

Curriculum transformation using a blended learning design toolkit

Ali Alammery, Angela Carbone and Judy Sheard

Monash University, Melbourne, Australia



Overview

- Based on the work of my PhD student
- Explored design challenges to create a blended learning course
 - What is blended learning?
 - What delivery methods are available?
- Research approach to address the design challenges
- Produced a toolkit – BlendIt
- Feedback on the use of the toolkit
- Future Work

What is a blended course?

*A course that **thoughtful** integrates different instructional methods such as: lecture, discussion group, self-paced activity; and contains both face-to-face and online portions*

- This thoughtful integration is challenging for most academics

(Alammary, A., Sheard J, Carbone A., 2014)

Blended learning delivery methods

- Classified into five categories

- 1 Face-to-face instructor-led: Students attend a class where an instructor presents material, there is an opportunity for interaction, hands-on learning or practice. (e.g., lecture, tutorial, lab)
- 2 Online instructor-led: Instruction delivered online with an instructor or facilitator who sets the pace and/or offers interaction (e.g., virtual classrooms, webcasts, scheduled Internet instruction)
- 3 Face-to-face collaborative work: Educational approaches that encourage students to work together in-class (e.g., problem-based instruction, cooperative learning, writing groups, peer teaching, workshops, discussion groups)
- 4 Online collaborative work: Educational approaches that encourage students to work together online (e.g., online discussion groups, online learning communities)
- 5 Online self-paced: (e.g., podcast, online Reading)

Two major design challenges



Deciding the proportion of online to face-to-face components of a blended course



Deciding the most appropriate delivery method to achieve each course outcome

(Jokinen and Mikkonen, 2013, Mohanna et al., 2008, Mortera-Gutiérrez, 2006)

Research background

- These challenges are influenced by many criteria relating to



The students



The nature of the course



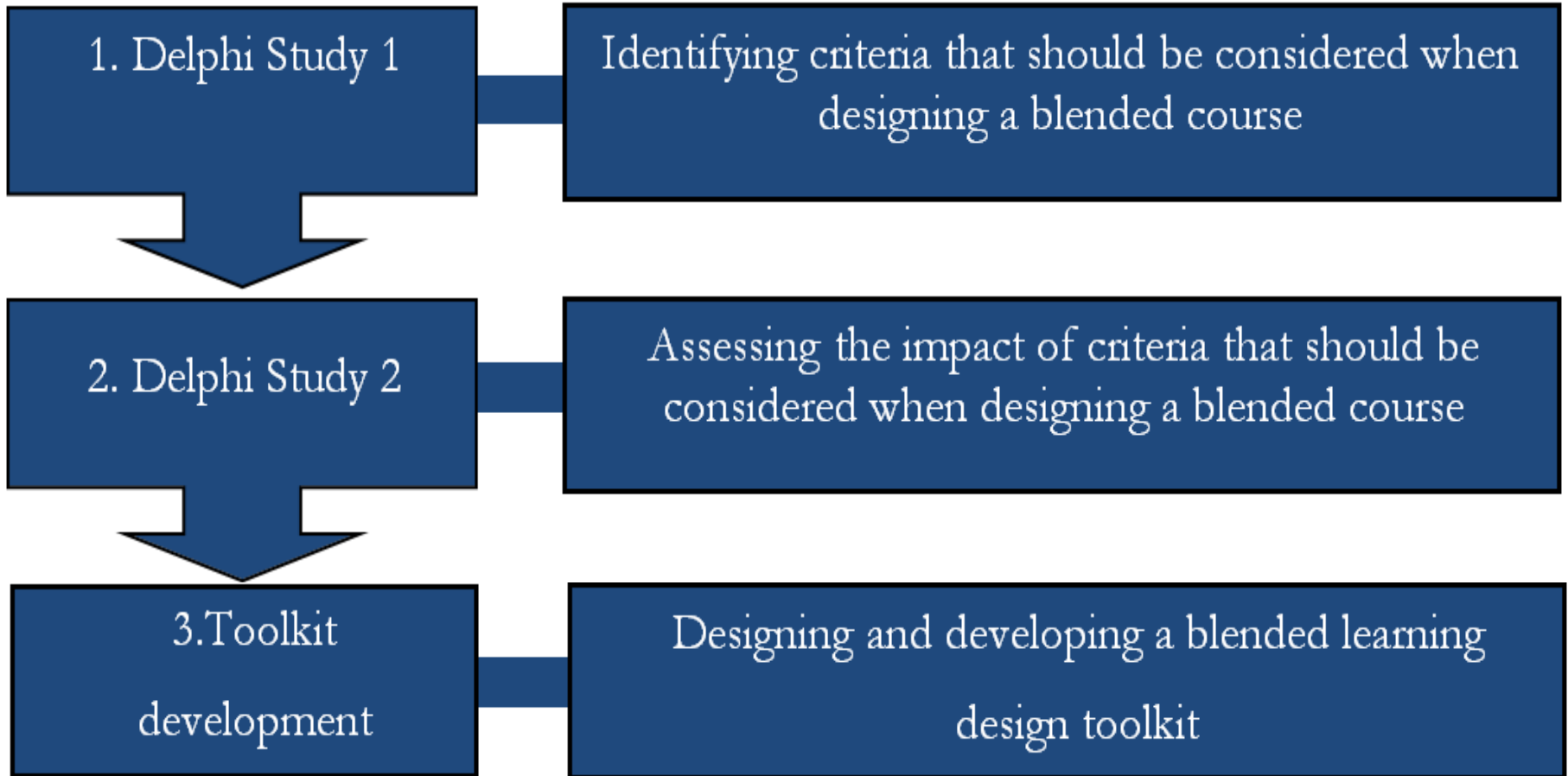
The educator



The educational institution

- No systematic investigation has been conducted to identify and assess the impact of these criteria

Research Approach



Delphi Study

- The Delphi method is a structured process for consolidating opinions of a group of experts into a judgement on an issue
- It employs a series of data collections and analysis techniques to reach consensus on a particular topic

Hsu, C.-C., and Sandford, B.A. (2007).

Skulmoski, G.J., Hartman, F.T., and Krahn, J., (2007)



Delphi Study 1 - identify two sets of criteria



Set 1- Criteria that academics should consider when deciding the **proportion of online to face-to-face** components of a blended course

- Two round Delphi survey



Set 2 - Criteria that academics should consider when deciding the **most appropriate delivery method**

i.e.. Face-to-face instructor-led; Online instructor-led; Face-to-face collaboration; Online Collaboration; Online self-paced

Delphi Study 1

- Recruiting an expert panel
 - 11 different disciplines,
 - average 6-20 years teaching experience,
 - most had 10+ years of online delivery experience

- Conducting the Delphi Survey
 - 19 completed survey
 - 37 criteria were found to influence the decision regarding the proportion of online components
 - 11 criteria were found to influence the selection of the most appropriate delivery methods.



Set 1: Criteria that should
be considered when deciding ...
**the proportion of online to face-to-
face components of a blended
course**

Alammary, A., Sheard J, Carbone A., (2014).

Top 10 criteria

Name	Category	Importance Rate ¹
Teacher's willingness to try new teaching methods	Teacher	4.2
Technical support	Institutional	4.13
Supporting teaching innovation	Institutional	4.13
Availability of technology to enable online delivery: Do you have all the technology that you need for the online delivery (e.g., camtasia, audio recording software, Learning Management System)	Course	4.07
Students' access to campus (Do they live near or away from the campus ?)	Student	4.07
Students' access to technology (Can they access the technology required for the course ?)	Student	4
Teacher's workload (Do they have time allowance for redevelopment ?)	Teacher	3.93
Students' life situation (Any outside commitments, such as work or family ?)	Student	3.93
Teacher's experience in designing for blended learning	Teacher	3.87
Peer support and mentoring (Are they provided with peer support and mentoring ?)	Teacher	3.87

¹ Mean of ratings of importance (1 is very unimportant and 5 is very important)



Set 2: Criteria that should
be considered when deciding ...
**the most appropriate delivery
method to achieve a course
outcome**

Top 10 criteria

Name	Category	Importance Rate ¹
Level of support for the technology required to deliver the course outcome	Institutional	3.87
Availability of appropriate staff	Course	3.67
Availability of technology to enable online delivery of the learning outcome	Learning outcome	3.67
Resourcing, such as space and technology, available per student	Course	3.53
Students' preferred learning style (Online or face-to-face)	Student	3.33
Knowledge type: factual, conceptual, procedural or metacognitive	Learning outcome	3.2
Student expertise with respect to the learning outcome (More scaffolded approaches help novices but can hurt the learning of experts)	Learning outcome	3.2
Students' preparedness for study	Student	3.2
Number of students enrolled in the course	Course	3.13
Level of learning: remembering, understanding, applying, analysing, evaluating or creating	Learning outcome	3.07

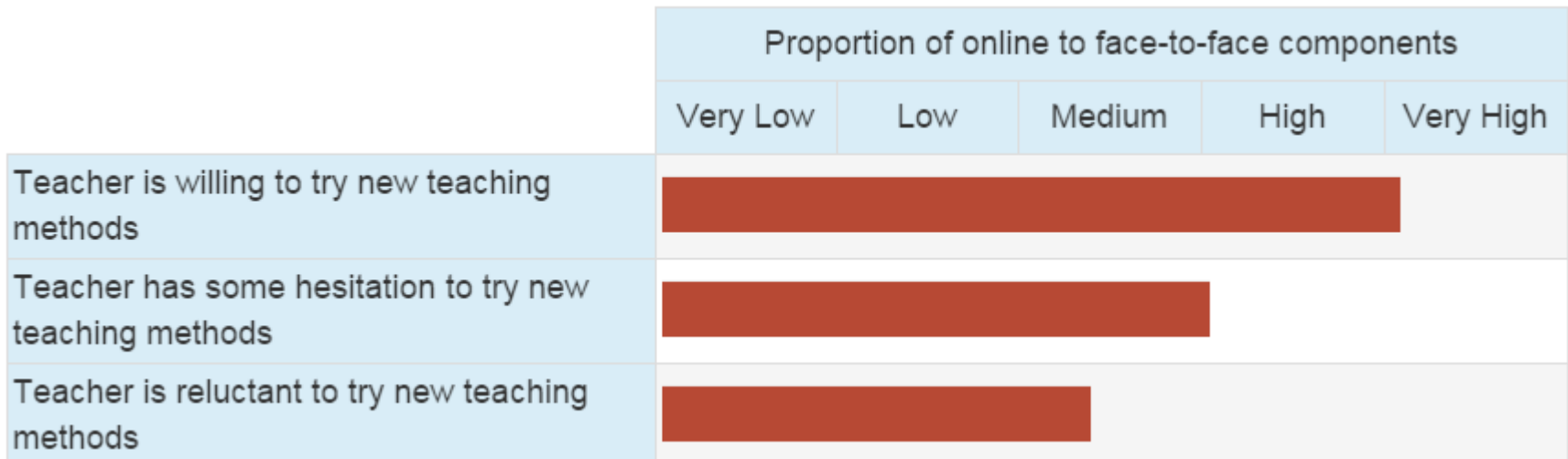
¹ Mean of rating of importance (1 is very unimportant and 5 is very important)

Delphi Study 2 - Assessing the impact of each criterion

- 18 completed survey
- For each criteria in Set 1, indicate the proportion of online to face-to-face components that you might include in a blended course ... (very low online to very high online components)
- For each criteria in Set 2, indicate the appropriateness of each delivery method ...
 - Face-to-face instructor-led;
 - Online instructor-led;
 - Face-to-face collaboration;
 - Online Collaboration;
 - Online self-paced

The proportion of online to face-to-face components of a blended course

1. Teacher's willingness to try new teaching methods
 - the more willingness the teachers have to try new teaching methods, the more online components that could be incorporated into the course



The most appropriate delivery method to achieve each course outcome

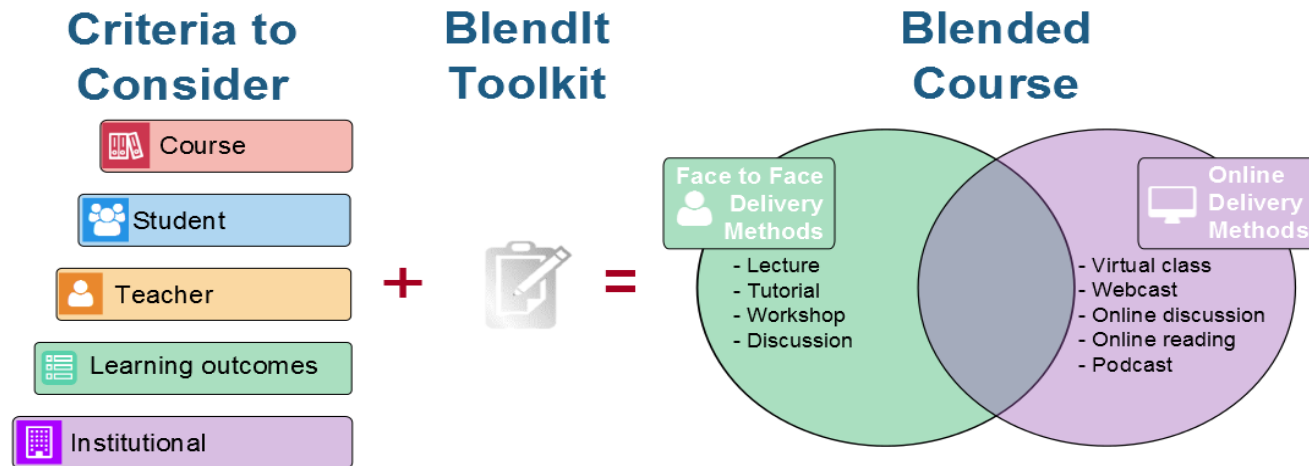
1. Level of support for the technology required to deliver the course outcome

The degree of appropriateness of each delivery method (Out of 5)

Technology required to deliver the course outcome has a high level of support	online collab	Online self-paced	online instructor-led	f2f collab	f2f instructor-led
	4.3	4.1	3.8	3.7	3.3
Technology required to deliver the course outcome has a moderate level of support	f2f collab	f2f instructor-led	online collab	Online self-paced	online instructor-led
	3.7	3.5	3.4	3.2	3.1
Technology required to deliver the course outcome has a low level of support	f2f collab	f2f instructor-led	online instructor-led	Online self-paced	online collab
	4	3.9	2.4	2.4	2.3

BlendIt – A Toolkit

- The results of the two Delphi studies have informed the development of a blended learning design toolkit called BlendIt <http://blendit.infotech.monash.edu/blendit/Default.aspx>
- BlendIt asks users questions related to the different criteria



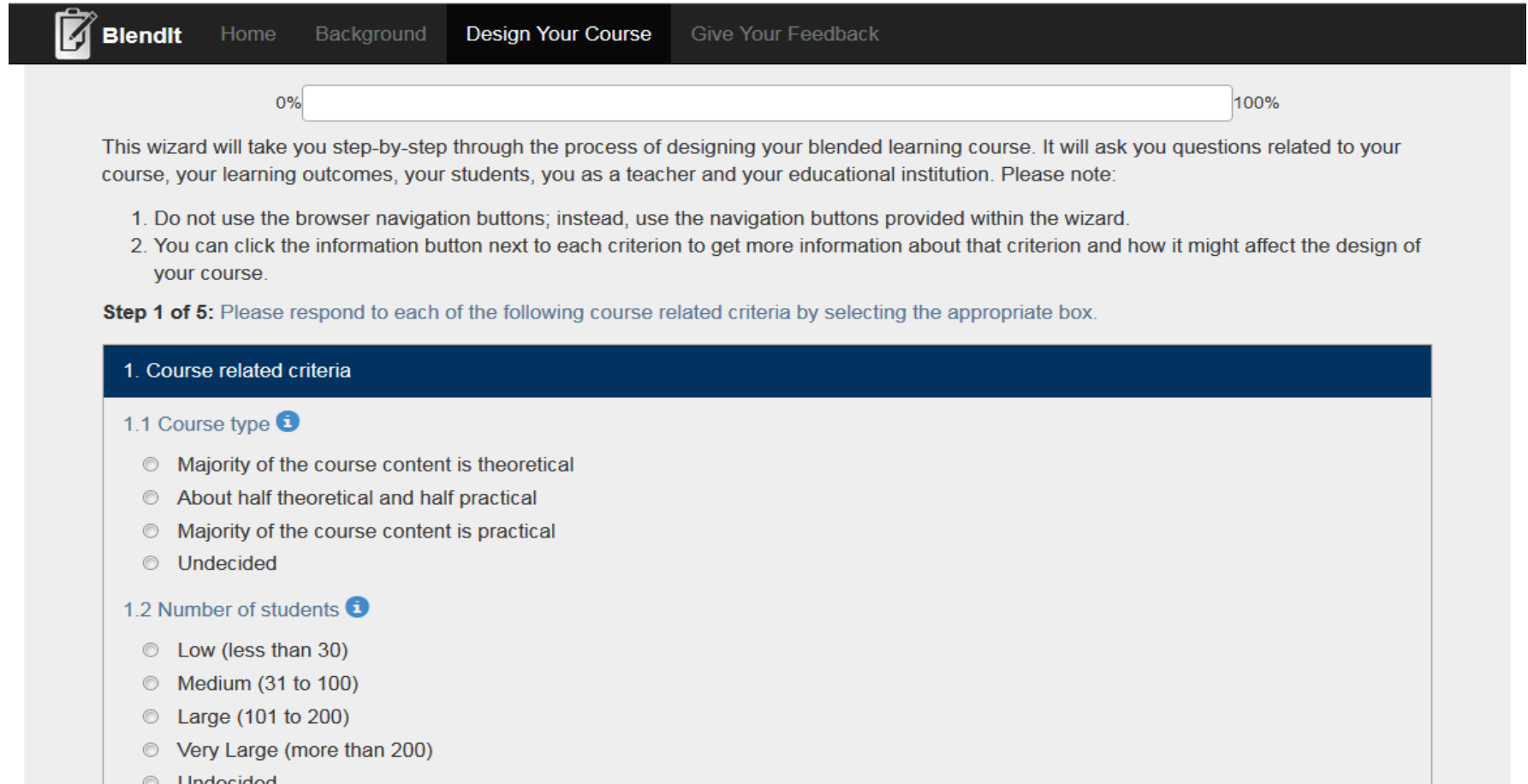
BlendIt Toolkit

- Technical aspects:-
 - It uses a popular Multi-Criteria Decision Analysis (MCDA) method called FUZZY TOPSIS to analyse users input and produce recommendations
 - MCDA is a widely used decision support approach that can improve the quality of decision by making the decision process systematic, transparent and justifiable

(Alammary, A., Sheard J, Carbone A., 2014)

BlendIt Toolkit

- BlendIt asks users questions related to the different criteria



The screenshot shows the BlendIt Toolkit interface. At the top, there is a navigation bar with the following items: BlendIt (with a clipboard icon), Home, Background, Design Your Course (highlighted), and Give Your Feedback. Below the navigation bar is a progress bar showing 0% completion. The main content area contains the following text:

This wizard will take you step-by-step through the process of designing your blended learning course. It will ask you questions related to your course, your learning outcomes, your students, you as a teacher and your educational institution. Please note:

1. Do not use the browser navigation buttons; instead, use the navigation buttons provided within the wizard.
2. You can click the information button next to each criterion to get more information about that criterion and how it might affect the design of your course.

Step 1 of 5: Please respond to each of the following course related criteria by selecting the appropriate box.

1. Course related criteria

1.1 Course type [i](#)

- Majority of the course content is theoretical
- About half theoretical and half practical
- Majority of the course content is practical
- Undecided

1.2 Number of students [i](#)

- Low (less than 30)
- Medium (31 to 100)
- Large (101 to 200)
- Very Large (more than 200)
- Undecided

BlendIt recommendations

- R1: The proportion of online to face-to-face components

Recommendation 1: the recommended proportion of online to face-to-face components

The recommended proportion is:

- High proportion of online components (56% to 80% of the course components are online with the rest being face-to-face)

See the table below for the final ranking of the different proportions.

Alternative	Rank *
1 Very low proportion of online components (less than 20% of the course components are online with the rest being face-to-face)	5
2 Low proportion of online components (20% to 45% of the course components are online with the rest being face-to-face)	4
3 Medium proportion of online components (46% to 55% of the course components are online with the rest being face-to-face)	2
4 High proportion of online components (56% to 80% of the course components are online with the rest being face-to-face)	1
5 Very high proportion of online components (more than 80% of the course components are online with the rest being face-to-face)	3

* Click the arrows for ascending or descending sorting.

BlendIt recommendations

- R2: the most appropriate delivery method to achieve each course outcome

Recommendation 2: the most appropriate delivery methods

[Click here to see the possible delivery methods in a blended learning course](#)

Learning outcome # 1: students will list nine reasons for conducting a needs assessment.

- The most appropriate delivery methods are: Online self-paced and Face-to-face collaborative work

See the table below for the scores of the different delivery methods.

	Alternative	Rank *
5	Online self-paced	1
3	Face-to-face collaborative work	2
1	Face-to-face instructor-led	3
4	Online collaborative work	4
2	Online instructor-led	5

* Click the arrows for ascending or descending sorting.

BlendIt integrated into CEED

- BlendIt was used in a CEED module (short online 6 hour course) at Monash university
- The module is offered as part of the Continuing Education Excellence Development program, under the Technology and Space theme



CEED module-- 'Planning for effective blended learning'



TECHNOLOGY AND SPACE

Planning for effective blended learning



Topic 1 The definition and components of blended learning

Topic 2 Three different design approaches

Topic 3 Design challenge1: deciding the proportion of online components

Topic 4 Design challenge2: Selecting the most appropriate delivery methods

Topic 5 BlendIt: a blended learning design toolkit

Academic engagement in the module

Module was offered for the first time in semester 1, 2017

Registered	62	
Completed	54	87%
Withdrew	1	1%
Non-completion	7	11%

Evaluation Survey from participants in 2017

Quality of the modules reported by participants						
2017	No. of Participants	Q1: The content of this module is relevant to my current or future academic practice	Q2: The teaching in this module assisted me to achieve the learning objectives	Q3: The various aspects of the module (feedback, activities, assessment and resources) worked well together to help me learn	Q4: The module was well organised	Q5: I am likely to incorporate learnings from this module into my future academic practice
Semester 1	54	3.65	3.39	3.51	3.84	3.53

Scale

<= 3.00

Needing critical attention

3.01-3.79

Needs improvement

3.80-4.69

Meeting aspirations

>= 4.70

Outstanding

Evaluation Survey from participants in 2017

- Positive comments:

- *The use of the BlendIt tool at the end of the module was the best part of this module. What a great innovation.*
- *I found it really valuable - thank you. There is a great disparity in what staff in our school consider to be the appropriate learning style, with some advocating a complete 'flip' of teaching and removal of all lectures. We trialled this for 2 years, and the students have indicated in SETUs that they did not like it. This module seems to advocate a more moderate approach, with a combination of both.*
- *Having a go with the BlendIt software helped to integrate some of the key concepts.*

Evaluation Survey from participants in 2017

- Negative comments:
 - *It does appear to have a bias towards a high proportion of online activity. I think this is more difficult to obtain with a high cohort of international (NESB) students*
 - *I felt like for the most part the module wasn't sufficiently actionable*
 - *If this is to work well, then we need more personal feedback relevant to our units. Most of the feedback is too generic*
- Suggested improvements:
 - Providing examples on how BlendIt recommendations could be implemented
 - “A few practical examples would be useful. Perhaps a choice of exemplars to get ideas from others”*
 - BlendIt should explain the types of activities that could be used to help students achieve a learning outcome
 - “would have really appreciated some ideas on the types of activities that can be undertaken with each style of delivery method”*

Questions



Ali Alammary
Ali.alammary@monash.edu

Angela Carbone
Angela.carbone@monash.edu

Monash University, Australia

References

- Oliver , M., & Trigwell, K. (2005). Can 'Blended 'blended Learning' learning' Be be Redeemedredeemed? *E-learning and Digital Media*, 2(1), 17-26.
- Picciano, A. G. (2009). Blending With Purpose: The Multimodal Model. *Journal of the Research Center for Educational Technology (RCET)*, 5(1), 4-14
- Ross, B., & Gage, K. (2006). Global perspectives on blending learning: Insight from WebCT and our customers in higher education. In C. J. Bonk & C. R. Graham (Eds.), *Handbook of blended learning: Global perspectives, local designs* (pp. 155- 168). San Francisco, CA: Pfeiffer Publishing.
- Norberg, A., Dziuban, C. D, & Moskal, P. D. (2011). A time-based blended learning model. *On the Horizon*, 19, 207-216. <http://www.emeraldinsight.com/loi/oth>
- Alammary, A., Sheard J, Carbone A., (2014) *Identifying criteria that should be considered when deciding the proportion of online to face-to-face components of a blended course. Proceedings of the 48th Annual Hawaii International Conference on System Sciences (HICSS)*, Grand Hyatt, Kauai, January 5-8, 2015.
- Alammary, A., Sheard J, Carbone A., (2014) *Identifying criteria that should be considered when deciding the proportion of online to face-to-face components of a blended course. Proceedings of the 48th Annual Hawaii International Conference on System Sciences (HICSS)*, Grand Hyatt, Kauai, January 5-8, 2015.
- Hsu, C.-C., and Sandford, B.A., "The Delphi Technique: Making Sense of Consensus", *Practical Assessment, Research & Evaluation*, 12(10), 2007, pp. 1-8.
- Skulmoski, G.J., Hartman, F.T., and Krahn, J., "The Delphi Method for Graduate Research", *Journal of information technology education*, 6(2007), pp. 1.

References - continued

- Whitelock, D. & Jelfs, A. (2003) Editorial: Journal of Educational Media Special Issue on Blended Learning, Journal of Educational Media, 28(2-3), pp. 99-100.
- Driscoll, M. (2002) Blended Learning: let's get beyond the hype, E-learning, 1 March. Available at: <http://elearningmag.com/ltimagazine>
- Garrison, R, & Vaughan, H (2008) Blended learning in higher education: Framework, principles and guidelines, San Francisco, CA: Jossey-Bass