# The Challenges of Blended Learning Using a Media Annotation Tool

Kathy A. Douglas
*Royal Melbourne Institute of Technology*, Kathy.douglas@rmit.edu.au

Josephine Lang
*Deakin University*, josephine.lang@deakin.edu.au

Meg Colasante
*Royal Melbourne Institute of Technology*, meg.colasante@rmit.edu.au

# The Challenges of Blended Learning Using a Media Annotation Tool

## Abstract

Blended learning has been evolving as an important approach to learning and teaching in tertiary education. This approach incorporates learning in both online and face-to-face modes and promotes deep learning by incorporating the best of both approaches. An innovation in blended learning is the use of an online media annotation tool (MAT) in combination with face-to-face classes. This tool allows students to annotate their own or teacher-uploaded video adding to their understanding of professional skills in various disciplines in tertiary education. Examination of MAT occurred in 2011 and included nine cohorts of students using the tool. This article canvasses selected data relating to MAT including insights into the use of blended learning focussing on the challenges of combining face-to-face and online learning using a relatively new online tool.

## Keywords

# The Challenges of Blended Learning Using a Media Annotation Tool

Kathy A. Douglas Dr
*Royal Melbourne Institute of Technology*, Kathy.douglas@rmit.edu.au

Josephine Lang Dr
*Deakin University*, josephine.lang@deakin.edu.au

Meg Colasante Ms
*Royal Melbourne Institute of Technology*, meg.colasante@rmit.edu.au

## The Challenges of Blended Learning Using a Media Annotation Tool

### Abstract

Blended learning has been evolving as an important approach to learning and teaching in tertiary education. This approach incorporates learning in both online and face-to-face modes and promotes deep learning by incorporating the best of both approaches. An innovation in blended learning is the use of an online media annotation tool (MAT) in combination with face-to-face classes. This tool allows students to annotate their own or teacher-uploaded video adding to their understanding of professional skills in various disciplines in tertiary education. Examination of MAT occurred in 2011 and included nine cohorts of students using the tool. This article canvasses selected data relating to MAT including insights into the use of blended learning focussing on the challenges of combining face-to-face and online learning using a relatively new online tool.

### Keywords

blended learning, video based learning, curriculum design, pedagogical approaches

---

**THE CHALLENGES OF BLENDED LEARNING USING A MEDIA ANNOTATION TOOL**

## Introduction

The use of blended learning – the use of both face-to-face and online learning modes (Moore 2006) – is growing in tertiary education (Johnson, Adams & Cummins 2012); this growth has been aided by the variety of online tools available (Herrington, Reeves & Oliver 2010). Good practice in blended learning combines the best attributes from both environments, establishes an interdependency between them that layers the learning content and provides teacher presence in both online and face-to-face environments (Glazer 2012). This article explores the ways that blended learning has been adopted using an online tool, the media-annotation tool (MAT). This tool provides students with the opportunity to annotate media; this allows them to engage actively with learning artefacts represented in various forms, such as instructional videos or student-generated media. Video has been recognised for its benefits in presenting learning content in audiovisual format to students despite some concerns about passive learning and/or access issues prior to the evolution of digital-technology platforms (e.g., Littlejohn & Pegler 2007; Laurillard 2002). These benefits are related to the "multimedia principle" (Mayer 1999), where research has demonstrated that "people learn better from words with pictures than from words alone" (Fletcher & Tobias 2005, p. 117). Video is an example of such integration. MAT allows for comments and/or threaded conversations to be attached directly to various selected pieces of the artefact under discussion (e.g., stages in a video). The tool has been used in a variety of contexts in an Australian university, supported by a 2011 learning and teaching investment grant that funded the examination of integrating MAT across multiple case scenarios.

This article provides detail of the ways this technology was used in a blended-learning design to illustrate the potential of MAT across diverse disciplines. It analyses selected data, including student pre- and post-survey responses plus student and teacher interviews, that relate to the use of MAT as a blended-learning approach. It is important for the literature relating to blended learning to capture case studies of this approach in learning and teaching. Other teachers in tertiary education may learn from the MAT experience as a blended-learning innovation. The aim is to provide "lessons learned" for those contemplating adopting a blended-learning approach. The article does not aim to provide the "best" model of using MAT in a blended format, but rather to discuss and explore emergent themes relating to student and teacher views on combining technology with face-to-face learning, and ways that the experience might be improved to foster "deep" learning in students (Ramsden 2003; Biggs & Tang 2007).

## Media Annotation Tool (MAT)

RMIT University's media annotation tool (MAT) is an interactive and innovative tool that allows students to engage with media, primarily video. Video as learning content – whether teacher-selected or student-generated – is uploaded for use. MAT goes beyond the basic online video functionality of viewing/control options with or without adding general commentary, to allow students to add text entries directly to specific sections of a video. Text entries form "markers" that are created individually or collaboratively and named and categorised by the creator(s), and which stay anchored to the selected video segments. Collaboration can be further built via options for structured threaded discussion, hence allowing peers, teachers or even external/industry experts to add to the analysis of the video or to provide students with direct feedback. Due to restrictions of space, refer to Colasante (2011) for a detailed description of MAT's functionality.

This tool was used by a variety of cohorts in 2011. In video-focused learning and teaching approaches to integrating theory and practice, videos were used in a variety of ways across the cases. For example, one application of MAT was teaching communication skills in the juris doctor program. Detail of this example of the adoption of MAT in the context of legal education is provided below.

### Example of the Use of MAT in a Course

The postgraduate juris doctor students used MAT to help them develop communication skills in advocacy that are required by new standards in legal education as part of the Australian Quality Framework (Kift, Israel & Field 2010). This was achieved through students annotating a professionally produced video of a moot, or simulated court presentation. The aim was to scaffold learning in three areas: the knowledge, skills and ethics of advocacy, including persuasive argument and court etiquette. Later, students used the understandings scaffolded by MAT to engage in face-to-face role-plays as advocates in a simulation played out in a court. Figure 1 illustrates interaction with the moot-court video.

"Marker types", usually generated by the teacher, are used as "filters" to identify themes in the media and help students use a categorising framework (textual and colour signposting) to analyse the video, and later to review by theme. Examples of filters set by the juris doctor teachers ( top of right-hand column in Figure 1) include introduction, persuasive argument and court etiquette. "Markers" are in turn generated by students, and represent their analysis of the video, clustered into the themes identified by filters. In Figure 1, students created a marker for "stand up when the Judge enters the room" as an illustration of the "court etiquette" filter; both the marker and filter were colour-coded green, which made it easy to see the link. This interaction between filters, markers and video is evident by the number of markers across the video timeline (underneath the video image in Figure 1), which are also represented by the marker list (lower right-hand side in Figure 1). The students worked in small groups, both online and face-to-face, the latter of which involved collaboratively analysing the content and creating markers under one member's login. Industry experts participated in two aspects of the pedagogical strategy: role-play in the video (both co-scripting and acting), and feedback to students by re-purposing the "Teacher Feedback" discussion-thread panel (Figure 1).
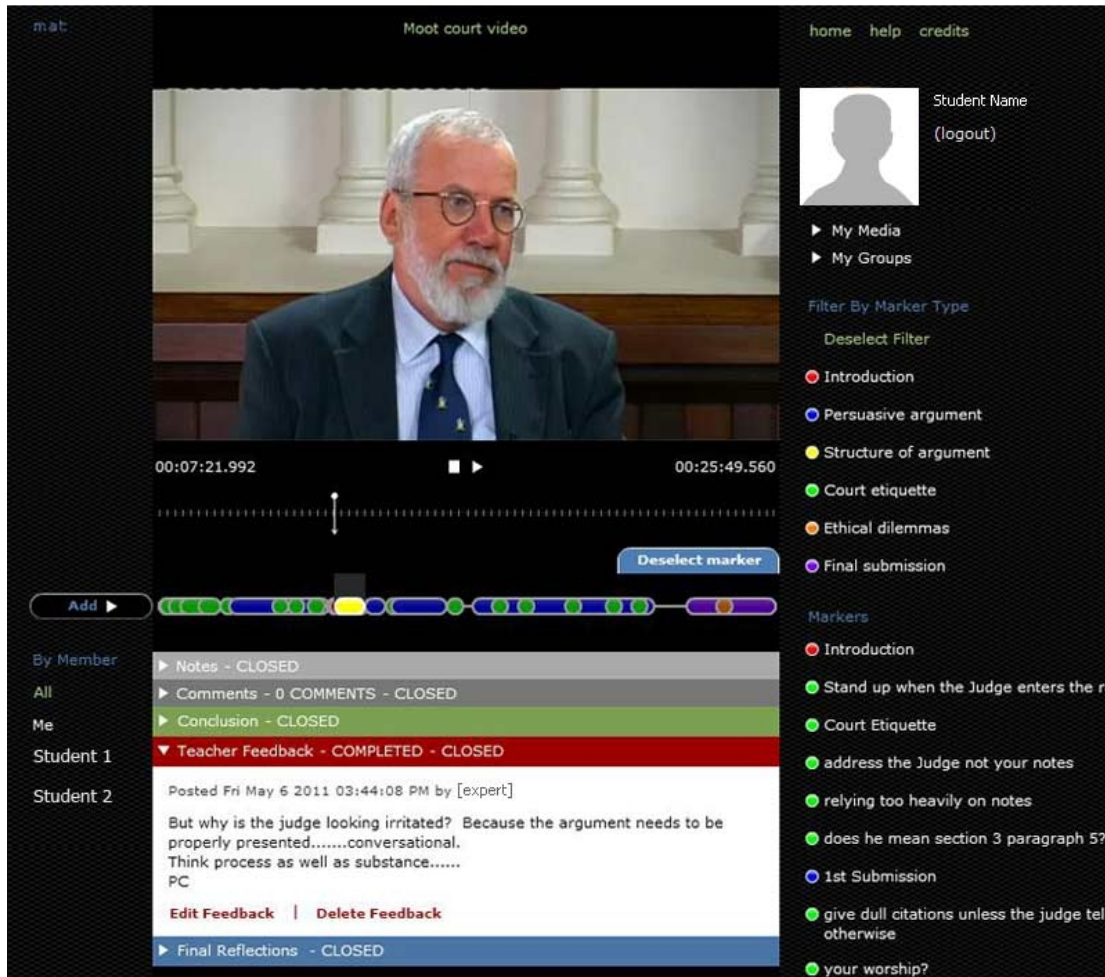
**Figure 1: MAT as used by juris doctor students (de-identified)**

### Blended Learning and MAT

Blended learning is an approach to curriculum design that uses more than one learning mode in a subject. This article will follow one of the more commonly accepted definitions, which refers to a blend of both face-to-face and online learning modes (e.g., Moore 2006; Conole & Fill 2005; Garrison & Vaughan 2008). The aim of blended learning is to combine the face-to-face and online learning environments to improve learning outcomes for students, facilitate "deep" learning (Graham 2006) and develop a community of inquiry (Garrison & Vaughan 2008). It is argued that the higher-education experience should be a community of inquiry whereby students are encouraged to connect and collaborate. The construction of community is important in tertiary education, as learning is social by nature and it is through discourse that knowledge is generated and learning takes place (Garrison & Vaughan 2008; see also Biggs & Tang 2007). Blended learning contributes to a community of inquiry, as the online mode offers more flexibility than scheduled face-to-face classes (Garrison & Vaughan 2008), and can render learning more

appealing when groups build an online learning community (Glazer 2012). Such an approach requires the teacher to be a facilitator of knowledge in the two modalities (George-Walker & Keefe 2010; Herrington et al 2010).

Blended learning has been used in a variety of learning contexts including education (e.g., the 2012 report published by the Ultranet and Digital Learning Branch) and law (e.g., McCall 2010). Garrison and Vaughan (2008) argue that blended learning is not merely an enhancement of the existing face-to-face approach; it also focuses on the community-of-inquiry framework. Transformational applications of blended learning should mean that teachers adopt a completely new approach to designing curriculum and pedagogy (Graham & Dziuban 2008). Although blended learning might superficially appear straightforward, it takes a careful approach to learning and teaching design to achieve the optimum outcomes (Moore 2006). One of the benefits of blended learning may lie in the variation that it provides to students in engaging with differing learning mediums; this variation may assist with construction of knowledge and understanding differing perspectives (Oliver & Trigwell 2005). Glazer (2012) sharpens the argument by introducing the concept of "layering" of the content by an "interdependence between online and face-to-face" learning. Such layering can be achieved through the following conditions:

- students see the need to attend to what is occurring in both the classroom and online environments
- activities extend from online to face-to-face and back again
- participation is required in both online and classroom settings
- student work is submitted in both settings
- the instructor is visible in both settings; e.g., provides feedback on student performance, moderates discussions (adapted from Glazer 2012, p. 5).

In the context of MAT, blended learning has been used in both the pilot and wider dissemination of the tool to enhance students' work-related skills using a "layered approach". For example, MAT was piloted to enhance students' teaching skills in the physical education (PE) teaching program, where the blend included face-to-face learning (both on-campus classes and workplace practice) and online small-group reflection and critical evaluation (of their videoed practice) (Colasante 2011). Work in each mode was intertwined, as during workplace practice the PE students video-recorded two samples of their teaching across an academic semester for critical analysis. Online, they asynchronously used MAT's structured learning cycle of reflection on videoed practice, annotation, discussion (with peers) and feedback (from teacher). The complexity of the online activities provided an additional sub-layering within the online environment, that of "blended elearning" (Littlejohn & Pegler 2007), using "next-generation electronic learning environments…[that allow] students to actively negotiate…develop and upload learning resources, set up online interactions" and more (p. 140). Woodall (2010) acknowledges the complexity of mixing of synchronous and asynchronous learning across the two modes, but cautions against a hasty mix of modes and media; blended learning must establish a balance between student learning advantages and the intended learning outcomes. These online activities for the PE students were further supported by on-campus face-to-face learning (lectures, discussions, practice classes). In addition, by working in small groups in MAT, these students provided peer feedback on each other's teaching strategies – thus developing a community of inquiry where the focus was to critically reflect about what made for effective teaching.

## Methodology

Integration and examination of MAT's use across multiple disciplines was conducted in a project

funded by a 2011 university grant. The project involved teachers and students across disciplines and academic colleges, including postgraduate law; undergraduate programs in education, chiropractic and medical radiations; and vocational programs in property services and audio-visual technology. Most of these cohorts, or cases, included participation from one or more industry professionals in the learning process;  for example, by participating in the video production (e.g., co-scripting, role-play, interview) and/or by providing student feedback in MAT. The methodological framework involved a multiple-case-study approach that employed a range of qualitative and quantitative data-collection methods. Each case used MAT in their respective work-relevant learning contexts. The mixed-methods approach included pre- and post-survey, interactive process interview (explained below) and learning-artefact analysis, which captured student experiences over two semesters. Students and teachers (and industry representatives where possible) were approached to participate in all data-collection methods, except for the surveys, which were administered to students only (refer to Table 1). All participants volunteered to participate in the research project, and University ethics approval was granted to conduct the research.

**Table 1: Research Participation Numbers**

| Cohort | Class size | Pre-survey^ | Post-survey^ | Student IPIs* | Teacher IPIs* | Other IPIs* |
|---|---|---|---|---|---|---|
| **Juris Doctor (law)** | 32 students 3 teachers | 18 (56%) | 2 (6%) | - | 3 | 1 (expert) |
| **Education (literacy)** | 18 students 1 teacher | 15 (83%) | 12 (67%) | 2 | 1 | |
| **Education (visual arts)** | 59 students 1 teacher | 18 (31%) | 13 (22%) | 3 | 1 | |
| **Chiropractic** | 78 students 2 teachers | 39 (50%) | 37 (47%) | 8 | 2 | 1 (teaching assistant) |
| **Medical Radiations** | 57 students 1 teacher | 36 (63%) | 33 (58%) | 1 | 1 | |
| **Property Services (traineeship)** | 20 students 1 teacher | 8 (40%) | 10 (50%) | 2 | | |
| **Property Services (specialised)** | 29 students 1 teacher | 20 (69%) | 9 (31%) | 2 | 1 | |
| **Property Services (diploma)** | 22 students 1 teacher | 13 (59%) | 5 (23%) | 1 | | |
| **Audio-visual Technology** | 39 students 1 teacher | 18 (46%) | 13 (33%) | 1 | 1 | |
| **Total 9 cohorts** | **354 students 10 teachers** | **185 (52%)** | **134 (38%)** | **20 (6%)** | **10 (100%)** | **2** |
| ^ Pre- and post-surveys were administered to students only * IPIs = Interactive process interviews (observation/demonstration followed by semi-structured/interactive interview) | | | | | | |

### *Data-collection Methods*

Participating students from each case were involved in a two-part survey that collected primarily

quantitative data (plus some open responses) before and after MAT use. All of the participating teachers, some students, one industry expert and one teaching assistant were involved in "interactive process interviews" (IPIs) (Table 1). These IPIs were audio-recorded observation-interview sessions that comprised the interviewee first completing tasks or demonstrating and explaining their use of MAT under observation by a research team member, followed by an interview. Although student participation numbers were generally low for the IPIs, they provided insightful reflections on the learning and teaching strategies, and helped contextualise the cases.

**Characteristics of the Project's Nine Cases: Integrating MAT in Curricula**

The diverse cases used a variety of approaches to integrating MAT. Table 2 outlines key characteristics of each case and its use of MAT. Some cases used MAT in the classroom; others used it to have students posting asynchronously outside the classroom.

**Table 2: Characteristics of Each Case Integrating MAT**

| Discipline; number of students and teachers in project | Video content | Blended-learning design | | Assessment incorporating MAT |
|---|---|---|---|---|
| | | Face-to-face | Online in MAT | |
| **Juris Doctor (law)** **32 students** **3 teachers** | Scripted and acted moot court proceedings | Class briefing on MAT; industry rep (the moot master) talk; students view video, work in groups critiquing moot-court proceedings | Students further analyse video, post comments, and collaborate; industry representative posts feedback to students on their analysis | Reflective journal on activities in MAT |
| **Education (literacy)** **18 students** **1 teacher** | Students generate their videos; e.g., book reviews, creating story boards/ storytelling | Modelling how to use MAT and associated technology so students can generate videos; focus on using MAT in storytelling for literacy; the use of MAT was also an editing tool to refine the creation of the story(board) | Students generate videos of creating children's books for storytelling; and use MAT through self and peer feedback to reflect on how storytelling can help develop literacy in primary-school students | Partially assess in one of the assessment tasks to provide evidence of process of creating a book for primary-school students |
| **Education (visual arts)** **59 students** **1 teacher** | Students generate videos to capture their own art processes, public-art experiences, | Modelling how to use the functionalities of MAT within the context of the subject; examples are worked through in class time; there | Students generate and upload several videos to demonstrate visual arts in multiple contexts; students review the videos using MAT to reflect on their professional knowledge | Not linked to assessment strategy |

| | | | | |
|---|---|---|---|---|
| | and the teaching of visual arts in primary schools | are also weekly learning activities using MAT in class | and identity as artists/art teachers | |
| **Chiropractic 78 students 2 teachers** | Scripted and acted chiropractic consultation in two parts | Class briefing on MAT; "headache" lecture series; teacher feedback lecture | Individually analyse video (A), then small-group work to determine short-list diagnoses, receive iterative teacher feedback, individually or collaboratively analyse video (B) to determine working diagnosis and receive targeted teacher feedback | Analysis in MAT forms one assessment item (plus end-semester examination) |
| **Medical Radiations 57 students 1 teacher** | Senior radiographer critiquing a range of x-rays of upper and lower limbs (10 videos) | Class briefing on MAT; image-critiquing lectures and laboratory demonstrations and practice | Individually select and analyse videos within online group environment, marking video with annotations; view peers' annotations within own group; receive detailed teacher feedback on all annotated videos | Not directly assessed, but the MAT activities aid preparation for end-semester examination |
| **Property Services – A (Cert IV, traineeship) 20 students 1 teacher** | Teacher interview of three professionals across different-sized companies (student groups access one video each) | Class briefing on MAT; subject lesson; collaboratively analyse group's video, identify and annotate customer service and networking advice; view peers' annotations within own group, compare and comment and answer key questions; iterative teacher feedback and final debrief | Completion of MAT activities if not already completed in class, and for absentees | Demonstration of competencies through MAT forms one assessment item |
| **Property Services - B (Cert IV, owners' corporation) 29 students** | Student role-plays of industry-styled meetings | Class briefing on MAT; subject lesson and role-play briefing; conduct role-plays in groups; collaboratively | Completion of MAT activities if not already completed in class, and modified activity for absentees | Demonstration of competencies through MAT forms one assessment |

| | | | | |
|---|---|---|---|---|
| **1 teacher** | | analyse another group's role-play video, identify and annotate meeting management, record minutes; iterative teacher feedback and final debrief | | item |
| **Property Services - C (Diploma) 22 students 1 teacher** | Teacher interview of a professional from a large company | Class briefing on MAT; subject lesson; collaboratively analyse video, identify and annotate customer service, networking and leadership advice; view peers' annotations within own group, compare and comment and answer key questions; iterative teacher feedback and final debrief | Completion of MAT activities if not already completed in class, and for absentees | Demonstration of competencies through MAT forms one assessment item |
| **Audio-visual Technology (Diploma) 39 students 1 teacher** | Two commercial videos on customer experiences | Class briefing on MAT; subject introduction; individually analyse one of two videos, identify and annotate customer service skills; receive teacher feedback in MAT | Completion of MAT activities if not already completed in class, and for absentees; access to teacher feedback | Demonstration of competencies through MAT forms one assessment item (plus role-play) |

Analysis of Table 2 provides insights into issues of curriculum design and pedagogical approaches used by the teachers to incorporate MAT within their respective subjects. All cases exhibit an element of Glazer's (2012) concept of "layering the content", whereby MAT was used in both the face-to-face and online modes of learning and teaching. In all cases, the face-to-face classes introduced MAT and how to use it within the context of the designed learning experiences. It is also observed that curriculum designs using MAT regularly demonstrate opportunities to encourage deeper learning (Biggs & Tang 2007) by using strategies such as further analysis (e.g., juris doctor, chiropractic and property-services cases) or creating multimedia (e.g., education cases).

Frequently, the face-to-face classes used working in small groups on MAT learning tasks (e.g., juris doctor, chiropractic and property-services cases). Using working in collaborative groups as a pedagogical approach within the designed curriculum supported the development of communities

of inquiry. As discussed earlier, such pedagogical approaches nurture peer learning, reflection and critique of ideas, allowing the co-generation of knowledge and deeper learning. It is important to note that the education cases asked students to prepare their own multimedia to upload and work with using MAT. In addition, one of the property-services cases (Case B) also asked students to generate media by role-playing an industry-style meeting. This experience contrasted with the remaining cases, where digital media was prepared for the students to use for their learning. This increased complexity in the blended-learning design of curriculum, which in turn provided a level of challenge – particularly, it seems, for the education students – that may have hindered the effectiveness of MAT and the blended-learning approach, as indicated by the student data in the next section (Figures 3 and 5).

## Quantitative Data

This section presents selected survey data that relates to issues of blended learning. Notably, the juris doctor cohort is not represented in the survey data due to a low return rate of the post-surveys. First, most of the cohorts in the study generally viewed MAT to be a positive addition to their learning across the various courses. For example, for the post-survey question "From my experiences of using MAT, I would recommend it for other students to use", responses in disagreement were in the minority (0% to 20%) (Figure 2). However, the two education cases (literacy and visual arts) had more negative responses than either positive or neutral (over 40% in each case disagreed). All except the education cases agreed they would recommend MAT for other students (approximately 50% to 80%).
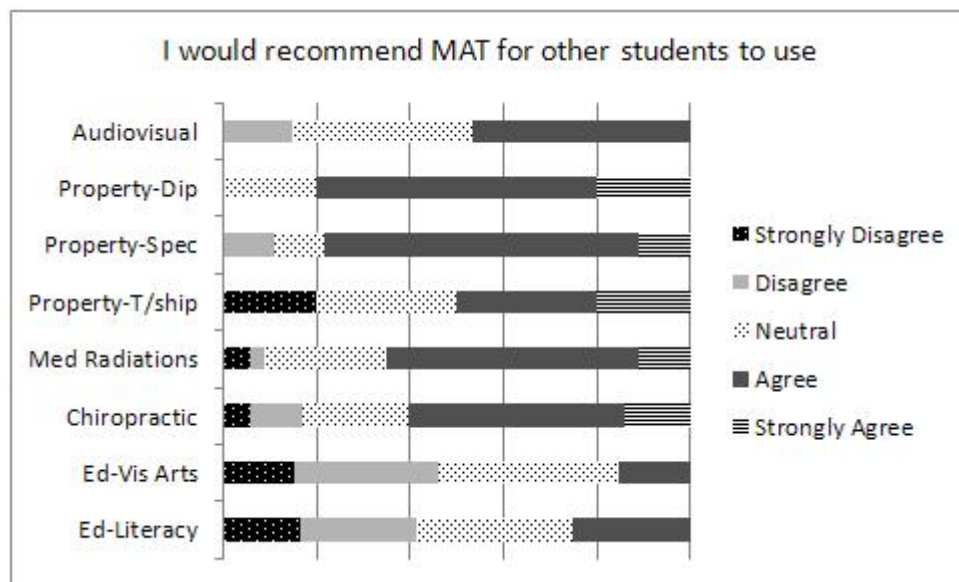


**Figure 2: Post-survey Question on Recommending MAT**

The question "The use of MAT in this course has hindered my learning experience compared to traditional learning methods", exhibits a similar trend (Figure 3). Those who responded that MAT did not hinder their learning ranged from a low of 23-25% for the education cohorts, a mid-range

of 50-60% for the two property-services cohorts, audiovisual technology and chiropractic, to an upper-range of 66-80% for medical radiations and property services – diploma.
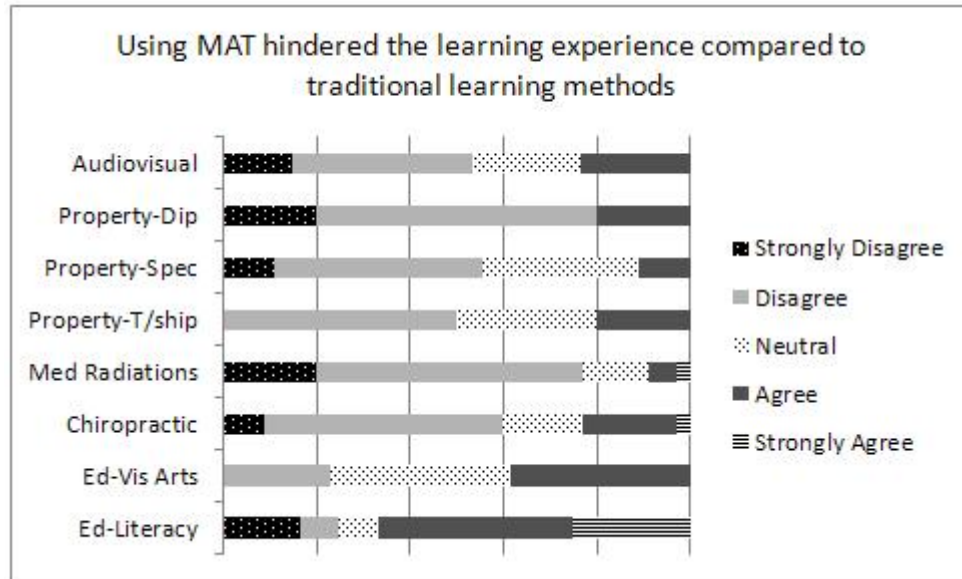


**Figure 3: Post-survey Question on MAT Versus Traditional Learning**

The student preferences for discussions about their learning in face-to-face or online (i.e., use of MAT) modalities reflect greater diversity in responses (Figure 4). In general, greater numbers of students across all cases (with the exception of the two education cases) opted to respond neutrally to the question; i.e., showing no preference for either modality.
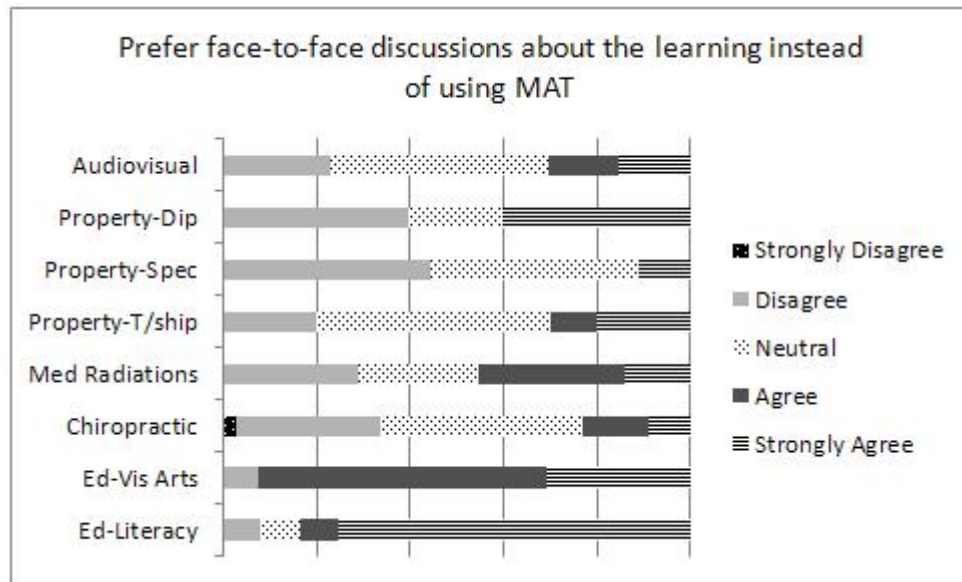
**Figure 4: Post-survey Question on Face-to-face Learning Discussion Versus MAT**

For the question "Having access to MAT enhanced my learning experience in this course"(Figure 5), property services – diploma had equal responses for and against, as did audiovisual technology (23%). Those cohorts in more agreement included property services –traineeship and chiropractic (40-49%), and those in majority agreement included property services – specialist and medical radations (67-69%). Those who did not find that MAT enhanced their learning included the education cohorts (arts: 54% disagreed; literacy: 67% disagreed).
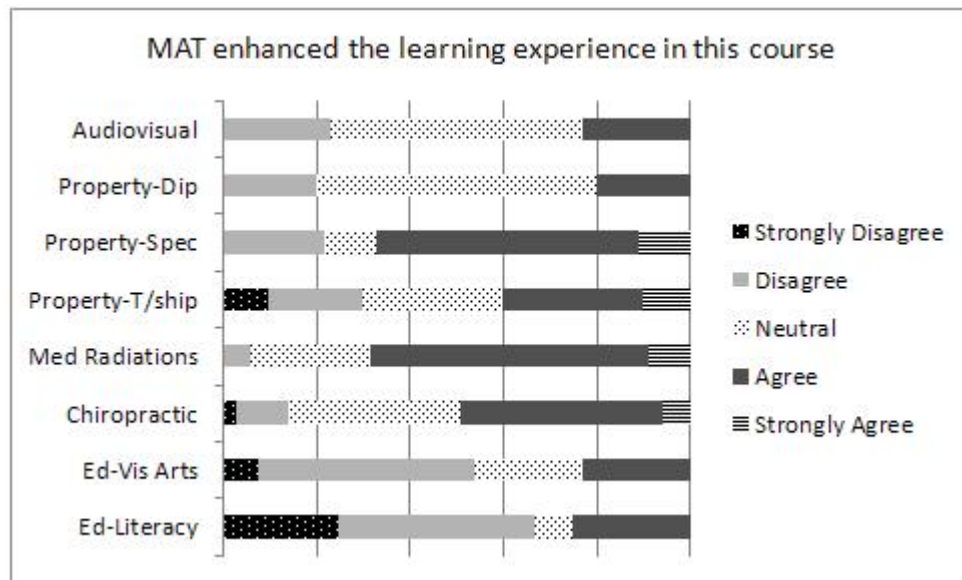


**Figure 5: Post-survey Question on Whether MAT Enhanced Learning**

 The answers to these four post-survey questions  show that a majority of education students expressed a strong preference for face-to-face learning over learning with MAT. Additionally, they felt that MAT did not enhance their learning, but hindered it, and these students did not support recommending MAT to other students. All remaining surveyed cohorts would recommend MAT to other students. Medical-radiations students had a moderate preference for face-to-face learning; however, the majority noted that MAT enhanced, not hindered, their learning. Chiropractic and  property services – traineeship students, while mixed in response to preferring face-to-face learning, also mostly indicated that MAT enhanced rather than hindered learning. The other  property-services cohorts included the diploma group, who didn't find that MAT actually hindered their learning but were ambivalent about whether it enhanced  it, and the specialist group, which strongly  indicated that MAT enhancing their learning and expressed no great preference for face-to-face learning. The final surveyed group, audiovisual technology, were ambivalent in both preference for face-to-face learning and whether it enhanced their learning, but did not tend to find it hindered their learning.

Figure 4 shows interesting responses to the question about preference between face-to-face and online (MAT) learning discussions, many responders not committing to either. This high range of neutrality (frequently ranging about 40%) seems to suggest that teachers had designed their blended-learning experiences to reflect equal value for each modality within the program – a principle also advocated by Glazer (2012) to ensure that one modality is not differentiated over the other. Yet, as Figure 4  shows, if there was a preference, students tended to lean towards the use of MAT (online modality) in all programs  except the two education cases, which leaned towards the face-to-face discussion preference.  Their preference suggests that the curriculum design may have not scaffolded the learning experience as well as some of the other programs. Table 2 suggests that one contributing factor may have been a lack of curriculum constructive alignment (Biggs & Tang 2007) across the blended-learning design elements, particularly the lack of association with assessment (this will be discussed further later in the article). This "gap" in curriculum design may have influenced the education students' learning experiences and perceptions of the value of MAT in their learning.

**Qualitative Data**

The qualitative data presented here is primarily from interviews with teachers and students, and partly from student responses to open ended post-survey questions. Discipline context is provided in a coded format to protect participant identification (Table 3).

**Table 3: Coding Key for Qualitative Data Quotes**

| Coding key for qualitative data quotes | | |
|---|---|---|
| **Discipline code** | **Included cohorts** | **Example** |
| **JD** | Postgrad Juris Doctor | (JD teacher 2) |
| **Education** | Undergrad Education – Visual Arts<br>Undergrad Education – Literacy | (education student 1) |
| **Health** | Undergrad Chiropractic<br>Undergrad Medical Radiations | (health student 5) |
| **VET** | Vocational Education and Training (TAFE) | (VET teacher 1) |

courses in:
- Property Services – Traineeship
- Property Services – Specialised
- Property Services – Diploma
- Audiovisual Technology – Diploma

In the interviews with the various teachers involved with MAT there was universal support for the potential pedagogical benefits of students annotating video. However, emergent in the data were a number of themes of caution relating to blended learning and the ways teachers undertook the challenge of designing a learning and teaching approach that included MAT. Some of the concerns that teachers raised were also supported by the student interviews. These themes are discussed under the subheadings of Curriculum Design, Planning and Communicating Purpose, Cost of Time and Effort and Potential. Overall, as with the quantitative data, the qualitative data indicated that MAT was viewed positively by many in the study, including both teachers and students, but not all and not uniformly. For example, participants remarked:

> I think it's a great innovation; I think it's a great visual tool; it's a very reflective tool; it's very active learning because you're engaging in dialogue (JD teacher 1).

> For my course I found watching the video and identifying the marker types for the first video was really, that was probably my favourite and most interesting (health student 3).

> It [MAT] would have been good to have a specific purpose/objective, otherwise it's not worthwhile (education student, post-survey).

### *Curriculum Design*

It emerged in the interviews that curriculum design, the ways that MAT was used and how it fitted with the rest of a subject both in content and pedagogy, was a significant issue in the use of this tool. For example, teachers stated:

> [MAT] needs to be thought about: exactly how it should be integrated into their…learning, their teaching…. I don't think it's something that you could just use MAT and nothing else, I think it should be integrated as part of your package for your delivery for that particular program (VET teacher 1).

> It [needs to be used] in a manner that's going to help student learning (health teacher 3).

> You have to carefully think about why you want to use it [MAT] and how you're going to use it (education teacher 1).

> As a teacher you make choices about which way to go, what to invest in and unless you believe in it and you see a purpose for it, I would not go down this path at all. But it's not just about MAT, it's about any tool that you might use (education teacher 2).

As discussed by others (e.g., Glazer 2012; Garrison & Vaughan 2008) and presented earlier in this article, the issue of curriculum design is particularly important in relation to blending two learning modes seamlessly for meaningful learning. As the above examples indicate, when teachers were

asked to reflect on their curriculum design and pedagogical approaches, they recognised the need to understand and exploit the value of MAT within the face-to-face context. In this regard, the teachers reflect Glazer's (2012) concept of "layering" in blended learning. Some students also articulated the need for "layering" in blended learning, where both face-to-face and online mediums are valued. For instance, one student in his open-ended survey question offered the caution:

> I would hate to use MAT by itself. [It] needs to be incorporated with face-to-face study also…. [It] must be used in conjunction with face-to-face (VET student, post-survey).

### Planning and Communicating Purpose

Good pedagogical design must be coupled with students' understanding of why a tool like MAT is introduced in face-to-face classes.

> Generally, I'm an honours student but I'm not so very friendly with computers…and online learning systems…. It was therefore something that I didn't naturally take to, that sort of thing. "Yeah great, I'm going to spend an afternoon in front of a computer.. And also the directionless-ness of it, I didn't quite know what I was really expected to do…. Even adding the markers in, you know, there are those markers on the right-hand side, I presume you're supposed to go in and when he talks about side marker, you're supposed to put that in there (health student 1).

Teacher reflections also identify the critical role of planning in curriculum design. Planning always plays a significant role in quality learning and teaching. Garrison and Vaughan (2008) outline a "planning framework" (p. 106) that clearly articulates the rationale for intended learning outcomes, learning activities that integrate face-to-face with online experiences and use of ICT to support learning as part of the planning process that informs the blueprint for curriculum design. Teacher comments allude to some of these planning elements.

Some of the teachers and students expressed the view that MAT could be initially difficult to understand, in its technical challenges and/or its place in the overall curriculum and pedagogy of the course. This initial diffidence was often overcome through planning or practice with the tool, and through having a narrative around why MAT had value in their learning. For instance, one teacher remarked:

> [Teachers] really need to practice, and you really have to think about every single stage. And that's probably what I didn't do enough of, really think about, "Okay, what's going to happen next; planning" – absolutely planning the life out of it so that you've got a contingency plan and...just making sure the students are constantly kept in the loop, I think, about the benefits for them and why they're doing it (JD teacher 3).

Similarly, another teacher commented that students might initially show some reluctance, but that this could be overcome after playing with, and persistence with, the tool:

> Some of the students had difficulty initially engaging with MAT, you know, "What's this all about this new technology?" But once they tried it for 30 or 40 minutes and they got their minds around it, they quite enjoyed it, and so I wouldn't say that's negative, just the initial response to it. Not being familiar with it, they felt a little bit uncomfortable

initially, but once they got over the hurdle, that barrier, they really engaged with it (VET teacher 1).

One teacher used her group home page in MAT as a dynamic communication page: first to explain the activities and provide support to students to help them engage with the tool; later, updating instructions as the activity progressed; and then as a final notification that teacher feedback was available within the tool.

> So I put on the instructions, just on the little home page here, and basically told them exactly what to do. Which ended up being a really fantastic thing because when students don't attend the class I was still able to direct them to the tool online (VET teacher 2).

A teacher emphasised that he combined MAT with discussion in the face-to-face class plus a reflective-journal assessment task. He was aware of the need to blend in such a way that learning was "brought together":

> …there was one other [piece of] work that we did outside of MAT that brought it all together. And so we used MAT as an initial tool, if you like, to capture the reflections of the students with engaging and their thoughts, about what the industry experts were saying (VET teacher 1).

Another teacher noted the importance of reinforcing the narrative of MAT's purpose to assist their learning through the tool:

> I think you have to think about exactly why you want to use it and how it's going to be purposeful for your course, and that's really constantly articulated across to the students. And it's not just because, like, for me, because it wasn't an assessment task. In my design I never even thought it would be part of an actual assessment task, but it would contribute to their success (education teacher 1).

One student's comment illustrates how challenging MAT can appear when the student first engages with this technology. While he valued the MAT activities, he still did not exactly understand the intended purpose at first exposure:

> … it [MAT] definitely helped, made me study the headaches, so that's something I would say is a definite positive. There were moments where I was like, "Why am I doing this crap; it's ridiculous", because when you first hear about it, you're just like, "Why are we doing something online? This is kind of stupid." But once you'd actually got into it and started looking at what you were learning, you were like, "This is not too bad"; it's not as ridiculously unusual as you think. It takes some getting used to, though (health student 3).

### Cost of Time and Effort

An issue that was raised by both teachers and students in their interviews, but particularly by teachers, was the cost of time in using MAT. Teachers identified a cost in their own time in engaging with new and evolving technology and how this might fit with their classroom activities. Students noted the cost in their time lost in the face-to-face classroom and in engaging with technical difficulties. There was also the cost of professional development and technical support for teachers. For example, teachers reflected:

> I invested a lot of time, and that was frustrating time, late in the previous year [pre-project], trying to first of all get access to MAT, then get video up and get it to work. There were a lot of problems and it was very hard to access people to provide the help at the time we needed it (education teacher 2).

> The negative is how much time it takes, and I think that that's a real issue in, unfortunately, the higher-education environment where you really are pressed for time so much in your teaching and learning design…. [My advice to teachers is to] just to give themselves time to prepare; to use the instrument themselves if they can – and also I think to recognise that cost is a big part of any learning and teaching innovation. And this is a pretty big innovation – it's been excellent, but it's a big leap (JD teacher 1).

> We were about a week ahead of the students I think…we'd sort of work out each week what we were doing and what our process was. But in terms of assessing the first part, where the markers were all set up on the history [video], we've probably put in a good decent afternoon together to set up our [marking] protocols and then do some groups together and then we did it individually. So that probably did take a bit of time (health teacher 1).

These teacher reflections provide the particulars of designing curriculum and pedagogical strategies that incorporate blended-learning approaches. Such reflections from teachers reaffirm the arguments developed by others, such as Sappey and Relf (2010), that learning technologies are changing the nature of academic work and identity. Sappey and Relf (2010) argue that institutions need to support academic teachers as they take on an "active not passive role" in designing curriculum with blended learning, and that these changes "impact on change in workloads, job design, motivation and work identity" (Article 3, pp.4-5). If the changing nature of academic work is not culturally and institutionally supported, they argue, the potential and quality of blended learning will not be realised. The sample of reflections by the teachers in this project illustrates the on-the-ground reality of Sappey and Relf's (2010) argument. The challenge for universities is to support their staff to transition to using new blended-learning pedagogies and curriculum-design practices, with the ultimate aim of ensuring quality learning and teaching.

For some students the cost of giving up class time to engage in MAT and the focus on online learning rather than face-to-face was a cost to introducing this blended approach:

> It was definitely interesting, although we did have to give up some lecture time, [and it] probably could have been spent more efficiently doing more headache stuff (health student 5).

> Can't we just have a simple, well-presented series of lectures? Why introduce another complex online learning "aid" when a good lecturer is far and away the best learning aid? (health student, post-survey).

These students' reflective comments on using MAT in a blended approach suggest that students perceived that the modality of learning (face-to-face as opposed to online) is valued differentially. Such student perceptions suggest that Glazer's (2012) principle of ensuring that modalities are seen as of equal value seems important to motivate students to learn in multiple environments.

Furthermore, the time that MAT took in terms of effort from students was also noted in the data. Learning in a blended environment can take time, and this can be difficult with other competing requirements on students. For example, one student commented:

> I find that it's filled out a lot into outside of the classroom. And we're not being assessed on what we put in MAT, so when there's so much else that you need to do, as a student and just as a person, you're not going to put that much emphasis on having to sit down and catch up on your PebblePad [eportfolio] observations; your MAT reflections; going through and putting, like, depth into the markers that you're doing. Rather, you're going to be like, "I only have however long to do it, I'm just going to write what I see" (education student 1).

This student's insightful comment indicates the need for academics to design curriculum meaningfully to help students mitigate the use of surface learning approaches (Ramsden 2003). In the above comment, the student seems to have drawn upon a surface-learning approach that intends to "focus on completing the task that distorts the structure of the task…[rather than] focus on understanding and maintaining the structure of the task", which is associated with a deeper learning approach (Ramsden 2003, p. 47). Designing a curriculum that fosters deeper learning approaches is challenging (Trigwell & Prosser 1991). Yet curriculum constructive alignment (Biggs & Tang 2007) offers a working principle for academics to apply: where curriculum design should show alignment between intended learning outcomes, learning and teaching activities and assessment strategy within a subject/ program. In the above comment, the student has perceived that the use of MAT in the course was an isolated learning activity, rather than being aligned with the course's learning and assessment program. This disjunction has made it difficult for her to make connections between learning in the face-to-face and online components that should have deepened her understanding of the discipline knowledge developed within the course.

### *Potential*

One of the key outcomes of the research into the use of MAT across the multiple cohorts and diverse disciplines was to identify its potential as an online tool. Many of the teachers and some students saw the benefits of MAT, and their reflections on the project included how MAT might be used in the future. For instance:

> It's got so much applicability in different contexts, presentations even…so being able to see what you can do and how, how to sell something, I'd love to use it [in that context] (JD teacher 3).

> So I see that this could be used in a number of ways for effective learning ….
> This could be maintained, perhaps as I said, as an electronic library, but I think it's more flexible than that. The students could use this to apply that skill in a particular setting such as this. Students could use it as revision for the exams, students could use it as a refresher before next year starts so they can revise this content because next year's content extends on this (health teacher 3).

> Because it gives you a different format to learn in and it gives you a visual format, and audible format, and you interact with it and you can compare with your peers in the same thing as well, it's much easier, much better assignment because you can talk about stuff…. It has benefits on multiple, multiple points compared to assignments. So I think it's very valuable, actually, and I think it's – it could be more complex now that that's

the first run. And I understand it would have taken a fair bit of effort to set up (health student 6).

While teachers and students acknowledge the potential of MAT, its transformational potential for learning lies in teachers "rethinking and redesigning the teaching and learning relationship…[that] create[s] a more active learning environment" (Graham & Dziuban 2008, pp. 270-1). The teachers in this project were beginning to rethink their teaching practice as they reflected upon their student reactions to MAT within their programs, and on ways to adapt their curriculum designs in the future. However, teachers also cautioned that the potential of this tool might depend on the design and the need to include it as an assessable task for optimum results:

> Make it a substantial percentage of your assessment, because it will take a lot of work depending on the task that you set, of course. It might not be as involved as what we've done, but, you know, make it a reasonable percentage so that the exercise is worth it to everybody (health teacher 1).

## Conclusion

Blended-learning curriculum design needs careful attention to build bridges between face-to-face and online components within a course. Glazer (2012) describes this kind of bridge as a "layering of content", and this project empirically supports this theoretical principle. This research demonstrates that integrating an online innovative tool such as MAT using a blended-learning approach can reinforce and deepen reflective learning for professional or workforce knowledge and skills. In the project, students and teachers identified at least four areas that need consideration in designing and delivering blended learning: curriculum design, planning and communicating purpose, cost of time and effort and potential. Adopters of blended learning would do well to consider these concerns when implementing blended learning in their teaching. Although providing challenges to both students and staff, the effective blending of MAT into the curriculum and pedagogical designs generally led to more innovative and active learning approaches. Caution may be necessary if students are asked to create their own multimedia (e.g., education cases) to upload and analyse within MAT; it appears that this added complexity requires further careful curriculum planning and design to support learners and their learning.

## References

Biggs, J & Tang, C 2007. *Teaching for quality learning at university* (3rd ed.), McGraw Hill, Berkshire, England.

Colasante, M 2011. Using video annotation to reflect on and evaluate physical education pre-service teaching practice. *Australasian Journal of Educational Technology*, vol. 27, no. 1, pp. 66-88.

Conole, G & Fill, K 2005. A learning design toolkit to created pedagogically effective learning activities. *Journal of Interactive Media in Education*, viewed at jime.open.ac.uk/2005/08.

Fletcher, J D & Tobias, S 2005. The multimedia principle. In Mayer, RE (ed.), *The Cambridge Handbook of Multimedia Learning,* Cambridge University Press, Cambridge.

Garrison, DR & Vaughan, ND 2008. *Blended learning in higher education: Framework, principles, and guidelines,* John Wiley & Sons, San Francisco.

George-Walker, L & Keefe, M 2010. Self-determined blended learning: a case study of blended learning design. *Higher Education Research and Development*, vol. 29, pp.1-13.

Glazer, FS 2012. Introduction. In Glazer, FS, *Blended learning; Across the disciplines, across the academy*, Stylus Publishing, LLC, Sterling, VA.

Graham, CR 2006. Blended learning system: Definition, current trends, and future directions. In Bonk, CJ & Graham, CR (eds.), *Handbook of blended learning: Global perspectives, local designs* (pp. 3-21), Pfeiffer, San Francisco.

Graham, CR & Dziuban, C 2008. Blended learning environments. In Spector, JM, Merrill, MD, van Merrienboer, J & Driscoll, MP (eds.), *Handbook of Research on Educational Communications and Technology* (3rd ed.), Lawrence Erlbaum Associates, New York & London.

Herrington, J, Reeves T & Oliver, R 2010. *A guide to authentic e-learning*, Routledge, New York.

Johnson, L, Adams, S & Cummins, M 2012. *The NMC horizon report: 2012 Higher Education Edition*, The New Media Consortium (Horizon Report), Austin, TX.

Kift, S, Israel M & Field R 2010. *Bachelor of laws learning and teaching academic standards statement* (ALTC Learning and Teaching Academic Standards Project).

Laurillard, D 2002. *Rethinking university teaching: A conversational framework for the effective use of learning technologies* (2nd ed.), RoutledgeFalmer, London.

Littlejohn, A & Pegler, C 2007. *Preparing for Blended e-learning*, Routledge, Abingdon, UK.

Mayer, RE 1999. Research-based principles for the design of instructional messages: The case of multimedia explanations. *Document Design*, vol. 1, no. 1, pp. 7-19.

McCall, I 2010. Online enhanced problem-based learning: assessing a blended learning framework. *The Law Teacher*, vol. 44, pp. 42-58.

Moore, M 2006. Forward. In Bonk, C & Graham, C (eds), *The handbook of blended learning: Global perspectives, local designs*, Pfeiffer, San Francisco.

Oliver, M & Trigwell, K 2005 Can "blended learning" be redeemed? *E-learning and Digital Media*, vol. 2, no. 1, pp. 7-26.

Ramsden, P 2003. *Learning to teach in higher education* (2nd ed.), RoutledgeFalmer, London and New York.

Sappey, J & Relf, S 2010. Digital technology education and its impact on traditional academic roles and practice. *Journal of University Teaching & Learning Practice,* vol. 7, no. 1, Article 3, viewed at http://ro.uow.edu.au/jutlp/vol7/iss1/3.

Trigwell, K & Prosser, M 1991. Improving the quality of student learning: the influence of learning context and student approaches to learning and learning outcomes. *Higher Education,* vol. 22, no. 3, pp. 251-266.

Ultranet and Digital Learning Branch, DEECD 2012. *Blended Learning: A synthesis of research findings in Victorian education 2006-2011.* Department of Education and Early Childhood Development (DEECD), Melbourne.

Woodall, D 2010. *Blended learning strategies: Selecting the best instructional method* (White Paper). August 2010, viewed at: http://www.skillsoft.com/infocenter/whitepapers/documents/blended_learning_strategies_wp.pdf.