Chapter 13
Finding the Right Blend: Bringing Learning Back to Blended Learning

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Abstract The central theme for this chapter is to highlight the importance of learning design for blended learning. This means anchoring blended learning on established learning approaches substantiated by theories, principles, and empirical data. Also important is the *blending* of various components related to learning, and how to achieve effective blending. Thus, we propose a blended learning design involving three major components: (1) design considerations from a learning perspective, (2) considerations of different dimensions of blended learning and (3) integrating different components for effective learning. A case example of blended knowledge building strategy was provided as an illustration of this design approach. We further suggest that this approach is transferable to other learning approaches, such as flipped classroom approach.

13.1 Bringing Learning Back to Blended Learning

This chapter has a seemingly simple yet complex mission: foregrounding *learning* in the design of blended learning. Blended learning has become a widely adopted learning approach in higher education (Lim & Wang, 2016). Nevertheless, Sharpe, Benfield, Roberts, and Francis (2006) highlighted the issue of different interpretations of blended learning and lamented the lack of consensus on how blended learning is defined. The most common definitions, according to Graham (2013), are "(1) blending online and face-to-face instructions, (2) blending instructional modalities (or delivery media), and (3) blending instructional methods" (p. 334).

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There could be good reasons for the wide range of definitions for blended learning. Norberg, Dziuban, and Moskal (2011) suggested that blended learning can be treated as a boundary object that is shared across various communities, each adapting it for local contexts and needs, yet maintaining a common identity. This could explain for the wide adoption of blended learning. Yet, there are a few related issues with the lack of consensus and clarity of the meaning of blended learning. First, the wide range of the definitions of *blended learning* means that it refers to a broad variety of approaches of learning that encompass various interpretations and implementation methods. When we say we use a *blended learning* approach, it probably conjures different images in different people. How is this helpful to learning designers and educators? In addition, if the instructional method is working or not working, we can't really tell what makes it work or what leads to the failure. This leads to the second issue: what are the affordances of blended learning environments that could lead to effective learning? To say that we use a mix of online and face-to-face delivery methods does not help much; we need a more granular description of the conditions of the learning environment. For example, in the Community of Inquiry model (Garrison, Anderson, & Archer, 2000), successful learning occurs through effective interactions between the instructor and the learner, learner and other learners, and learner and the learning resources. That means a more detailed description of the learning conditions based on an established learning theory, model, or principle is needed. Third, all definitions highlighted by Sharpe et al. (2006) focus on how instructions are delivered or implemented, rather than designing for effective learning interactions. Graham (2013), in a comprehensive review of blended learning, suggested that while empirical studies show the effectiveness of blended learning, there are "still needs to uncover the root causes for improved learning outcomes in blended learning contexts." (pp. 345–346). He further proposed some productive areas of research, such as exploring quality of interactions, cognitive engagement, and learner characteristics. These areas of research are, in fact, all related to learners and learning. In other words, to explain for how and why blended learning works, there is a critical need to bring the perspective of *learning* back to blended learning.

Critically, we need to be cognizant that the term blended learning is constituted of two words: blended and learning. Specifying how it is blended is not sufficient, we need to describe the conditions for effective learning. Thus, blended learning has to be anchored by learning design for effective learning.

13.2 Learning Designs for Blended Learning

Focusing on learners and learning means prioritizing thinking about how to create a holistic learning environment for more effective learning. Without considering how to design for effective learning, other aspects of blending may not be productive. Learners will not learn better simply because we change the modes or modality of delivery. Graham, Henrie, and Gibbons (2014) made a similar argument after reviewing empirical studies of blended learning. They found that much of the design research of

blended learning focused on surface features or physical attributes such as the modes of delivery, which did not help to explain why and how blended learning worked pedagogically. To have greater explanatory power, they suggested identifying the core attributes of the design and highlighted the importance of the pedagogical layer of design.

Putting learners at the centre of our design consideration, we can consider learner's experiences in a learning context. We propose a blended learning design involving three major components: starting with (1) design considerations from learning perspectives, followed by (2) considerations of different dimensions of blended learning and finally (3) how to achieve effective *blending*.

1. Designs underpinned by learning approaches and principles. In general, successful learning occurs through effective interactions between the instructor and the learner, learner and other learners, and learner and the learning resources (see Anderson, 2008). Ultimately, a learner has to be engaged in thinking about the content, and relating to prior knowledge, or dialoguing with others about the content, and engage in meaning making. The integrative effect of cognitive, social, and emotional engagement provides the favourable conditions for learning to take place. Thus, one fundamental design consideration could be providing the appropriate blend of cognitive, social, and emotional engagement for holistic learning. The instructor could choose to adopt a more specific learning approach or model that integrates holistic engagement with students, for example, a dialogic approach to learning.

2. Building on this basic unit of effective learning interactions and engagement, we can begin to extend the design considerations to other dimensions of blending (Sharpe et al., 2006), such as face-to-face and online, or synchronous and asynchronous learning. Different aspects of blending could be considered. Sharpe et al. (2006) proposed eight dimensions of blending: delivery modes, technologies supporting blended learning, synchronous or asynchronous modes, practice-based or classroom-based learning contexts, different grouping strategies, pedagogical approaches, acknowledging different learning goals, and self-directed or teacher-directed. Some of these, such as pedagogical approaches, are related to learning.

3. For each dimension of blending, it is important to consider the alignment across different modalities or modes of instruction. For instance, there could be weaving between face-to-face and online learning to achieve strong coherence between the two modes of instruction, rather than as independent instances of instruction and learning. For example, if an online forum is used to engage students in the online discussion, the content of discussion could be weaved into the face-to-face discussion, and vice versa. Otherwise, the learners may feel that the learning is compartmentalized. Similarly, if an instructor chooses to use dialogic approach to learning, then the same approach could be applied across the modes of instruction. If the online mode is only used for delivering content via computers didactically but the face-to-face instructions is reserved for problem solving (which is practised in some flipped classrooms), the learners might form the impression of one mode of instruction being more important or more engaging or more interesting than the other. Critically, there is a lack of opportunity to deepen understanding of knowledge learnt.

In the next section, a case example will be used to illustrate what the proposed learning design looks like in a case example.

13.3 Case Example – Blended Learning through Knowledge Building Approach

This case example was a graduate level course that was offered to Master's and doctoral students, focusing on computer-supported collaborative building (CSCL) and knowledge building (KB) approach. Two instructors co-taught this course and both have more than 15 years of experience working with CSCL and KB. This chapter is based on the findings of part of the case study; it highlights on the blended learning *course design* and the *rationales* underpinning the design.

There were 15 participants in this course, out of which 14 participants consented to a case study research. The 14 participants, aged between 31 years to 60 years, had obtained a Bachelor's degree and 4 participants had completed a Master's degree. In addition to the tertiary education qualifications, 9 participants had completed professional training in adult and continuing education. All participants are educators working in schools, institutes of higher education, or other adult education contexts.

The main learning goal of this course was to help participants gain deep understanding of the theories and practice of CSCL with deeper exploration into knowledge building as one specific CSCL approach. This is aligned to the ideal of educating learners in the knowledge age (Tan, Hung, & Scardamalia, 2006). The instructional approach was to engage the participants in knowledge building so as to learn about CSCL and knowledge building. This is also an approach that instructors *walk the talk* (Divaharan, Lim, & Tan, 2011) by modeling the pedagogical approach. More explanations on the learning design will be elaborated below. There were 13 face-to-face sessions, each lasting for about 3 hours. During and in between face to face meetings, the participants also engaged in online discussion using a CSCL platform known as Knowledge Forum.

13.3.1 Learning Design – Blending of Cognitive, Social, and Emotional Aspects of Learning

Underpinning the blended learning for the course is the knowledge building approach (Scardamalia & Bereiter, 2014), which essentially involves collaborative inquiry among participants towards the shared goal of problem solving or problem of understanding. A critical part of the process is the construction and improvement of shared knowledge artefacts (e.g., notes, concept maps) that represent deepening of understanding of knowledge achieved by the community. Knowledge building is an integrative approach of learning that involves interactions between the instructor

and the learner, learner and other learners, and learner and the learning resources (see Community of Inquiry model by Garrison, Anderson, & Archer, 2000).

Unlike approaches that focus solely on individual cognitive changes and approaches that emphasize individual acquisition of knowledge, knowledge building is aligned to the socio-cultural perspective of learning where knowing is achieved through participation in cultural practices (Sfard, 1998). In addition, it has the added element of learning through knowledge creation (Paavola & Hakkarainen, 2005) that highlights the critical role of co-creating and improving knowledge artefacts that capture the group learning. It is also a dialogic approach where productive dialogues among participants are critical to bring about meaning making. By productive dialogues, we mean productive talks that are not simply agreeing, or are confrontational, but exploratory talks (Dawes, Mercer, & Wegerif, 2003) that require active listening, being critical and constructive to others' ideas, treating ideas as tentative and open to improvement, and aiming to collaborate rather than to compete (Walton & Macagno, 2007). Through exploratory talks, participants build on and improve one another's ideas. In addition to cognitive gain in individual learners, social aspects of learning are critical in knowledge building.

In more concrete terms, knowledge building is triggered by problems authentic to the participants that are raised by the participants (e.g., is collaborative learning different from cooperative learning? How do we foster productive discussion?) Such authentic issues act as a trigger for the participants to put forth their ideas, and seek to improve their ideas. To create a space for exploration, the questions are "open or divergent…in terms of allowing a broader degree of uncertainty in what would constitute an adequate answer" (Burbules, 1993, p. 97). In other words, open-ended questions are solicited to trigger inquiry rather than for assessing students. By idea, we mean a unit of thought that can be a question, an explanation, an observation, or an opinion. It is represented in some ways using the semiotic resources (e.g., a text written by a participant). These ideas are thus captured as knowledge artefacts in a shared platform (e.g., an online forum). Once in the shared platform, the participants can read the ideas, compare ideas, identify the strengths and weaknesses, identify gaps, suggest ways to improve the ideas, or propose new ideas. Since these texts are representations of students' ideas, improving the idea representation could mean improving their understanding of the topic or issues being discussed. Overall, it leads to collaborative idea improvement through productive discourse. This process could be cyclical in that the process of collaborative inquiry usually triggers other new ideas and new questions that lead to further inquiry.

Focusing on authentic inquiry suggested by the participants has the advantage of developing their epistemic agency, that is, participants taking ownership of their knowledge creation effort. When the participants are engaged in inquiry of an authentic problem they raised, they are naturally more motivated and are likely to invest a lot of effort to pursue the answer. In other words, knowledge building entails emotional aspect of learning.

Scardamalia and Bereiter (2010) proposed 12 principles of designing for knowledge building. Table 13.1 shows how these 12 principles were applied for the design of this course.

Table 13.1 Application of 12 principles of knowledge building for the course design

Principles	Examples of initial approaches to guide the students
An idea-centric approach	
Real ideas, authentic problems Engage students in inquiry related to problems that arise from their effort in understanding the world.	Trigger students' curiosity and interest in a topic and help them to generate inquiry questions. For example, "Dillenbourg (1999) distinguished between cooperative learning and collaborative learning. Why? Are these two concepts different? Are there similarities?"
Improvable ideas Treat all ideas as improvable.	From the students' discourse, show the students a few examples of good ideas and to think of ways to improve the ideas further. Explicitly talk about respecting one another's ideas.
Idea diversity It is good to identify ideas that are related and to have a variety of ideas that approach the same problem from different perspectives.	Highlight examples of ideas that are different because of different perspectives or different ways of approaching the same inquiry problem. Identify the values of how these differences enrich the way we think about an issue or approach a problem.
Rise above The aim is for students to be able to integrate ideas, to synthesize new ideas, or to use higher level principles or theory in explanation.	Demonstrate to students how different ideas can be integrated to become a better idea; how to go beyond listing discrete facts and pieces of information to understanding a topic or a problem from a higher level principle or theory. For example, relating the seemingly different concepts of "constraints" and "affordances" as ways of facilitating learning.
Knowledge building practices	
Authoritative sources of knowledge Students should make meaning of authoritative sources of knowledge, not just acquiring the knowledge, but also to use them for the inquiry.	Provide students with selected articles for meaning making. Highlight how to assess the information critically for accuracy, how to interpret the meaning of the information, and how to use relevant information towards the goal of the inquiry.
Knowledge-building discourse Students should engage in productive talks that focus on active listening and building on one another's ideas, rather than competing to win an argument.	Show examples of good and productive talks and get students to apply them mindfully. Teach students how to negotiate differences. Contrast productive talks with talks that are competitive, disputation in nature, or those that are of simple agreement or disagreement without providing reasons.
Transformative embedded assessment Assessment is not a separate activity. We can integrate assessment *for* learning and assessment *as* learning seamlessly in the process of knowledge building; encourage self-assessment.	Use students' notes as evidence of learning. Use analytics (e.g., analytics in the Knowledge Forum®) to provide quick feedback to the students. Engage students in discussing the criteria for assessment and the criteria to assess the quality of notes in the discussion. Get students to assess their own notes. In this way, assessment is part of the learning process.
Symmetric knowledge advancement Recognize different expertise among students; having them take turns to lead and contribute will eventually benefit everyone.	Help students to identify different expertise and strengths among them and encourage them to take turns to help one another. Increase students' awareness that we benefit and learn in the process of teaching others. Teach the students about collaborative strategies.

Table 13.1 (continued)

Principles	Examples of initial approaches to guide the students
Develop knowledge-building capacity	
Pervasive knowledge building Develop knowledge-building practice as a habit of mind to be applied across various learning contexts and subjects, not just an ad hoc application.	Use knowledge-building approach consistently, regularly and frequently throughout the course.
Democratizing knowledge All students have the rights to contribute in knowledge building, not just the privileged.	Emphasize that every student has the rights (and responsibility) to participate and contribute. Set class rules about respecting every participant. Provide opportunities (online and face-to-face) for students who are less confident to contribute in class.
Collective cognitive responsibility Develop in students the attitude that everyone has the responsibility in advancing the collective knowledge to the benefit of the community.	Allocate some points for positive group behaviours. Provide opportunities for students to create something as a whole group or class (e.g., group portfolio and group taking turns to lead discussion).
Epistemic agency Help students develop the ownership of learning and autonomy in doing knowledge building.	Let the students know that their ideas matter; find opportunities to highlight good ideas contributed by the students. Provide opportunities to show autonomy in their learning. Encourage students to show autonomy by sharing relevant resources or initiating new inquiry.

In short, the course design was underpinned by knowledge building principles. The following sections explicate various dimensions of blending, and for each, the design considerations for effective blending.

13.3.2 Blending the Synchronous/Face-to-Face and Asynchronous/Online Modes

This course consisted of both face-to-face instructions complemented by online discussion supported by Knowledge Forum (a CSCL platform) (see Fig. 13.1). In essence, Knowledge Forum provides a platform for the participants to put forth their ideas and collaboratively improve their ideas. It has customizable scaffolds to help shape productive discourse and it is equipped with various analytics (e.g., social network, level of participation) available to the instructor and learners.

The notes on the Knowledge Forum act as the knowledge artefacts that represent the students' ideas. Once posted, they serve as a historical record of the development of ideas and mediate the collaborative idea improvement process. These textual records of the online discourse is critical in linking the online asynchronous discussion and the face-to-face synchronous discussion, which is achieved with intentional design that weaves the two modes of instruction, illustrated below with a specific topic of discussion on the affordances of technology.
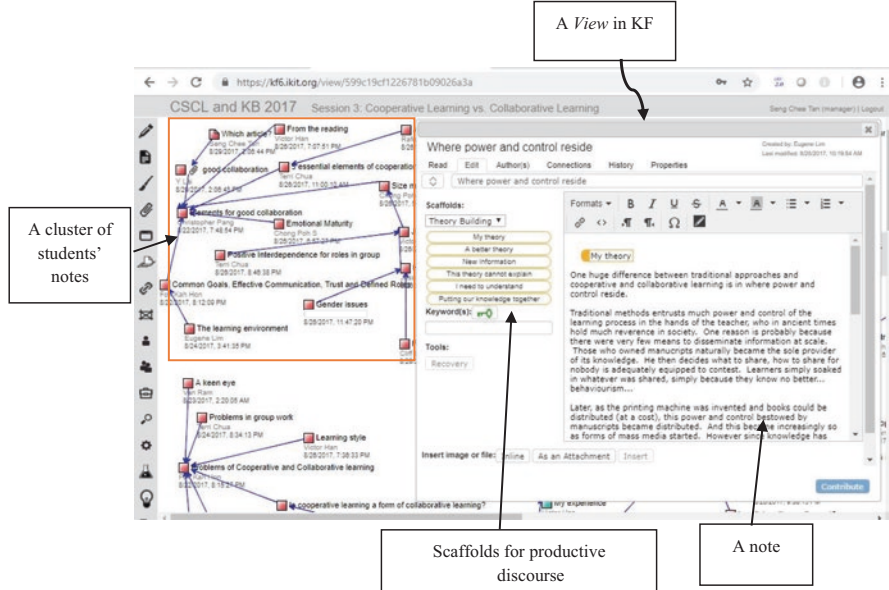
Fig. 13.1 Knowledge Forum interface

In one of the face-to-face sessions, the topic of discussion was on collaborative learning and cooperative learning. Following that, an academic paper that discussed the affordances of computer-supported collaborative learning (Jeong & Hmelo-Silver, 2016) was posted in the Knowledge Forum. This was to start linking "computer-supported" (the roles of computers) with the concept of "collaborative learning". Through the asynchronous online discussion mode, the students had an extended discussion on the meaning of "affordances", which involved related concepts such as "perceived affordances", "intended affordances", "affordances and context", and "affordances and constraints". This was led by a group of students who was responsible for facilitating the discussion. In the subsequent face-to-face meeting, the students summarized the key concepts discussed and highlighted a few insights generated through the discussion. The instructor then came in to address one of the concepts, *constraints*, which was misinterpreted by the students. Following this, the instructor led the students to concepts of knowledge building, which involve the principles of facilitating collaborative learning supported by networked computers.

In summary, the strategy of integrating synchronous/face-to-face discussion with asynchronous online discussion involves (1) the design consideration of how concepts are linked to one another in a logical manner, (2) how to engage the students to gain deep understanding of these concepts, (3) how to bring the discussion of the concepts from the online mode to the face-to-face mode and vice versa. Knowledge artefacts play a key role in this process, both as a record of the development of ideas, as well as mediator for collaborative idea improvement across different modes of learning.

13.3.3 Blending Instructor's and Students' Voices and Choices

Blending of instructor's and students' voices is reflected in the dialogues among students and with the instructors. Knowledge building is a dialogic approach in that productive dialogues among participants is a critical element to collaborative idea improvement. Students are taught to focus their talks on epistemic quality of ideas, for example, providing elaborate and justified explanations and support ideas with examples, reasons, and evidence. There should also be meta-level reflection by examining the process of the discussion and the epistemic criteria for reasoning, thus creating opportunities for self-correction (Burbules, 1993; Splitter & Sharp, 1996). Meta-level discourse moves include seeking clarification, connecting ideas across contexts and participants, and reflecting on levels of understanding. Through the dialogic process, the students engage in collaborative co-construction of knowledge by building on one another's positions and justifications, integrating the preceding contribution to advance the group's reasoning. Correspondingly, the instructor focuses on providing epistemic feedback. That is, rather than dichotomizing students' answers as right or wrong, the feedback could help to advance the inquiry by paying attention to the process and quality of ideas, seeking elaboration for the epistemic basis of the answers, such as justification, asking for evidence, and challenges students with alternative perspectives (Gregory, 2007).

Reznitskaya and Gregory (2013) described dialogic teaching as "a pedagogical approach that involves students in the collaborative construction of meaning and is characterized by shared control over the key aspects of classroom discourse" (p. 114). Thus, another aspect of dialogic teaching, as compared to monologic teaching such as didactic instruction, is the shared control given to students. In other words, dialogic teaching also caters to autonomous adults by encouraging shared control among the educator and adult learners in the teaching and learning process. In concrete terms, there is a democratic power relationship among participants over the content and form of discourse. Students are encouraged to take responsibilities for pursuing their inquiry questions, managing talks, offering new ideas, seeking clarification, evaluating one another's ideas, and suggesting changes. In knowledge building, the democratic power relationships are reflected in several design principles: developing students' epistemic agency, assuming shared cognitive responsibilities, and democratic participation.

In the course, blending of instructors' and students' choices are reflected in the flexible course implementation. The instructors provided the course outline detailing the intended learning objectives, course schedule, and delivery methods, thus setting the initial exploration space for the topics in the course. The students, however, had the choice of raising their inquiry questions, exploring deeper into related issues (e.g., explore deeper into the concept of affordances) and providing additional resources (e.g., additional readings). The students also took turn to assume instructional leadership by leading and facilitating online discussion, and presenting the summary of discussion or additional learning activities in the subsequent face-to-face meeting.

13.3.4 Blending Individual and Group Learning

By now, it could be apparent to some that knowledge building is concerned with collaborative idea improvement, which features strongly the interactions among the learners. Personal and group learning, however, are actually intertwined. This is explained in Stahl's (2006) model of collaborative knowledge building. Adapting from this model, we can view knowledge building as involving two intertwined spheres of learning. A personal space and the social knowledge building space (Fig. 13.2).

Explained from the perspective of Vygotsky's theory of human development (Vygotsky, 1978), learning is social in nature as it first takes place in an intermental plane (between individuals) before moving into an intramental plane involving individual thought processes. When we interact with others in a shared space, we share our thoughts and experiences with others, and in the process, interpret and codify our experiences (Varela, Thompson, & Rosch, 1991). In other words, we co-construct meanings and develop coherent understanding of the world through social interactions. The knowledge building process (e.g., posting notes on Knowledge Forum, engaging in idea improvement) reflects this social interaction and learning. The shared understanding is captured in the co-constructed knowledge artefacts (e.g., notes).

Expanding this concept of shared knowledge artefacts to our everyday life, we are living in an environment surrounded by cultural artefacts (e.g., books) and practices (e.g., how to do something). These are resources that we use as we engage in knowledge building. As we learn to use these artefacts and develop the practices, we assimilate the experiences of others (Leont'ev, 1981). In the process, we are set on
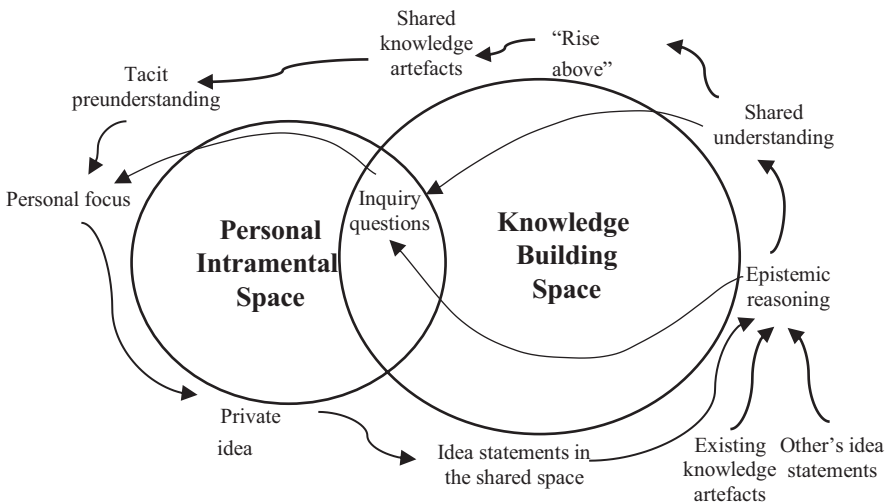

Fig. 13.2 Intertwined personal and group learning in knowledge building

a trajectory of mastering the cultural tools and developing the accepted practices. Seen from this perspective, human beings possess not only biological inheritance, but cultural inheritance; and the participation in communities of practice brings about continuity of the society. Learning, from this broader perspective, is the result of continuous participation in social activities that leads to transformation of the identity of an individual who develops expertise in using cultural tools and engaging in practices. Through joint activities with others, different people contribute to developing solutions for new situations, complementing and supporting one another in the interest of achieving the shared goal. Teaching, the intentional act of providing instructions to another towards a predetermined objective, is but one way of helping another person to develop. From this perspective, learning through knowledge building, in itself, is a blended personal and group learning process.

In the course, to recognize and encourage both individual and group learning, course assessment consists of both individual assignments (e.g., maintaining personal portfolio, concept maps, reflection), as well as group assignments (e.g., leading a discussion).

13.3.5   Blending Assessment of, Assessment for, and Assessment as Learning

Assessment is an integral part of learning. There are, however, different approaches of assessment for different purposes. In essence, assessment of learning is to place judgement on students' learning (e.g., end of course assessment) for the purposes such as awarding credits. Assessment for learning emphasizes the use of information of learning to improve students' learning (e.g., providing feedback, identifying areas for improvement). Assessment as learning engages students in the process of self-assessment for self-monitoring or self-directed learning.

In this course, all modes of assessment are employed. Assessment of learning is needed as this is a course offered for credit. Criteria for the course assessment are communicated to the students at the beginning of the course, comprising both individual and group components. For the group assessment, the groups are tasked to facilitate an online discussion followed by face-to-face "rise above", as mentioned earlier. The individual assignment is based on personal portfolio and a summative reflection. By asking the students to build their portfolio as the course progresses, assessment for learning is linked to assessment as learning. For example, the students were asked to construct concept maps as they explored different topics. In this way, newer concepts can be linked back to the earlier concepts learnt, and amendments can be made to the earlier maps, which is, in a way, a reflection of own learning.

Analytics are used in this course to provide feedback to the students. Knowledge Forum is equipped with a suite of analytics tools, including level of contribution over time (Fig. 13.3), social network analysis (Fig. 13.4), and time machine (recording online behaviours over time).
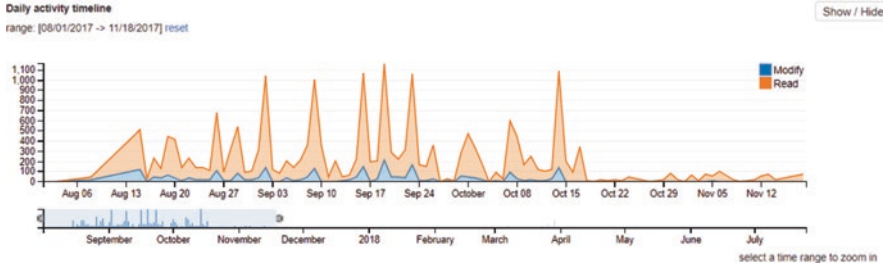
Fig. 13.3 Activity levels of reading and modifying notes over time
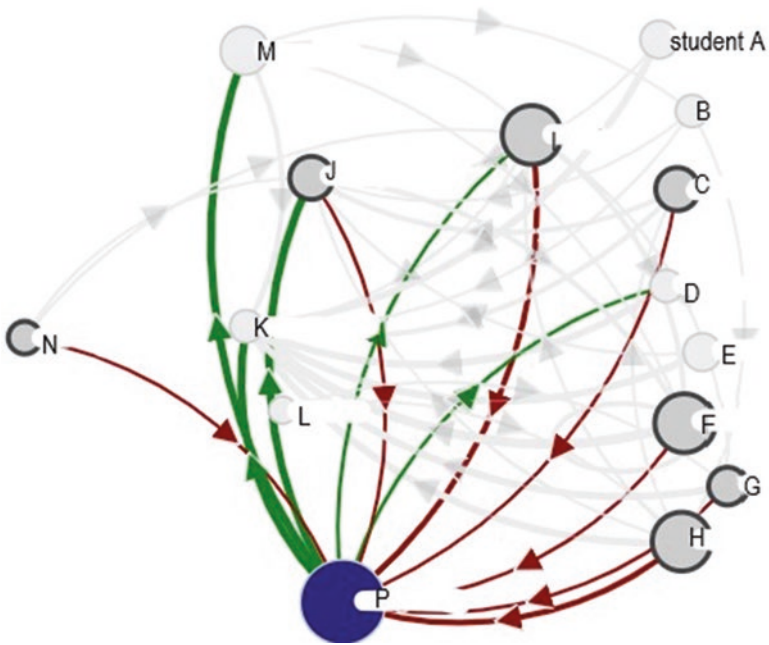

Fig. 13.4 In- and out-notes built on network visualization of a selected author

For example, Fig. 13.3 shows the level of activities over time. The instructor first showed the analytics to the students, highlighting the fact that most online activities happened the day before the class. Figure 13.4 shows a selected student (dark shaded circle), the extent other authors built onto the notes (thickness of the line) contributed by this student (in arrow), and the number of times this student built onto notes of other participants.

These analytics are also available to the students, who were keen to use the tools to monitor their own activities and behaviours. As reflected in the post-course interview, the students were particularly mindful of whether other people responded to

the notes contributed by them and they wanted to post high quality notes that could lead to active discussion.

These analytics, first used by the instructor to provide feedback to the class (assessment for learning), become tools for students to monitor their own performance and behaviours (assessment as learning).

13.4   Discussions

The above case example on the design of blended knowledge building is used to illustrate the key considerations for the blended learning design that we proposed. These are guidelines that we suggest are applicable if other learning approaches are adopted.

To iterate, the main message we intend to bring across in this chapter is that blended learning comprises two parts: blended and learning. We should not lose sight of learning design. Suppose an instructional designer decides to use a blended learning approach considering various conditions such as the learners' preference, the instructor's preference, the infrastructural provision and support, and the availability of computing devices, at some point in time, the designer needs to consider what learning activities should be assigned to the online mode and what to be implemented in the face-to-face instruction. This cannot be a random decision. We have illustrated how the design decisions were made following knowledge building principles (Table 13.1). Consider another example, if the designer decides to use a flipped classroom approach, then principles of flipped learning need to be applied. Consequently, what learning activities to be assigned before, during, and after classroom instruction phases will follow depending on which models of flipped learning is adopted. The decision to adopt a flipped learning approach means that there are some underlying assumptions about what constitutes effective learning and what the roles of technologies are in supporting learning. In other words, we cannot escape from the learning design. Since learning designs are closely related to our beliefs about learning, it is critical to anchor the design on learning theories, principles, and approaches, before considering to blend different components and methods.

Second, once a learning approach is selected, it is important to understand the key principles of the anchoring learning approach to minimize the risk of a "lethal mutation" (Brown & Campione, 1996, p. 292). In the knowledge building example presented through the case example, we need to keep the key essence of collaboration and idea improvement through dialogic inquiry. Consider another example regarding a flipped classroom approach, then the focus cannot be merely on creating video to deliver content. It requires a careful consideration of the distribution of learning activities across different phases of the instruction. If an instructor decides to use video to deliver part of the content to the students so as to free up more time for the face-to-face instruction (a very common rationale for flipped classroom), it is critical that learning activities that deepen the understanding of the core concepts or that engage the learners in applying the concepts should be designed for the

face-to-face meeting. If the face-to-face interactions are limited to lectures and common text-book based exercises, the key values of flipped classroom will be lost.

Finally, we should not neglect the integration of different components in the blending phase. Learners might feel that the learning activities are compartmentalized and learning effectiveness may be sacrificed. For example, in the case of knowledge building, if there is no connection between discussion on the Knowledge Forum and the face-to-face meetings, we will lose the opportunities to deepen understanding of key concepts or to have more nuanced insights on related issues. Likewise, for flipped classroom approach, the concepts learnt in the pre-classroom phase should be employed in the classroom activities (e.g., problem solving); otherwise, they are just distinct instructional phases with different modalities, rather than a blended learning.

13.5 Conclusions

This chapter started with a declaration of the mission of bringing *learning* back to blended learning, in other words, to give due attention to learning design focusing on designing conditions for effective learning, before considering other issues such as delivery methods and modes. We propose a learning design for blended learning involving three major components:

1. design considerations from learning perspectives by anchoring it on established learning approach or model,
2. design considerations of different pedagogical dimensions of blended learning, such as delivery modes, delivery methods, individual and group learning, assessment, and voices and choices of learners, and finally,
3. design considerations for achieving effective *blending*, that is, to weave different components together to provide a coherent learning experience towards the learning goals.

As a case example, we presented a blended knowledge building approach (Fig. 13.5), which is an approach that has evolved with decades of research and stood the test of numerous classroom implementations. As explained in the earlier section, essentially, knowledge building engages learners in collaborative idea improvement and involves cognitive, social, and emotional aspects of learning. Knowledge building is an integrative approach of learning that involves interactions between the instructor and the learner, learner and other learners, and learner and the learning resources (see Community of Inquiry model by Garrison et al., 2000). This learning approach, backed by a wealth of empirical research data, provides confidence that the suggested design principles could lead to effective learning.

Four types of blending are featured in this design, each with a suggested blending strategy.
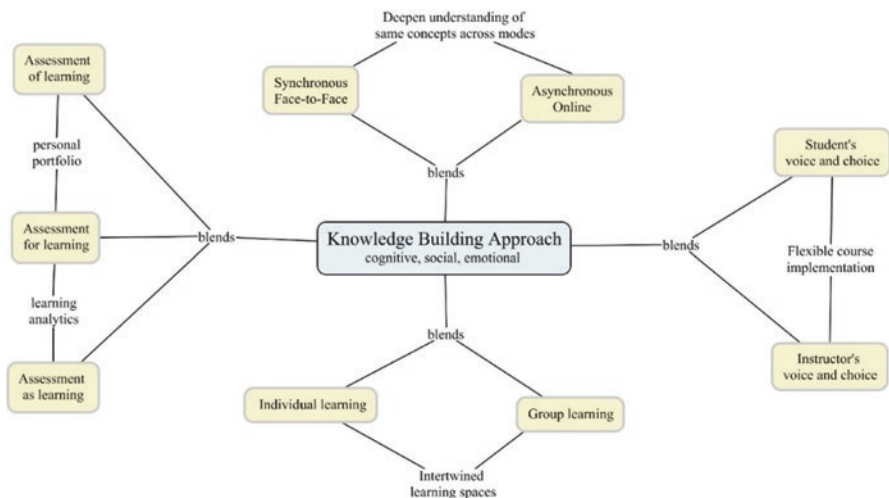
Fig. 13.5 Summary of blended knowledge building strategy

1. Blending of synchronous/face-to-face with asynchronous/online learning. The design could consider how discussions could be weaved in the two modes of instructions to deepen learners' understanding of the concepts or key ideas. Knowledge artefacts created by the learners can mediate this process.
2. Blending of instructors' and students' voices and choices. This involves consideration of the initial boundary or scope or rules set by the instructors and the flexibility to encourage learners' choice of inquiry questions. It also empowers the learners by highlighting the importance of dialogues among learners in the learning process.
3. Blending of individual and group learning. This can be achieved through the exploration space as a naturally intertwined personal intramental space and social knowledge building space. The instructors can further strengthen the conditions by including as assessment components of both individual's and group's performance.
4. Blending modes of assessment. This is achieved through the building of personal portfolio incrementally throughout the course and the use of learning analytics to encourage reflection as part of learning.

We further suggest that the above components of learning design can serve as a general guideline, even if other learning approaches are adopted. Regardless, it is critical to understand the key elements of a learning approach and avoid mutation of the methods that might compromise the effectiveness of the blended learning. It is also important to pay attention to the integration (or blending) of different aspects of instruction.

Finally, we like to iterate the key message: blended learning is made up of two terms, *blended* and *learning*. Anchoring design of blended learning on established learning approaches is critical.

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