Critical Review of the Blended Learning Models based on Maslow's and Vygotsky's Educational Theory

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Abstract. Blended learning involves the combination of two fields of concern: education and educational technology. To gain the scholarly recognition from educationists, it is necessary to revisit its models and educational theory underpinned. This paper respond to this issue by reviewing models related to blended learning based on two prominent educational theorists, Maslow's and Vygotsky's view. Four models were chosen due to their holistic ideas or vast citations related to blended learning: (1) E-Moderation Model emerging from Open University of UK; (2) Learning Ecology Model by Sun Microsoft System; (3) Blended Learning Continuum in University of Glamorgan; and (4) Inquiry-based Framework by Garrison and Vaughan. The discussion of each model concerning pedagogical impact to learning and teaching are made. Critical review of the models in accordance to Maslow or Vygotsky is argued. Such review is concluded with several key principles for the design and practice in blended learning.

Keywords: Hybrid Learning, Blended learning, Educational Theory, Educational Technology, Higher Education

1 Introduction

"It is challenging to find a widely accepted definition of blended learning, and even more difficult to find a core set of literature on blended learning mythologies or framework." [18, p.137]

Of all instructional methods in the modern day, the term "blended learning" or "hybrid learning" is increasingly popular among UK higher educational institutions. Bonk and Graham [6] capture a vast amount of methods and applications of worldwide blended learning case studies in universities and commercial training and development units. Other researchers such as Littlejohn and Pegler [24], Allan [2], and Garrison and Vaughan [17] also provide comprehensive resources related to blended learning models in the context of higher education. The pervasiveness of blended learning has, however, increased the diversity and debates on its definitions and models. In higher education, there is neither standard nor simple framework to scaffold blended learning for all disciplines. The practices of blended learning are

often tailored by different needs and requirements of individual or organisation. There are too many ways and models of 'blends' depending on the blender and context. In a crude manner, blended learning involves the combination of two fields of concern: education and educational technology. To understand the richness of this term and its scholarly recognition from educationists, it is necessary to revisit its models and educational theory underpinned. This paper respond to this issue by reviewing models related to blended learning based on two educational theories.

2 Method and Overview of Chosen Educational Theory

This paper is neither empirical nor development project. It is an educational and critical review aimed to revisit current blended learning models from educationists' stand. First, the theories by Maslow and Vygotsky in educational context are explained. Four models were chosen due to their holistic ideas or vast citations related to blended learning: (1) E-Moderation Model emerging from Open University of UK [31, 32]; (2) Learning Ecology Model by Sun Microsoft System [42]; (3) Blended Learning Continuum in University of Glamorgan [21, 7]; and (4) Inquiry-based Framework by Garrison and Vaughan [17, 39]. The discussion of each model concerning pedagogical impact to learning and teaching are made. Critical review of the models in accordance to Maslow or Vygotsky is argued. Such review is concluded with several key principles for blended learning practitioners.

Two prominent educational theories, Maslow's theory and Vygotsky theory, were selected as grounding for the evaluation of blended learning models. Vygotsky considers socio-cultural factors in cognitive learning and education. For this reason, his idea is increasingly adopted as welcome guidance for classroom practice [23]. Vygotsky believes that learner's knowledge is developmentally constructed in a social or cultural interaction [11]. These interactions include those with educators, parents, classmates, family members and friends. They involve relationships with significant objects, such as books or toys, and culturally specific practices that learner engage in the school, at home, and in the community. This is called the Vygotsky's Cultural-Historical Theory [14], in particular to integrate historical and psychological processes into an untied theory of human consciousness [38]. In addition, this social and cultural construction of knowledge is mediated by words and language.

The Zone of Proximal Development (ZPD) is Vygotsky's terms for the range of tasks that are too difficult for learner to master alone but that can be mastered with guidance and assistance from educators or more-skilled peers [35]. Vygotsky views that learning could lead development if it occurs within the learner's ZPD. A simple but powerful principle lies behind ZPD: the quality of learner's thinking and performance is much better if he is aided with a more skilful and knowledgeable educator rather than he works independently [1]. For the skills and concepts that lie outside a learner's ZPD, even significant instructional efforts may fail to produce developmental gains. Vygotsky recognises that the kind of assistance needed to help learner develop new skills and concepts within their ZPD takes different forms for learner of different ages [14]. Vygotsky's view on the role of the educator is as a facilitator. The nature of this role is reflected in ZPD model. To facilitate the learning

among learners, the educators utilise modelling and supporting techniques when they teach learners concept which are above their current skills and knowledge level in ZPD, motivating them to excel beyond their current level. The facilitating process from the educator is essential to encourage the learner to achieve higher level of ZPD. In summary, Vygotsky emphasises the social interactions, language and culture of their total learning environment, with the educators' and more-skilled peers' facilitation in learners' ZPD.

Abraham Maslow [26] is a famous contemporary theorist who put forward the hierarchy of needs. His model can be implied in educational context especially to understand the motivation of learning and teaching for learners [15, 22, 41] as well as educator [5, 10, 28, 29]. The educational implications of his ideas are summarised in the table below:

Table 1. Pedagogical Implication for Maslow's Hierarchy of Needs (Modified from [1])

Stage	Needs	Pedagogical Implication
Stage-1	Physiological well-being	Learners will lose attention and not be able to learn well if their physical conditions such as accessibility, hungry, insufficient sleep, illness and indistinct noises are not well attended. No physical obstacles that hinder the accessibility to the learning materials in this stage.
Stage-2	Safety	The learning environment must be safe and sound for all students from any background and at any age. For example the inclusive facilities for disabled learners or international students. Psychologically the learners feel safe to communicate with the peers and tutor in this stage.
Stage-3	Love and sense of belonging - Social	The individual learner needs to be cared and loved by the peers and educator. The educator shall create such learning community to provide the sense of belonging to the learners.
Stage-4	Self-esteem	The personal strength, qualities and uniqueness within the individual learner is developed and found in the learning process. Learners who are given tasks to play role in the learning environment can contribute to this perception.
Stage-5	Self-actualisation	The learner will develop the full potential as a human being to realise the purpose driven learning process and the cultural life.

3 Revisit Current Models

3.1 Salmon's e-Moderation and e-tivities

"The UK Open University (OU) was founded on the idea of blended learning long before the phrase came into common use." [34, p.387]

Gilly Salmon [30, 31] is perhaps one of the most popular researchers on blended learning or online education in the UK in the last decade. Her classic books on e-

tivities and e-moderations have shifted the typical terms such as e-learning or online education to a new paradigm. A new term namely "e-moderator" was created to substitute online tutor or e-tutor. E-moderation model has widely adopted by the higher educational institutions across the world [33]. Salmon's e-moderation model was apparently built on Maslow's model for hierarchy of needs. To understand Salmons' model, it is necessary to revisit the profound concept developed by Maslow. In Maslow's context, McFadzean [25] defines the aim of education as to assist learners to achieve self-actualisation and thus fulfil their potential for personal growth. Through the social interaction, learners feel loved and sense of belonging to the learning group. Educators may contribute to the sense of belonging and self-esteem by ensuring the engagement of learners in the community which is socially and academically reinforced [27]. This idea is clearly presented in Salmon's model for e-moderation. In accordance with Maslow's model, her stage-like model consists of 5 phases as shown in Figure 1. At Stage 1, the warm induction, motivation and accessibility for all learners are the key agenda. E-moderators shall provide an interesting introduction to the use of the technological platform, and acknowledgement the feeling surrounding using technology and meeting new people through the online environment [30].
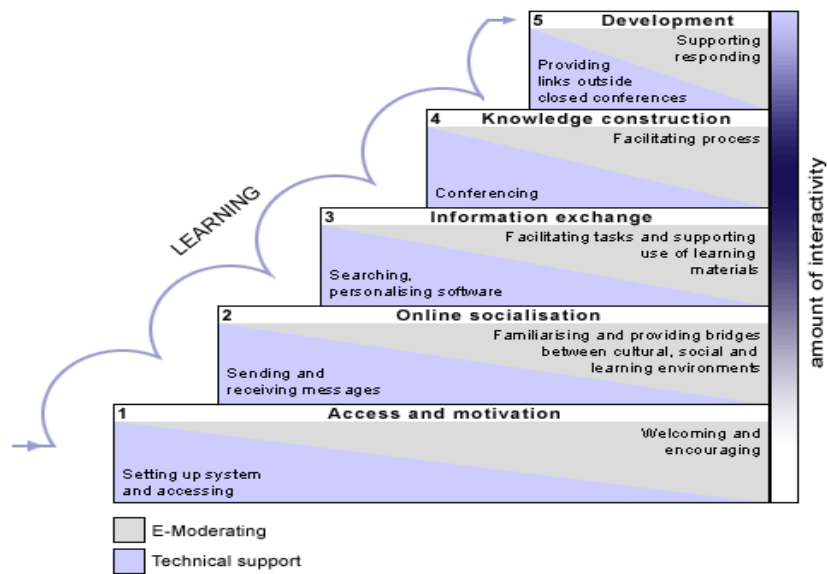

Fig. 1. E-moderation (Salmon, 2000, 2001)

Salmon [30] emphasise socialisation with peers and e-moderator are the essential activities in Stage 2. The learners are familiarising with each other and developing bridge between cultural and social barriers. Information will start to exchange in the following stages if the bridge are built. Rather than merely reading from the online materials, interactions with the materials and interactions with e-moderator and peers will be stimulated at individual own pace. In stage 3, the sense of belonging to this community may grow in parallel. By stage 4, learners start constructing the

knowledge and facilitating each other. The personal strength and knowledge within the individual learner is developed and constructed along the way. Learners will take control for their own knowledge construction where as e-moderators merely facilitating the knowledge constructing and sustaining the groups' communication in a little noticeable manner. Ideally, the learners will successfully handling their own group dynamically as the learning proceeds. At the last stage, learners become responsible for their own learning and for their group. They also become critical and self-reflective. Ultimately, learners are confident in reflection, assessment and achieve self-actualisation in the whole e-moderation process.
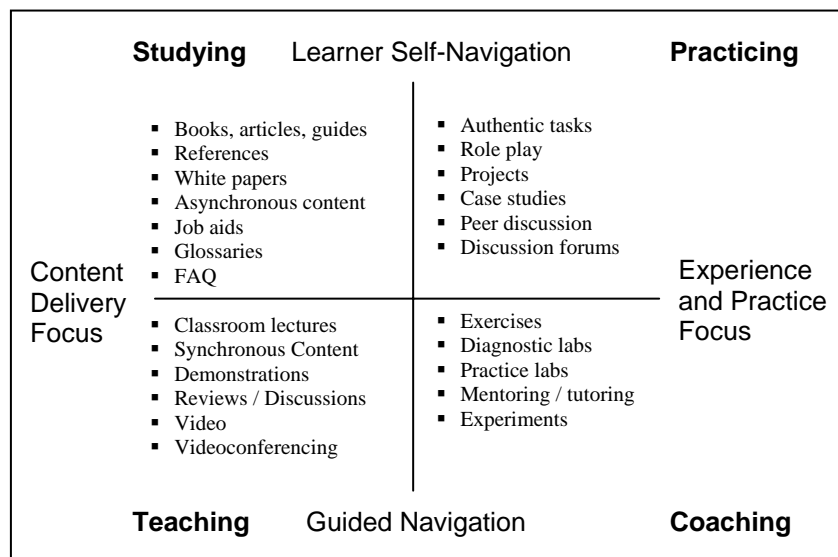
Salmon [32] claims that this e-moderating model is a proven resource that provides a clear blueprint for education and e-learning. Hammond [19] also addresses the strength of e-moderating lies in its pragmatic and practical nature. One of the authors attended an e-moderating course in the year 2006. Based on such personal experience, these claims are rather valid. E-moderating is a simple but useful guide to scaffold the blended teaching and learning for the educator. In the past few years, there have been an increasing number of studies dealing with the blended issues such as (1) how to integrate different technology and media into conventional classroom and (2) how pedagogy and face-to-face instructions can be mediated by technologies. To support these issues, Salmon addresses the "what, which and how" type of questions e-moderating model. Her aim is to provide a simple but practical guide for those who are involve in online education and training based on Maslow's educational concept.

Maslow cautions that most learner stop maturing after they have developed a high level of esteem and therefore never reach the stage of self-actualisation [35]. To Maslow, self-actualisation is always the critical concern and problem in his model. In the education context, the learner who is in self-actualisation stage is cognitively knowing and exploring new knowledge, to connect to something beyond the ego or to help others find self-fulfilments and realise their potential [20]. In this respect, it is indeed the greatest challenge for e-moderator to facilitate learners to the last stage (stage 5). There is one criticism from Hammond [19]: Salmon appears to take generally negative view on those participants who read messages but may not post a contribution. It could be argued from my experience of attending an e-moderating course in the past, that some of the messages posted are merely "for the sake of posting" or "for the sake of communicating" without valuable contributions the learning. The authors would assert that not necessarily interactions with people or actively posting message in the discussion board are the only way of assessing a student. Overall, e-moderating is still an interesting and practical attempt for modelling online education based on a profound educational theory.

3.2 A Learning Ecology Model by Sun Microsoft System

According to Wenger and Ferguson [42], world-wide Sun Microsystem corporate adopted an ecology framework as a guide to their blended learning model. This model enables them to map the current possibilities as well as new possibilities of technology and learning design for IT training in global corporate. The major strength of this model is that it contains a broader and stable view of the totality and at the same time accommodates a constant changing set of components (refer to Figure 2).

Wenger and Ferguson [42] suggest five important backgrounds to this learning ecology framework as (1) Quality of Learning experience; (2) Control over Learning Experience; (3) Formal versus informal learning; (4) Social nature of learning and (5) Cost effectiveness. These are essential values to construct the framework but the authors would like to argue that not all of them were embedded and applicable in the model, for instance, the measurement for the "quality" and the "cost effectiveness" of learning experience. This model presents a methods-rich framework for blended learning. They named the methods and opportunities as "learning elements" for learners to construct the knowledge and perform social interactions. Each learning element in Figure 2 demonstrates the learner-focus or educator-focus idea behind. With the above spiral type of learning modalities, the ecology framework is flexible enough to tailor the learners' and educators' needs.
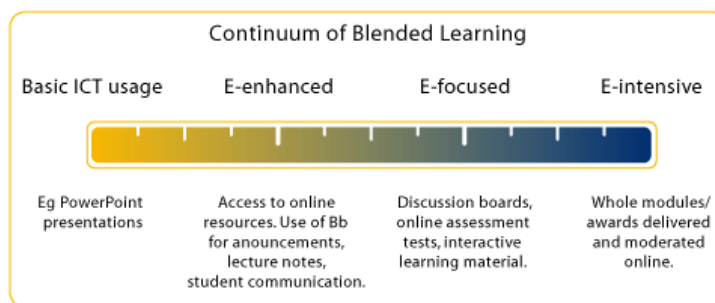

Fig. 2. Learning Modalities (Wenger and Ferguson, 2006)

A research in Canada, Siemens [36] spectacularly indicates that learning is a dynamic, living and evolving state and learners always learn from evolving process more than static content. In this respect, it could be argue that learning modalities shown in Figure 2 provides less dynamic and evolving environment. There is no specific learning element which is undoubtedly distinguishable from the adjacent elements in another column. For instance, case studies can be learned by "studying" or "teaching" instead of "practicing" in certain circumstances; and exercises can be carried out in self-initiative manner without guided coaching. The line between studying and practicing, teaching and coaching is therefore ambiguous. There is no clear distinction between self-navigation versus guided navigation. The learning could be took place in an overlapping circumstances as described by Vygotsky in ZPD in which the learner constructs the knowledge (self-learning) in the aid of a senior facilitator (guided learning). On the other hand, the authors would argue that this model pays too little attention to the cognitive factors such as reflection and

assessment along the learners' development. However, this Learning Ecology addresses the criticism raised by Stevens and Frazer [37] about the concept of "coaching" is the missing ingredient in blended learning strategy. Nevertheless, Vygotsky's ZPD is clearly revealed in "Coaching" element in Figure 2 as the Learning Ecology model emphasises coaching as one of the four elements.

3.3 Jones's Blended Learning Continuum

The University of Glamorgan (UoG) is one of a number of UK HEIs which has taken a whole institutional approach to the adoption of Blended Learning. It made a commitment in 2005 to the adoption of Blended Learning across the institution and its delivery partners. A three-year project across the University's provision led by Professor Norah Jones, the Head of Centre for Excellence for Learning and Teaching, has been carried out [8]. With the consideration for all arguments against no standard models for blended learning, Jones [21] suggests that the continuum of blended learning is a better guideline instead of a stage-like model for institutional wide adoption. Such continuum used by University of Glamorgan is shown in the Figure 3.

Fig. 3. Learning Modalities (Wenger and Ferguson, 2006)

Jones [21] identifies that PowerPoint presentations and basic web-facilitated learning resources through VLE are the indication for the category of "Basic ICT Usage" and "E-enhanced". The next point is "E-focused" where discussion boards, online assessment tests and interactive materials take place. More online facilities are used extensively and creatively here. E-intensive is the last category in the continuum, where whole teaching and learning is delivered online with face-to-face inductions. Similarly, this Jones's continuum tally with Garrison's and Vaughan's [17] view on the rejection for dualistic thinking of choosing between conventional face-to-face and online learning. A continuum provides more flexibility for practitioners to decide at which point the best option is, in order to suite the individual's epistemology and disciplines. At the same time, one may be able to conduct self evaluation and understand more options along the way. The available directions are well-defined for anyone who adopts this continuum. The "E-intensive" in this model, however, is not asserted as the best solution. It is a subject dependency and flexible model acting as a guideline to individual discipline and requirement via different mode of category. It provides an unambiguous method to the institution that is new to blended learning.

Jones's Continuum of Blended Learning is a simpler but more practical model than Learning Ecology Model (refer to section 3.2) in terms of practical adoption of the technology. It shows the progress and direction of blended learning for a higher educational institution where as this is not clearly expressed in other models. The Continuum of Blended Learning provides the educators an idea of what and how to embed blended learning in their teaching process. In this respect, this model provides an overall picture especially on the choices and indications that can be made in producing uncomplicated but effective blended learning experiences, from individual's module to the whole programme. Allen, Seaman and Garrett [3] conducted an extensive survey among the universities in the State. They provide a very similar indication to Jones's Continuum. Thus the authors attempt to relate both ideas as the Figure 4. To compare the Jones's continuum and Allen et al.'s classification, it could be summarised that "Basic ICT usage" is fall into the category of "Traditional"; "E-enhanced" is more likely to be the type of "Web Facilitated"; where as "E-focused" is labelled as "Blended/Hybrid" course; and "E-intensive" is apparently fall into the category of "Online" module. In practice, Allen et al.'s classification may be easier for one to identify the current stage from the exact percentage. It could be argued at that, however, this may again provoke disagreement from the educationalists as it is a typical stereotype. Cross [13] affirms that the classification by percentage is not useful blends as they are "oversimplified" (p.xviii). Jones's continuum on the other hand, provides more thinking space and flexible variation, which commonly required in the context of education. Overall, Allen et al.'s [3] idea does not stand comparison with Jones's continuum.

Proportion of Content Delivered Online	Type of Course	Typical Description	Jone's Continuum
0%	Traditional	Course with no online technology used — content is delivered in writing or orally.	Basic ICT usage
1 to 29%	Web Facilitated	Course which uses web-based technology to facilitate what is essentially a face-to-face course. Uses a course management system (CMS) or web pages to post the syllabus and assignments, for example.	E-enhanced
30 to 79%	Blended/Hybrid	Course that blends online and face-to-face delivery. Substantial proportion of the conten is delivered online, typically uses online discussions, and typically has some face-to-face meetings.	E-focused
80+%	Online	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.	E-intensive

Fig. 4. Indications for Blended Learning Continuum [3]

If there is one point of criticism for the continuum, it is that its emphasis on technology rather than pedagogy. Pedagogical considerations such as instructional activities and social interactions are not directly described in the continuum. Furthermore, it does not reveal the role of educators and learners as depicted in the Learning Modalities [42] and Salmon's models [30]. It is essential due to the focal point of education are people and followed by pedagogy, not technology. Hence, the

authors assert that practitioners with pedagogical knowledge and practice, winged by technological tools, are the initial principles of blended learning model. The main challenge is perhaps to convince the academics that this continuum is not a new initiative but an attempt to improve professional development in a systematic manner. Ultimately it acts as an impetus for academics to move forward in view of the pedagogical issues and of their ICT competencies.

3.4 Garrison and Vaughan's Inquiry-based Framework

In the context of blended learning, the authors perceive that Garrison and Vaughan are perhaps one of the most pioneer and prominent researchers, in terms of the understanding of the nature of both educational process and educational technology. Garrison and Vaughan [17] precisely assert that "reflection and discourse" (p.31) are the two inseparable elements at the heart of a meaningful educational experience. They promote blended learning design which recognise and maximise such educational experience through: (1) thoughtfully integrating online learning and face-to-face learning for better reflection and discourse; and (2) fundamentally revisiting and rethinking the learning and teaching to optimise students' engagement. Based on the immerse experience grounded in the field of education, Garrison et al. [16] developed the Framework for Community of Inquiry (CoI) as a guideline for online and face-to-face learning and teaching. As a result, Arbaugh [4] reports that Garrison et al.'s work [16] has shown considerable promise and becomes the most cited piece of research in the journal of *The Internet and Higher Education* to date. According to Garrison and Vaughan [17], CoI framework is rooted on Dewey's idea on constructivism. They understand Dewey in the sense that educational inquiry is neither to memorise nor seeking final answers but a practical process to investigate problems and issues. They believe the ideal educational process is the route for a collaborative constructivist who focuses on inquiry. The key of CoI is heavily relies in the process of inquiry. In such process, knowledge is shaped and constructed through social interaction and collaboration.

Figure 5 depicts the idea of educational experience from the process of inquiry. Cognitive presence consists of information exchange, connections of ideas and the creation and testing of the concepts. Teaching presence establishes the reasonably structure and process of the learning and teaching. It also provides the quality design and direction for educational experience. Garrison and Vaughan [17, p.15] thus argue that "education defined as a process of inquiry goes beyond accessing or even assimilating information. Inquiry joins process and outcomes (means-end) in a unified, iterative cycle. It links reflection and content by encouraging students to collaboratively explore and reasonably question the organization and meaning of subject matter." Social presence represents a group communication that facilitates the collaborative learning. A community of inquiry will be formed through its presence. The personal educational experience will be enhanced when all teaching, cognitive and social presences occur at the same time and facilitating each other. The categories and indicators for CoI are clearly presented in the Table 2 and from that table, one may think of many educational technologies that are able to facilitate these elements. Many blended learning researchers merely provide and analysis a list of technologies

that can be adopted in learning and teaching. It could be asserted, however, that Vaughan and Garrison [39] have successfully shifted the focus of blended learning from "technology" to "learning", yet simultaneously trigger the exploration and interests on possible technologies or ways to enhance the educational experience. In addition to these issues, the framework of CoI is facilitated heavily by educational technologies and they can also be used in faculty level rather than at the individual level. Vaughan and Garrison [39] conclude from their findings that blended learning was successfully supporting a development community of inquiry in a faculty. Vaughan and Garrison [40] further highlight that a blended faculty community of inquiry provides the necessary structure to support and sustain the course redesign process. The blended faculty CoI will provide support and recognition for participants to revisit and reflect on their course design, pedagogy and the uses of educational technology. Presumably, blended learning in this sense may represent the integration of pedagogy and technology in a community-based inquiry development. This is a different dimension of view from Salmon [30] and Jones [21]. Both Salmon and Jones define the blended learning model in a structured and practical manner where as Garrison and Vaughan [17] illustrate blended learning in a more descriptive and wider way. According to a recent research, Arbaugh [4] reports on the empirical verification of the CoI framework and assert that this research needs to move beyond exploratory descriptive studies.

Fig. 5. Community of Inquiry Framework (Garrison and Vaughan, 2008)

Garrison's and Vaughan's model remarkably responds to Maslow's hierarchy needs and Vygotsky's Socio-Cultural theory. CoI create a socio-cultural educational environment for educators as well as learners. That setting inevitably leads to Maslow's perception from the stage of physiological well-being to self-esteem. Blended learning, in the eyes of Garrison and Vaughan [17] is not simply embedding educational technology into face-to-face instruction. Rather than suggesting "what and how" type of questions as Salmon [30, 31] did, they precisely introduce a holistic, reflective and self-sustainable Community of Inquiry Framework grounding on a strong educational theory. It acts as a conceptual tool that helps the academics and

blended learning practitioners who wish to evaluate and position the value of blended learning. It also acts as a stimulation of positive and informed change through such reflections. If there is one point of criticism, it is that assessment - an important element of learning and teaching is not depicted in the framework.

Table 2. Community of Inquiry Categories & Indicators (Garrison and Vaughan, 2008)

Elements	*Categories*	*Indicators (examples only)*
Cognitive presence	▪ Trigger event ▪ Exploration ▪ Integration ▪ Resolution	▪ Having sense of puzzlement ▪ Exchanging information ▪ Connecting ideas ▪ Applying new ideas
Teaching presence	▪ Design and organizing ▪ Facilitation of discourse ▪ Direct instruction	▪ Setting curriculum and methods ▪ Sharing personal meaning ▪ Focusing discussion
Social Presence	▪ Open communication ▪ Group cohesion ▪ Affective/personal	▪ Enabling risk-free expression ▪ Encouraging collaboration ▪ Expressing emotions, camaraderie

4. Conclusion

In the context of blended learning, Croft [12] suggests that two challenges faced by educators and learners when technology-focus is in place: (1) we should have a distinct idea of the purpose(s) we wish to serve; (2) we must maintain the flexibility and imagination to adapt the tool to new uses as they arise. The blended learning models discussed above serve the later challenge but not the first challenge. In this sense, educational theory is always the foundation of educational purposes.

Again, all models are not argued as equally good. Some models are better than others and it is almost impossible in contrary, to design a perfect model as blended learning resides in the field of education or social science rather than in computer science. At this point, the authors would like to assert that, without strong educational philosophy priming the blend, all principles are rather instrumental, stereotypes and trivial [9]. Today, blended learning researchers seem to have an emphasis toward practices without a clear understanding of or underpinned educational theories. Technologist possibly seldom takes the time to develop educational technology that is informed by pedagogy and sound educational reasoning. If things go well, educators simply assume that it works; but ironically, they will blame as "the system is not right" or "this is useless and it is not what I want". It could be argues that the latter phenomenon is more likely to happen. Most often, this is caused by the disciplinary and epistemological differences for educationalists and technologists. The heart of blended learning lays on deep understanding for the trends of both educational theories and technology. Hence, the need to explore educational theory and its relationship with technology is essential.

Social interactions, language and culture of learners total learning environment, with the educators' and more-skilled peers' facilitation shall be regarded as one of the keys design principles of blended learning. Pedagogical implications based on

Maslow's hierarchy of needs (stage 1-4 only) are recommended to be considered during the design and practice. Theories of education provide insight into important components of blended learning models, however it is a practical and empirical question whether blended learning can be structured yet having the same benefits with practitioners from different disciplines using the similar model and if so, how. This area is suggested for future research in blended learning. It is also suggested that blended learning researchers should investigate and develop principles or framework which recognising disciplinary differences and grounded on educational theory.

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