ASCILITE
SHAPING THE FUTURE OF TERTIARY EDUCATION
Show Me The Learning
Adelaide, Nov 27-30, 2016

A blended learning model and a design model combine to support academics in pedagogical redesign of the curriculum

Linda J. Pannan
La Trobe Learning and Teaching
La Trobe University

Katherine A. Legge
College of Science, Health and Engineering
La Trobe University

Mostly, blended learning is simply interpreted as the combination of face-to-face and computer-mediated learning (Graham, 2006). Unfortunately, this definition not only hides the complexity and transformative possibilities of blended learning, it can also leave the academic teaching developer without the detail and certainty they need to develop learning designs that address their institution's blended delivery expectations and meet their students' learning needs. Our approach to supporting academic change to blended learning addresses these uncertainties and places emphasis on the pedagogic strategies that guide student learning activity and drive the design of integrated learning experiences across learning environments. We present two models - a four phase blended learning model and a two-layer design model, and demonstrate how the properties of each combine to afford a blended learning design approach. Early indications of its effectiveness are promising and favourable responses to the models' simplicity and use indicate they may support teaching developers across other contexts.

Keywords: blended learning models, design approach, pedagogical focus, curriculum change

Introduction

A growing body of work concerned with institutional change to progress the adoption or implementation of blended learning (e.g., Graham, Woodfield & Harrison, 2013; Garrison & Kanuka, 2004; Taylor & Newton, 2013) is supported by evidence compiled in many empirical studies that blended learning is more effective than fully online or fully face-to-face (f2f) learning (Means, Toyama, Murphy, Bakia & Jones, 2010). In this context the term 'blended learning' is most often simply interpreted as the combination of f2f with computer-mediated learning (Graham, 2006). This simple portrayal of blended learning understates its potential: Blended learning is a transformative educational methodology, capable of delivering pedagogically sound learning experiences across disciplines and levels of education as well as providing flexibility and choice to meet the individual needs of students in contemporary society (Graham, Henrie & Gibbons, 2014; Garrison & Kanuka, 2004).

Multiple blended learning definitions exist (e.g., Torrisi-Steele, 2011; Westbrook, 2008) and the variety and possibilities seem endless (Westbrook, 2008). While many researchers suggest this is a strength, providing opportunity for contextualised interpretation and design, others are more circumspect (Alammary, Sheard & Carbone, 2014). Torrisi-Steele (2011, p. 360) cautions that "the lack of consensus on a definition of blended learning and the techno-centric nature of many existing definitions contributes to the unrealised pedagogical potential of blended learning". In essence, the very power of blended learning is frequently lost through mundane interpretations.

Of further concern and the focus of the work presented in this paper, is the position this leaves teaching developers[1]: They feel the pressure to convert existing traditional subject delivery to a blended format but often have limited experience, tools, and time to do so in a pedagogically sound way (Vaughan, 2007). Those who seek support may find a good variety of approaches available for beginning their blended learning journey (e.g., Carter & Huber, 2013; Salmon, Jones & Armellini, 2008). However, many are troubled by the disparity they see between the needs and expectations of their students and institution, and concerned about changes to their teaching role in the new blended learning format (Stacey & Gerbic, 2008). For those contemplating its use for the first time, there is often a lack of certainty on what it is, what is required and where to start.

[1] 'Teaching developers' are academics who (re)design and implement subjects, and teach these subjects to their tertiary level students.

A further challenge is the continued lack of pedagogical focus in models and definitions of blended learning: Graham et al. (2014, p. 27) state that "the heavy focus in existing models on physical or surface-level characteristics rather than pedagogical or psychological characteristics is impeding progress.", while Torrisi-Steele (2011) reveals that a majority of definitions in her study lacked adequate learning and teaching focus to support good practice in blended learning implementation. Further, while a focus on pedagogy is presented in blended learning design practice (e.g., Garrison & Vaughan, 2008; Herrington, Reeves & Oliver, 2010), it can be readily overlooked if pedagogically inadequate definitions and models are used to guide design - particularly by those lacking experience or time. Yet, an adequate focus on pedagogy is critical during design as "it is the design of the experiences and how the students are engaged that directly affect the quality of the learning experience" (Garrison & Vaughan, 2008, p. 87). Learning designs need to be shaped by the desired educational outcomes; moreover, planning and design should emphasize the strategies to engage, motivate, guide and monitor the learning experience while the important blend of f2f interaction and ICT-mediated materials and processes is relegated to that of the tools used to implement the strategies (Torrisi-Steele, 2011).

In essence, effective blended learning is no different to effective traditional learning in the requirement that students engage and are confident in the way the learning has been structured in the subject. In both the traditional and the blended, the student's learning is paramount and the critical difference lies in the role played by the teacher and student in the learning process. Indeed, blended learning represents a "fundamental reconceptualization of the teaching and learning dynamic" (Garrison and Kanuka, 2004, p. 97) and presents new requirements for the teacher's role (Gerbic, 2006 (in Stacey & Gerbic, 2008)).

Our institution has recently progressed from a period in which constructive alignment (Biggs & Tang, 2007) was embraced and embedded across the curriculum to its current focus on delivery mechanisms. This includes moving, at a minimum, to a replacement blended learning format (Twigg, 2003), with sobering requirements for all subjects such that, online learning must comprise at least 25% of each subject's core learning requirements; in-class time is to be reduced; and videoconference lectures abolished. With this in mind our focus has been to move to a blended learning model in which students have more active control of their learning and can achieve deep learning based on a constructivist approach. This is a definite move into transforming blend territory, compelling the teaching developer to refocus their pedagogical approach and engage in a fundamental redesign of their subject learning model (Graham, 2006).

In efforts to support teaching developers through the reconceptualization required, and assist educational designers who guide them in their redesign, we embarked on a project to advance and support the design of pedagogically determined, student-centred blended learning formats, to benefit them and their students. We adopted a design-based research methodology (Anderson and Shattuck, 2012) and derived the research questions seen below to drive the project. Qualitative and quantitative methods will be used to determine the effectiveness of the investigation; academic data will be called on and further data collection relies on a mix of methods including interviews, focus groups, questionnaires, observations and expert reviews.

1. How can we promote development of student-centred, pedagogically integrated blended learning in a way that enables teaching developers to understand and have confidence in their blended learning design?
2. What support do teaching developers need in developing blended learning designs that
   a. pedagogically integrate the blend of f2f and online learning activity?
   b. prepare, encourage and support students through the online learning phase?
   c. promote an elevated cognitive level of learning interaction in the f2f phase?
3. How well do teaching developers' blended learning implementations address student-centred and pedagogic integration indicators and, further, affect their students' learning experiences, behaviours and outcomes?
4. What factors impact on the effectiveness of the teaching developers' blended learning implementations?

In this paper we present outcomes of the early stages of the project. Although unable to formally address the above questions as yet, detail is presented of two models we developed and combined to create a design approach. We discuss examples of its use in subject design and development and identify three core strengths.

A four-phase blended learning model

Figures 1 & 2 are used to introduce the four phase blended learning model. The physical structure and operation of the blended learning process is evident in the simple surface format seen in Fig. 1. Closer inspection reveals active learning elements within each blended learning component. The blended learning format combines these two perspectives and highlights the learning steps students engage in during their blended learning experience.

Blended learning format

The student blended learning experience is influenced by four components: *active learning online*, *face-to-face interactive learning* and two *active learning transitions*. The first two constitute contrasting modes of learning, while the latter two propel the learning process from one mode to the other and influence how effectively students will embark on and learn in each, whether online or face-to-face.

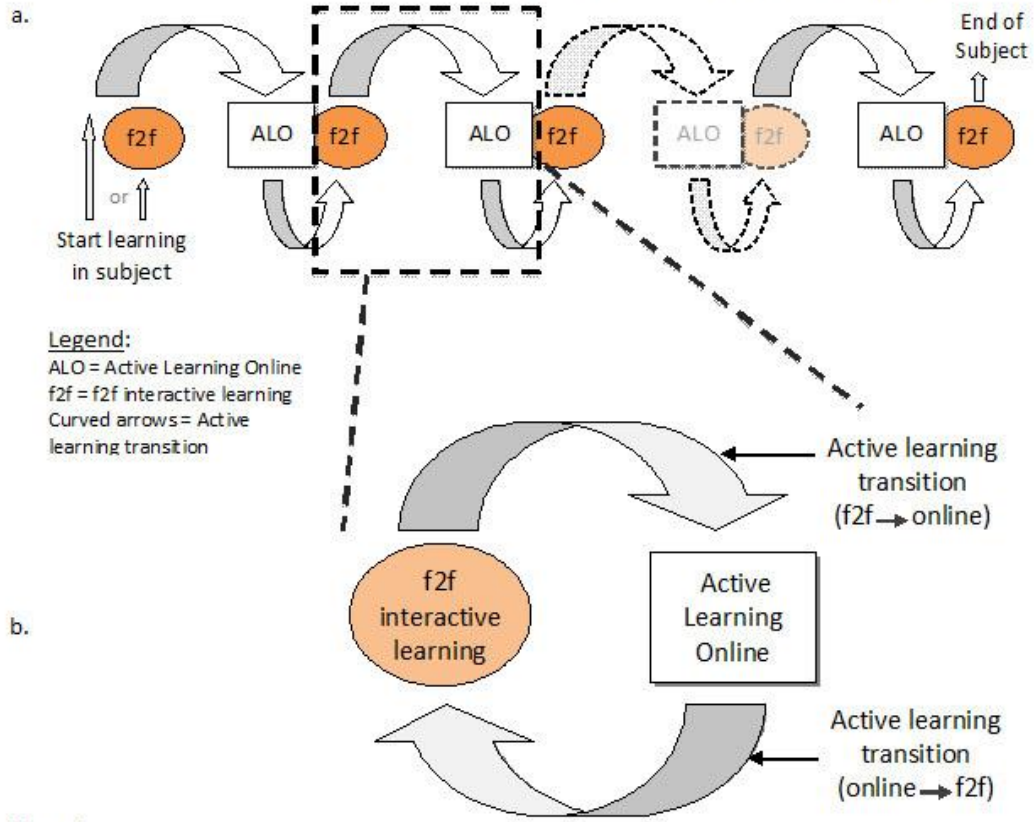

Figure 1.
a. Repeated blended learning cycles form a spiral as the subject and learning progress.
b. A four phase blended learning cycle.

A cycle of blended learning naturally develops as students move from one learning mode to the other (Figure 1b).

The cycle may be repeated several times, with successive cycles building on learning achieved in earlier cycles, forming a spiral as the syllabus & learning progress (Figure 1a).

Often these cycles occur weekly in subjects designed for blended learning beginners, but the learning design and setting for the subject determines their length and frequency. For example, subjects offered in condensed semesters may use several shorter cycles to start with while fewer cycles of varying length might occur in placement or later-year subjects.

Figure 1: Operational structure of the four phase blended learning model (Reprint from Presentation leaflet, *Blended learning format* (p.1), L.Pannan, 2014, La Trobe University)

Blended learning components

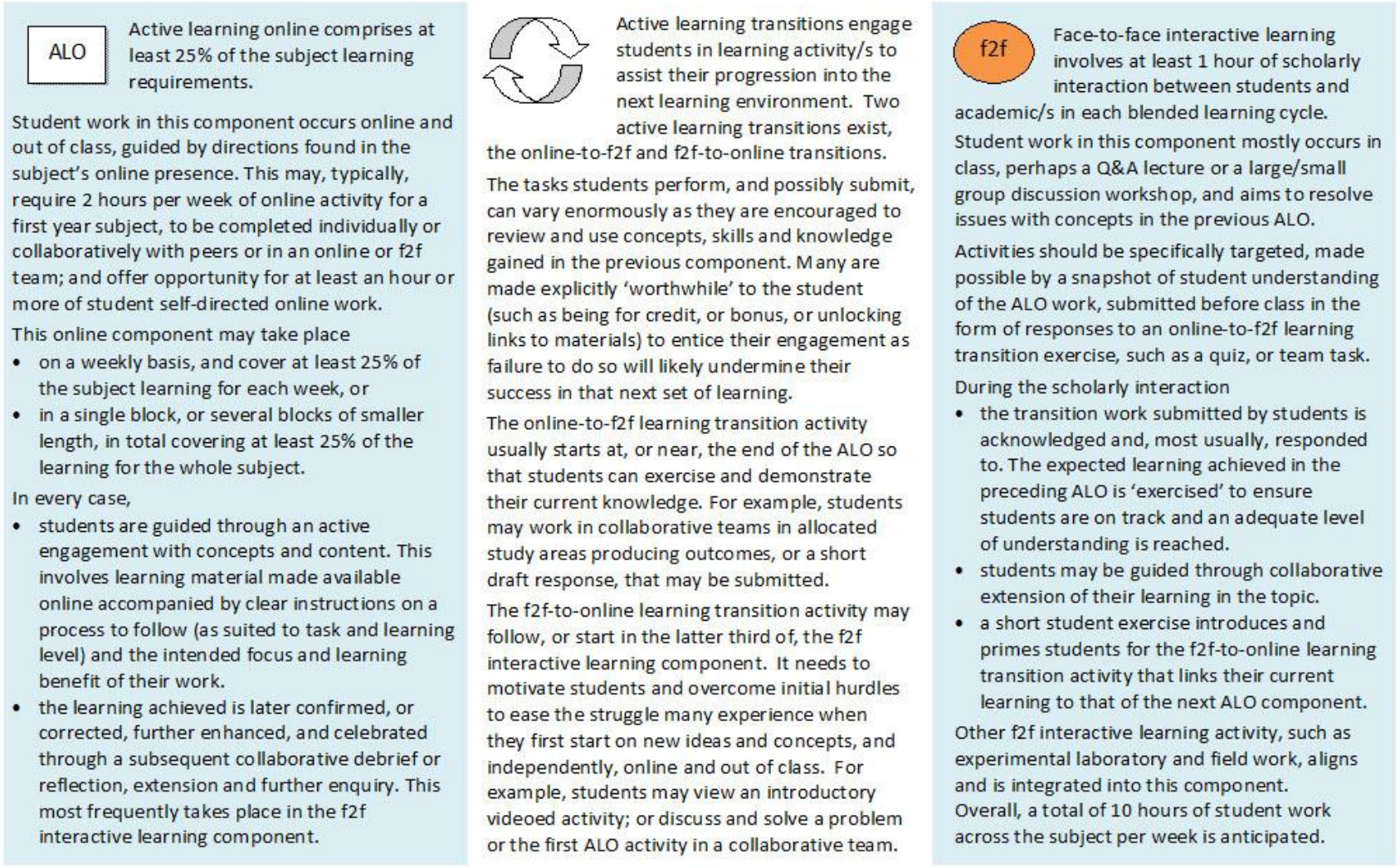

Figure 2: The four phase model's components (Reprinted from Presentation leaflet (revised), *Blended learning format* (p. 2), L.Pannan, 2014, La Trobe University)

The model deviates from other blended learning models in that four components of student learning activity are identified: *active learning online* (ALO), *face-to-face interactive learning* and two *active learning transition* components. The first two constitute contrasting modes of learning, though both progress earlier learning and introduce new knowledge and concepts as needed. The two transition components offer activities that influence how effectively students assimilate earlier learning and embark on and learn in the next online or f2f component. As learning activity moves from one component to the next, a cycle of blended learning develop that progresses through four learning phases (Fig. 1b). Repeating this four phase cycle allows the learning to progress through the syllabus (Fig. 1a).

The design of each phase in the blended learning cycle is critical, requiring adequate pedagogical planning to ensure that the respective purpose of the phase is supported and may be achieved. For example,

- In the ALO phase, clarity of expectations (e.g. activity duration and learning outcomes), guides and scaffolding for learning activities are particularly important. The aim is to avoid misunderstandings and gaps in explanations as the teacher cannot immediately know about nor readily fix these in the same way as they are often efficiently dealt with in a f2f class (Hoffman, 2006). Students may work collaboratively in study venues on campus, or work on their own, on or off campus.
- The *online-to-f2f learning transition* activity validates the student's efforts in ALO. Its aim is to encourage students to reflect on and apply the concepts and understandings gained in ALO, to well prepare them for the f2f interactive learning. If students submit a completed formative quiz or a f2f collaborative team response to a set question, for example, the teacher can be alerted to issues in their learning progress and develop timely strategies to address them.
- During the f2f interactive learning phase, robust and meaningful scholarly interactions with academic/s and peers should be a distinct possibility. The aim is to raise the cognitive level of learning achieved. Discussion, debating of options or current issues - the activities may vary but their intent is to interactively exercise, strengthen and extend the learning achieved in the preceding ALO. Students will, mostly, arrive well prepared; the teaching developer will need to explore these opportunities to promote deeper learning.
- The *f2f-to-online learning transition* activity encourages reflection and use of previously encountered concepts and knowledge in new situations, preparing students for the next ALO. The activity is short, f2f or online, and probably collaborative. It aims to support them over hurdles they often face when starting study online: allaying uncertainties and resolving issues before they arise - perhaps simply those of a new topic or because fewer or unplanned outcomes arose in the previous scholarly f2f interactions.

Although student-focused learning and engagement strategies influence the design of learning activity in each phase of the model, it is the learning activity in the transition phases that intentionally connects the learning experiences of the f2f and ALO environments. These transition phases encourage students to reflect on and apply concepts and knowledge gained in their preceding ALO or f2f learning experiences so that it is likely they will be curious and well prepared for learning in the next f2f or online environment. This may not only influence the depth of learning achievable in subsequent learning tasks (Biggs, 2009), but it also establishes an effective integration of the f2f and online learning activity to improve the progression and quality of the learning experienced (Garrison & Kanuka, 2004).

Blended learning designs developed through use of the four phase blended learning model are characterized by a student learning experience that alternates between f2f and online learning environments throughout the subject or module. Other design characteristics and flexibilities are available in Fig. 1 & 2. (Note that institutional specific example requirements used in Fig. 2, such as online percentages and study durations, can be changed.)

A two-layer blended learning design model

The two-layer design model draws on theory and practice surrounding more complex design models (Gibbons, 2014; Gibbons & Rogers, 2009), but its simplified form has far fewer design layers. The model provides a conceptual framework for understanding the relationships between elements of blended learning. Its two layers are abstract concepts into which blended learning is divided based on its two key features: "a process that is pedagogically based and a product (course) with a mixture of face-to-face and online components" (Alammary et al., 2014, p. 443). Thus, the *pedagogical layer* and *physical layer* were created to focus on 'learning activity' and the 'operational learning environment', respectively (see Table 1).

The abstract separation of blended learning complexity into two layers facilitates design development by bringing together related structures and functions in each layer: This simplifies comparison, discussion and decision-making with regard to these elements. Although each layer has a distinct purpose, layers are functionally interdependent and decisions made about the elements of one layer will influence the decisions possible for structure and function in other layers (Gibbons, 2014). Development of a design, therefore, needs to be an iterative process. The layer hierarchy established in our model dictates that the physical layer serves the pedagogical layer: Being dominant, the pedagogical drives the design process.

The pedagogical layer is supported, and possibly constrained by, the learning context and mechanics available in the physical layer. It leans heavily on cognitivist and constructivist learning theories (Biggs & Tang, 2007) and research on pedagogical approaches and possibilities in computer integrated learning models (e.g., Conole, 2013; Herrington, Reeves & Oliver, 2010; Littlejohn & Pegler, 2007). When operating in this layer the teaching developer considers strategies to drive student-focused, interactive and activity based learning, and use of constructively aligned learning experiences to promote deep learning (e.g., Biggs & Tang, 2007; Garrison & Vaughan, 2008; Laurillard, 2002). Then, by way of arranged demonstrations of the learning benefits of new and available learning technologies, they can experiment and explore how these may be used to support and enhance learning (e.g., Howland, Jonassen & Marra, 2011; Kenney, 2013). Finally, they select approaches they believe will address the topic and learning needs of their students.

The physical layer provides the context and mechanics for effective blended delivery and can be the primary focus of those first considering use of blended learning and discovering what it can offer. This layer defines all physical elements needed in the operational learning environment and their interrelationships during the blended learning process. In essence, the continuing flow of learning activity through each blended learning cycle is made possible by the scheduling, availability and operation of physical layer elements, such as venues, learning materials and tools. When working in this layer the teaching developer first identifies the learning context, external requirements and constraints. In due course they determine all elements they require in the learning environment and select access to learning resources and delivery support tools for scheduled and any-time learning activity. Notably, locations and schedules are also established for the people needed in the learning environment, including students, teachers, and support personnel.

Table 1: The two layers of the blended learning design model

Layer	Focus	Critical elements the layer is responsible for
Pedagogical	The learning activity: what is done, how and why. It defines the pedagogy and strategies to engage learners, guide & promote deep learning, and monitor engagement & progress.	• Student-focused teaching & learning strategies. • Learning theories: constructivism & constructive alignment, cognitivism. • Learning outcomes and designs. • Blended learning technology strategies
Physical	The operational learning environment: who is where, when. It defines the context, content, structure and mechanics that support operation of the tangible aspects of blended learning, including people and technology products.	• Gross structure, locations, people, components and their interactions. • Requirements & constraints imposed by the environment. • Operational sequences and timing. • Learning tools (f2f & ICT-mediated learning materials & technologies)

While using this two layered design strategy, the teaching developer is encouraged to keep their design concept simple by limiting the set of defined elements and using as few changes in tools and mechanisms as possible to achieve the required functions (Gibbons, 2014). To develop a design concept, we:

1. Plan an integrated flow of learning across the learning environments to achieve the desired outcomes.
2. Determine, and schedule, the tools that best suit the planned learning tasks and cohort.
3. Use the plan (from above) to finalize a design for an integrated blend of f2f and ICT-mediated learning that best addresses the topic and learning requirements.

So, for example, following several iterations of investigation and decision making in the two design layers (i.e. iterations of steps 1 and 2), the teaching developers finalize their pedagogical layer decisions and establish learning activities that develop the desired outcomes. Subsequently, their final physical layer decisions ensure that the structure of the learning environment and scheduling and function of all physical elements support their learning plan. The success of the latter step, and subsequent creation of the final design (i.e. step 3), may depend on whether an earlier iteration has accurately negotiated the final set of physical constraints on the design.

The blended learning design approach

Our design approach combines the two models already presented. The four phase blended learning model formulates the pedagogical and physical structure that is aimed for in the design concept, while the two-layer blended learning design model delivers a guided design process for achieving it. Development of the design follows the iterative format dictated by the design model, alternating design effort between the physical and pedagogical layers while following the design process steps until the design concept emerges.

Familiarization with the operating structure of the four phase model (Fig. 1&2) alerts teaching developers to the pedagogical processes that may be required. They consider how students might engage in learning in each phase in every cycle, for each topic and across the curriculum; then they develop their designs through successive cycles of blended learning. While they use elements available in the pedagogical design layer they also retain the integrity of the four phase blended learning cycle's inherent pedagogical structure so that strong integration of learning activity across the f2f and online environments will exist in their design.

Some teaching developers may decide to import learning strategies and tools that are known to better support specific learning activity and outcomes for their cohort and discipline. This can work well, with the pedagogic baseline for the design of integrated blended learning activity and support being provided by the four phase model, while the imported strategies influence the detail of the learning approach.

Implementation

In introducing the four phase blended learning model to the teaching developer we seek not only to establish with them an understanding of the model but also transference to how it works in their context. To this end we provide tools and examples and concentrate their effort on pedagogy. Subjects initially have a variety of formats ranging from the traditional to a flipped classroom delivery (Sankey & Hunt, 2013). Whatever the design and regardless of the student-focused nature teaching developers are striving to achieve, it is inevitable that when they describe the subject they focus on what they as teachers present to their students. This focus is not helped by the administrative approach to subject descriptions being aligned to timetable requirements and academic workload systems, all of which follow the requirements of teachers in f2f environments only.

Working with the teaching developer, we begin by clarifying the context, tools and constraints on the curriculum and thus establish the scope of possibilities for the blended design. Within this scope we refocus on the student experience and encourage them to describe what they want students to do over a topic in each part of the blended learning cycle, and get them to complete the design tool (Figure 3) for one blended learning cycle.

We provide two examples illustrating how use of the model and tools affected the design. The first is a traditionally delivered Engineering subject with a heavily teacher focused delivery across three lectures and a two-hour tutorial/problem class each week. The subject was required on several campuses, and the teaching developer was concerned about the difficulty of successfully reproducing the didactic classes in an efficient and effective way. In discussions, they articulated the idea that they felt the students needed to be more engaged with the subject material, and needed to see the subject as a development of conceptual understanding rather than a series of disjointed topics; and further, that they needed to participate in and wrestle with the problem solving and so develop their understanding and confidence in the material.

Using the design tool, the teaching developer was able to incorporate their ideas in the re-designed delivery. The result is a design where the student is introduced to the initial concepts through a guided use of resources and a short quiz, in the ALO, before engaging in work in a peer group that exercises the concepts through a few carefully selected set problems, and then submit their solutions (Fig. 3). The academic teaching developer can gauge the level of understanding reached by the class from these solutions and this guides the syllabus and activities in the subsequent f2f class. The teacher introduces the next iteration of the blended learning cycle, both conceptually and in practice, towards the end of the f2f class and workshop, respectively. At all times during the blended learning cycle the students are required to be active.

By repeating the design process for a new cycle and linking topics in a progressive spiral, the model allowed the teaching developer to project the bigger picture of the subject being presented as an integrated sequence of learning. The result is a subject delivery design produced by the teaching developer with student learning squarely at its focus, and able to be delivered on multiple campuses. The passive didactic lecture or tutorial that characterized the original design and hindered the required cross campus delivery has been removed. Each cohort has access to the common online activities and resources and experiences the same learning cycle, but their own f2f class each week responds to the particular cohort's needs.

Our second example is a subject that was already taught in a blended and flipped classroom format. By aligning it to our model, the teaching developers were able to visualize the consequences of their design on the student experience and to further develop the subject for multi-campus delivery. The subject is now taught on three campuses and is used as an exemplar to other subjects with regard to multi-campus delivery.

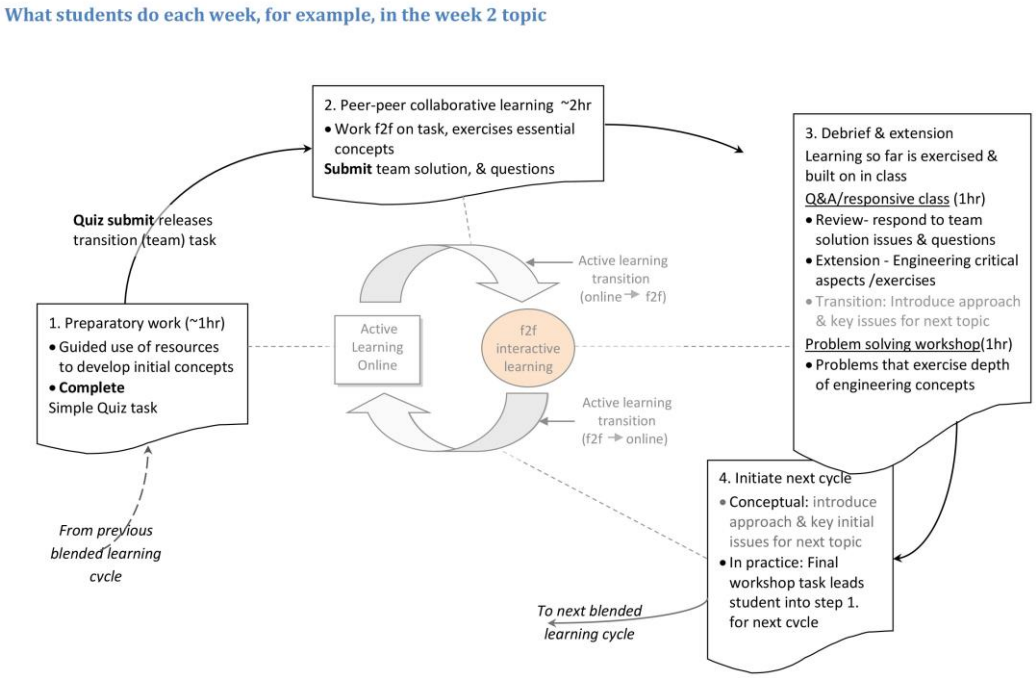

Figure 3: The design tool, with user added content in four scrolls outlining one week's activity

The point is that, whatever the example, the teaching developer is forced to consider the student's learning experience when using this model. Where the teaching developer has difficulty moving past the need for teacher-led lecture delivery, they are forced to describe what it is that the student does, and "sits passively in a two-hour lecture" does not fit comfortably with their idea of engaged learning.

Discussion

Our blended learning design approach exploits the combined properties of a four phase blended learning model and a two-layer design model, both created specifically for this purpose. Although each may also be used independently, when used together the models provide a structured design approach that clarifies the blended learning format and operation as well as the need for pedagogic dominance during design. The design approach and models are in the early stages of deployment and evaluation. So far the signs are promising; teaching developers, irrespective of their experience, appear to quickly grasp the physical structure and blended learning process concepts, and its cyclic nature. The four phase model has received favourable feedback from teaching developers and educational leaders, and also from design and development staff. Drawing on this feedback and our observations so far we identify three core strengths of the design approach and models as follows:

First, the definition of active learning transition components and the resultant integrated cycle of blended learning in the four phase blended learning model. Student learning activity is presented as flowing through the globally accepted f2f and online (or ICT-mediated) learning environments and then from one to the other via the active learning transition phases. The learning and engagement strategies that define the transition phases compel the teaching developer to consider and clarify the pedagogical links between learning activity in the online and f2f environments and develop an integrated learning design across each cycle of blended learning. Thus, these transition phases provide the model with an inherent pedagogical focus that may constitute progress towards addressing the pedagogical inadequacies reported for blended learning models (Graham et al., 2014).

The following feedback comment from one of our institution's experienced educational designers, in 2014, highlights the significance of the model's transition components when working with teaching developers.

> .. I think it is a very useful tool. The explanation of the active learning mode transition is what switches the light bulbs on for people when I show it to them. They finally get to understand blended learning as an integrated process requiring design thought rather than as two separate processes which is commonly how it's understood beforehand. Online learning is usually seen either as a supporting adjunct to face to face (filing cabinet) or as a replacement for face to face (diy university) and therefore is viewed as either irrelevant or unnecessary, or as a threat to the continued existence of teaching staff. This model helps get past those misconceptions and enables more productive conversations, and more adventurous design.

The model has the potential to be a truly useful tool for design of blended learning. It is simple and versatile: The only firmly fixed features of the model are the four phases of learning in the blended learning cycle and the pedagogy that defines them. The essential pedagogical structure of the learning cycle can support an enquiry based learning approach as evidenced in the "inquiry-through-blended-learning" example presented by Garrison & Vaughan (2008, p. 113). Other approaches, such as flipped classroom and problem/case based learning, may also be supported. As yet, the four phase model looks equipped to inspire development of a good variety of learning blend designs, across the range of low to high impact blend categories (Alammary et al., 2014).

Second, the two design layers, and dominance of the pedagogical layer in the two-layer blended learning design model. The two layers provide a clear delineation between the physical operational features and the pedagogical strategies and learning activity; and, they concur with Graham, Henrie and Gibbons' (2014) suggested approach to strengthening blended learning design models. The hierarchical relationship between the layers obliges the teaching developer to focus on the strategies for student learning; this has been observed to motivate exploration of alternative learning strategies and technologies to support specific learning outcome and skill development.

Third, the combined pedagogical emphasis of both models in our design approach. The four phase blended learning model provides strategies to integrate the learning blend across every cycle of blended learning, while the two-layer design model strengthens the pedagogic basis of the final design by prioritizing and iteratively revisiting the pedagogical aspects. With pedagogy as a central theme in both models, the teaching developer is eased into consideration of a variety of engagement, learning and progress monitoring strategies and can move on to design a sequence of integrated learning experiences. This is a step towards addressing the pedagogic deficit observed in blended learning models and abridged design practices (Graham et al, 2014; Hoffman, 2006).

With subjects gradually turning to a blended learning format the response from staff involved has been positive. In the main it is the clarity with which the four phase blended learning model enables them to see what their subject means for the students, that grabs their attention. The requirement to address the blended learning cycle and describe the students' experience reminds them of their responsibility to affect student active learning engagement and supports them in their design of a pedagogically focused blended format.

Conclusion

From a position that appreciates the complexity and uncertainties confronting academic teaching developers we present two blended learning models: One clarifies blended learning as an integrated pedagogical process while the other separates and promotes the pedagogical over the physical during design. The models combine in a design approach that emphasizes pedagogy in blended learning and, by focusing on what the student does and why, shifts attention away from the tools (both f2f and ICT-mediated) and toward the learning intent. We discuss three core strengths of the models and design approach, and how they address current concerns with blended learning. These strengths assist the teaching developer to navigate the complexity of blended learning; in particular, the emphasis on clarity of integration and navigation of essential learning experiences encourages them to create blended learning designs that strive to engage, prepare and support their students through integrated blends of online learning activity and robust scholarly f2f interactions.

Early implementation trials provide signs that the models and design approach can be effective in supporting teaching developers to design or transfer their subject, in accordance with the expectations and physical realities of the institution; in sympathy with the learning needs of their students; and with a clear understanding of their own role in the learning-teaching process. Evaluation effort to validate their effectiveness has started; in addition, studies are required to determine the contexts and constraints on use of both models in designing pedagogically integrated blended learning experiences. Although developed and introduced to meet the demands of our local context, the core strengths and favourable responses to the simplicity and utility of our models and approach suggest they may provide useful support to teaching developers across the tertiary education sector.

References

Anderson, T., & Shattuck, J. (2012). Design-Based Research: A Decade of Progress in Education Research? *Educational Researcher, 41*(1), 16-25. Retrieved from http://edr.sagepub.com/content/41/1/7.full.pdf+html.

Alammary, A., Sheard, J., & Carbone, A. (2014). Blended learning in higher education: Three different design approaches. *Australasian Journal of Educational Technology, 30*(4), 440-454. dx.doi.org/10.14742/ajet.693

Biggs, J., & Tang, C. (2007). *Teaching for quality learning at university (3rd ed.).* Maidenhead, UK: OpenUP.

Carter, H., & Huber, E. (2013). Working in partnership: An authentic professional learning program to promote sustainable curriculum change. In *Electric dreams. Proceedings ascilite 2013 Sydney* (pp. 129-138). http://www.ascilite.org/conferences/sydney13/program/papers/Carter.pdf

Conole, G. (2013). *Designing for learning in an Open World.* New York, NY: Springer.

Garrison, D.R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *Internet & Higher Education, 7*, pp. 95-105. http://dx.doi.org/10.1016/j.iheduc.2004.02.001

Garrison, R., & Vaughan, H. (2008). *Blended learning in higher education: Framework, principles and guidelines*. San Francisco, CA: Jossey-Bass.

Gibbons, A.S. (2014). *An architectural approach to instructional design*. New York, NY: Routledge.

Gibbons, A.S., & Rogers, P.C. (2009). The architecture of instructional theory. In C. M. Reigeluth & A. Carr-Chellman (Eds.), *Instructional-Design Theories and Models* (Vol. 3, pp. 305-326). New York: Routledge.

Graham, C.R. (2006). Blended learning systems: Definition, current trends, and future directions. In C.J. Bonk & C.R. Graham (Eds.), *The handbook of blended learning: Global perspectives, local designs* (pp. 3-21). San Francisco, CA: Pfeiffer Publishing.

Graham, C.R., Henrie, C.R., & Gibbons, A.S. (2014). Developing models and theory for blended learning research. In A.G. Picciano, C.D. Dziuban, & C.R. Graham (Eds.), *Blended learning: Research perspectives* (Vol. 2, pp. 13-33). New York, NY: Routledge.

Graham, C.R., Woodfield, W., & Harrison, J.B. (2013). A framework for institutional adoption and implementation of blended learning in higher education, *Internet & Higher Education*, 18, pp. 4-14.

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

Hoffman, J. (2006). Why blended learning hasn't (yet) fulfilled its promises: Answers to those questions that keep you up at night. In C.J. Bonk & C.R. Graham (Eds.), *The handbook of blended learning: Global perspectives, local designs* (pp. 27-40). San Francisco, CA: Pfeiffer Publishing.

Howland, J., Jonassen, D., & Marra, R. (2011). *Meaningful learning with technology*. Columbus, OH: Merrill.

Kenney, J. (2013). Getting results: Small changes, big cohorts and technology. *Higher Education Research and Development Journal, 31*(6), pp. 873-889.

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

Littlejohn, A., & Pegler, C. (2007). *Preparing for blended e-learning*. New York, NY: Routledge.

Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2010). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies.* Washington, DC: U.S. Department of Education. https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf

Oliver, R., & Herrington, J. (2003). Exploring technology-mediated learning from a pedagogical perspective. *Journal of Interactive Learning Environments, 11*(2), pp. 111-126.

Salmon, G., Jones, S., & Armellini, A. (2008). Building institutional capability in e-learning design, *Association for Learning Technology Journal, 16*(2), pp. 95-109. http://dx.doi.org/10.1080/09687760802315978

Sankey, M.D. & Hunt, L. (2013). Using technology to enable flipped classrooms whilst sustaining sound pedagogy. In *Electric dreams. Proceedings ascilite 2013 Sydney* (pp. 785-795). http://www.ascilite.org/conferences/sydney13/program/papers/Sankey.pdf

Stacey, E., & Gerbic, P. (2008). Success factors for blended learning. In *Hello! Where are you in the landscape of educational technology? Proceedings ascilite 2008 Melbourne* (pp. 964-968). http://www.ascilite.org.au/conferences/melbourne08/procs/stacey.pdf

Taylor, J.A., & Newton, D. (2013). Beyond blended learning: A case study of institutional change at an Australian regional university. *Internet & Higher Education, 18*, pp. 54-60.

Torrisi-Steele, G. (2011). This thing called blended learning – a definition and planning approach. In K. Krause, M. Buckridge, C. Grimmer and S. Purbrick-Illek (Eds.) *Research and Development in Higher Education: Reshaping Higher Education, Gold Coast.* (Vol. 34, pp. 360-371).

Twigg, C.A. (2003). Improving learning and reducing costs: New models for online learning. *EDUCAUSE Review, September/October 2003*, pp. 28-38.

Vaughan, N. (2007). Perspectives on blended learning in higher education. *International Journal on E-Learning, 6*(1), pp. 81-94. Chesapeake, VA: AACE. Retrieved from https://www.learntechlib.org/p/6310

Westbrook, K. (2008). The beginning of the end for blended learning? In P. Sharma (Ed.*), IATEFL CALL Review, Summer 2008*, pp.12-16. http://ltsig.iatefl.org/wp-content/uploads/cr0802.pdf

Please cite as: Pannan, L. & Legge, K. (2016). A blended learning model and a design model combine to support academics in pedagogical redesign of the curriculum. In S. Barker, S. Dawson, A. Pardo, & C. Colvin (Eds.), *Show Me The Learning*. *Proceedings ASCILITE 2016 Adelaide* (pp. 487-497).

Note: All published papers are refereed, having undergone a double-blind peer-review process.