week 4: Creating an mPortfolio	Guest speaker (NZ): “The power of an ePortfolio”	Students establish their own Behance portfolios as hubs for their mobile social media platforms of choice (e.g. Flickr, Instagram, Vimeo)	Student negotiated	Modification of student portfolios	Andragogy, Incrementation
Week 5: Collaborative video production	International industry guest from Vyclone (USA) via Hangout: “The power of collaborative production”	Students create and share a short form collaborative video using Vyclone	Student negotiated	Modification of collaborative video production	Andragogy, Reinitiation
Week 6: Student presentations and reflections	International guest (Ireland) via Hangout: “The power of a shared journey”	Students record a reflective statement via <i>Vyclone</i> or <i>Bambuser</i> – 10 min max, shared via Twitter for peer feedback	Active student participation within a learning community	Augmentation of student reflections	Andragogy to heutagogy, Reinitiation

Rather than substituting existing curriculum activities and assessment strategies using mobile social media we have attempted to modify and redefine the nature of activities and assessments that can be enabled by mobile social media within the context of the new elective course. Therefore the focus of the course is not upon the delivery of a prescribed canon of content, but upon student-generated content as a result of their experiences and explorations of mobile social media throughout the course. In the first 2014 iteration of the course this meant that we drew heavily upon examples of student work from our previous collaborative projects, while the second cohort of students had the benefit of the examples created and shared by the first cohort of 2014 students. The elective course design focuses upon drawing students into active participation within a global learning community that will hopefully become a model for participation in life-long professional communities after graduation.

The key concepts covered during the six weeks of the elective included:

- An overview of the paper and the ethics of the expected course culture of open sharing and collaboration
 - A critical introduction to Mobile Social Media
 - Smartphone and tablet technology affordances
 - ePortfolios and Web2 tools
 - Exploring creativity enabled by Mobile Social Media
 - Exploring mobile tools to use for future online collaborations
 - Discussing some examples via a series of case studies

These were assessed by three activities including: the production and sharing of a six-second self-promotional video using Vine, evidence of engagement in the course community via mobile social media (posts on Google Plus community, Twitter, and creation of a video channel on either YouTube or Vimeo), and the collation of students' online profiles and work in progress using Behance as an ePortfolio. A course outline and assessment criteria were shared with the students on Google Docs and linked into the course Google Plus Community.

2.1 Participants

The first iteration of the elective course involved a cohort of fifteen second-year bachelor of design students and the two authors as collaborative lecturers. The second iteration of the course involved a cohort of twelve second-year students plus the authors. As an introductory course activity a survey of the students was undertaken with each cohort, designed to identify their previous experience of mobile social media. The results indicated that while the majority of students considered themselves "digital natives", their mobile social media activity was mainly limited to Facebook (100%), text messaging (93%), Web browsing (93%), Calendar (86%), YouTube viewing (86%), Google Maps (72%), and Instagram (64%) usage, with limited use of mobile social media within educational contexts. Beyond Facebook, students were predominantly consumers of social media, and not producers. All of the students owned a mobile phone, with 85% smartphone ownership (64% iPhone, 21% Android), all of the smartphone owners used 3G/4G mobile broadband as well as the University WiFi network. All students also owned either a laptop (64%) and/or a tablet (43% iPad, 7% Android). Table 3 provides a summary and comparison of the SurveyMonkey results of the two cohorts of students' (E1 and E2) use of mobile social media within education, indicating that the majority of the elective course activities were new to their educational experience.

Table 3. Student participants' mobile social media usage in education survey results.

Activity	E1	E2	Activity	E1	E2
Watched PODCasts of lectures	10%	0	Created your own PODCasts	0	0
Mobile Web searches	50%	38%	Twitter	20%	25%
Text messaging	40%	38%	Mobile Blogging	10%	0
Recorded & uploaded	20%	0	Recorded & uploaded	30%	20%

mobile video			mobile photos		
eBooks or eBooks	20%	24%	iTunesU	0	0
Augmented reality	0	0	Soundcloud	0	0
Blackboard App	30%	10%	QR Codes	10%	10%
Skype	0	0	G+ Hangouts	0	0
Google Drive	0	0	Geolocation activities	0	0
Collaborative Wiki editing	0	0	None of these	10%	30%

There were no major differences in the prior experience of the educational use of mobile social media between the two student cohorts – both groups had minimal prior experience beyond mobile web searches and txt messaging.

3 Results

In this section we briefly analyse some of the curated course content that included: mobile social media streams, student journals and reflections on their Wordpress blogs, student ePortfolios on Behance, livestreams of face to face guest lecturers, and archived remote guest lecturer hangouts on YouTube.

3.1 Mobile Social Media Analysis

The course Google plus Community was used as an online course hub, and social media streams were curated via a course hashtag (#autmsm2014) using TAGBoard (<http://tagboard.com>). A class TAGBoard was linked into the G+ Community to curate student activity on Google Plus, Twitter, and Vine. Table 4 provides a summary of mobile social media use associated with the two iterations of the elective.

Table 4. Summary of #autmsm2014 mobile social media activity.

Mobile social media	E1 Activity	E2 Activity
Map of geotagged #autmsm2014 Tweets http://goo.gl/maps/vvBgm	179 tweets from 20 users	145 tweets from 32 users
Google Plus Community http://is.gd/Vy5NHY	96 posts and 150 comments	68 posts and 68 comments
TAGBoard https://tagboard.com/autmsm2014/182047	320 posts	103 posts
Vine video production http://vinebox.co/tag/autmsm2014	30 Vine videos	52 Vine videos
Example ePortfolio interaction on one Behance profile	187 views 26 appreciations 7 follows	197 views 48 appreciations 20 follows
Wordpress workbooks	Average of 12 pages of posts	Average of 12 pages of posts

Comparing the mobile social media activity of the two elective cohorts (E1 and E2) in Table 4, shows a similar level of engagement with two main differences between the cohorts. The second cohort were less active on Google Plus and the

Google Plus Community but more active using Vine than the first cohort. We encouraged the development of a potentially global community around the class by explicitly highlighting the curation of social media via the course hashtag #autmsm2014 both during classes, and on the Google Plus community. TAGSExplorer [19] was used for a more detailed graphical Twitter analysis of the course hashtag usage (#autmsm2014), enabling the lecturers to identify and promote key emerging student conversationalists. TAGSExplorer graphically identifies all users of a Twitter hashtag as nodes within a virtual community, and highlights conversational interaction between these users via mentions and retweets, where the most active conversationalists are represented by the largest nodes, as shown in figure 1. TAGSExplorer is thus a powerful representation of the use of Twitter to build global asynchronous communities. Individual isolated nodes indicate Twitter users who are either on the periphery of the community, or using Twitter in a simplistic broadcast mode, aligning with a reproductive mode of creativity.

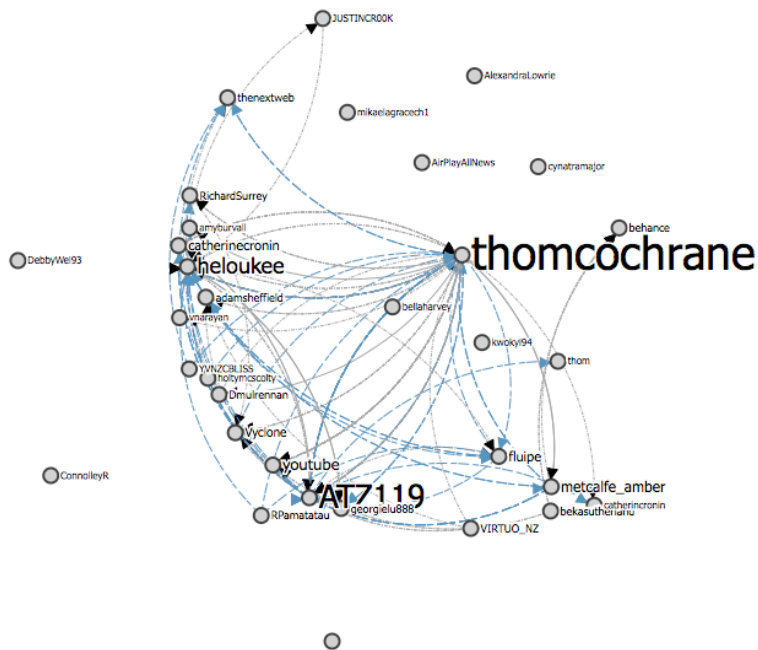


Fig. 1. TAGSExplorer for #autmsm2014 elective 1.

Figure 1 illustrates that the key conversational nodes using the course hashtag were the lecturers. In total there were 179 tweets from 20 users during the first iteration of the course, including the guest lecturers. While many students are represented by isolated nodes Figure 1 also identifies the beginnings of a couple of students becoming conversational nodes as they built up confidence throughout the six weeks of the course. As specific students emerged as significant conversational nodes on Twitter using the course hashtag we encouraged them by sending Tweets such as “@username you are the top student Twitter conversationalist for #autmsm2014”, to

encourage active participation in this global network. Figure 1 also illustrates the reach of Twitter as a tool for facilitating a connected network with associated social media sites and guest lecturers from around the globe.

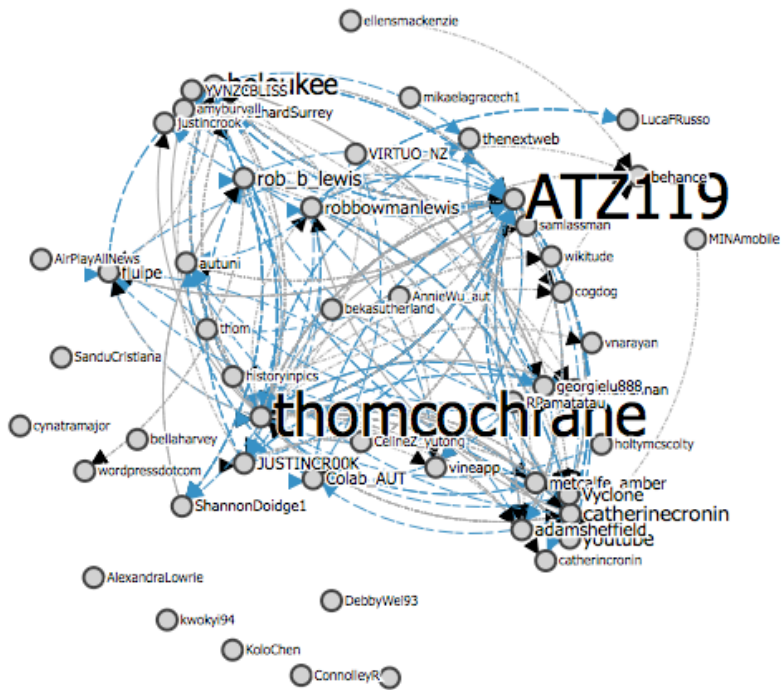


Fig. 2. TAGSExplorer for #autmsm2014 elective 1 and 2.

Figure 2 is a snapshot of TAGSExplorer analysis of Twitter activity using the course #autmsm2014 hashtag after the second iteration of the course. The combined activity from both electives included participation from 52 users and 324 conversations. While there were slightly less Twitter conversations from the second iteration of the elective, the global community of Twitter users interacting with the students increased. Twitter provided a window into students' experiences of becoming part of this new global community, for example several tweets illustrate the impact of the series of Google Plus Hangouts with a variety of international experts throughout the course: Example of a student tweet after a Hangout with the CEO of the Vyclone App “#autmsm2014: youtu.be/2etUc8x8cdk via @YouTube Talk with David the CEO of Vyclone an awesome new app were trying!”. Tweet from an international guest prior to a class Hangout “Hey #autmsm2014 Mobile Social Media students... looking forward to hangout with you all (& @thomcochrane & @ATZ119) tomorrow :)”, followed by an in class tweet from a student during the Hangout “Talking to Catherine Cronin in Ireland on Google Hangouts! #autmsm2014”. Another example of a student tweet after an international guest Hangout “Thank u to be the guest speaker today! It was so cool \(\^o^\^)/ #autmsm2014 @heloukee”.

Twitter also provided a critical link between the international guests, the lecturers, and the students in becoming part of a global network, for example a tweet from one of the international guests shared an example of student work with her wider Twitter network “Love this from #autmsm2014 - Motion graphic test no.8 vine.co/v/OKn3wQwpl5p via @vineapp @ATZ119 @thomcochrane”.

3.2 Examples of Student Work

Each class session focused around two triggering events: (1) a guest lecturer – either face-to-face and live-streamed, or remotely via an archived Google Hangout, and (2) a simple fast production student-generated content exercise using a mobile social media application that the students could potentially use within their final eportfolio toolkit (or eportfolio ecology of resources). For example: an introductory course activity invited students to collaboratively edit an interactive course Google Map by locating links to their online profiles and examples of Vine videos as interactive points of interest. The two cohorts of students were assigned as editors of two separate layers on a single Google Map, so that they could see the two classes examples while maintaining a distinct identity. The map data was also exported into a mobile augmented reality browser (Wikitude) as an example of the contextual affordances of mobile social media.

Links to example student work:

- Example student promo videos <http://www.youtube.com/playlist?list=PL2-TasqEeWBUeWdSfLlrnjyug9g1L91CI>
- Example elective 1 student journal: <http://richardsurrey.wordpress.com>
- Example elective 1 student Behance ePortfolio: <https://www.behance.net/RichardSurreyDesign>
- Example elective 2 student journal: <http://robbowmanlewis.wordpress.com>
- Example elective 2 student Behance ePortfolio: <https://www.behance.net/robbowmanlewis>

As the students progressed through the six weeks of the elective course and explored the weekly triggering events we observed the evidence of student progression from initial attempts at creativity as reproduction of ideas on new platforms through to incrementation as they developed their ideas and finally the exploration of new ideas through reinitiation as they discovered new possibilities afforded by the use of mobile social media within the context of graphic design. This was evidenced in the difference between students first attempts to use Vine to create a self promotional video and their final Vine videos after posting various iterations for peer feedback and comparison on the Google plus community. The six second video length limitation of Vine proved to be a catalyst for student creativity in producing a self promotional video that was not simply a very short video. Students created and shared drafts of their videos on the G+ Community, receiving feedback from their peers and their lecturers, and quickly began to explore the stop motion possibilities of Vine videos. This was evidenced in student reflections on the Vine video creation process on their Wordpress workbooks. For example students posted explanations and

created YouTube tutorials outlining how they developed ways of stabilising their smartphones for stop motion video production via building a variety of unique tripods and stop-motion scene techniques.

The development and sharing of a public portfolio within the Behance online community provided a catalyst for students to critically curate and creatively present their work to a professional standard. Students were particularly motivated by other Behance users beginning to follow and provide feedback on their portfolios. Behance became a platform for students to highlight their unique graphic design skills and showcase their creativity. Students were also encouraged to link their new and developing mobile social media portfolios to their Behance profile, resulting in students improving the quality and creativity of their social media posts via Twitter, YouTube, Instagram, and Google Plus. Students began to build connections between their social media usage and their online digital profiles, such as the following student tweet: “Check out my Behance Workbook, about my progress in my elective class at university #autmsm2014 youtu.be/fQyj3q3x2jw?a”.

3.3 Student Feedback

Student feedback on the elective course was very positive across both of the iterations. Students posted text or video reflections on their course experiences on their Wordpress blogs after the end of the elective. A common theme from students was an initial misunderstanding of the scope of the course from the marketing department material that seemed to imply the course focused upon mobile App development. Students initially believed that they already had a broad understanding of mobile social media, however their responses to the initial course survey and a simple Google search for their own online profiles quickly dispelled this assumption. Indicative examples from each cohort are included here.

While I was originally enrolled to partake in the coding elective, my mistake of arriving to the wrong class came as a blessing in disguise. I had originally felt that I was fairly up to date when it came to using mobile media and having an effective online presence, however within just a few app classes I quickly came to realise I had a lot to learn. (Student E1, 2014)

When coming into this course I personally thought that it was about designing apps and had no idea to what we actually were going to do. When first explained what the course was about I thought I knew a lot already as I was on a few social media platforms but I was wrong!! This course brought forward so many ideas and creative ways into how we can brand ourselves on social media platforms in a professional way, not only this but how to connect and interact with other devices to make life so much easier! I thought this course was really good as our generation seem to think they know everything about technology because we have grown up with it and experienced change first hand. I have learnt so many new techniques to get my work out in

the open, portray myself and also most importantly to me tools that will help me save a lot of time in the future for working on projects together with people. I thought that the interaction with other lecturers and interested parties all over the world was amazing, it was awesome to get an insight from people on the other side of the world and find out the similarities and differences in teaching and learning platforms but also learn from what they had to say to heighten our interest and knowledge of our particular course. Thank you so much! I will definitely benefit from this course and hopefully will see you again in the future. (Student E1, 2014)

This class was great, I enjoyed learning about the power of social mobile media and it has opened up so many opportunities to me that I didn't know existed. The importance of a good online profile was something that had not really occurred to me prior however i am now grateful that i have a good basis to share future work. (Student E1, 2014)

The class had a positive atmosphere and allowed us to be creative, and not set to a particular trajectory. I liked that we were able to go outside of the classroom to practice our skills, something that we don't see as much in other papers. (Student E2, 2014)

Special thanks to [my lecturers] for an amazing course, thoroughly enjoyed it. Also to the guest speakers that were also inspiring and informative, I definitely appreciate your words of wisdom. I would recommend this course to anyone who had the option to take it as I feel I have learnt a lot from it and am better off as a Designer because of it. Guttered the class is over, and hope to keep the ball rolling using social media and different apps in my career. (Student E2, 2014)

The impact of the elective course on the professional development of students' digital identity was evident in student reflective feedback on their Wordpress blogs as illustrated above, and illustrates a conceptual shift from the use of mobile social media as an initially reproductive process towards the more creative levels of building upon prior ideas (incrementation) followed by the generation of new ideas (reinitiation).

4 Discussion

The mobile social media elective was both a creative pedagogical design experience for the lecturers, and a creative learning experience for the students. Using our mobile social media framework for creative pedagogies we attempted to design the course as a potentially transformative learning experience for students. The impact of this

experience was measured by integrating the recording of student process and participation within the course assessment criteria. For example: “Demonstrate the ability to critically reflect on your work and that of peers by actively participating in class discussions and critiques as well as engaging online via *Google+ Community*”. Table 3 provides a summary of student prior experience of mobile social media, and Table 4 provides a summary of their subsequent course activity. From this it was clear that students’ previous lack of active participation with online networks and communities beyond Facebook meant that their first engagement in a wider range of mobile social media such as a Google Plus Community was definitely a new learning experience, and one that they quickly appropriated. The majority of enrolling students identified themselves as ‘digital natives’ [20] in the initial survey, and appeared to have bought into the hype surrounding the concept. A series of JISC [21] surveys of highschool student perceptions in the UK indicates that this is not an isolated phenomena. Although heavily critiqued [22],[23],[24], the myth of the digital native has gained widespread adoption, leading to students believing that they are technologically superior to their lecturers, and providing an opt-out excuse for lecturers to not engage with educational technology beyond the substitution of current practice. Student misconceptions about their own capabilities with mobile social media were quickly dispelled as we introduced them to the wide range of creative possibilities and also introduced them to a global network of more experienced professional users and producers of mobile social media. This is summarised in two representative student reflections after the end of the elective classes, transcribed below.

The course taught me that I am part of a large group of social media participants – not a creator, but a participant... But that’s all going to change as I put myself into the social media world and create my own digital identity. (Student E2, 2014)

Working and growing in any chosen career in today’s world not only requires the necessary skills, but also the ability to be able to network yourself online. Before this class it could be said I was a complete rookie at this kind of thing. I didn’t have any type of professional profile and the only existing accounts I mainly used were Facebook and Instagram. This class helped me discover a wide range of new applications and websites that will benefit me in the future. I think the specific skills learnt from this class will have a huge impact on how I present myself now, and could also give me a one up on the competition when it comes to looking for employment. (Student E2, 2014)

Students expressed the wider curriculum impact of their #autmsm2014 elective experience as they sought to integrate some of these experiences into other courses and projects. Thus the elective course built students’ self-esteem and confidence in the professional and critical use of mobile social media, particularly with respect to moving from local networks and interaction with their classmates to experiencing a network of international experts and support groups.

4.1 Designing creative learning environments

The learning design process behind the development of the elective course was itself a collaborative creative experience for the lecturers. We chose to explicitly design the course around facilitating authentic student experiences rather than developing a teacher-delivered body of content. In this model the lecturers used Google Docs to collaboratively brainstorm and write a series of triggering events that would scaffold students into active participation within the growing global of graphic designers. To achieve this we developed an ecology of resources that leveraged the affordances of mobile social media platforms, as illustrated in figure 3.

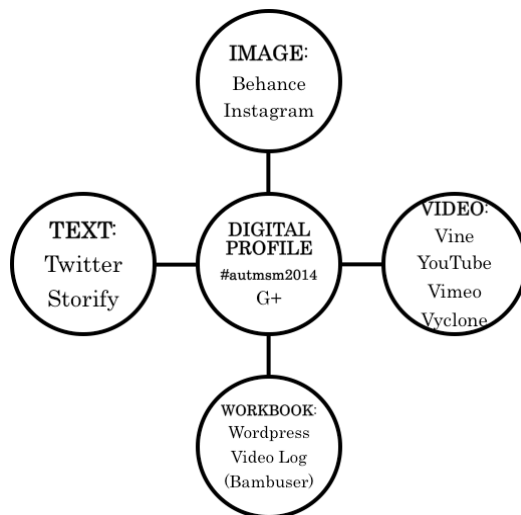


Fig. 3. The ecology of resources for the #autmsm2014 course.

The ecology of resources (EOR) was designed to facilitate student-generated portfolios to enable students to establish the beginnings of a professional digital profile. We defined the choice of mobile social media to apply to the context of graphic design, categorising a selection of platforms according to the creation and sharing of: text, image, video, and reflection via a workbook, all providing rich student-generated content for their Behance portfolio. Utilising a common predefined hashtag for the course (#autmsm2014) enabled the curation of a rich variety of social media, rather than the traditional approach taken in education to require ‘submission’ of predefined assessments via an institutional learning management system. As lecturers and course designers we felt liberated by this approach from the ‘digital myopia’ [25] imposed by institutional systems.

4.2 Facilitating student creativity

There was evidence of a wide range of student creative activity throughout the two iterations of the elective. While students were required to create and maintain a

reflective journal throughout the course, the exact nature of that journal was open to student negotiation, with the one stipulation that the journal be open and accessible online. The majority of students created a Wordpress blog as the host for their reflective journal, but the content of these journals was wide: from a series of weekly embedded 2 minute YouTube videos, to a 45 page multimedia exposition. Student reflective Wordpress journals averaged 12 pages of entries across the 6 week elective. This was beyond our expectations of the level of student engagement from such a short optional elective course. As students began creating a professional online profile of their own work they began to realise the power of social media to motivate their own creativity.

Working as a creative person in today's industry requires an in-depth knowledge of how mobile social media is intrinsically linked to how we work and how we promote ourselves as professional people. Without this class I would have a hard time creating an active online presence which could potentially become a job opportunity, I am grateful to *my lecturers* for helping me realise the importance of social media and its real life application. I feel as though I am now equipped with the basic tools to move forward as a professional designer and promote myself as a brand more effectively. (Student E1, 2014)

I have learned social media today is not only my own entertainment and social life, but an effective way to let the whole world to know my work. Also by following the works of other artists lend me more inspiration and know more people from other places. (Student E2, 2014)

4.3 Modeling creative pedagogical practice

The course lecturers invited the students into their own professional networks of international lecturers and visual design experts. This provided students with an authentic experience of the potential of mobile social media such as Twitter to facilitate global networking and serendipitous learning [26]. For example, Figure 4 provides a screen shot of #autmsm2014 geotagged Twitter activity displayed on a Google Map exported from TAGSExplorer, highlighting the global reach of the course experience.

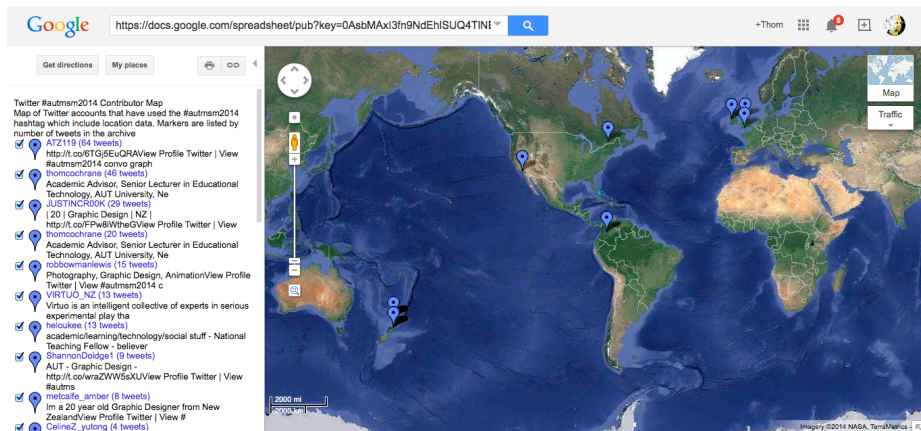


Fig. 4. Google Map of geotagged #autmsm2014 tweets.

Students found this experience empowering, for example:

All this interaction with people overseas allows me to see the world differently. Previously the prospect of working overseas seemed daunting with a lack of connections, however I can see that tools like Twitter and Behance are ideal for connecting with people in your industry who are abroad. Having people from New Zealand talk with us was also good as it gave us an insight to the professional world in New Zealand and what we could expect if we followed this path. (Student E2, 2014)

The lecturers also modeled the use of mobile social media to deliver course material and for live interaction within classes. All class materials (outline, assessment criteria, schedule...) were hosted via social media such as Google Docs, and wireless screen-mirroring technologies [27],[28] were used to demonstrate and present directly from a range of mobile social media using the lecturers iPhones, iPads and laptops. No Powerpoint or similar alternatives (for example Keynote or Prezi) were used throughout the course by the lecturers.

4.4 Future Developments

One of the limitations of the six-week elective format has been Time. In spite of a general positive feedback from the students, we noticed that there wasn't much participation and engagement outside the class time. Based on previous experiences, one solution to this situation could be to schedule an open three-hour session or open workshop for better support and one-on-one mentoring in-between each new guest-lecturer triggering event. The design and implementation of the elective course was not only a learning experience for the participating students – it was also a new learning experience for the course lecturers, particularly in regards to the creative

potential of collaborative curriculum design and the brokering of student participation within the lecturers' global networks. Consequently the authors are now using this experience to design an up-scaled professional development program for university lecturers, using our mobile social media framework as a design guide for a mobile social media learning technologies (mosomelt) cMOOC (connectivist MOOC). Cormiers conception of a rhizomatic model of learning and teaching was framed within the context of facilitating cMOOCs [29]. The #mosomelt cMOOC is designed to provide lecturers with an authentic experience of learning within a global learning community, bridging a variety of small communities of practice within various departments into a potentially global shared learning experience via an exploration of mobile social media tools (<http://mosomelt.wordpress.com>). The mosomelt cMOOC uses the concept of a series of triggering events for participant exploration, creativity and sharing, rather than the delivery of content mode of xMOOCs such as those designed and delivered around the Coursera model for example.

5 Conclusions

The design and implementation of two iterations of an elective course on mobile social media illustrates the authors' belief that designing creative learning environments involves not only facilitating student creativity, but also modeling creative pedagogical practice. In this paper we have explored the implementation of a framework for designing creative learning environments using mobile social media as a catalyst for redefining both lecturer pedagogical practice, as well as redesigning the curriculum around student generated m-portfolios. The framework links a conceptual continuum of three levels of creativity, educational technology adoption (SAMR), and three phases of mobile learning with the pedagogy-andragogy-heutagogy (PAH) continuum. We have implemented this framework by designing an ecology of resources to support the development of a series of triggering events designed to embed authentic learning and gently push students from an initial reproductive form of creativity towards the generation and sharing of new ideas and design processes evidencing creativity as reinitiation. The framework thus provides a theoretically informed guide for designing creative learning environments using mobile social media.

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