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Article

Implementing a Mobile Social Media Framework for Designing Creative Pedagogies

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Abstract: The rise of mobile social media provides unique opportunities for new and creative pedagogies. Pedagogical change requires a catalyst, and we argue that mobile social media can be utilized as such a catalyst. However, the mobile learning literature is dominated by case studies that retrofit traditional pedagogical strategies and pre-existing course activities onto mobile devices and social media. From our experiences of designing and implementing a series of mobile social media projects, the authors have developed a mobile social media framework for creative pedagogies. We illustrate the implementation of our mobile social media framework within the development of a new media minor (an elective set of four courses) that explicitly integrates the unique technical and pedagogical affordances of mobile social media, with a focus upon student-generated content and student-determined learning (heutagogy). We argue that our mobile social media framework is potentially transferable to a range of educational contexts, providing a simple design framework for new pedagogies.

Keywords: heutagogy; collaborative curriculum design; communities of practice

1. Introduction

The term Web 2.0 was coined by O'Reilley [1] in 2005 and helped define the social media revolution. However, in the intervening years, we have seen the exponential growth of mobile Internet

connectivity, and burgeoning mobile application ecosystems, to the point where mobile subscriptions to the Internet out-numbered laptop and desktop computing connections in 2010 [2], and over 1.2 billion mobile Apps are now available in the iTunes Store (for example). Over 89% of the world's population now own a mobile phone, whereas less than 15% have access to an Internet connected desktop or laptop computer [3]. This has issued in the era of post Web 2.0 defined by mobile social media [4,5]. However, higher education is still dominated by a Web 1.0 pedagogical paradigm that is characterised by teacher-delivered content, usually within the password-protected confines of an institutionally-hosted Learning Management System (LMS), leading to what Herrington, Reeves and Oliver [6] describe as 'digital myopia'. The situation is perpetuated by a lack of examples of theoretically informed transferable frameworks for implementing mobile social media in education [7–9].

1.1. Mobile Social Media

The rise of mobile social media provides a powerful tool for enabling learner-generated content and collaboration. In defining mobile social media we are interested in leveraging the affordances of student-owned mobile devices (such as smartphones, and wireless handheld computers such as the iPod touch and the iPad) alongside the collaborative and user-generated content affordances of social media. We have previously argued that mobile social media provides unique opportunities for new and emerging pedagogies [10–12]. Kearney, Schuck, Burden and Aubusson [13] proposed a useful pedagogical framework for mobile learning based around authenticity, collaboration, and personalisation. However while they focused upon the affordances of mobile devices they fail to address the critical issues of the disruptive nature of mobile, pedagogical design, and integrating mobile learning within formal learning environments. For example: Sharples, Milrad, Arnedillo-Sanchez and Vavoula [14] argue that mobile devices disrupt the traditional power relationships in todays classrooms by empowering learners, Herrington, Herrington, Mantei, Olney and Ferry [15] identify nine design principles for mobile learning, and Laurillard [16] argues for the critical role of educators in designing and integrating mobile learning experiences for students.

1.2. Reconceptualising Pedagogy

Kukulska-Hulme [17] describes mlearning as a catalyst for pedagogical change. However, pedagogical change must be an explicit element of curriculum design or else we perpetuate the no significant difference phenomenon inherent in comparative technology enhanced learning research [18]. While we acknowledge that there are many theoretical foundations upon which education can be predicated, we have chosen social constructivism as a theoretical foundation as we believe that this mirrors the development of the types of skills that todays higher education graduates need. We believe that a key role of higher education is to empower graduates to be creative life-long learners with a wide range of digital literacies enabling them to become active members of global professional communities. To achieve this requires a reconception of pedagogy around how mobile social media pedagogical frameworks can harness the concepts of social constructivist learning theories. We have found the concept of the Pedagogy-Andragogy-Heutagogy (PAH) continuum [19] useful as a measure of pedagogical change from the delivery of teacher-directed content to a refocus upon enabling authentic student-determined collaborative learning (heutagogy). Luckin *et al*., outline the concept of

the PAH continuum in Table 1. Luckin *et al.*, argue that heutagogy need not be solely the domain of doctoral research, but can be applied to any level of learning.

Table 1. The Pedagogy-Andragogy-Heutagogy (PAH) continuum ([19], p. 78).

	Pedagogy	**Andragogy**	**Heutagogy**
Locus of Control	Teacher	Learner	Learner
Education Sector	Schools	Adult education	Doctoral research
Cognition Level	Cognitive	Meta-cognitive	Epistemic
Knowledge production	Subject understanding	Process negotiation	Context shaping

Luckin *et al.*, present the PAH continuum as a reconceptualization of the level of influence that the teacher plays in the context of education. However, we see the input and facilitation of the lecturer as a critical success factor in implementing mobile social media technologies, and would agree with Laurillard's position that states "M-learning, being the digital support of adaptive, investigative, communicative, collaborative, and productive learning activities in remote locations, proposes a wide variety of environments in which the teacher can operate" ([16], p. 172). Thus we view the input from the lecturer within all three stages of the PAH continuum as critical, however, the role of the lecturer is significantly changed. The concept of heutagogy (student-determined learning) resonates with the graduate capabilities that we value—such as creativity, critical thinking, and the ability to work successfully either in teams or independently as needed [20]. The PAH continuum maps onto the three levels of creativity defined by Sternberg, Kaufman and Pretz [21]: reproduction, incrementation, reinitiation.

Reconceptualising pedagogy requires new curriculum design strategies, and Laurillard [22] calls for curriculum design to become a collaborative process: "The basic argument is that a 21st century education system needs teachers who work collaboratively to design effective and innovative teaching, and digital technologies are the key to making that work" ([22], p. 1). Balsamo [23] also argues that education needs a paradigm shift "from a paradigm of 'teaching' to one of 'learning'" ([23], p. 134) utilizing innovative technologies. Bruns [24] argues that social media enables a pedagogical refocus upon student-generated content. These ideas resonated with our experiences and led us to approach curriculum design as a collaborative process with the goal of enabling student-determined learning within authentic experiences enabled by mobile social media [25]. We argue that in a world increasingly dominated by mobile connectivity mobile social media provide the tools for this pedagogical reconception. This refocus can be viewed as part of a continuum of pedagogical change enabled by new and emerging technologies, and the emergence of mobile social media in particular, illustrated in Table 2.

While the three stages of the post web 2.0 continuum are not mutually exclusive, they do represent a progression in a reconception of pedagogy from teacher-directed to student-determined [26,27]. This pedagogical reconception is fundamentally philosophically driven rather than technological determinism—it is enabled and mediated by the emergence of new technologies that earlier social constructivist thinkers such as Dewey and Vygotsky could only dream of.

Table 2. Post Web 2.0 Continuum.

1995	2005	2013
• Web 1.0	• Web 2.0	• Mobile
• Teacher	• Student	• Collaboration
• LMS	• ePortfolio	• Connectivism
• Content delivery	• Student-generated Content	• Student-generated Contexts
• PowerPoint	• Slideshare	• Mobile Social Media
• Pedagogy	• Andragogy	• Heutagogy
	• Social learning	• Creativity
	• Building learning communities	• Active participation in professional communities

1.3. Communities of Practice

We have found that scaffolding conceptual shifts in the role of lecturers and students for pedagogical change can be achieved by the sustained engagement of a community of practice of lecturers who support one another as they investigate the potential of mobile social media within the context of their curriculum [28]. Communities of practice is a social learning theory proposed by Lave and Wenger [29], and further developed by Wenger [30] who has continued to explore the way social media can nurture and enable COPs [31]. Key concepts in COP theory include: the domain of interest or the 'glue' that holds the COP together. In our case, this is a shared interest in the potential of mobile social media to enable transformation in education. Legitimate peripheral participation: or the drawing in of peripheral participants of the COP into becoming active members over time. The production of boundary objects as an outcome of the reified activity of COPs that can be used to broker the activity of the COP into other contexts. In our case, this is the social media stream produced by both students and lecturers. And technology stewardship—the role under taken by a member of the COP who guides the appropriate choice of technologies to facilitate communication and collaboration. The use of communities of practice to support teacher professional development has been widely explored [32–34] and been used within the context of mobile learning [35].

2. A Mobile Social Media Framework

Drawing on our experience of designing and implementing over 45 mobile social media projects has led to the development of a mobile social media framework for creative pedagogies that we believe can be used within a variety of educational contexts. This framework has three key elements including: supporting pedagogical reconception by the establishment of communities of practice, appropriate curriculum redesign, and the development of a supporting technology infrastructure that enables the use of mobile social media within a framework of new pedagogies. The framework development was founded upon six critical success factors (CSF) for mobile social media integration in education [28]:

1. The pedagogical integration of the technology into the course and assessment.
2. Lecturer modeling of the pedagogical use of the tools.
3. Creating a supportive learning community.
4. Appropriate choice of mobile devices and web 2.0 social software.
5. Technological and pedagogical support.

6. Creating sustained interaction that facilitates the development of ontological shifts, both for the lecturers and the students.

Applying these critical success factors to the concept of the PAH continuum within the context of our mobile social media projects has led to the development of a framework for mobile social media integration within design education, which was used to inform the development of a new media minor —a set of four elective courses across the three years of the Bachelor of Visual Communication degree. Our mobile social media framework is essentially a mashup of concepts that we have found particularly useful to support the introduction of creative pedagogies via mobile social media. These include: the concept of the Pedagogy-Andragogy-Heutagogy (PAH) continuum [19], and Puentedura's [36] SAMR model (Substitution, Augmentation, Modification, Redefinition) of educational technology transformation. Both of these pedagogical frameworks resonate with Sternberg, Kaufman and Pretz [21] view of creativity involving incrementation (or modification of a current idea) followed by reinitiation (or redefinition). Using this framework we have designed and integrated the types of activities and pedagogies that support creativity and move beyond substitution towards redefinition, and move from teacher-directed pedagogy towards student-determined heutagogy.

We outline a generic version of this mobile social media framework in Table 3 and discuss how this framework was applied to the development of the new media minor in Section 3, and then discuss how this framework can be applied to other learning contexts beyond Visual Communications in Section 4.

Table 3. A framework for using mobile social media to enable a move towards heutagogy (modified from [19]).

	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	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

<div align="center">**Table 3.** *Cont.*</div>

	Pedagogy	**Andragogy**	**Heutagogy**
Locus of Control	Teacher	Learner	Learner
SAMR [36]	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
Critical success factors	CSF 1, 2, 3	CSF 4, 5	CSF 5, 6
Creativity [21]	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

3. Designing a New Media Minor

In our exploration of mobile social media we utilized a participatory action research methodology [37]. We were interested in institutional change—specifically the application of new pedagogies, and the development of principles to facilitate this change. A mobile community of practice (MOBCOP) was established consisting of six lecturers and the researcher as a technology steward during 2012 [38]. The participants were all lecturers within the Visual Communication department, and each participating lecturer was supplied with an iPhone 4S, and an iPad3 and was allowed to keep these as their own devices. A direct outcome of the MOBCOP experience was the collaborative development of a new media minor for integration within the degree. The minor was modeled on our developing concept of a mobile social media framework for enabling creative pedagogies, and consists of four courses across three years of the bachelor of Visual Communication programme designed to scaffold a move from teacher-directed pedagogy to student-determined authentic experiences. This new minor explores the potential of twenty-first century mobile social media with a focus upon understanding the way mobile social media platforms reconceptualise the practical processes of storytelling, teamwork, adaptability, collaboration, user content creation, critical thinking, networking and delivery into an evolving and changing technological future. The minor aims to critically explore examples of the impact of mobile social media on Visual Communications, providing students with an authentic experience and participation within an international community of practice of leading researchers and practitioners of mobile social media from select higher education institutions around the globe,

including: the UK, France, Spain, Germany, and New Zealand. The goal of the minor is to facilitate a unique learning experience similar to the MOBCOP experience that enables pedagogical change involving conceptual shifts for both the lecturers and students involved. These conceptual shifts require the participants to recategorise their understanding of both teaching and learning. These ontological shifts are scaffolded (or supported) by following a three-stage implementation, following a progression along the PAH continuum [19] from teacher-directed pedagogy (P) to student-centred Andragogy (A) to student-determined heutagogy (H). Beginning in the first year of the degree by introducing the adoption of mobile social ePortfolio for establishing student-generated content, and building upon this in the subsequent two years of the degree as shown in Table 4, so that by the third year of their degree the students and lecturers are enabled to implement student-negotiated team projects around student-generated contexts (heutagogy). This will develop graduates of the course with the critical 21st Century skills of knowledge critique, collaboration, and creativity.

Table 4. Developing a new media minor based upon our mobile social media framework.

Paper	Year	Credit and Level	Cognition level	Assessment activities	Conceptual shift	PAH alignment
Paper 1: Introduction to mobile social media	1	15 Level 5	Cognitive	Personal digital identity building and student-generated content	Teacher modeled	Pedagogy
Paper 2: Mobile social media collaboration	2	15 Level 6	Meta Cognitive	Collaborate in a team-based project as content creators	Teacher guided	Andragogy
Paper 3: Contextual affordances of mobile social media	2	15 Level 6	Epistemic	Establishment of an international team project	Student negotiated	Andragogy to heutagogy
Paper 4: International community of practice	3	15 Level 7	Epistemic	Active participation within a global professional community	Student directed	Heutagogy

Our mobile social media framework was used to guide the development of the new media minor. This involved a collaborative process between three of the MOBCOP members, using Google Docs to synchronously and asynchronously brainstorm, justify, and critique course goals, pedagogical strategies, and assessment activities. Much of this was based upon the participants own mobile social media experiences throughout the MOBCOP, and informed by the researcher's mobile learning research literature review [39]. The resultant four courses are outlined in Table 4 as aligned with the mobile social media framework.

The following sections outline the new media minor as based upon our mobile social media framework for creative pedagogies, designed to move students and teaching strategies along the PAH continuum and establish students as active participants within authentic communities of practice throughout the length of the course.

3.1. Paper 1: Introduction to Mobile Social Media

Paper one provides an introduction to the fundamental concepts, critical contexts and processes that underpin the first year of the course by extending the adoption of mobile social ePortfolios to establishing student-generated content. In this course students explore the unique affordances of mobile social media and create ePortfolios that will become the foundation of their learning journey throughout the three years of the minor. The course is based around social collaboration with student peers and lecturers, with a focus upon developing student-generated content. This involves the establishment of student-generated ePortfolios using student-owned mobile devices, and a collation of mobile social media tools (such as *Flickr*, *Vine*, *Vimeo*, *YouTube*) using a social media hub such as *Behance* or *Wordpress,* and establishing a learning community using asynchronous tools such as Twitter and Google Plus. An indicative assessment plan is shown in Table 5.

Table 5. Introduction to mobile social media assessment plan.

Assessment Event	Weighting %	PAH Alignment
1. Students create and personalize the following accounts: G+, Google Hangouts, Google Drive, YouTube & Vimeo, Twitter & Storify, Bambuser, Wordpress (blog)	25%	Pedagogy—teacher-directed use of mobile social media
2. Online presentation (2 minutes maximum) of the use of a chosen smartphone technology	25%	Andragogy
3. Brand Yourself "Who are you?" This project aims to create a form of design, which expresses and promotes students themselves in a 9 second long mobile video, utilizing tools such as Vine or Vimeo, and embedding this within their social media profiles on sites such as Behance, Wordpress, and Tumblr.	50%	Andragogy

3.2. Paper 2: Mobile Social Media Collaboration

This course covers a critical exploration of contemporary mobile social media as a foundation for building student collaborative video projects. In this course students' build upon their mobile social media portfolios established in the year 1 paper to become mobile social media content creators, collaborators and critics. This learning experience is achieved through the development of student focused projects within national collaborative projects throughout New Zealand, incorporating teams based at AUT, Unitec, Massey University, and other potential national partners. The course focuses upon social collaboration with student peers and 'authentic environments' enabled by establishing the unique communication and collaboration affordances of student-owned mobile devices. The course also aims to develop student mobile social media curation and critique via tools such as *Scoopit* and *Storify*. An indicative assessment plan is shown in Table 6.

Table 6. Mobile social media collaboration assessment plan.

Assessment Event	Weighting %	PAH Alignment
1. Students create an online group and use msm to record a group session as well as personal reflective statement (shared via *YouTube*)	20%	Andragogy
2. Students set up a mobile media streaming strategy (for example utilizing: *Bambuser*, *G + Hangout*, *GDrive*, *Vimeo*, *Vyclone*)	20%	Andragogy
3. Students participate in a national team project. • Present an appropriate digital report (*Blog, Storify, Evernote*) about a story (student led) • Present an online summary to the Online group (mini video conference) • Film, edit and upload online 2 minutes video (*Vimeo*) and video progress report	60%	Towards heutagogy — students negotiate the project detail

3.3. Paper 3: Contextual Affordances of Mobile Social Media

This advanced educational opportunity provides for students the investigation of the contextual affordances of mobile social media. In this paper, students build upon their mobile social media national project established in the year 2 paper 1. Through practical application to a series of projects and media, international collaboration, critical and analytical skills are enhanced in a social media context. This is achieved via the development of team-based projects within international collaborative context throughout New Zealand, and international partners. The student projects are expected to explore the geolocative and contextual affordances of mobile social media by creating and sharing collaborative interactive Google Maps (for example). An indicative assessment plan is shown in Table 7.

Table 7. Contextual affordances of mobile social media assessment plan.

Assessment Event	Weighting %	PAH Alignment
1. Students set up an Online video portfolio and present it in a live recorded online session (*Vimeo, Youtube, Bambuser*)	20%	Andragogy
2. To incorporate constructive criticism into subsequent online presentation of work, using curation tools such as *ScoopIt* and *Storify*, adding a systematic critique, and creating a shared reference library via *Mendeley*. To develop unique content for a mobile augmented reality browser such as *Wikitude* and an interactive *Google Map*.	30%	Andragogy
3. To create a few specific location based videos in collaboration with international peers, to promote them via mobile social media and live reporting (*G+ Hangout* on *Air*, *Bambuser*, *Vyclone*, *Twitter*) to the group about the methods and tools engaged.	50%	Towards heutagogy—student negotiate project detail and select team peers

3.4. Paper 4: International Community of Practice

This course invites students to become participants within an authentic international community of practice of experts in the field of mobile social media. Research, analytical, critical and creative capabilities are developed and refined within the context of a student-generated project. Critical frameworks, collaborations, teamwork, and intercultural competencies are explored to situate the project within relevant theoretical and professional contexts. Issues of mobile social media are examined within an international community of practice. Presentation skills are developed to position the research outputs from the project in the setting of a body of work, and project timeline and critical dates are negotiated between students and lecturers. Thus in this third year course we invite a student representative from each student team to become collaborators and active negotiators of project outcomes (Heutagogy) alongside the course lecturers. Graduates of this course will be prepared to become active members of collaborative mobile social media production teams, both nationally and internationally. An indicative assessment plan is shown in Table 8.

Table 8. International community of practice assessment plan.

Assessment Event	Weighting %	PAH Alignment
1. Summarise various and relevant existing projects across a range of mobile social media and explain the selection criteria appropriately in relation to the student's own negotiated project proposal. Students use a range of msm tools to present this background review.	25%	Heutagogy—students negotiate the parameters of a literature review and critique
2. Set up an international team and identify the purpose and the plan of a specific project using a range of mobile social media strategies (*Blog, Evernote, Google Drive, G+ Hangout*)	25%	Heutagogy—students establish an international COP and develop an msm project
3. Online publication of the final team project, including peer critical analysis and articulation of a range of mobile social media approaches (Using an msm curation and publication platform such as *Storify, Scoopit, G+*)	50%	Heutagogy—students negotiate the publication of their COP project results

4. Discussion

The four papers of the new media minor scaffold a shift from teacher-directed pedagogy in the first year of the degree, to student-determined authentic collaborative projects (heutagogy) in the third and final year of their Bachelor of Visual Communication degree. Thus the new media minor will serve as a vehicle for pedagogical change within the curriculum, facilitating conceptual shifts for students as they move from largely passive recipients of knowledge to active participants within a student-directed learning community. The role of the lecturer is also reconceptualised over the length of the new media minor, from an initial focus upon teacher-directed pedagogy towards a refocus upon student-determined heutagogy. However, the role of the lecturer is critical in designing authentic learning experiences and actively modeling collaboration and critique of mobile social media, bridging the formal and informal learning experiences of their students [15,16]. Mobile social media is used as a catalyst for these conceptual shifts within the curriculum. In this section we discuss the impact of the

three key elements of our framework on the design of the new media minor, including: supporting pedagogical reconception by the establishment of communities of practice, appropriate curriculum redesign, and the development of a supporting technology infrastructure that enables the use of mobile social media within a framework of new pedagogies.

4.1. Modeling Communities of Practice

While students are prolific users of mobile social media their level of engagement is generally at a purely social level rather than in the context of education or the establishment of critical communities of practice [40–42]. Thus we have found that it is critical that lecturers model the educational use of mobile social media, and the use of these tools to support the development of communities of practice integrated into the curriculum [28]. In this approach a group of multi-disciplinary lecturers form the core of a community of practice around a course and broker participation in this COP to the course students, who move from peripheral participation into full participation as active members of a creative learning community. As this progression occurs, the locus of control of the course shifts from teacher-directed pedagogy to student determined heutagogy. We have attempted to explicitly build this process into the design of the new media minor.

4.2. Curriculum Redesign

The goal of this new minor is to transform students into creative professionals, by focusing upon ontological pedagogies [20] that deal with the process of becoming, rather than pedagogies that focus upon knowledge transfer. Thus the new minor focuses upon extending students' experience and expertise beyond the formal requirements of the course to give them a real world collaborative experience via mobile social media such as Twitter, live streaming via Bambuser, ePortfolio, such as Behance, and the use of mobile devices to present in class reports and participate in live critique via screen mirroring of their mobile devices. The final paper of the new media minor features students creating and actively participating in a global team project, giving them an authentic experience of working in a professional community of practice within their discipline. The descriptor of this final course within the minor positions itself firmly within a heutagogical paradigm:

> Research, analytical, critical and creative capabilities are developed and refined in this student-generated project. Critical frameworks, collaborations, teamwork, intercultural competencies are explored to situate the students chosen area of research in relevant theoretical and professional contexts. Issues of mobile social media are examined within an international community of practice. Presentation skills are developed to position the research outputs in the setting of a body of work and project timeline and critical dates are negotiated between students and lecturers.

Table 9 shows a comparison of the change in curriculum activities and assessments in the new minor compared to other current papers in the Department.

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, with a focus upon drawing students into active participation within

global learning communities that will hopefully become the basis of life-long professional communities for them to build upon.

Table 9. Mobile social media in the Visual Communication curriculum.

	Pedagogy	**Andragogy**	**Heutagogy**
Activity Types	Teacher defined projects: course requirements, Project scope	Teacher as guide	Teacher modeling use of mobile social media within collaborative curriculum redesign team
	Teacher delivered examples	Digital identity: Behance ePortfolio	
	Assignments submitted via institutional Learning Management System (LMS)	Student-generated content: mobile film production	Student-generated contexts: live streaming of events
		Student negotiated teams in collaborative projects	Active participation in global teams
Creativity	Reproduction	Incrementation	Reinitiation

4.3. Developing a Supporting Technology Infrastructure

Key to enabling the unique affordances of mobile devices is establishing a robust wireless connectivity infrastructure. The types of activities designed within the new media minor are predicated upon mobile connectivity and this required the roll-out of increased WiFi coverage across the teaching and learning spaces that the new media minor will utilize in order to enable wireless connectivity for the participants to teach and interact wirelessly with the presentation systems within these environments, and also to enable their students to connect, collaborate, and interact via their own mobile devices. Thus the researcher worked closely with the University's Information Technology (IT) services to design a WiFi and classroom connectivity solution for enabling wireless screen mirroring from mobile devices. A second AUT-Test WiFi network was established to test the impact of enabling Airplay screen mirroring and wireless streaming media from mobile devices to classroom projection systems. Wireless connectivity to video projectors was achieved via either the installation of AppleTVs in classrooms, or the installation of the Airserver App on lecturers' laptop computers that could then be connected via VGA or HDMI to classroom audio/video (AV) systems. This enabled the flexibility to present and interact from anywhere in these spaces, rather than the lecturer having to stand at the front of a classroom and present from a fixed desktop or laptop computer. This also enabled students to connect and share their work wirelessly from anywhere within these spaces as well. Wireless screen mirroring also enables lecturers to think differently about content-delivery and interaction processes—whereas they previously tended to default to PowerPoint slide presentations, with mobile wireless screen mirror they can show and interact with any application live in real-time.

Secondly, building upon the work done around the development of mobile collaborative workstations by Mitchel, White and Pospisil [43] at Queensland University of Technology (QUT), we developed MObile Airplay screens (MOAs). Whereas Mitchel *et al.* created mobile Computers On Wheels (COWS) for flexible student collaboration workstation and presentation systems, we created wireless presentation systems with no attached dedicated computer. Rather students can mirror the screen of their mobile device (iPhone, iPad, Android, or Windows mobile device) to the MOAs that require only an Airplay enabled WiFi network and power to create a moveable collaborative workstation and presentation system. This turns a student-owned mobile device from a personal small

screen productivity tool into a group collaboration tool. The goal of the MOAs is that students can work in several groups in a single learning space, creating their own flexible collaborative learning environment, rather than focusing upon the large presentation mode that classroom projection systems tend to perpetuate. The first prototype MOA is shown in Figure 1.
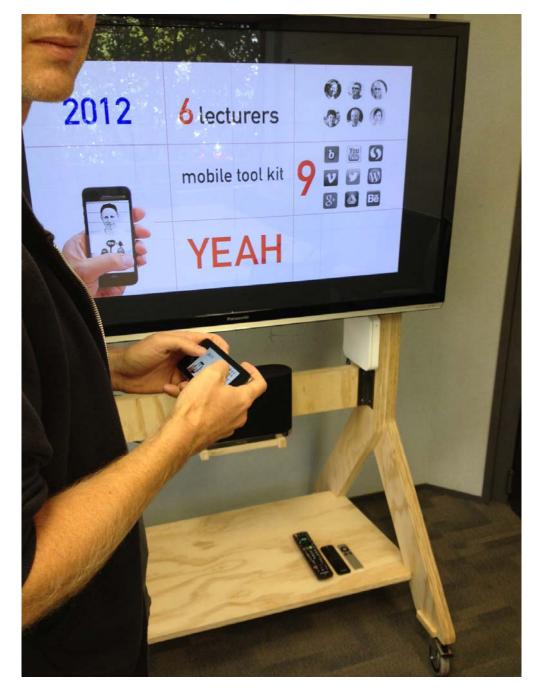
Figure 1. Mobile Airplay Screen (MOAs) prototype.

The MOA design went through several iterations throughout 2013 and led to the development of a "flock" of MOAs (Figure 2) that were deployed in several departments within the University where similar mobile social media COPs were established in 2013 [44].

Figure 2. A flock of MOAs.

4.4. Transferability of the Framework

While the context of the MOBCOP experience and research has been Visual Communication, the application of our mobile social media framework is not limited to this one context. We have applied iterative versions of this framework within a variety of contexts, including: Product Design [12], Journalism [45], and an international collaboration comprised of five different courses in five countries, Ireland, UK, Spain, Germany, New Zealand [46]. While the conceptual framework is based upon a mashup of several simple associated frameworks (including the SAMR framework for educational technology adoption, the PAH continuum, and three levels of creativity) the implementation of the framework is embedded within a supportive community of practice. This implies a familiarity with the concepts of COPs and nurturing COPs. This represents a significantly different role for most lecturers whose prior teaching experience has been focused upon delivery of lectures rather than building learning communities. As we explore the transferability of the framework beyond the direct influence of the authors/researchers we have found this to be a significant factor in reconceptualising teaching and learning as active participation and facilitation of learning communities.

4.5. Future Research

Future aims of our research include comparative analysis and critique of the implementation of our mobile social media framework within varied educational contexts. To this end, we have established

communities of practice in a variety of new contexts to explore the transferability of the mobile social media framework. The participants are drawn from a range of higher education contexts including:

- Paramedicine
- Game development
- Performance for camera
- Occupational Therapy

Each of the participating lecturers is exploring ways of designing and integrating mobile social media into their own curriculum contexts.

5. Conclusions

We have used the development of a new media minor course as a model of implementing a mobile social media framework for creative pedagogies. It is the authors' hope that this will be useful for other interested lecturers to guide the potential redesign of their own courses, utilizing mobile social media as a catalyst for a pedagogical shift from traditional teacher-directed pedagogy towards student-determined heutagogy. We have identified three key elements in implementing our framework: supporting pedagogical reconception by the establishment of communities of practice, appropriate curriculum redesign, and the development of a supporting technology infrastructure that enables the use of mobile social media within a framework of new pedagogies. We believe that twenty first century education needs to engage with new pedagogies that can leverage the growing ubiquity of student-owned mobile devices within a wide variety of educational contexts. To this end, we are exploring the transferability of a relatively simple and pragmatic framework for creative pedagogies within a range of higher education contexts beyond the creative arts and design domains.

Acknowledgements

Abbreviations

PAH: Pedagogy-Andragogy-Heutagogy;
COP: Community of Practice;
mlearning: Mobile Learning;
MSM: Mobile Social Media.

Author Contributions

Thomas Cochrane was the primary mlearning researcher and editor of the paper, collaborating as an academic advisor alongside Laurent Antonczak who is the Visual Communications lecturer. Together they have developed the new Mobile Social Media minor for the programme based upon their shared experiences, and have collaborated on several mlearning research publications since 2012.

Conflicts of Interest

The authors declare no conflict of interest.

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