

2021

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Recommended Citation

Jenkins, L. E., & Crawford, R. (2021). Pre-service Music Teachers' Understanding of Blended Learning: Implications for Teaching Post COVID-19. *Australian Journal of Teacher Education*, 46(7).
<http://dx.doi.org/10.14221/ajte.2021v46n7.5>

This Journal Article is posted at Research Online.
<https://ro.ecu.edu.au/ajte/vol46/iss7/5>

Pre-service Music Teachers' Understanding of Blended Learning: Implications for Teaching Post COVID-19

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Abstract: The significant increase in online teaching during the COVID-19 pandemic has created a heightened need for educators to implement teaching methods which do not rely solely on “face-to-face” learning within the same physical space. Blended Learning (BL) is one such approach, allowing for flexibility in the delivery of a class and constant access to unit materials. This paper reports on an investigation, by two Australian Pre-service Teacher (PST) educators, of their students' understanding of BL at the beginning and end of a BL music method unit. Data were collected for three consecutive years with three separate cohorts. Findings indicated that the majority of the participants began the unit with little to no understanding of BL. This improved considerably through direct BL experience, with some exceptions. The implications for the development of flexible and responsive PST education in the current and post pandemic education environment are considered.

Key words: Blended learning, COVID-19, pre-service teacher education, flexible learning and teaching, music teaching.

Introduction

“Higher education institutions have long recognised that holding onto past learning and teaching practices is not congruent with the needs of our knowledge society” (Waha & Davis, 2014, p.172). Currently, the need for teaching approaches to respond to social change is crucial as we experience a global pandemic due to the COVID-19 virus. This crisis has significantly affected educators' and students' safety when working in the confined space of a classroom due to the potential for the virus to be spread from person to person through direct or indirect contact (World Health Organisation, 2020). Prior to this international medical crisis, students expected to be studying in a flexible learning environment with twenty-four hour access to unit resources (Crawford & Jenkins, 2017). This is unlikely to change as the pandemic has brought with it the need for even more flexible teaching approaches which cater for an array of learning contexts. Blended Learning (BL) offers the opportunity to manage this rapidly changing learning environment while providing quality teaching.

Teachers often implement methodologies learnt in their pre-service teacher (PST) courses in their school classrooms and in doing so ‘act as change agents for technology integration in schools’ (Teo et al, 2008, p.163). If BL is taught effectively in a PST course this increases the chance of it being taught well in a school program. PST educators therefore have a responsibility to implement learning which is relevant to the social context, creating focused teaching imperatives. The two researchers, who are both pre-service educators,

implemented BL in their own music method classroom to enhance the learning outcomes and to increase the PSTs' understanding of BL. The researchers sought information about the PST's understanding of BL, both pre-and post-semester. The students were encouraged to think more deeply about BL to develop their knowledge constructs and skills and future professional development; this process also informed the researchers' teaching practices (Crawford & Jenkins, 2018; Eret-Orhan et al, 2018).

Understandings of Blended Learning

“Current literature in the field of blended learning is relatively young” (Singleton, 2012, p.31) and definitions of BL can differ, but a generally accepted understanding is that it combines online and on-campus components (Bicen et al, 2014). By combining these elements the students are experiencing an independent approach to learning while also collaborating with other class members regularly (Garrison & Kanuka, 2004). Some view BL as a substantial integration of technologies into onsite instruction (Picciano, 2006), but this perspective is perhaps limited as BL is a more complex and considered approach than this (De George-Walker & Keeffe, 2010). The educator must consider the planning, implementation and management of the classroom. A two-way interaction takes place between the student and the teacher whereby the student achieves a target and the learning expectations are then modified in response. This leverages students' prior knowledge and capabilities to increase overall learning outcomes (Hamilton & Tee, 2013).

The complexities of BL mean that the development of an effective BL process requires a re-definition of the student and teacher learning relationship (Garrison & Kanuka, 2004). This may involve a refocus from (i) teacher to student (ii) content to experience and (iii) technologies to pedagogies (Oliver & Trigwell, 2005). The implementation of BL in the classroom therefore requires considerable planning and a solid understanding of what it entails. This includes how it affects the role of the teacher, the student experience, course/unit content and the mode of delivery using technology and in-class resources. For PSTs who are in the process of learning their craft and developing different teaching methodologies such as BL, there is a need to make connections between university classrooms and ‘imagined’ school classrooms (Carrington & Salva, 2010). This process will enhance their ability to “meaningfully teach with and integrate digital technologies in learning and teaching” (Lemon & Garvis, 2016, p. 387). With an array of understandings about BL, educators may now need to reconsider how such an approach should be implemented if teaching is to respond effectively to the impacts of COVID-19.

Methodology

The research used an embedded advanced mixed methodology (Creswell, 2014). For the purposes of investigating students' understanding of BL, the data is drawn from a survey and student work samples from online forums. These were compulsory and were implemented via an online learning platform (Moodle).

The research questions were as follows:

- What are the PSTs' understandings of Blended Learning prior to commencing the unit?
- Having participated in a Blended Learning classroom, what are the PSTs' understandings of BL post the unit?

Ethical Considerations

Ethical approval for this project was gained from the relevant university ethics committee for human research. All participants consented to be part of this research and were provided with an explanatory statement prior to participating. As the researchers were the participants' music method educators there was an associated imbalance of power. A process was implemented to address this issue. A third party, who was not an educator of the music students, managed the survey process and de-identified the forms before returning these to the researchers. The provision of hard copy surveys allowed for an efficient de-identification as names were physically removed from the top of the survey front page. To allow for a comparison between participant responses in the pre-and post-surveys, the third party kept a record of the participants with their names and survey numbers. In the post survey this record was used to ensure that each participant received a post-survey with the same number on the front as they completed for the pre-survey.

Blended Learning Implementation in PST Method Classroom

Prior to beginning the research the educators implemented some in-class changes to incorporate a BL approach. These changes were based on the work of Garrison and Kanuka (2004), Oliver and Trigwell (2005), De George-Walker & Keeffe (2010) and Hamilton and Tee (2013). The researchers adopted an understanding of BL as a combination of "face-to-face" and online learning which incorporated a re-consideration of the role of the educator and student. The researchers considered themselves to be facilitators and the students were the focus during class. The sharing of ideas and the development of understandings were nurtured and the students were encouraged to develop their ability to work independently, in a 'face-to-face' group and within an online platform.

The class met for 3 hours on campus each week over a 12 week semester. A predominantly non-paper environment was achieved through the consistent use of technology, particularly ipads, laptops and smartphones. The PSTs understood that they always needed to have a technological device available during class. There was regular participation in online forums both in and out of timetabled class time. The forums engaged with and extended the on-campus class content. This was achieved through the provision of focus questions which prompted all students to participate in an online discussion, and the brainstorming and sharing of teaching approaches, examples and lesson plans. The educators planned their content to include 'real-time' posts during class which were used as a catalyst to stimulate and frame classroom discussion. Web 2.0 content was included as part of activities and online discussion to broaden perspectives and allow for an analysis of ways to teach music in a BL environment.

Participants

All participants were pre-service music teachers who were studying to be secondary school teachers in a Bachelor of Education degree, a Graduate Diploma of Education or a Master of Teaching in an Australian university. The participant numbers in the three separate cohorts were year 1, n=28, year 2, n=28, year 3, n=24, total number of participants, n=80.

Data Collection/ Tools/Protocols

The research tools included a pre-and post-survey which were implemented in each of the three years. The first survey (pre) took place at the beginning of semester and the second (post) was conducted at the end of the semester after the participants had experienced the BL approach in their university classroom. In years two and three some student work samples from online forums were included to enrich the data

Survey Questions

Pre-and post-surveys were provided to participants in hard copy and participants completed the surveys manually. The surveys included open-ended questions which are outlined below. The post survey had some additional questions which engaged with data from the first survey and explored the impact of BL on the participants' thinking about teaching.

Pre:

1. What is your understanding of the term blended learning? (open ended)
2. Why do you think your lecturers have chosen to use blended learning in their workshops? (open ended)
3. With regard to your own learning, do you have any issues with the blended learning approach? Please explain your answer.

Post:

1. What is your understanding of blended learning at the end of the unit? (open ended)
2. Do any of the following terms resonate with your understanding of blended learning? (multiple choice)
3. Why do you think your lecturers have chosen to use blended learning in their workshops? (open ended)
4. After experiencing blended learning as a pre-service teacher-do you value this approach? (Likert scale)
5. Do you feel confident enough to implement this approach in your classroom? (Likert scale)
- Do you think the blended learning approach had a positive impact on your learning (Likert scale). Please explain your answer-how and in what way? (open ended)

The open-ended questions allowed the PSTs to provide a written description of BL from their perspective, including its various elements or characteristics. The findings and discussion section will be based on the data from question 1 from the pre-and post-survey as this provided a valuable picture of participants' development in their understanding of BL from the beginning of semester to the end of semester. The connections between the PST's understanding of BL and how this informs and engages with a post-pandemic educational space is the focus of this article.

Online Forum Student Work Samples

Engagement with online forums was a regular and valued part of the BL classroom implementation. These forums supported the students' developing understandings of their thinking about pedagogy, the role of music in the curriculum and the development of quality teaching resources. Students shared ideas about the inclusion of online learning in their planning for teaching and how they might implement activities and BL teaching in their future school music classroom. These student work samples enriched the data and provided

for greater trustworthiness through triangulation of data (Hendricks, 2009). The samples also provided a deeper perspective on the PSTs’ understanding of BL as a process for learning.

Data Analysis

Content analysis was used to analyse the data from the survey questions as it provided a framework for the counting of the words and phrases and then the interpretation of meaning (Kuckartz, 2014). Words/phrases such as “face-to-face”, traditional teaching, online teaching, forums, facilitator and interaction were counted and used as the basis for an objective coding framework (Berg, 2001). The second step was to analyse in what combinations these words appeared with each other, or with other words, and what meaning this conveyed about the participants’ understanding of BL. The work samples involved a more interpretative form of content analysis to allow for an assessment of the participant’s depth of understanding of how online activities could form part of productive BL learning.

Findings and Discussion

Pre-and Post-Surveys

Year 1

After much consideration of the wide array of BL definitions available, and the implementation of content analysis using a coding framework, it was decided that a satisfactory understanding of BL needed to incorporate a recognition of on-campus “face-to-face” and online components (Bicen et al, 2014; Singleton, 2012). In year 1 some participants displayed ‘no’ or ‘limited understanding’ in the pre-survey with 8 remaining at none/very limited understanding after a semester of BL experience. Positively, 18 of 28 participants showed a good understanding of the BL concept at the post stage. See table 1 below:

Year 1	No response provided (nothing written)	Very limited understanding shown of BL	Showed an understanding that BL is a combination of “Face-to-face”/online delivery	Total no. participants
Pre	5	20	3	28
Post	2	8	18	28

Table 1

Participants 5 and 7 had a limited understanding in the pre-survey with participant 5 suggesting it was about learning together and developing ideas. Participant 7 responded with humour saying “guessing it’s nothing to do with a food blender”. Others did not engage with the concept at all throughout the semester, for example participant 5 who described BL in the post survey as “group work”. Whilst the latter was reflective of one of the activities used frequently in the methods class, this did not demonstrate any development in understanding. In contrast, participant 7’s post survey response showed considerable development. They referred to aspects of the classroom activities “incorporating Moodle, ICT, PowerPoints, group work” which described some of the possible components of BL. Similarly, participant 14 showed an improved understanding, initially believing it was two or more classes being joined together and then at the end of semester understanding it was “a combination of class work and online work/learning”.

The responses of participants such as 5 and 7 belied the assumption that young people's prior knowledge and skill in technology should be leveraged in a BL environment (Hamilton & Tee, 2013; Rosenburg, 2006). If a student enters a PST course without a prior understanding of BL and is unwilling to develop an understanding via their course experience, they will be unlikely to implement BL effectively in their own future school classrooms. There was little proactive behaviour being displayed by these participants in relation to self-development and engaging with different approaches to teaching (Carrington & Salva, 2010).

Several participants showed a good understanding pre- and post-survey, such as participant 27 who initially gave a valid answer which included online and "face-to-face" learning (Bicen et al, 2014; Picciano, 2006). They then developed this into a post response which recognised a "blend of pedagogical methods to deliver a unit of work" which involves group work, private work and technology. This response suggested that the participant 27 had engaged with some of the complexities of BL beyond the "face-to-face" and online combination and had considered the various types of activities which BL could include and the pedagogy which underpins it (Garrison & Kanuka, 2004; Oliver & Trigwell, 2005). Participant 7 cited activities such as the "inclusion of technology and online platforms and group work" which may have been a reflection of their PST classroom experience where this type of work was regularly implemented as part of the BL approach.

The flexibility which BL provides was recognised and participant 24 suggested in the pre- survey that BL means less days spent at university and more online student contributions. In the post survey they said it was about students contributing more via Moodle and participating in discussion of topics outside of class. This response demonstrated an understanding that BL is not limited by time and place, a characteristic our current global education environment expects (Tucker, 2013).

Years 2 and 3

Following the analysis of year one data the researchers decided that the pre- and post-surveys were not sufficient to demonstrate the level of the student's understanding of BL in relation to their own future classroom work. The surveys had not allowed for a demonstration of more complex thinking about the use of Web 2.0 and other possible online inclusions in BL teaching. It was decided to include some student work samples as data to ascertain whether the PSTs were able to recognise and engage with the challenges and limitations of BL.

In addition, the variation in responses from year one participants, and the wide range of definitions and understandings available outside of the project, prompted the researchers to spend considerable time re-thinking how they would assess whether a participant's response showed a valid understanding of BL. It was concluded that a response which named 'in-class' and 'online learning' as the major components of BL was still valid, but a response which was based on the participants' experiences in the BL classroom was also evidence of a valid understanding. These students had gained their understanding of BL via experiential learning, the experience informing their awareness of what BL incorporated (Kolb, 1984). They had a concrete experience which they reflected upon, then developed new concepts which they could test in new situations such as their planning for future classrooms. This considered approach to the analysis of the responses to question 1 (pre-and post-surveys) was taken into years two and three.

In years 2 and 3, as in year 1, the data also showed an increase in the number of participants whose understanding of BL had developed from pre-to post-survey. In year 2

there were 15 with limited understanding in the pre-survey but only 4 in the post. In year 3 there were 13 participants who demonstrated little understanding pre-semester and only 3 in the post-survey. Data indicated that 17 had a valid understanding in the post survey in year 2 and 15 in year 3. It should be noted that in year 3 there were only 24 participants compared to 28 in years 1 and 2. See table 2 below:

Year	No response provided (nothing written)	Very limited understanding shown of BL	Showed an understanding that BL is a combination of “Face-to-face”/online delivery	Total no. participants
Year 2				
Pre	3	15	10	28 (year 2)
Post	7	4	17	28 (year 2)
Year 3				
Pre	6	13	5	24 (year 3)
Post	6	3	15	24 (year 3)

Table 2

The researchers were though, presented with a new challenge. In the pre-survey question 1, one student admitted to using the internet, saying “From WIKI: B.L. [blended learning] is education that combines “face-to-face” classroom methods with computer-mediated activities” (participant 8). This exact wording was reiterated by participant 15, indicating they had also accessed the Wikipedia definition. The management of the survey completion was done by a third party to meet ethical requirements, so the researchers were not present to observe this breach of accepted protocol. Whilst participant 15 showed a more individually shaped response in the post survey, saying it was ‘ICT incorporation and online shared resources’, participant 8 did not provide a response. The researchers decided that they would not include these pre- responses as part of the analysis as these were not the participant’s own thoughts.

Similarly to year 1, some year 2 and 3 participants had no understanding pre-or post-survey like participant 20 (year 2) who said in the pre-survey “not too sure, different learning that is put into one category” and then “not sure” in the post survey. Participant 1 (year 3) further exemplified this saying in the pre-survey “does it mean everyone post ideas and we can all use these ideas as resources?” and then “I’m still not sure what it means” in the post.

Others showed an understanding of the basics of BL such as participant 17 (year 3) who described it in the pre-survey as online learning and “face-to-face” and then in the post-survey said “using technology and “face-to-face” teaching and learning”. Participant 11 (year 3) directly referenced their own experience stating “for this particular class the methods were normal classroom instruction, discussions and online contributions”.

This type of experiential learning was further evident in responses which described the emphasis on student-focused work. For example, participant 15 (year 3) described BL as including group work and class discussions and participant 25 (year 3) stated that it focused on the sharing of resources and ideas with their peers. This appeared to reflect their experience in the music method class as the BL had focused on students rather than the educators and encouraged group discussion, the sharing of ideas and collaboration on assessment tasks and activities. Similarly, participant 7 (year 2) described the value of “Exchanging our thoughts on Moodle” as this helped them to “collect all the resources for my future”. This demonstrated the way in which the online component was used in the methods class as a tool to support the pedagogy (Oliver & Trigwell, 2005). By including technology

or online components the approach took advantage of web technology and community resources to support student learning (Hwang et al, 2009). Participant 18 (year 2) identified the positives of this and described BL as “collaborative, structural, team learning”.

These types of responses reflected the change in relationship between the educator and student and the nature of their roles in the classroom through:

- the constant exchange of student ideas
- group work
- forum activities that stimulated well considered written exchanges
- the sharing of resources

The collaboration and structure of the classes emphasised experience over content and whilst the classes used technology, there was a constant emphasis on this as a means to support, but not drive learning. These experiences aligned with the concept of the learner being at the centre of the curriculum (Chigeza & Halbert, 2014, p.145) and BL being far more complex than the integration of technology with “face-to-face” learning (De George-Walker & Keeffe, 2010).

Online Forum Student Work Samples

Having identified issues in year 1 with the limitations of the survey responses and assessment of the participants’ understanding of BL, in years 2 and 3 the researchers expanded the data sets. Student work samples were used to enrich the data and increase the trustworthiness of the analysis and findings. These work samples helped to demonstrate whether the students could engage with a discussion about the value and purpose of online forums and Web 2.0 learning activities within a BL classroom. A focused music activity allowed students to discuss specific music aspects that connected with the imagined future school music classroom (Carrington & Salva, 2010).

In an online forum the participants discussed their ideas about the potential use of Web 2.0 and what it would contribute to the BL learning. The discussion engaged with questions about whether Web 2.0, with its high level of interaction and collaboration, provided for a meaningful inclusion in a lower secondary school music classroom. The Web 2.0 presentation being analysed was based on song-writing, using some Crowded House (popular contemporary Australian rock group) music to discuss the elements of a song such as form, melody and chords. It included a series of activities which encouraged participants to explore the process of song-writing as a creative exercise. This format encouraged the PSTs to make decisions about how they would incorporate online and “face-to-face” classroom work.

The research participants showed a genuine interest in using such a platform for their own future classroom but they had well-considered reservations. For example, the quality of such resources was questioned by participant 5 (year 3) who indicated that they like to approach song writing with attention to the complexities and would want to present a songwriter who “talked about the editing, the collaborative process of song-writing” rather than it being interpreted as an easy process. This participant was not averse to using Web 2.0 activities but sought resources which enhanced their students’ understanding of the process and challenges of the song-writing process. They wished to avoid the inclusion of online interaction simply to promote a particular musician’s life with little substantial purpose (Bicen et al, 2014). Other participants concurred with this concern and discussed the negative aspects to technology in combination with “face-to-face” activities and the imperative for the educator to use Web technology to enhance the learning experience rather than as a structural driver (Hamilton & Tee, 2013). Participant 4 suggested that a balance is required when

considering the inclusion of technology in the classroom as “using ipads instead of [musical] instruments is never something that I will be happy to do”.

The opportunities for the sharing of resources was valued by participant 6 who said “students are given the opportunity to (respectfully) express their points of view... forum sites like this gives people a voice when they do not feel like they have one.” The increased emphasis on the student (Oliver & Trigwell, 2005) that BL often provides was acknowledged by participant 6 who referred to the potential it offers for those who feel uncertain about communicating. They suggested it encourages these learners to “talk to their peers freely without the use of words... it’s... a community based event that allows classrooms to merge and for subjects to expand.” The sense of community that the blend of online and in-class activities provided was valued by participants (Garrison & Kanuka, 2004).

Participants displayed a good sense of the potentially positive effect of Web 2.0 in a BL classroom and showed that they understood the contextual restrictions and considerations in relation to the particular subject, music, for which they were considering BL. No participants were satisfied with a completely online approach, particularly when it came to the practical inclusion of musical instruments and the art of musical performance. The preference was for a combination of “face-to-face” and online teaching. Participants identified the potential issues whilst also valuing the positives for learning. The views expressed showed a thoughtful and considered approach to the opportunities such platforms present for the implementation of BL whilst being very mindful of its use as a support to learning with a clearly defined educational purpose.

Implications for PST Courses with Consideration to COVID-19

This research began prior to the COVID-19 pandemic. The intention was to gather data which informed an understanding of PSTs’ understanding of BL to inform their own and other PST educators’ practice. Whilst this is still considered a valid and important purpose, COVID-19 has radically changed the way educators are now delivering their content and learning. This has forced a re-think about how education will move forward to allow for swift and effective responses to an unpredictable global environment. PST courses need to respond effectively and focus on teaching approaches which allow for flexibility, responsiveness and continual access to resources. BL offers these elements, but there are two challenges to be addressed if we are to begin to include it as a more focused part of PST education.

Firstly, the findings indicated a wide range of understandings among the participants and importantly, differing levels of willingness to engage with the concept of BL. A small group of PSTs showed no development in their understanding of BL, from pre-to post-survey, whilst many participants demonstrated considerable development. Whilst many showed that they understood the two basic elements of BL, online and in-class activities, this level of understanding did not necessarily engage with the more complicated concepts which incorporate changes to classroom content, a re-think of educator and student roles and the structure of classroom activities. This finding suggests that the first challenge is for PST educators to ensure that all PSTs engage appropriately with the complexities of BL and review their students’ understanding progressively to ensure comprehension. PSTs will then be better positioned to implement BL with confidence and skill in a “face-to-face” or online classroom and positively manage unpredictable modes of delivery.

The second challenge for PST educators, and educators more generally, is to re-think the concept of BL for the online learning environment. The inclusion of technologies and the emphasis on students, experience and pedagogies are all aspects which are transferable into the increasing online teaching space. However, the component of “face-to-face” teaching and

how this is implemented in BL needs to be re-considered to expand the traditional concept of the educator and students working together in the same physical space.

BL should be specifically addressed in a focused and consistent manner in PST classes to meet the first challenge presented above. This will require PST educators to connect BL to their students' imagined school classrooms and thereby provide them with a valuable teaching approach to manage an unpredictable post-pandemic classroom. This can be underpinned by a more contemporary view of "face-to-face" teaching re-shaped for the online classroom. The current researchers recommend that the second challenge is addressed through a cross-university exploration of the model of "face-to-face" teaching in BL within the PST space. By effectively addressing both challenges, school students' outcomes can be positively impacted by a well-conceived BL program delivered by a confident and knowledgeable graduate teacher.

References

- Berg, B.L. (2001). *Qualitative research methods for the social sciences*. 4th edition. Boston MA: Allyn & Bacon.
- Bicen, H., Ozdamli, F., & Uzunboylu, H. (2014). Online and blended learning approach on instructional multimedia development courses in teacher education. *Interactive Learning Environments*, 22(4), 529-548.
<https://doi.org/10.1080/10494820.2012.682586>
- Carrington, S., & G. Selva, G. (2010). Critical social theory and transformative learning: evidence in pre-service teachers' service-learning reflection logs. *Higher Education Research & Development*, 29(1), 45-57. <https://doi.org/10.1080/07294360903421384>
- Chigeza, P., & Halbert, K. (2014). Navigating E-Learning and Blended Learning for Pre-service Teachers: Redesigning for Engagement, Access and Efficiency. *Australian Journal of Teacher Education*, 39(11). <https://doi.org/10.14221/ajte.2014v39n11.8>
- Crawford, R., & Jenkins, L. (2017). Blended learning and team teaching: Adapting pedagogy in response to the changing digital tertiary environment. *Australasian Journal of Educational Technology*, 33(2), 51-72. <https://doi.org/10.14742/ajet.2924>
- Crawford, R., & Jenkins, L. (2018). Making pedagogy tangible: Developing skills and knowledge using a team teaching and blended learning approach. *Australian Journal of Teacher Education*, 43(1), 127-142. <https://doi.org/10.14221/ajte.2018v43n1.8>
- Creswell, John. W. (2014). *Research Design: Qualitative, quantitative and mixed method approaches*, 4th edition. Thousand Oaks, CA: Sage Publications.
- De George-Walker, L., & Keeffe, M. (2010). Self-determined blended learning: a case study of blended learning design. *Higher Education Research & Development*, 29(1), 1-13. <https://doi.org/10.1080/07294360903277380>
- Eret-Orhan, E., Ok, A., & Capa-Aydin, Y. (2018). We train, but what do they think? Preservice teachers' perceptions of the adequacy of their teacher education in Turkey. *Asia-Pacific Journal of Teacher Education*, 46(2), 183-198. <https://doi.org/10.1080/1359866X.2017.1355050>
- Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), 95-105. <https://doi.org/10.1016/j.iheduc.2004.02.001>
- Hamilton, J., & Tee, S.W. (2013). Blended teaching and learning: a two-way systems approach. *Higher Education Research & Development*, 32(5), 748-764. <https://doi.org/10.1080/07294360.2012.711301>

- Hendricks, C. (2009). *Improving schools through action research: A comprehensive guide for educators*. New Jersey, US: Pearson.
- Hwang, W.-Y., Hsu, J.-L., Tretiakov, A., Chou, H.-W., & Lee, C.-Y. (2009). Intra-action, interaction and outeraction in blended learning environments. *Educational Technology & Society*, 12(2), 222-239.
<http://link.galegroup.com.ezproxy.lib.monash.edu.au/apps/doc/A198291294/AONE?u=monash&sid=AONE&xid=69600ffb>
- Kolb, D. A. (1984). *Experiential Learning*. Englewood Cliffs, NJ: Prentice-Hall.
- Kuckartz, U. (2014). *Qualitative text analysis*. London: Sage.
- Lemon, N., & Garvis, S. (2016). Pre-service teacher self-efficacy in digital technology. *Teachers and Teaching*, 22(3), 387-408.
<https://doi.org/10.1080/13540602.2015.1058594>
- Murcia, K. (2014). Interactive and multimodal pedagogy : A case study of how teachers and students use interactive whiteboard technology in primary science. *Australian Journal of Education*; 58(1) p.74-88. <https://doi.org/10.1177/0004944113517834>
- Oliver, M., & Trigwell, K. (2005). Can ‘blended learning’ be redeemed? *E-Learning*, 2(1), 17–26. <https://doi.org/10.2304/elea.2005.2.1.2>
- Picciano, A. G. (2006). Blended learning: Implications for growth and access, *Journal of Asynchronous Learning Networks*, 10(3), 85-91. <https://doi.10.24059/olj.v10i3.1758>
- Rosenburg, M. J. (2006). *Beyond E-learning: Approaches and technologies to enhance organizational knowledge, learning and performance*. San Francisco: Jossey-Bass/Pheiffer.
- Singleton, D. (2012). The Transition from Traditional to Blended On-Campus Learning Experience. Dissertation Submitted to Nova Southeastern University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy.
- Teo, T., & Chai, C.S., & Hung, D., & Lee, C.B. (2008). Beliefs about teaching and uses of technology among pre-service teachers. *Asia-Pacific Journal of Teacher Education*. 36(2), 163-174. <https://doi.org/10.1080/13598660801971641>
- Tucker, C., & Umphrey, J. (2013). Blended Learning. *Principal Leadership*, Sept., 36-41.
- Waha, B., & Davis. K. (2014). University students’ perspective on blended learning. *Journal of Higher Education Policy and Management*, 36(2), 172-182.
<https://doi.org/10.1080/1360080X.2014.884677>
- World Health Organisation, <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>