

Blended Learning Praxis in Delivery of Teacher Development Programmes: A review

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ABSTRACT

Blended learning is widely accepted as an effective mode of course delivery in higher education. As it has been pragmatically tested to see the effectiveness in the delivery of professional courses, the use of blended learning in the delivery of teacher development programmes needs an inquiry into empirical literature to see the applicability. The review was set with three questions, identifying appropriate instructional strategies for blended learning, finding instructional strategies and activities employable for blended teacher development programmes and deciding the appropriate blended learning model for teacher development programme delivery. Review articles were searched via five online databases (Google Scholar, ScienceDirect, scinapse, ERIC and ProQuest) and paper selection criteria guided to select of sixty-three papers from peer-reviewed journals. Thematic review findings show that self-directed learning, self-regulated learning and self-paced learning strategies are commonly used in both general and blended teacher development programmes. Self-directed learning strategy has been the preference in the delivery of blended teacher development programmes. Asynchronous forum discussions, providing self-reflective materials and group activities are highly preferred in blended teacher development programmes. The flipped classroom model is preferred in blended teacher development programmes as it facilitates to improvement of teacher professional skills with the presence of peers and mentors.

Keywords: Blended learning, Teacher development programmes, Instructional strategies, Instructional activities, Flipped classroom

INTRODUCTION

One major change brought about by technology is that academic communities now extend beyond the classroom walls and continue to grow virtually by means of new and innovative technologies. Efficacy of technology decides the success of the educational programmes (B.Ed. PGDE, M.Ed.) despite the level that they focus on. One of the benefits of technology integration is that technology opens up new avenues for educational programme design and delivery. Blended learning is contextual (Garrison and Kanuka, 2004). It means different things to different people (Driscoll, 2002). Effectiveness of what “Blending” is and what is to be “Blended” are preliminary questions that have been discussed in blended learning literature

over the past years (i.e. Kaur, 2013, Tayebinik & Puteh, 2013). As literature suggests, Blended Learning facilitates learner centered learning activities which take place inside and outside the classroom while combining the advantages of different learning modes - i.e. face-to-face and online (Rossett, Douglis & Frazee, 2003, Driscoll, 2002). Garrison and Kanuka (2004, p. 96) defined blended learning as “*At its simplest, blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences*”. Based on the above definition, it can be affirmed that blended learning is a synergistic combination of traditional teaching methods with the tactics of distance teaching and learning (Donnelley, 2010, Kenney and Newcombe, 2011, Drysdale et al, 2013, Owston, York and Murtha, 2013, Graham, Woodfield and Harrison, 2013, Tang and Chaw, 2013, Chang et al, 2014).

Usually, blended learning supports to combine the face-to-face and online learning experiences. What is not easily possible in face-to-face learning can be effectively practiced in the online learning (ref). Online learning opens up more opportunities for learning. Additionally, it has lots of advantages over face-to-face learning such as, timely feedback can be provided by the trainers (Smyth et al, 2012), learner to learner interactions can be maximized and knowledge sharing and construction of new knowledge can be heightened. Garrison and Kanuka (2004) stated that one of the greatest benefits of blended learning is providing a sense of community amongst the learners. Evidently, blended learning facilitates use of information communication technology, more specifically, the web technologies (Concannon, Flynn & Campbell, 2005). Instructional design and delivery capability goes up with the proportionate combination of face-to-face and online modes (Picciano, 2006).

It is evident that blended learning is widely used in the delivery of higher educational programmes (i.e. university degree and diploma programmes) over the past two decades. Hence, many theoretical and practical developments can be seen since 1990s. Research literature further informs that blended learning and its applications can be differently adapted to meet the diverse needs of the learners (Singh, 2003).

Blended learning is not new. It is convinced in every means (Garrison and Kanuka, 2004, Graham, 2006). Considerably, less number of studies is found in blended teacher training and its success (Keengwe & Kang, 2012, p.82). Keengwe and Kang in 2012 forwarded two reasons for being the number of papers limited in blended teacher training: firstly, educators trust only the face-to-face delivery methods for professional teacher training courses; and secondly, the

methodological limitations being employed in the evaluations of available blended teaching courses (Keengwe & Kang, 2012, Owston, Sinclair & Wideman, 2008).

As Google Scholar and ScienceDirect do not provide any papers for blended approach in educational technology courses, field of educational technology teacher training is still an area to be researched with blended learning. Conversion of educational technology courses into blended mode may open up a new dimension of blended learning and uncover an untapped potential of blended learning as well.

Review Questions

The present review meets three questions: (1). What instructional strategies support to deliver blended programmes? Primarily, the paper discusses which instructional strategies support the delivery of blended programmes; (2). Do instructional strategies and activities in blended teacher development programmes differ from the other blended programmes? The review attempted to find which strategies and activities are used in blended teacher development programmes (B.Ed. PGDE, M.Ed.) and there could be any difference in this respect; (3). What blended models/approaches support to deliver the blended teacher development programmes (B.Ed. PGDE, M.Ed.)? Finally, this paper inquires the appropriate blended models to deliver the teacher development programmes.

Problem Statement

Usually in teacher education courses, skills mastery and knowledge dissemination are handled via instructor-led methods, i.e. lecture method and demonstration, which ultimately caused for student anxiety and frustrations (Kottasz, 2005). Further, it limits learner-to-learner and instructor to learner interactions, individual attention and knowledge sharing and building. For some training aspects of the course, face-to-face meetings cannot be neglected (i.e. micro teaching) but for the rest, the distance mode of delivery might be more effective than the face-to-face delivery (Simonson, Smaldino, & Zvacek, (Eds.). 2014). Many educational programmes are converted into blended mode or online delivery to mitigate the issues faced by the programme designers and learners (Graham, Woodfield, & Harrison, 2013, Picciano, 2006). This has been a common practice in teacher training (Wang, 2009, Caner, 2010, Kundra, 2018).

Many Local and international universities and higher academic institutions offer teacher training courses for both In-Service and Pre-Service teachers. Yet, the common practice has

been they are designed for face-to-face delivery. Curriculum design, methods and delivery approaches are yet to be revised (Grossman, Hammerness, & McDonald, 2009). These courses involve theoretical and practical aspects of pedagogy to be mastered by the teachers (Darling-Hammond, 2006). Yadav (2011) pointed out, in a comparative study, that the teacher training programmes conducted in India, Sri Lanka, Bangladesh and Pakistan (Bachelor of Education - B.Ed.) have not been revised for a long time, and course design and delivery is conventional (Yadav, 2011, p.1047-1048).

As blended learning has been one of the options for the practitioners to meet the aforementioned challenge in teacher development programmes, the core issues of the present review derived thereof, which instructional strategies and blended activities can be used and which blended models are supported for the delivery of them. To have an insightful understanding on the above aspects, it needs a purposeful reflection on the existing literature.

LITERATURE REVIEW

There is lack of research in blended learning in the field of teacher training and education. Many studies can be found in literature dedicated to studying blended learning experiences in other disciplines (i.e. Management, Engineering, Nursing & etc...) while a limited number of studies are conducted in teacher education and related aspects (Keengwe & Kang, 2012). Two reasons have been forwarded by Keengwe and Kang in 2012 for having limited number of studies on blended learning in teacher education, (1) Not all teacher educators agree that the blended or online learning approach is effective in teacher training because of the limitations of technology to improve teacher trainees' learning and authentic field experiences, (2) Even though some teacher training programmes provide blended learning approach for their teacher trainees, it is not easy for researchers to evaluate the effectiveness of the programmes because of limitations in the methodology being used (p.82).

There is an ambiguity over the terms '*instructional methods*' and '*instructional strategies*'. The terms have been used interchangeably (i.e. White et al, 2019, Zeichner, 1987).

Here we argue that instructional strategy is not equal or similar to instructional methods or activities in the teaching-learning process though there seems to be an inseparable relationship between each other (See Figure: 1). Necessarily, the instructional methods derive from the

instructional strategies (Petrina, 2004, p.127²). Instructional Strategy is the overall plan for teaching (Meador, 2018, Akdeniz, 2016). It is neither a method nor an activity. There are a few strategies, basically five in number, but number of methods and activities exist for teachers to achieve the instructional goals and objectives in the class (Petrina, 2004, Alberta Learning, 2002, Saskatchewan Education, 1991). Petrina (2004) has summarized types of five instructional Strategies (i.e. *Direct, Indirect, Interactive, Experiential and Independence Study*) and *forty one teaching methods* (p.127-131). Further, she reported that instructional methods can be limited to three as Transmissive, Transactive and Transformative. Joyce and Weil (2000) introduced four families of teaching methods (i.e. Social interaction, Information Processing, Personal and Behavioral Modification).

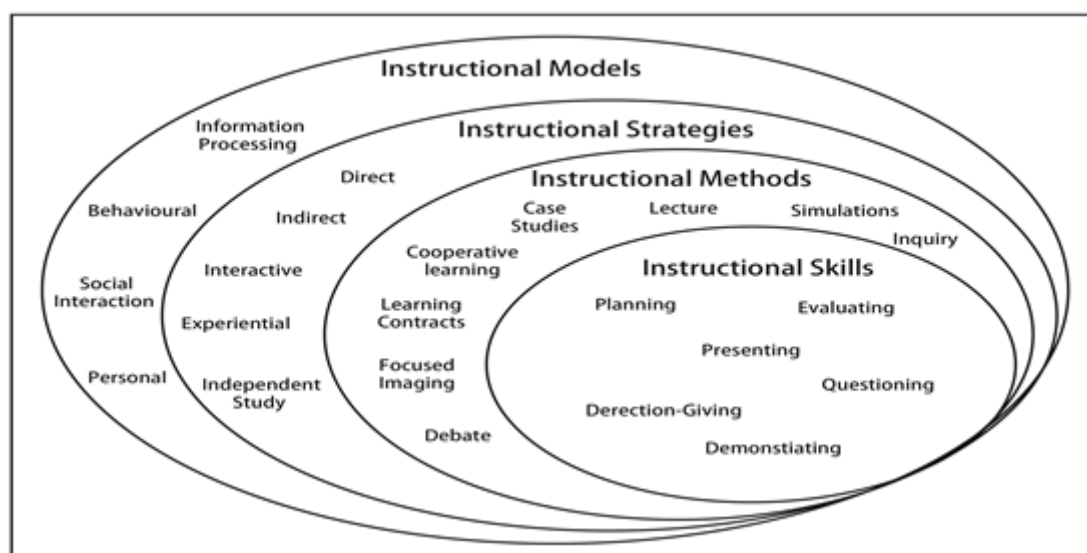


Figure: 1 - Instructional Framework (Saskatchewan Education, 1991, p.12)

Transition of knowledge and field experiences via classroom activities are considered to be important in teacher training programmes. By having implemented such a system could be effective for the formation of teacher identity, the development of professional learning and professionalism. Further, they suggested that to tackle the success of teacher training programmes, new or different research methods are necessary (Keengwe & Kang, 2012, p.82).

Many blended approaches are found in the literature. There is no perfect model which frames all the learning requirements, even the available models continue to grow (Christensen, et al., 2013). Depending on the elements such as contextual, institutional, course-wise, curricula and student requirements, level of the technology integration, educational theoretical underpinning

(i.e. Behaviorism, constructivism & etc...), and instructional methods, techniques and activities used, blended approaches have been defined (Valiathan, 2002, Graham, 2006). Chew (2009) has summarized five Blended learning models (p. 37 – 54): (a) E-Moderation Model emerging from the Open University of the UK (Salmon, 2000, 2002); (b) Learning Mix from the Open University of Malaysia (Kaur and Ahmed, 2005) (c) Learning Ecology Model by Sun Microsoft System (Wenger and Ferguson, 2006); (d) Blended Learning Continuum from the University of Glamorgan (Jones, 2006); (e) Inquiry-based Framework by Garrison and Vaughan (2005, 2008) Except the Inquiry-based Framework of Garrison and Vaughan (2005, 2008), the other models are contextual in comparison to the models proposed by Horn and Staker (2011), Staker and Horn (2012) and Christensen, et al. (2013).

Considering the blended learning trends in K-12 school context, Staker and Horn in 2012 classified blended learning models into four as Rotation Model (Station-Rotation, Lab-Rotation, Flipped Classroom, and Individual-Rotation Models), Flex-Model, Self-Blend Model, and Enriched-Virtual Model (Staker, & Horn, 2012, p.8). These blended models show how online and face-to-face components are organized and delivered. It seems that flipped classroom model has been the priority in many blended programmes today (Vaughan, 2014, Kurt, 2017), but, it needs further reflection to verify the assertion.

METHODOLOGY

An extensive literature review was conducted to locate research papers on blended learning in educational technology teacher education fields using search engines Google Scholar, ScienceDirect, scinapse, ERIC and ProQuest. The keywords used were “blended learning or hybrid learning”, “teacher development programmes”, “instructional strategies” and “instructional activities”. And, these keywords were combined aiming to find the most relevant review papers.

As many papers are loading with the keyword “blended learning”, papers were further scrutinized based on the criteria that (a) only the papers produced based on empirical studies were selected (Surveys, Quasi-Experimental and Experimental, Case Studies, and Descriptive research studies), (b) only the papers published in peer-reviewed journals were selected, and (c) conference papers, concept papers, thesis and dissertations were not included. At the end of routinization process made via the criteria, 18 papers were reviewed related to the blended teacher education programmes and 45 papers were reviewed from the general blended literature. Findings were analyzed in the content quantitatively and qualitatively.

RESULTS

Review results are mainly presented under the three review questions and the general findings are given at the end of this section.

(1). What instructional strategies support to deliver blended programmes?

Instructional strategy can be simply defined as the approach that the instructor uses to transfer the cognitive content, to develop the attitudes and to generate expected skills in students aimed at the attainment of educational goals and learning outcomes in a course of study (Soyemi, Ogunyinka and Soyemi, 2012, Azevedo et al, 2008, Akdeniz, 2016, p. 61, Shinn, 1997, p. 11). Materials development (Learning aids/Instructional media design and development), selection of content for teaching - curriculum development (Haung, Ma and Zhang, 2008), and assessments are planned based on the selected instructional strategy. Table 1 and Figure 2 illustrate the review findings in respect to the review question – 1.

Table 1: Instructional Strategies in Blended Programmes

Strategies	No of studies	Mean	SD	%
PBL	5	0.11	3.46	9.4
Collaborative Learning	4	0.09	2.77	7.5
Cooperative Learning	4	0.09	2.77	7.5
Self-Regulated Learning	12	0.27	8.30	22.6
Self-Directed Learning	15	0.33	10.37	28.3
Self-Paced Learning	7	0.16	4.84	13.2
Activity based learning	3	0.07	2.07	5.7
Project based learning	2	0.04	1.38	3.8
CSCL	1	0.02	0.69	1.9

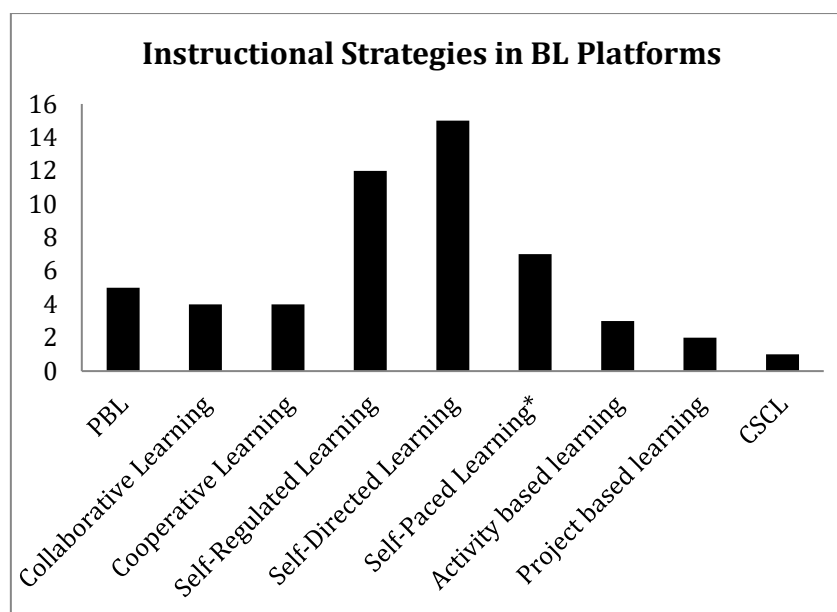


Figure 2: Instructional Strategies in Blended Programmes

Table 1 and Figure 2 report which strategies are generally used in blended programmes. Among them, Self-Directed Learning (SDL), Self-Regulated Learning (SRL), and Self-Paced Learning (SPL) have been selected in many of the programmes in comparison to the other strategies. Problem-Based Learning (PBL), Collaborative Learning (COL), and Cooperative Learning (CL) are comparatively less preferred. In some instances, two or three of these strategies have been used (i.e. Woltering, Herrler, Spitzer & Spreckelsen, 2009, Verkroost, Meijerink, Lintsen & Veen, 2008, Collis, Margaryan & Kennedy, 2004). It cannot be exactly decided which strategy is most appropriate or effective for blended learning. It might be contextually decided. But, in general, research findings support to make some valid inferences about the strategies. As SDL, SRL and SPL are widely used; the following section is dealing with some research recommendations particularly made on the use of these three strategies in blended programmes.

SDL is effective in delivery of blended programmes and it has been a strategy which support achievement of learning outcomes in blended programmes (i.e. Akgunduz & Akinoglu, 2016, Verkroost, Meijerink, Lintsen & Veen, 2008), Ausburn, 2004). SDL is better for the achievement of learning objectives when different types of learning are provided based on the student different learning styles and learning requirements (Hendricson et al., 2006, Denis, 2003). Conradie (2014) also concluded that SDL is effective in e-learning environments and supporting the students to achieve higher level of academic achievements. One key implication is that more academic guidance is needed on what and how to use the

technology effectively for independent learning, even where ICT skills levels are high (Deepwell & Malik, 2008).

It is not the role of the teacher to prescribe the nature of the blend but to develop courses with multiple means of representation, expression and engagement, and to scaffold and support students in the creation of their own individualized blend. In this way, students will engage and also develop their skills as reflective, self-directed, and self-regulating and indeed, self-determined learners (George-Walker & Keeffe, 2010). SDL is the ability to direct and regulate one's own learning experience and it underlies many of the dispositions needed for critical thinking. Exactly the same educational strategies can be used to develop critical thinking and self-directed learning (Hendricson et al., 2006). When designing a self-directed e-learning system it is important to think of ways of supporting students in the new competencies they need for self-directed learning (Verkroost, Meijerink, Lintsen & Veen, 2008). Self-directed learning could be empowered through learning tasks that support constructivist collaboration in both physical and virtual learning spaces. The learners inquire new skills, knowledge and attitude through self-directed learning in a blended learning environment. Web technology platforms such as Moodle online discussion forums, Google Docs and Wikispaces empowered self-directed learning among the adult participants (Sze-Yeng & Hussain, 2010, Oravec, 2003, Akgunduz & Akinoglu, 2016).

Verkroost et al in 2008 pointed out some weaknesses of SDL in online environment as follows: (a) The Internet as a source for content is easily accessible but its use does not always lead to a good and useful results because it is a highly unstructured environment; (b) Support for the search on the Internet can be offered using (online) instructions and a list of resources. Students value these kinds of support more when they address the personal information needs of the students as an individual (Verkroost, Meijerink, Lintsen & Veen, 2008).

SDL setting does not match with all the participants and cannot be concluded that those who do not participate in online activities are not self-directed (Schwier, Morrison & Daniel, 2009). Blended-teaching method could better suit some students, depending on their degree of motivation and level of self-directed learning readiness (Gagnon, Gagnon, Desmartis & Njoya, 2013, Simmering, Posey & Piccoli, 2009).

Jossberger, Brand-Gruwel, Boshuizen & Van De Wiel in 2008 distinguished between the concepts self-directed learning and self-regulated learning placing self-directed learning in the adult learning domain and self-regulated learning in the educational psychology domain. Self-

directed learning can be viewed at the macro level (i.e. planning of learning trajectory), while self-reflected learning is placed at the micro level (i.e. learning task level, self-controlled learning activities) (p.1). Thus, with self-regulated learning, specific learning activities required to reach learning goals are managed by the learner, while with self-directed learning, the learner is also responsible for creating their own learning goals (outcomes). Important to note, self-directed learning automatically implies that self-regulated learning takes place, but the reverse is not true (Conradie, 2014). It is possible to have self-regulated learning without self-directed learning. Additionally, self-direct learning and self-regulated learning refer to both an instructional design or method and a personal characteristic.

SRL is also effective in blended platforms with respect to the achievement of learning objectives and satisfaction of needs of learners (i.e. Lynch & Dembo, 2004, Shea & Bidjerano, 2010, Broadbent, 2017, Shen, Lee & Tsai, 2011). Schraw (2007) has suggested that self-regulatory learning skills can be enhanced by computer-based instruction found in the online and blended learning environments (Schraw, 2007). Barnard et al., in 2009 stated that SRL increases the learner performances in both online and blended platforms (Barnard, Lan, To, Paton, & Lai, 2009, Schober, 2008, Tsai, 2011, Ting & Chao, 2013).

Self-Paced Learning (SPL) is an extension to the conventional classroom teaching (Soyemi, Ogunyinka & Soyemi, 2012). SPL was initially used in *VET* (Vocational Education and Training) as an alternative method of delivery. It has been advantageous to the *VET* students and their employers as being less resource intensive than face to face teaching (Inkson & Smith, 2001). *“Self-paced or individualized learning is defined as learning directed by the individual in order to meet personal learning objectives.”*(Soyemi, Ogunyinka & Soyemi, 2012, p. 130)

It is evident that SPL can be used in online blended learning environments as a supporting strategy to SDL and SRL (Russell, Kleiman, Carey & Douglas, 2009, Kocdar, Karadeniz, Bozkurt & Buyuk, 2018, Boutell & Clifton, 2011, DeVore, Marshman & Singh, 2017, Al-Malki, Almasre, Al-Malki & Al-Harbi, 2015). Rhodes (2009) confirmed that not only the formal interactions but also the informal interaction are equally important in determining the online learning via SPL (Rhodes, 2009). But proper guidelines should be given for student interaction. Student interaction is very low in SPL (Collis, Margaryan, & Kennedy, 2004). To develop SPL skills in online learning environments, five factors are needed: goal setting, help seeking, self-study strategies, managing physical environment, and effort regulation (Kocdar, Karadeniz, Bozkurt & Buyuk, 2018). When the students enjoy the flexibility which SPL

affords, it affects the student learning outcomes and higher academic achievements (Inkson & Smith, 2001, Tullis & Benjamin 2011, Bautista, 2015 Bele, & Rugelj, 2007).

(2). *Do instructional strategies and activities in blended teacher development programmes differ from the other blended programmes?*

Instructional strategies of blended teacher development programmes are indistinguishable from the other blended programmes. SDL, SRL, PBL and other strategies noted in the above section of the review can also be seen in blended teacher development programmes (i.e. Chong, Cheah & Low, 2010, Mouzakis & Bourletidis, 2010). Related literature does not provide a clear cut inference to say which strategy is effective in the delivery of blended teacher education programmes. It is interesting to note that SDL has given lack of teacher knowledge when it was tested in a blended teacher educational programme by Mouzakis and Bourletidis (Mouzakis & Bourletidis, 2010). Chong, Cheah and Low stated that the learners have positive perspective towards the blended learning under PBL (Chong, Cheah & Low, 2010). It seems that the effectiveness of instructional strategies in blended teacher development programmes has to be further tested in research studies.

Instructional activities are different by the intended purposes of being used in instructional process. Mainly, they could be individual or group; the group activities might be designed for pairs or more than two member students to collaborate for learning. Instructional activities generally show how a novice or an apprentice could deal with the content to be learned or practiced (Lampert & Graziani, 2009, p.493). Psycho-social, cultural and philosophical presence of learning can only be ensured via instructional activities used in the instructional approaches. Particularly, activities might be contextual, learner specific and outcome-based (Lampert & Graziani, 2009).

It could be a challenge for the practitioners to get traditional classroom stuff worked in new scenario so as to ensure effective learning. Therefore, the review findings will be much supportive for the blended learning practitioners to see how the aforementioned challenge has been met in the blended contexts. Table: 1 reports instructional activities being used in blended platforms. Instructional designer or the instructor is not restricted to use any specific activities for blended learners by any philosophical or pedagogical doctrine in education. Online phase might be an advantage for both learners and instructors to perform better (i.e. Heba & Nouby, 2008, Shand & Farrelly, 2018). Therefore, it is apparent from the Table: 1 that almost the same normal classroom activities have been used in blended platforms as well. Essentially, face-to-

face meetings and discussions exist in blended modality (100%); partly the other instructional strategies are coupled with online technologies. Frequently, in blended programmes, students are provided self-study texts (58%) aimed at self-reflection and continuity of learning. Asynchronous discussions (78%) and group assignments (42%) have been the popular preferences in blended courses as shown in the table: 1. The rest of the activities shown in the table are comparatively less preferred.

Table 2: Instructional Activities in Blended Programmes

Instructional Activities	No of Studies	Mean	SD	%
Lab Activities	1	-	-	-
Self-study texts and reflections	26	0.58	17.98	57.8
Asynchronous Discussions	35	0.78	24.20	77.8
Synchronous Discussions	11	0.24	7.61	24.4
Group Assignments (online)	19	0.42	13.14	42.2
Think pair & share	1	-	-	-
Individual Assignments (Online)	13	0.29	8.99	28.9
Student group projects	5	0.11	3.46	11.1
Learning Contracts	1	-	-	-
Student Presentation	3	0.07	2.07	6.7
Discussions & Meetings (F-to-F)	45	1.00	31.11	100.0

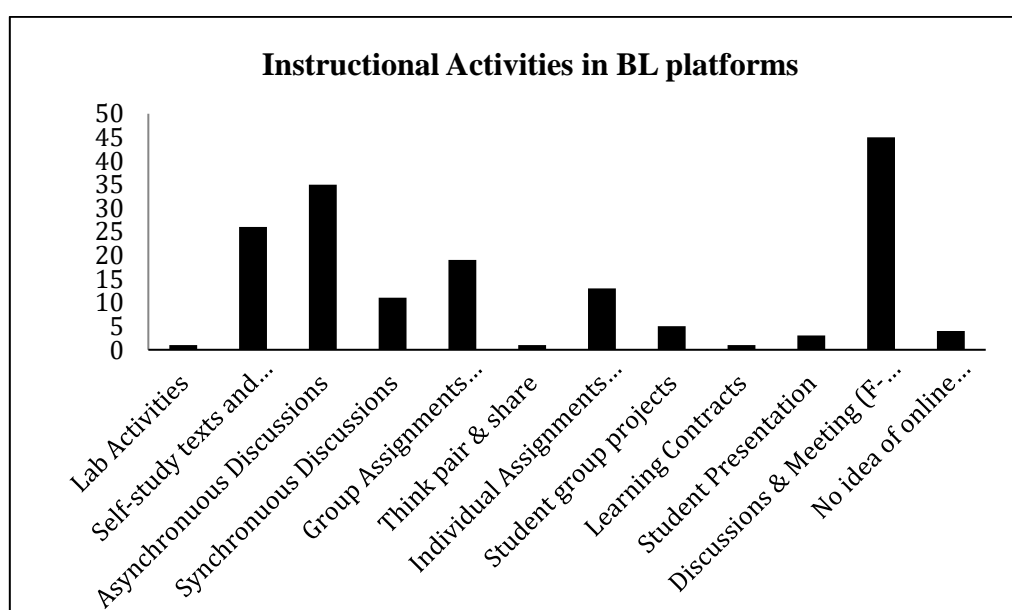


Figure 3: Instructional Activities in BL platforms

In 2006, Hendricson et al identified seven elements associated with effective learning: 1. Communication of learning objectives for each class session; 2. Organization of the subject matter in a manner that makes sense to the learner; 3. Frequent in-class activity such as writing notes, analyzing problems, or answering questions; 4. Use of mnemonics to aid memorization of factual information; 5. Frequent in-class quizzing with immediate feedback on response correctness; 6. Total amount of “time on task” including in-class activities and personal study time; and 7. Summary of key points to remember (“take-home messages”) at the end of each lesson (p.929). It is seen that these elements are supporting declarative knowledge construction. Development of reasoning ability, logical thinking, insightful learning and learner motivation will be the focus of instructional activities. Self-learning is ensured only if the students are provided opportunities to get involved in their learning via appropriate instructional activities but not just by giving unintentional and unplanned activities (Hendricson et al., 2006, p.929, Mouzakis & Bourletidis, 2010). Online activities should be linked to the face-to-face activities taken place inside the classroom (Shand & Farrelly, 2017, Abdelraheem & Ahmed, 2015, Lin, 2008).

It is not a need of the context to discuss about why the face-to-face meetings and discussions are scheduled in every blended platform because it is a need of blended mode itself (Garrison & Kanuka, 2004, Graham, 2005, Means et al., 2013). Online activities are combined with the face-to-face activities to get benefitted by both the worlds, online and face-to-face, aimed at the satisfaction of learners’ diverse needs (Garrison & Kanuka, 2004, Graham, 2005).

The review noted that online asynchronous discussions (forum discussions) are highly preferred in blended programmes other than the online synchronous discussions. The following research findings confirm the assertion.

“The asynchronous computer-mediated ‘Discussion’ forum of WebCT provides an additional learning opportunity as an adjunct to other activities that are held within the framework of teaching Practice course.” (Caner, 2006, p.88)

“Discussion forums are a good way to promote peer interaction and objectively measure peer interaction.” (Broadbent, p.23).

Alayyar, Fisser and Voogt in 2012 noted that through the online discussion forum student can post questions, answer questions, or reflect on discussion online, and thus could increase the

participation rate in the discussion and foster deep thinking because writing message requires thoughtful thinking. This in turn would lead to the development of complex perspectives on the addressed topic (p.1301). On the other hand, forum discussions could work as a tool which facilitates for interpersonal closeness, peer collaborations and interactivities within the group members (Caner, 2010, Chen et al., 2009). Holmes and Prieto-Rodriguez in 2018 found that synchronous discussions provided in the LMS are useless; the students are much interested in social media chatting instead. The face-to-face meetings would be much beneficial than any of the online interactive tools used in blended programmes (Holmes & Prieto-Rodriguez, 2018, Lin, 2008). Though this assertion seems reliable, but it would be contradicting with the findings of Chen and Looi in 2007. They pointed out that online discussions set via LMS in blended learning environments are more effective and useful because it encourages deeper learning, sharing knowledge and reflective thinking (Chen & Looi, 2007). Depending on the above contradiction, it could be said that using either online asynchronous or synchronous discussions could have contextually different results.

Use of group activities (assignments) has been one of the significant instructional activities in blended learning programmes. Group activities are designed for collaborative knowledge construction and to maximize knowledge sharing and interactions among the peers (Caner, 2010, Gudmundsdottir & Vasbø, 2017). By flipping online technologies available in LMS with group activities, the depth of the group activities could be increased (Vaughan, 2014). The group learning is crucial since it will help learners share their experiences, opinions, thoughts and feelings, accumulate skills for analyzing and solving problems, and make better inferences about strategies for using technology and fostering better instructional design. Learners can constantly improve their understanding in course concepts using discussion and communication, and as a result, students are equipped with sound understanding about theory and how it is practiced (Huang & Zhou, 2006, p.304).

Online individual assignments have also been used in blended programmes to ensure an environment for self-learning and to establish own learning efforts (i.e. Demetry, 2010, Seleka, Mgaya, & Sechaba, 2009, Shen, Lee & Tsai, 2011). When compared to the online group assignments, online individual assignments have been less effective in terms of knowledge construction (Heba & Nouby, 2008).

Face-to-face meetings and discussion have been commended by the blended course participants in many learning contexts (i.e. Lin, 2008, Shand & Farrelly, 2018). Inactive students in online

phase were much benefitted in face-to-face sessions and they could get their problems solved when they meet peers and instructors face-to-face (Alayyar, Fisser & Voogt, 2012, p.1300, Borup, West, Thomas & Graham, 2014). Therefore, the most striking result to emerge from the review is that face-to-face interactions and meetings have been the most effective means of knowledge sharing and construction in blended programmes.

Table 3: Correlation of instructional activities between selected instructional strategies

		SDL	SRL	SPL	COL
SDL	Pearson Correlation	-	.981**	.986**	.906**
	Sig. (2-tailed)	-	.000	.000	.000
SRL	Pearson Correlation	.981**	-	.978**	.871**
	Sig. (2-tailed)	.000	-	.000	.000
SPL	Pearson Correlation	.986**	.987**	-	.890**
	Sig. (2-tailed)	.000	.000	-	.000
COL	Pearson Correlation	.906**	.871**	.890**	-
	Sig. (2-tailed)	.000	.000	.000	-
Activities	Pearson Correlation	-.204	-.243	-.155	-.241
	Sig. (2-tailed)	.524	.446	.631	.450

**Correlation is significant at $\alpha=0.01$ level (2-tailed).

As noted in the review, mainly there are about eleven instructional activities have been used in blended programmes. The above table 3 shows that, with reference to the selected instructional strategies (SDL, SPL, SRL, and COL) employed in the delivery of blended programmes, the frequencies of using instructional activities are highly correlated each other (i.e. in between SDL and SRL =0.981 correlation with respect to $\alpha=0.01$ significant level). It says that frequency of using the instructional activities positively correlate in SDL and SRL (See: Table 3). The table shows further that the frequency of the use of instructional activities between SDL and other strategies (i.e. SDL and SPL = 0.986, SDL and COL=0.906) are highly correlated. Significantly, though statistical analysis shows that there is a significant difference in the frequencies of selecting instructional activities between each pair of strategies with $\alpha=0.01$ of significance in 2-tailed test (i.e. between SDL and SRL =1.6755E-8, SDL and SPL=3.6897E-9, SDL and COL=0.000049) but the overall statistical comparison shows that there is no such significance difference when SDL is compared to the other three instructional strategies (SRL,

SPL, and COL). The correlated statistical significance of SDL is 0.524 in 2-tailed test. This is above $\alpha=0.01$ significant level ($0.524>0.01$). It suggests that the frequencies of using instructional activities in SDL do not differ greatly from the other three instructional strategies (SRL, SPL, and COL). Consequently, the significance values of SRL, SPL, and COL are SRL = 0.446, SPL = 0.631, and COL = 0.450. As all these values are above $\alpha=0.01$ significant level in 2-tailed test, it can be concluded that tendency of using the identified instructional activities in the selected four instructional strategies is similar and unique and no significant difference exists among the strategies as per the correlated significance.

Instructional Activities in Teacher development programmes (TDP)

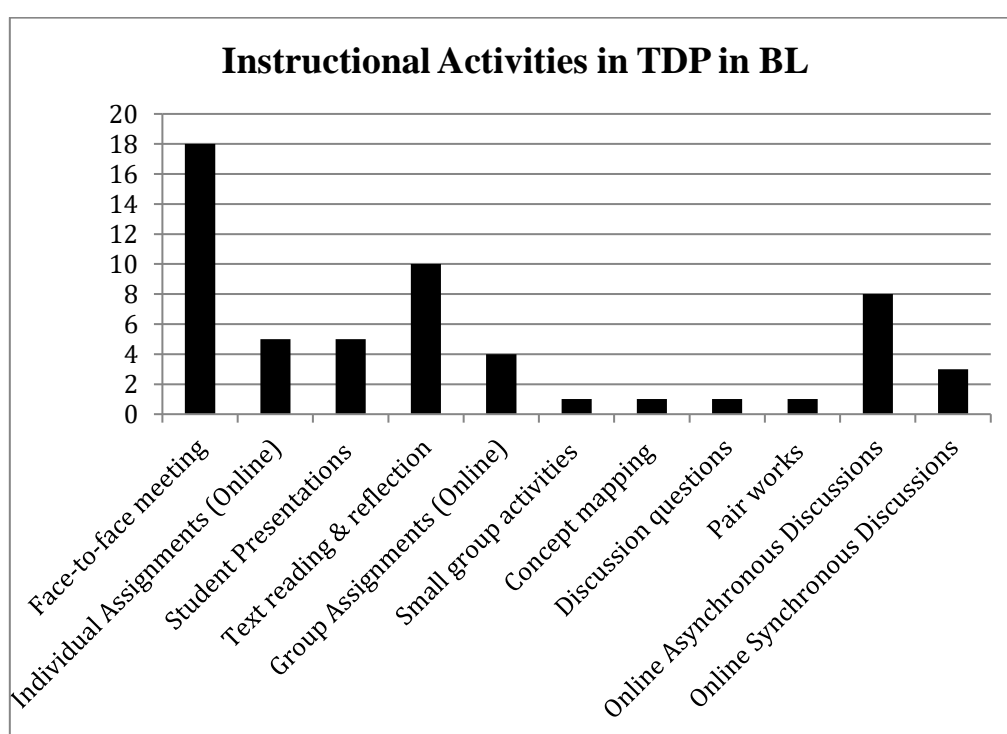


Figure 4: Instructional Activities in TDP in BL

Figure 4 shows instructional activities in teacher development programmes. Exactly the same activities can be seen in blended contexts, TDP and other blended programmes. The most preferred activity has been “*Online Asynchronous Discussions*” as in the other blended programmes. Holmes and Prieto-Rodriguez (2018) found out online synchronous discussions are useless. They recommended having face-to-face discussions instead (p.31). Further, as a means of interactivity and assessment, they recommended online quizzes or tests due to on time feedback for the students; conversely the staff members were not much interested in online quizzes (p.32). They suggested using Anderson’s (2003) *Interaction Equivalence Theory* as a means of explanatory mechanism for students’ behavior in blended learning platforms (p.32).

Forum discussions, as an interactive discussion tool among the peers and instructors, have been most effective in blended platforms (Popa et al., 2015, p.279; Bicen, Ozdamli and Uzunboylu, 2014, p.537; Caner, 2010, p.92). Alayyar, Fisser and Voogt (2012) commended discussion forums as *“The online discussion forum was found to be very helpful, because the pre-service teachers could exchange their ideas and opinions and get instant feedback from team members, peers, or experts”* (p.1310).

Blended activity design in teacher development programmes has been done based on certain norms. The first is *prospective teachers’ professional development and building a professional identity*. Since teaching is a profession the aim of course design and delivery has been to exemplify how particular type of learning could support for them to practice in their career (Alayyar, Fisser, & Voogt, 2012; Shand & Farrelly, 2018; Popa et al., 2015). Alayyar, Fisser and Voogt (2012) argued as follows.

“.....a teacher preparation program should provide students with the knowledge, skills, and experience needed to integrate ICT effectively in their future practice, taking into account the interactions between pedagogy, content and ICT.”

(Alayyar, Fisser & Voogt, 2012, p.1298)

The second is *maximization of student-student and student-instructor interactions and student engagement in learning*. In blended platforms, as the students are away from the classroom walls, possible measures should be taken to keep the student engaged in learning process and to maintain continuous feedback and instructor supervision (Shand & Farrelly, 2018; Borup, West, Thomas & Graham, 2014; Lin, 2008).

“.....dialogue between students was required in the online component of the course as an online communication activity. Discussions, both face-to-face and online, provided students with opportunities to engage dynamically with the course instructor and peers over difficult content matter and reflect on their learning It also helped students feel they were part of the course learning community, and it encouraged socialization, an important part of the learning process.”

(Shand & Farrelly, 2018, p.7)

Many instances were found which recommend the significance of interactions among the students and instructors (i.e. Lin, 2008; Holmes & Prieto-Rodriguez, 2018; Mouzakis & Bourletidis, 2010; Abdelraheem & Ahmed, 2015). One of the drawbacks of online component

might be *'feeling isolated or abandoned in the learning environment'*. To avoid such circumstances, maximization of interactions and engagements is utmost important as stated by Mouzakis and Bourletidis (2010)

"the opportunity given to teachers to participate in an active and meaningful training process presupposes reliable network access, adequacy of links, pleasing and attractive layout, hyperlinks and hyper media options and synchronous and asynchronous communication tools that enhance various forms of interaction" (p.19).

The third is *interactivity*. Blended learning accompanies characteristics of distance education (Mouzakis & Bourletidis, 2010). Fairly less amount of time is allocated for face-to-face meetings in blended platforms (i.e. Bicen et al., 2014; Holmes & Prieto-Rodriguez, 2018). As the knowledge is built via social interaction, there should be opportunities provided for the students to engage in interactive activities aimed at knowledge sharing and building (Caner, 2010; Holmes & Prieto-Rodriguez, 2018). As the students spend much time outside the classroom, instructional activities organized in blended platforms tend to be interactive. Caner (2010) stated that as the teacher education programmes are professional, the students ought to have opportunities to see what the peers do and think on what they are being taught and learnt (p.92-93).

The fourth is *nature of target group (i.e. age, training needs, experience, ICT knowledge etc..) and programme content*. The complexity of the technology and types of activities to be included has been decided upon two factors: the target group, which is the imperative factor in activity design; and programme content, which has to be mastered by the students. Researchers have inquired into student background and how the programme content design and delivery could be aligned to the background (i.e. Chong, Cheah & Low, 2010; Caner, 2010; Popa et al., 2015). Shand and Farrelly (2018) concluded that *"The blended course design seemed to effectively meet the objectives of the course and the needs of the students. It also provided several benefits to those enrolled in the course. The online components were appropriate and productive and provided students with the flexibility to engage with the content when they were able."* (p.11).

The fifth is *amalgamation of learning theory and principles of adult learning*. Learning theory is necessarily to be considered in any educational platform. Despite the fact what the educational theory says, effective instructional activities cannot be designed. Except only three studies (i.e. Bicen, Ozdamli & Uzunboylu, 2014; Mouzakis & Bourletidis, 2010; Heba &

Nouby, 2008), the other researchers have not specifically highlighted the underlying theory of activity design. Mouzakis and Bourletidis (2010) elaborated the value of both learning theory and principles of adult learning in blended platforms - “*Main principles of adult learning (work-related activities, activities that reflect teacher’s interest etc.) and the learning theories (behaviorist, cognitive and constructivist strategies) should be taken into account to promote active learning and to foster higher-order thinking and meaningful knowledge*” (p.17).

(3). *What blended models/approaches support to deliver the blended teacher development programmes?*

Blended models or approaches simply say how technology presence (i.e. ICT, web, internet and so on) and face-to-face presence are blended (Picciano, 2006, p.97-98). The blend could be either technology-rich or face-to-face dominant. Based on contextual demands, the appropriate blend has been defined (i.e. Demetry, 2010, Derntl & Motschnig-Pitrik, 2005, Bianco, Collis, Cooke & Margaryan, 2002). Mostly, blended approaches differ greatly in par with what the intended programme to be achieved; either if the programme is looking at technology impact or social impact on learner performance and learner attitudes towards the particular blend which is tested (i.e. Mellema, Smart, Shull & Salmona, 2009, Donnelly, 2010, Greener, 2008).

The present review noted that the blended experiences reported in the studies cannot be categorized under the models suggested by Horn and Staker (2011), Staker and Horn (2012) and Christensen, et al. (2013). Most of the blended experiences are partially related with the four models proposed by Staker and Horn in 2012 (p.). For such instances the best appropriate classification would be the “*blended frameworks*” but not the “blended models or approaches”. It is observed in some situations that the roots or origins of blended frameworks derive from the models but eventually the frameworks deviate largely from the models in practice (i.e. Demetry, 2010). Flipped classroom model has been one of the popular concentrations in blended platforms. Usually flipped model says that lecture content is delivered online and instructional activities are conducted face-to-face in the classroom (Staker and Horn, 2012. p.). It is noted in the review that this model requirements have not been met fully in the blended programmes (i.e. Demetry, 2010, Strayer, 2012). Not only the content is delivered online, in addition, warm up activities such as online quizzes and assignments have also been assigned for the students online and face-to-face sessions have been used to solve the learner issues related to the content delivered (Demetry, 2010, p.1).

Further, the review noted that blended settings differ in response to the subjects being targeted. If the subject is information technology focused or language focused, blended approach has been adapted accordingly (i.e. Ting & Chao, 2013, Akgunduz & Akinoglu, 2016, Sriarunrasmee, Techataweewan & Mebusaya, 2015). Technology presence could be higher when the blended mode is used in technology related subjects such as science, ICT and medical science (i.e. Gagnon, Gagnon, Desmartis & Njoya, 2013, Woltering, Herrler, Spitzer & Spreckelsen, 2009, Derntl & Motschnig-Pitrik, 2005). Simulations, animations, audio-video conferencing (i.e. Avatar) and high-end software have been used to deliver the content in technology-rich subjects in comparison to social science subjects such as education and languages (i.e. Shen, Lee, & Tsai, 2011). Social presence has been significant in blended social science programmes. Instructor and tutor support, peer collaborations and interactions, instructor supervision and face-to-face meetings have been more significant than the technology presence in blended social science programmes (i.e. Ausburn, 2004, Ting & Chao, 2013).

One of the common constituents of two types of blended programmes, science and social science programmes, was “*pedagogical presence*”. Pedagogical presence is for the assurance of the quality of the educational programmes. When technology is combined with teaching and learning, pedagogy provides theoretical, philosophical, psychological and phenomenological foundation for the process. Pedagogical presence can be used for instructional design, curriculum design, technology adaptation, learner motivation and assessment. Though this has not been much emphasized in the blended approaches but blended learning could not happen if the pedagogical presence is lost. It is interesting to note that though the blended models emphasize technology presence and social presence as significant constituents, pedagogical presence has been behind blended learning (i.e. Huang & Zhou, 2006, Bianco, Collis, Cooke & Margaryan, 2002, Denis, 2003). Instructional strategies and activities derive from the instructional modes (i.e. behaviorism, constructivism) (Saskatchewan Education, 1991). To apply pedagogical concepts and theories in blended learning, practitioners could get the support of pedagogy. Significantly the review noted that blended models consist of three constituents, technology presence, social presence and pedagogical presence. This deal is seen in each blended programmes in varying degrees.

Blended teacher development programmes do not differ greatly from general blended trends in respect of model selection. But one important observation could be made in the review. The

flipped classroom model (Inverted Classroom) has been much popular in TDP (i.e. Shand & Farrelly, 2018, Popa et al., 2015, Vaughan, 2014, Caner, 2010). Flipped model supports to increase the sense of community as it opens up an environment where the learners could interact, share knowledge, build study groups and encourage informal learning online (Shand & Farrelly, 2018). In online phase students have their own pace and classroom phase clears the misconceptions about the materials. Vaughan (2014) stated that flipped classroom models is best fit for teacher preparation courses because it encourages student ownership over their own learning, and simultaneously frees up class time to expose teachers to myriad instructional strategies during the application of the content they have learned. Flipped classroom model gives enough time for the learners to get ready for their learning prior to the classroom meeting; the challenges emerge as a result for the instructor are how to manage new learning experiences, keeping contacts, building rapport and giving feedback when they are outside. To overcome such challenges instructor possesses enough time before the next meeting. The success factors of flipped model are, therefore, planning and management of instruction (Vaughan, 2014). In this sense, technology plays a critical role in flipped classroom model.

As teacher preparation programmes are focused on professional development, managing application of the new knowledge would be an issue. To make the model fruitful in this aspect, careful planning of activities and revisiting of the strategies are needed (Vaughan, 2014). Vaughan (2014) further emphasized that instructors need training on how to handle the different technology tools activities. Then, instructors get more advantages of online phase (Popa et al., 2015). Findings of Vaughan (2014) tally with the findings of Popa et al., 2015 about the implementation flipped classroom model in teacher development programmes. They also recommended that instructor professional development is a must in flipped model of blended learning.

CONCLUSION

It is noted that blended learning accumulates recognition and acceptance of scholars in the field of teacher development programme delivery since it supports the academic institutions to programme outcomes. Selection of instructional strategies of the two types of programmes, general blended programmes and blended teacher development programmes, is indistinguishable due to the same instructional strategies are used in the programme delivery and self-directed learning has been preferred. Instructional activity selection in blended teacher

development programmes is focused on mastery of professional skills, therefore asynchronous discussions; individual and group activities and text-reflection have been highly preferred.

Eventually, it seems that flipped model fits with blended teacher development programmes once the proper instructional planning and implementation measures are introduced into flipped model of blended learning in TDP. There could be variations even within such contexts as blended learning means different thing to different people.

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