# BLENDED LEARNING EXTENSION IN A GLOBAL COLLABORATIVE LEARNING ENVIRONMENT

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## ABSTRACT

*The advancement of technology and the internet have created global collaborative learning opportunities and changed learning and teaching in any discipline around the world, including in developing countries. The availability of web-based resources and high-speed internet infrastructure has extended the opportunities to conduct blended learning and new ways of distance learning beyond virtual class room webinars. The aim of this exploratory paper is to review the challenges and opportunities for increasing student engagement in virtual learning. A reflective analysis of international collaborative learning case studies, published articles and practices in virtual learning is used to explore the extension of blended learning organised and participated by institutions from multiple countries. The lessons learnt from flexible learning delivery in professional practice courses in Property Education are used to evaluate potential extensions of blended learning implementation in a global context.*

Keywords: blended learning, student engagement, professional based learning, virtual learning, work integrated learning

## 1. INTRODUCTION

Recent Australian Federal Education Budget cuts have attracted negative responses from university students across Australia in May 2014. The Australian government removed the maximum contribution amount for students at universities and other higher education institutions and the Commonwealth subsidy to the institution will be reduced. Therefore, tertiary institutions will be able to determine the tuition fees (Australian Government Department of Education, 2014). The impact of this will start in 2016 when students start paying interest on their Higher Education Loan Program (HELP) and tuition fees will increase for coursework and higher research degrees.

In addition, internationalisation and globalisation have a great impact on Australian tertiary education. Australia is the most expensive country for overseas students, more expensive than United States and United Kingdom (see Figure 1).
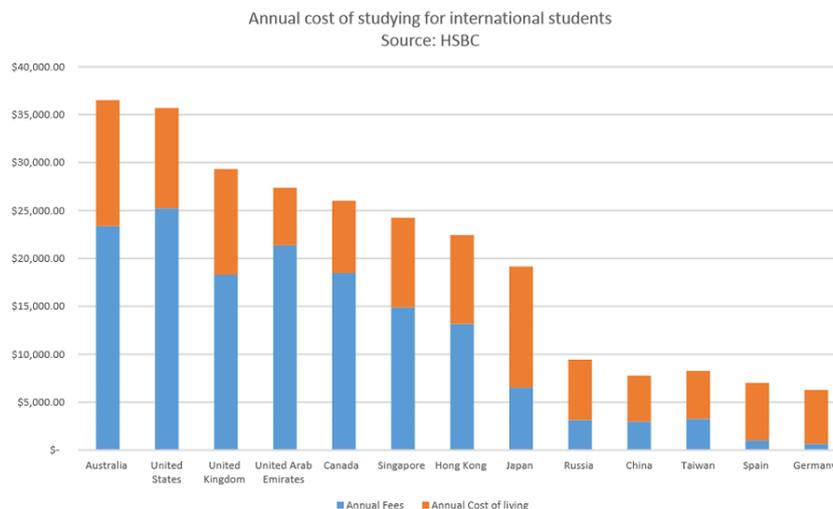


Figure 1. Annual cost of studying for International students

Source: HSBC in Pash (2014)

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This situation encourages tertiary institutions to increase their delivery effectiveness to remain competitive to attract both domestic and international students. External study is considered as a 'cheaper' delivery option as institutions do not have to provide physical infrastructure like classrooms. On the other hand, external study provides flexible learning options, which will support students who want to study but also have to work to support themselves financially. Flexibility to study in their own time has attracted many external students or distance-learning students. However, the paper based distance learning did not support collaborative and active learning as well as real-time support system. The students had to be able to learn independently and relied on minimal support from the course coordinator.

This paper focuses on flexible learning through online delivery or virtual learning. The aim of this exploratory paper is to review the challenges and opportunities for increasing student engagement in virtual learning. The advancement of technology is discussed in the next section, from the complimentary resources storage system until the usage of technology as a replacement of face-to-face meetings. Student engagement in virtual learning is a real challenge in optimising effective course delivery. A reflective analysis of case studies on professional practice like units in Property related courses are used to recommend extension opportunities to explore wider engagement of teachers and learners using virtual learning beyond country borders.

## 2. ADVANCEMENT OF TECHNOLOGY TO FACILITATE VIRTUAL LEARNING

In the early 1990s, the internet infrastructure has just started to be used mainly for localised networks within some countries. When the internet expanded to become a global communication infrastructure, it changed how information was delivered and how knowledge was transferred and stored. The revolution continued as the internet infrastructure improved in capacity and speed as governments around the world invested in telecommunication infrastructure to support the high demand.

Hardware, software and telecommunication network innovation contributed to this information revolution. The development of super computers into mobile computers also marked this revolution. The development of smart phones changed how people learn and communicate with other people. Software developers have to develop software to suit the mobile-based applications as well as for desktops or laptops. The advancement of internet and broadband infrastructure allows greater flexibility for wireless facilities and unlimited data access.

The advancement of computer technology has provided different opportunities to enhance people learning and therefore changes the pedagogy of teaching for educators in primary, secondary and tertiary institution. Harasim (2011) addresses how to design an effective online environment for learning (pedagogy) and how to evaluate students' learning (evaluation). It has affected in-class delivery as well distance education. Face to face classroom delivery is changed as information (in the format of texts, graphics, videos) can be delivered quicker and is searchable through free or subscribed search engine facilities. Initially the technology was used as a repository of information that students could access at any time. These online resources have been used as complimentary sources rather than the replacement of face to face classroom delivery.

The online platforms that are commonly used for teaching and learning are "Blackboard" or "Moodle". These online platforms offer communication tools and a repository of learning resources, references, assessment guidelines and online submission of assessment. There are three types of communication tools commonly used in online platforms. The first is a passive communication tool (announcement) which is used to complement emails sent to students. The second is the two ways communication tools such as discussion board, WIKI or BLOG which can be used not just in real-time (synchronous) but also asynchronously (Board of Regents of the University of Wisconsin System, 2014). The third communication tool is the synchronous communication or conversation like activities: online chatting, audio conferencing and video conferencing are used for instant messaging and also increase clarity of ideas without waiting for a chain of messages.

The online videoconferencing platform can be used for seminar-like events using a website to facilitate the interaction. It is now commonly known as a webinar (Web Seminar). Video conferencing is not an expensive exercise anymore and the ability to transfer and store large files in the cloud has also improved the power of virtual learning. In the early development of video conferencing facilities, virtual meetings could only be facilitated through a special design facility with expensive hardware/ software. However, nowadays the video conferencing can be done using mobile device such as tablet or smart phones.

Both software and hardware advancement needs high-speed internet connection to improve the quality of communication process. The availability of web-based resources and high-speed internet infrastructure has extended the opportunities to conduct new ways of distance learning beyond independent learning. The speed and quality of networks has allowed development of virtual learning for both internal and external students.
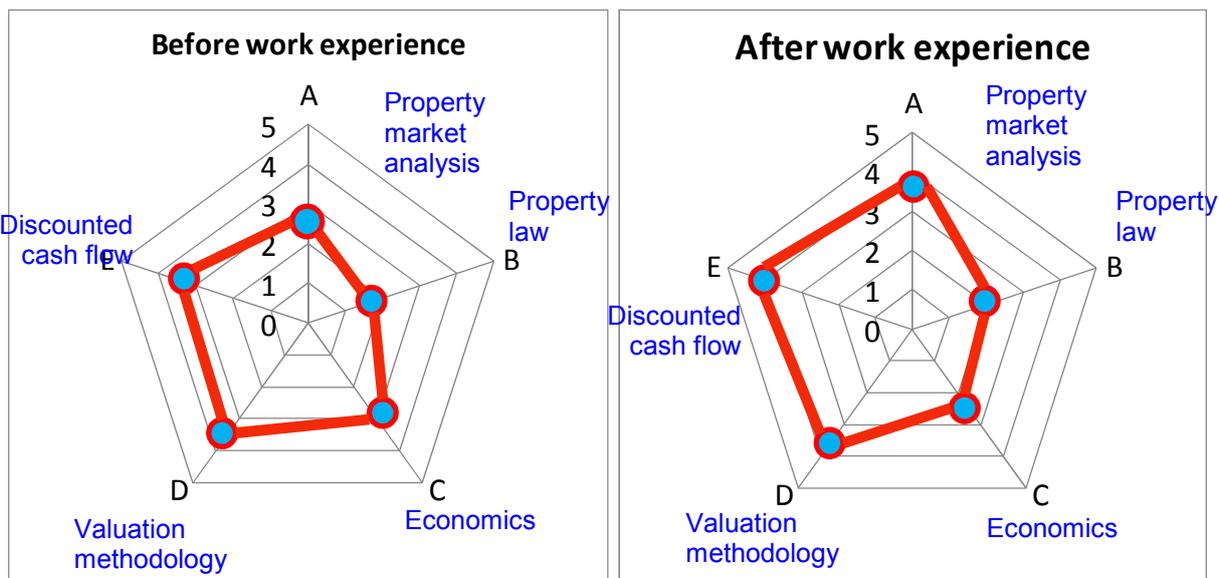
# 3. STUDENT ENGAGEMENT IN VIRTUAL LEARNING

Successful learning is correlated with learners' engagement with teachers as well as with other learners. As mentioned in the previous section, some students may encounter difficulties attending face to face delivery and are therefore not engaged with their peers and teachers. Therefore, traditional lecture delivery which is mainly a one way transfer of knowledge from lecturer to students is no longer the best way to deliver course material. Students can find information relatively easier now from websites and academic publications. Further evident of active learning increases students' performance in undergraduate Science Technology Engineering and Mathematics (STEM) stated by Freeman, et.al. (2014). Students in classes with traditional lecture were 1.5 times more likely to fail than were students in classes in active learning.

The internet creates opportunities to deliver courses in virtual classrooms through webinars and other blended learning techniques. Blended learning can be delivered through combinations of face-to-face instruction and asynchronous and/or synchronous computer technologies (Glogowska, 2011; Lam et al., 2011; Wilson, 2012). Blended learning approaches have helped address issues of access and flexibility as well as student engagement and endorses the claims that access to virtual classrooms have the potential to increase flexibility and access as well as help students feel engaged and connected (Loch, Reushle, Jayne & Rowe, 2010; Moore & Kearsley, 2012).

Blended learning is a way of supporting flexible learning by maximising the advantages of face-to-face learning and the use of ICT technologies to support student learning.. The main benefit of face-to-face learning is the synchronous interaction between teacher and students and also active interaction among peer-students through collaboration. This is now possible with the advancement of technology conducted in virtual learning environments through video/ audio conferencing facilities.

A traditional lecture (class-room based delivery) is not suitable for supporting students who are doing internships or professional practice based learning: The main difficulty is arranging suitable timetables with workplace hours. This student engagement review highlighted the need to improve learning experiences; increase student engagement and collaborative learning; and to be more flexible since many students study and work part time. In the face to face classes, the students benefit from attendance if the classroom delivery is designed as an interactive lecture or hands-on tutorial session. These collaborative learning and active learning strategies have improved students' engagement in class. Using technology to support this process will facilitate students' learning not just in the large virtual classroom but also in smaller virtual group.. The online platform also designed to facilitate students' lead initiatives within smaller groups or bigger group. The group can also participate in both synchronous and asynchronous communication activities.

Figure 1 is an example of in virtual classroom activities that invite student engagement through a whiteboard exercise. The first diagram reflects the five technical skills of Property Economics graduates. This is an exercise to compare the level of skills before and after work experience. This exercise assists students to think about and identify the skills and their level of competency as well as providing an opportunity to reflect on what have they have learnt within their degree program and how their skills have improved.



| Level | 0 | 1 | 2 | 3 | 4 | 5 |
|-------|---|---|---|---|---|---|

| Description | No skills | Poor Skills | Some Skills | Moderate | Good Skills | Proficient Skills |
|---|---|---|---|---|---|---|
| | | | | | | |

**Figure 1. Example of self-assessment exercise of technical skills level of Property Economic Students**

From 2010 to 2013 the delivery of the Work Integrated Learning program at the Queensland University of Technology changed from face to face interactive lectures into a combination of face-to-face, asynchronous self study and synchronous webinar sessions (Peach, Gomez & Ruinard, 2013). The blended learning combination starts with introduction of intensive, on-campus, seminars; online, self-paced Career Development Modules; real time webinars (using Blackboard Collaborate); student WIKIS as part of the learning management system (Blackboard); student online presentations; online guest speakers; and peer review using Google forms. As part of the face to face delivery, students are taught how to use the online tools for webinar (elluminate which subsequently changed to Blackboard Collaborate).

These adjustments have helped address issues of access and flexibility as well as student engagement and endorses claims that access to virtual classrooms has the potential to increase flexibility and access as well as help students feel engaged and connected (Loch Reushle, Jayne & Rowe, 2010; Moore & Kearsley, 2012). However, continuous evaluation of the blended learning approach has also highlighted the importance of scaffolding the transition from face-to-face to blended learning for staff and students; motivating students to remain engaged online; regular communication; regular feedback on students' work; pre and post webinar activities; clearly presented content; the need to adjust teaching styles in the blended environment; and ongoing, training needs of staff and students in the use of technology. (Peach, Gomez, Ruinard, 2013; Quinn, et al., 2012; Salmon, 2002).

The clear advantage of using virtual learning opportunities has allowed distance students to complete the unit at the same time as working. Although the webinars are recorded and students can play webinar sessions at their own leisure, they will not gain the full benefit of collaborative and active learning if they do not physically participate in the webinar sessions. Resta and Laferriere (2007) states that the application of the internet-based technologies in support of collaborative learning in higher education using social interaction analysis. The barriers to participation have been reduced by the advancement of software application on smart mobile devices that can be used to participate in the webinar sessions. However, students still need to have good internet access to be able to effectively participate.

Table 1 illustrates the blended learning features currently used in the Work Integrated Learning unit. The tools are classified as synchronous and asynchronous, however, the synchronous tools can be used as off-line revision or asynchronous contributions if the session has not been closed after the real time meeting completed. For example, the video conferencing sessions are \recorded and the participants can review the conference in their own time after the sessions. All conversations (in the chat-box) and activities are recorded.

The online collaborative tools such as google forms, google docs and gosoapbox are tools that can be used both for synchronous and asynchronouslearning. These powerful tools can be used during real-time meetings, However, the session can be opened before and after the sessions for people to participate and review afterwards.

**Table 1: Synchronous and Asynchronous features and benefits**

| Communication | Features | Benefits |
|---|---|---|
| Synchronous | Video conferencing | Real-time engagement, networking and direct input |
| | Online chatting | Text conversation in the chat box during video conferencing |
| | Online platforms (may be used as multiple users in real-time) Google forms Google docs Gosoapbox (quiz/ polling) | Support online discussion and feedback, support individual and collaborative work within and across teams |
| Asynchronous | Online discussion forums | Support within and beyond classroom delivery i.e. when participants return to workplace |
| | WIKI/Blog | Sharing complex information (graphics and text) and allow peer comments and inputs. |
| | Online sharing files using 'drop-box' and emails | Reading materials readily accessible |
| | e-learning diaries | A record of what has been done/learned and intended future practices i.e. What did you do today?, What did you learn today? How could you use this learning in your work? What (if any) changes will you make to your professional practices |

| | | when you go back to your workplace? |
| --- | --- | --- |

All other asynchronous tools are designed to support flexible learning needs as the information is not required to get immediate responses. The online discussion forums, WIKI and BLOG will allow peer learning as well. Discussion forums are mainly text-based discussion and allow initiating new discussion threads or comments. However, asynchronous tools will only support but not increase student engagement on the real-time webinar sessions.

The following reflection is based on twelve semesters' delivery which designed to improve student engagement. It is difficult to measure the improvement as every semester, the participants of webinars are new users and unfortunately the majority of them will not use the same delivery method in their degree. The continuous improvement has been conducted by the teaching team who are consistently teaching the units, adding new interactive activities before, during and after webinars. Prior to the webinars, students will be given tasks that relate to the webinars, however, students rarely complete these (in the author's experience). Thus, the teaching team have been introducing in-webinar activities to improve their learning despite the lack of prior preparation. During the sessions, students can contribute by writing on the white board or provide feedback/ instant responses (emoticons, quizzes/ surveys, multiple choice selections).

In the following semester, the teaching team will focus on motivating students to attend the real-time sessions rather than listening the recorded lecture. Students will attend the webinars if they can see the tangible benefits in relation to the summative assessments. Assessment driven delivery is used to design the delivery. However it is not easy to engage students with diverse disciplines and experience (Susilawati and Peach, 2012). The sessions will be delivered in more tutorial-like activities and part of the sessions (hands-on) and smaller group interaction with academics will not be recorded. In addition, we are providing incentives and rewards for students who attend and participate on the online webinar in real time.


## 4. BLENDED LEARNING AND EXTENSION OPPORTUNITIES

The lessons learnt from blended learning delivery mentioned in the previous section can be listed as:

- The learning resources that develop for face-to-face delivery cannot be use for real-time virtual delivery. The material needs to be completely redesigned for delivery on-line. In-class interactive activities may not work in the virtual platform.

- Design the blended delivery to allow combination of asynchronous and synchronous tools.

- Selection of 'hardware' and 'software' that suitable as online platform.

- The learners have to know how to participate using the online platform by providing pre-recorded video as practice/ exercise sessions sandpit for students.

This paper explores opportunities to extend beyond single unit and single institution provider. Using online platforms provides greater flexibility for the participants. Both students and lectures may participate beyond country boundaries and beyond one institution. The more recent development of MasterClass by UNESCO will extend blended learning delivery for global network.

The CONNECT-Asia (COllaboration for Network-eNabled Education, Culture, Technology and science) was created in June 2009 to share experiences on information and communication technologies and work together for education and research (UNESCO, 2014). The collaboration within Asia-Australia region (e.g. Asia) is preferable as the time differences across countries still acceptable.

The network is creating an effective and flexible mechanism for using information and communication technology (ICT) based learning and teaching methods (CONNECT-Asia, 2014). Therefore, it will broaden access to knowledge and information. The network also facilitates the global collaboration in research and education. CONNECT is a group of national, sub-regional, and regional ICT networks listed below. The group is actively contributes to the improvement of education and research in Asia and the Pacific.

CONNECT-Asia Network list in its e-booklet are: (CONNECT-Asia, 2014)
1. School on Internet Asia (SOI Asia), SOI Asia site in Timor Leste
2. Indonesia Higher Education and Research Network (INHERENT)
3. Malaysian Research & Education Network (MYREN)
4. Philippines Research, Education and Government Information Network (PREGINET)
5. University Network (UNINET)
6. Lanka Education and Research Network (LEARN)
7. Pakistan Education & Research Network (PERN)
8. Nepal Research and Education Network (NREN)

9. Korea Research Environment Open NETwork (KREONET)
10. The Asia-Pacific Advanced Network (APAN)

One of the successful activities conducted by CONNECT-Asia is "One day in Asia". The idea was to utilize the power of CONNECT-Asia ICT networks and mobile technology to livestream a broadcast from UNESCO World Heritage sites located in multiple countries. The two hour event would go from noon in Nepal to night-time in Australia, wrapping up one whole day in Asia, plus morning in Greenwich, England. Table 2 shows the list of the participants of "One day in Asia" event.

The Regional Science Bureau for Asia and the Pacific Scopes JFIT (Japan Funds in Trust) assisted CONNECT-Asia to conduct MasterClasses events. The MasterClass development workshop was conducted by UNESCO Jakarta office from 12 to 13 September 2014 in Savoy Homann Bidakara Hotel in Bandung, Indonesia. The MasterClass workshop participants (30 participants) from a number of National Research and Education Network (NREN) discussed the development of Masterclass content and application of CONNECT-Asia e-learning platform to synthesize and share best practices and e-learning through a number of MasterClasses (UNESCO office in Jakarta, 2014).

The workshop consolidated e-learning experiences among all stakeholders for effective operation of CONNECT Asia network. Using the ICT networks, UNESCO want to increase access to quality education tools and resources to deliver MasterClasses to a wider audience, beyond those directly participating in the project. The MasterClass proposals which developed during the meeting are very diverse from Sustainable development, community sustainable livelihoods, community based flood management, Biosphere Reserves and living laboratories, and School of mathematics and handling big data.

## Table 2. One day in Asia

| Countries | Cultural sites | Time Zone (UTC) | In cooperation with |
| --- | --- | --- | --- |
| Nepal | Patan Durbar Square | +5.45 | Nepal Research and Education Network |
| Myanmar | Shwedagon Pagoda | +6.30 | SOI Asia – University of Computer Studies Yangon |
| Indonesia | Angklung Musical performance | +7 | Dapur Angklung Jakarta – Angklung Artist Community |
| Malaysia | A Famosa, Malacca city | +8 | MYREN, Universiti Malaya, Universiti Putra Malaysia |
| Japan | Kamakura | +9 | SOI Asia – Keio University |
| South Korea | Uam Historical Park | +9 | KREONET – Chungnam National University |
| Australia | Sydney Opera House | +11 | Asia-Pacific Advanced Network (APAN) |
| England | Greenwich | 0 | SOI Asia – Keio University |

Source: Adopted from CONNECT-Asia (2014)

The MasterClass proposals will be developed with the consideration of using blended learning. The virtual lectures will be delivered through web-seminars (webinar). In addition, the learners will be required to conduct both individual and peer learning. Therefore, the richness of learners' learning will depend on their collaborative learning experience. Diversity of learners' background will create extra challenges for the instructor of MasterClasses to design classes that fit any one with diverse background. One of the strategies might be suitable is providing pre-workshop reading and also pre-test to gauge the level of understanding of those learners. It is difficult to find global examples that can be simplified to the individual learners' experiences. However, learners might find the collaborative learning strategy will enlighten their learning process.

In professional practice based learning, learners will use their individual professional experiences for implementing new knowledge that they learnt during the course delivery. The learners have limited opportunities to develop their skills

fully due to the timing of the program, which is only a few weeks to a few months. Some programs will require participants to develop their back to work plan using the new knowledge gained in the program. The learners' experience during this program is enriched through interaction with other learners. The peer learning could be as important as individual learning. Collaborative learning can take place through interaction with other participants which is not possible if individual learners study independently like the traditional distance learning program.

The learners may feel it is very complex and not easy to implement the knowledge and skills gained to their local situations. It is not easy to accommodate both 'think globally and act locally' in the short MasterClass session. Thus, learners will need to keep a reflective journal to synthesis their learnings, experiences and future action plan strategies. The reflective journal is an integral part of the learning tools together with prior reading and learning resources as well as the in-class (virtual class) interactive activities. Learners will see the direct benefits of the MasterClasses, if they can get feedback on the implementation of new knowledge on their back to work plan.. The peer learning is useful to help the feedback process and instructors can provide general and specific feedback.

The global MasterClass will open opportunities for delivery of cost effective virtual learning courses for participants in developing countries. Beside the time differences, the language and culture barriers will be considered in delivery preparation. A different strategy will provide students with tasks that they can participate in the 'safe' learning environment. The MasterClasses are a work in progress and the outcomes of the global collaboration blended learning extension will be closely reviewed in the future.

# 5. CONCLUSION

The revolution in Information and Communication Technology (ICT) has changed teaching and learning development and delivery. It creates some challenges for both learners and teachers to optimise online platforms for research and teaching. However, it creates opportunities to provide flexible learning as well as broaden the participant cohorts beyond one institution and beyond countries. It will be particularly beneficial for professionals in remote and regional areas.

The design of the blended learning approach is not the same as delivering learning resources developed for face to face interactive lectures. In addition to face-to-face discussion and delivery, interactive online discussion, a range of technological innovation and online feedback will be used to enhance the learning experience. The integration of preparation, during and after webinars will contribute to the success of blended learning delivery. The use of real-time (synchronous) and asynchronous communication tools in delivery will facilitate students to arrange their flexible study time to fit with their other commitments.

Finally, UNESCO MasterClass using the CONNECT-Asia network has been designed as blended learning approach. The same technology may be used however the language and culture barriers will require further refinements on contents and delivery planning for the MasterClass beyond country boundaries.

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