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Engaged Learning with E-Learning Technology — A Proposed Model and Case Example

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Abstract

Promoting active participation among learners for meaningful learning with technology has been a challenging task for many educators. This paper presents an engaged learning model based on studies on E-Learning and distance learning, as well as cognitive and constructivist pedagogies. We propose the SMART (student, motivation, activities, regulation and management, and technology) framework, which details five important dimensions for designing and implementing learning with technology. Using the SMART approach, a case study was conducted on 18 trainee teachers who went through a blended instruction on designing constructivist learning activities. Results show that engaged learning was achieved when trainees participated actively in class and in online forums, developed constructive ideas, engaged in reflective thinking, set learning goals and displayed dispositions towards a constructivist approach of instruction.

Introduction

One of the critical considerations in technology-mediated education, as in E-learning, is the issue of engaging learners in learning. E-learning is defined succinctly by Cisco Systems as "internet-enabled learning" (Cisco systems, 2002). In the broadest sense, E-learning is learning administered via any electronic medium — CD-ROM, video or internet. In practice, the dominance of internet technology makes it the medium of choice among the electronic media. In an E-learning environment where instructors do not have face-to-face interactions with the learners, ensuring learners are meaningfully engaged in learning activities and consequently achieving the desired learning outcomes becomes a daunting task. To address this issue, Kearsley and Shneiderman, based on their experience in electronic and distance education environments, proposed the engagement theory (Kearsley & Shneiderman, 1999; Shneiderman, 1994), which focuses on designing learning activities. Building on Kearsley and Schneiderman's engagement theory, this paper intends to elaborate on the notion of engagement to include the process dimension (learning activities), the volitional dimension (motivation), the roles of technology and the roles of teachers.

Engagement Theory — A Proposed Model

To clarify engagement theory, we seek the answers to the following questions:

1. What is engaged learning? How is engaged learning manifested? When can we recognize that engaged learning has occurred?
2. What are the supportive conditions for engaged learning to occur? What kind of learning environment and learning activities facilitate engaged learning?
3. What are the learner's characteristics or disposition for engaged learning?
4. What are the roles of technology?
5. How should an instructor or teacher design and implement engaged learning?

These questions have helped us to identify and clarify the relationships among the key elements for engaged learning, which are depicted in Figure 1. We shall discuss the following elements in turn: 1) manifestation of engaged learning; 2) learning activities or environment for engaged learning; 3) the motivational dimension; 4) the roles of technology; and 5) the roles of instructors or teachers.

Manifestations of Engaged Learning

The notion of learner engagement is not new, and it has been examined from different perspectives. Based on cognitive learning psychology of human memory

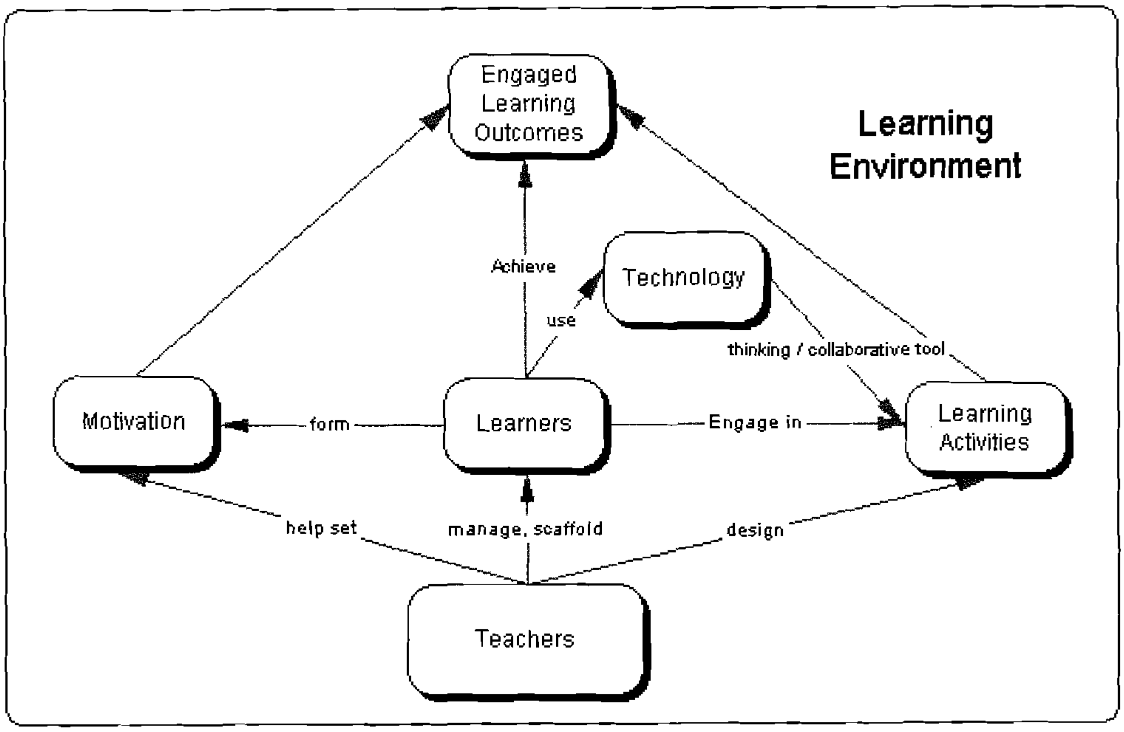

Fig. 1. A model of engaged learning.

and thinking processes, Wittrock (1992) conceived the model of generative learning which emphasises the active role of learners in generating relationships among different parts of new information as well as with their prior knowledge. Likewise, constructivists' views on learning (Duffy & Jonassen, 1992) also place learners at the centre of the learning process but with a different epistemological contention that knowledge is human interpretation of our experience of the world instead of reflection of objective truth. Regardless of the differences in epistemological stance, we identify many similarities among these views and derive manifestations of engaged learning based on the notion of meaningful learning proposed by Jonassen, Peck, and Wilson (1999):

1. *Active engagement*: Learners actively manipulate objects or phenomena in the environment and construct interpretations of phenomena based on their active manipulation.
2. *Constructive thinking*: Learners construct their own meaning and integrate new ideas with prior knowledge in order to make sense of the phenomena they are engaged with.
3. *Reflective thinking*: Learners recall their prior knowledge when making sense of the new phenomena as well as engage in metacognitive regulation of their learning process.
4. *Intentional learning*: Learners persist in their attempt to achieve their own cognitive goals when explaining a new phenomenon (Scardamalia, 1999) instead of merely completing the learning tasks assigned by others.
5. *Knowledge/skills gained or change in attitudes*: An important product of engaged learning is that learners formed new interpretations or new meaning as a result of their engagement with the phenomena being investigated.

We argue that collaborative learning is an essential but not a necessary condition for engaged learning. Many research studies support the claims that collaborative learning motivates students, increases academic performance, encourages active learning, promotes literacy and language skills and improves teacher effectiveness (Johnson & Johnson, 1997). In addition to the evidence of improved academic performance, many research studies have also documented the positive impact of collaborative learning on personal and social development for students of all ages and enhanced self-esteem and improved social relations between racially and culturally different students (Webb, 1985). Regardless, cognitive psychologists have also shown that creating a transactive environment between the learners and the materials does result in active learner participation and effective learning (Wittrock & Alesandrini, 1990; Wittrock, 1992).

Learning Activities and Environment

One of the most critical dimensions of engaged learning is, of course, the design of the learning activities or learning environment. In fact, Kearsley and

Shneiderman's engagement theory (Kearsley & Shneiderman, 1999; Shneiderman, 1994) focuses only on this particular aspect. Underpinned by the notions of social constructivist learning and situated cognition, they suggested a "relate–create–donate" principle that defines the characteristics of learning activities for engaged learning. Operationally, it translates into three characteristics:

1. Collaborative learning (relate)
2. Project-based (create)
3. Contributing to authentic demand (donate)

Extending from task to learning environment, Jonassen (1999), in his model for designing constructivist learning environments, suggested that to engage students in meaningful learning, the environment should be the following: active, constructive, collaborative, intentional, complex, contextual, conversational and reflective. Operationally, this is translated into problem/project based learning activities, with scaffolding provided via related cases, information resources and cognitive and collaborative tools. Jonassen also defined the roles of instructors in coaching, modelling and scaffolding. Likewise, emphasis is placed on the authentic problems/projects/cases as the main driving force for engaging learners. In addition, Jonassen maintained that there must be room for learner manipulation in the problem space, such that the learners can interact, experiment or explore the phenomena being investigated. This, he argued will engage the learners and give them the ownership of the problem being investigated.

Generating ownership in learners about learning is critical. Scardamalia (1999), likewise, cautioned against assigning learning tasks to learners such that they focus only on task completion. Scardamalia observed that expert writers often deal directly with their knowledge, whereas novice writers tended to focus on the immediate task of completing the assigned exercise of writing the essay. She made similar observations in many classrooms where the primary focus seemed to be the tasks and activities. This prompted her to advocate "moving ideas to the centre" by encouraging students to work directly on the knowledge.

In summary, we suggest that to engage learners, the learning activities must fulfil the following criteria:

1. The activities invite learners' ownership. This can be achieved via authentic problems or projects, suggested by the learners or co-constructed between the learners and the instructor.
2. The activities involve learners' manipulation in the form of exploration, experimentation, or explanation.
3. The product or deliverables of learning activities must be meaningful. The learners should be engaged because the learning outcomes are significant to them or beneficial to others.

Learner's Motivation

The above discussion on learning activities reveals an implicit factor for engaging learner motivation. We feel that this factor should be explicated to illuminate the design of engaged learning. Numerous studies on learning psychology have pointed towards motivation as an important factor in learning (Weiner, 1986). Several factors have been identified that contribute towards learner's motivation (Driscoll, 1994): goal setting, motive matching, satisfaction of expectancies and learners' attribution of success or failure.

Research has shown that setting explicit goals is better than setting general goals and setting proximal goals results in higher motivation than setting distal goals (Schunk & Gaa, 1981). Dweck (1986) advocated setting learning goals rather than performance goals. She found that when learners set learning goals, they aim to enhance their knowledge, seek challenges and demonstrate persistence in their task. On the other hand, when learners set performance goals, they aim to earn favourable judgement from others, avoid failure and quit easily in the face of hurdles.

When the learning tasks match the learner's needs or values, there is motive matching that could enhance the learner's motivation. Setting authentic tasks has been suggested as a strategy towards achieving this match. When learners accomplish a learning task successfully, it could bring about satisfaction regarding their learning outcomes, that they have acquired the skills or knowledge, as well as satisfaction of self-efficacy.

Weiner (1986) identified three dimensions of factors of how a learner attributes success or failure: internal versus external, stable versus unstable and controllable versus uncontrollable. In general, when a learner attributes the success or failure to internal (caused by self, not by others), stable (predictable) and controllable (changeable, improvable) factors, the potential for the learner to engage in a similar task in future is higher.

Research and theories on learners' motivation explain why the learning activities must be meaningful, invite ownership and allow experimentation. This will help to match the learner's motive with the learning activities, provide concrete proximal goals and encourage setting of learning goals. In addition, the teacher or instructor can provide the necessary scaffolding or coaching to help learners achieve learning outcomes that promote satisfaction and self-efficacy. The teacher can also help learners see themselves as important agents for learning and making improvements.

The Role of Technology

The above discussion focuses on generic design of engaged learning, whether in face-to-face situation or technology mediated. In an E-learning environment, technology can play two important roles in engaged learning: 1) as a cognitive tool or mindtool (Jonassen, 1996, 2000) to engage the students in critical thinking; and 2) as a communication tool to foster collaborative learning.

Jonassen and Reeves (1996) advocate learning *with* computers rather than learning *from* computers. When computers are used merely to replace instructors, the students learn from computers. This application is best represented in computer-based tutorials or drill-and-practice programs. However, this application requires extensive programming to emulate the intelligence of human tutors. Moreover, it does not encourage students to engage in critical thinking. Thus, Jonassen and Reeves argue that computers should be used as intellectual partners — as thinking tools — to assist the students in knowledge creation. Examples include students

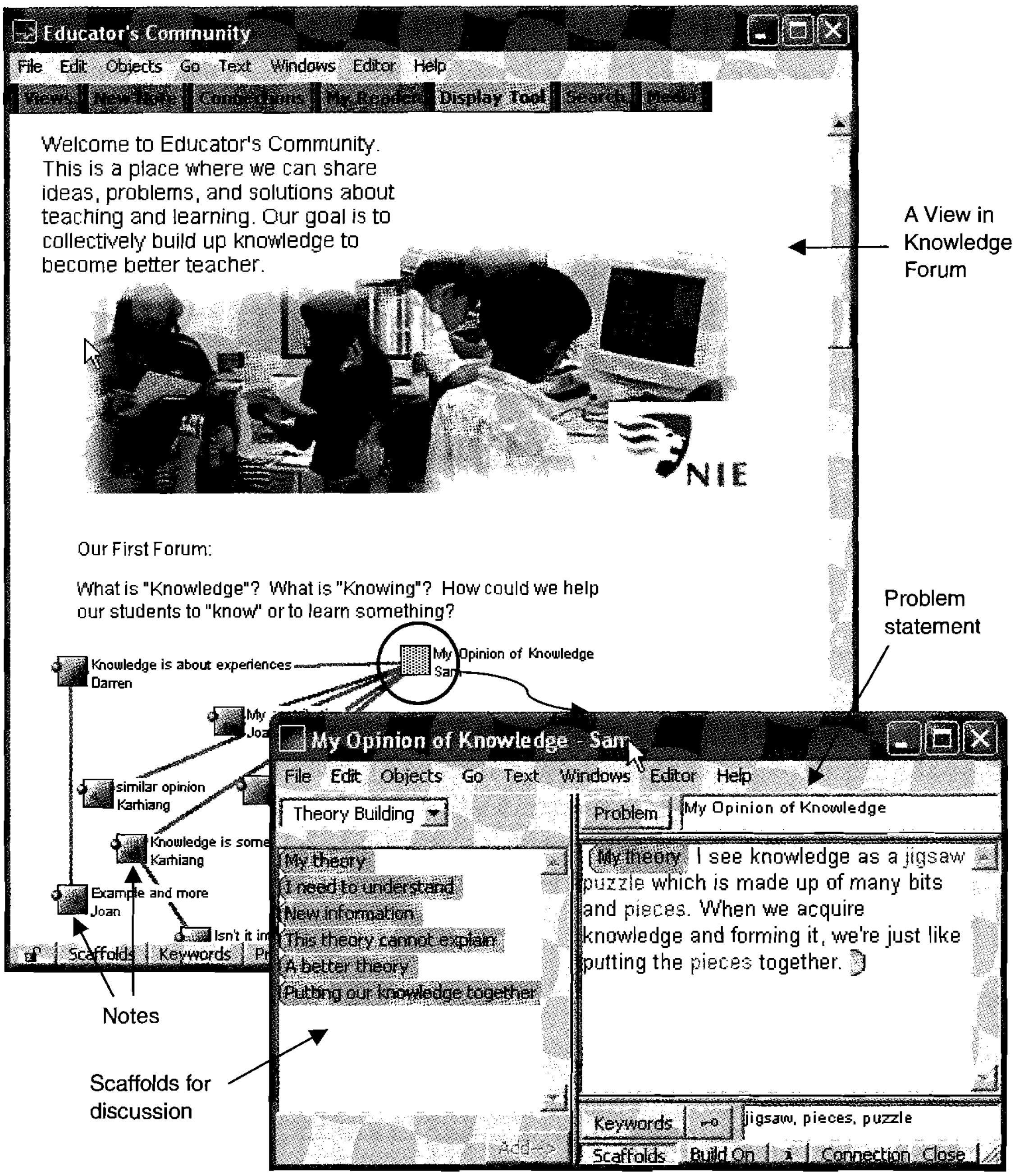

Fig. 2. A view in Knowledge Forum.

using a hypermedia program to create and present their knowledge of a topic, students using a spreadsheet to apply their mathematics knowledge to solve a problem and students using a concept mapping tool to represent their conceptual maps of a domain of knowledge.

Another emerging technology that is relevant here is computer-supported collaborative learning (CSCL). CSCL supports social constructivist learning by affording students an environment to co-construct their knowledge within a community. CSCL technology includes online discussion boards and scaffolded collaborative environments like Knowledge Forum (Scardamalia & Bereiter, 1996) and the CoVis project (Edelson & O'Neill, 1994). For example, in Knowledge Forum (Figure 2), learners are provided with procedural cues to label their contribution to the inquiry. Examples of procedural cues include "I need to know", "I need to understand", "My theory is", "My theory cannot explain" and "A better theory is". The Knowledge Forum design allows for multiple perspectives and participants not reaching a consensus or decision. They may still hold different views, but they feel that some advancement has been made in their own understanding of the content areas. The essence is for students to identify their own knowledge needs — to recognise what is unclear, puzzling, doubtful and incoherent and, most importantly, gain an understanding through collaboration.

The Role of Teachers

In light of the ongoing discussion, it is evident that engaged learning does not occur by chance. We do not deny that some learners with intrinsic motivation are capable of independent learning. However, in many cases, intervention from an instructor or teacher is necessary. Among many other things, the instructor needs to design appropriate learning activities, provide scaffolding, coaching or modelling, help motivate the learners, identify appropriate technology, facilitate online discussion, etc.

One critical implementation issue is management. In fact, engagement in learning has been related to classroom management issues traditionally. For example, studies have shown that time-on-task is higher in well organised cooperative learning situations compared with independent work (Slavin, 1990). Maintaining the momentum and pace of a lesson and meaningful sequencing of instruction are other factors that keep task engagement high (Kounin, 1970) and, accountability and group alerting are two strategies for managing group learning (Kounin, 1970). Accountability strategy engages all students on task and holds them responsible for their performance, and group alerting keep uses and appropriate wait time after a question to keep all students on their toes before calling on a student to answer.

Facilitating group processes is a challenging task in an online environment. Johnson and Johnson (1997) advocate explicit instructions on social skills and having group members to monitor their group processes. Salmon (2000) proposed a five-stage process for moderating discussion in an E-learning environment:

1. *Access and motivation.* This is a stage for checking technical connection and welcoming students on board. The teacher needs to ensure the system is properly set up, students are able to connect to the system and students know the importance of the collaborative tasks.
2. *Online socialisation.* In this stage, students test the communication system and get to know each other, to close any gaps of cultural or social space and to initialise themselves to the culture of online collaboration.
3. *Information exchange.* This is the stage at which students start to share ideas, resources and learning materials.
4. *Knowledge construction.* Following the information exchange is the stage where students are engaged in a deeper processing of knowledge, in critical thinking and in forming their perspectives.
5. *Development.* At this stage, students are confident of participating in online conferences and take personal responsibility for their own learning.

The SMART Model

To guide the instructor or teachers in designing and implementing engaged E-learning, we propose the SMART model, which provides guidelines on the five main dimensions of engaged learning we discussed earlier: students, motivation, activities, regulation/management and technology. (See Table 1.)

A Case Example of Engaged Learning with Blended Instructional Approach

In the following sections, we describe an example of engaged learning designed for preservice teachers. The trainees enrolled in the module "Creating Constructivist Activities with ICT", which was offered as one of the optional electives after the trainee teachers had completed some core modules on educational studies and some specific curriculum subjects. We adopted a knowledge building (KB) approach that aims to encourage the participants in collaborative advancement of knowledge, much like how research scientists advance collective knowledge in science (Scardamalia & Bereiter, 1996, 1999). The key features include engaging participants in a sustained study of a topic in depth; encouraging learning driven by the learner's inquiry; focusing on authentic problems; facilitating collective understanding and improvement of knowledge; and advancing knowledge through explanation and discourse (Hewitt, 1996). The rationale is to engage learners in creating and transforming knowledge and through the process develop the necessary skills and dispositions of workers in a knowledge society (Bereiter, 2002).

Table 1.
SMART model.

Guidelines
Students
• Encourage learners' ownership of the learning activities, for example, use of authentic problems or student initiated/co-constructed problems.
• Encourage active participation; reward continuous participation and contribution.
• Provide scaffolding, coaching or modelling to help learners accomplish learning activities when necessary.
Motivation
• Encourage learners to set learning goals instead of performance goals.
• Focus on engagement with knowledge instead of completing the learning tasks.
• Motivate learners by focusing on success factors and their contributions to personal and group achievement.
Activities
• The activities should be sufficiently challenging yet achievable.
• The activities should involve learners' manipulation in the form of exploration, experimentation, explanation, etc.
• Set learning activities that are authentic and meaningful to the learners.
Regulation/Management
• Help manage the learning progress; engage learners in metacognition and self-regulation.
• Help learners acquire group processing skills when necessary.
• Facilitate online discussion to encourage deep inquiry.
Technology
• Identify appropriate cognitive tools to augment learning process.
• Identify appropriate CSCL tools to facilitate collaborative learning.
• Facilitate smooth implementation of the technologies.

The SMART Approach

Using the SMART framework, we document our strategy to engage preservice teachers in learning about constructivist pedagogy.

Students

There were 18 adult trainee teachers, 10 males and eight females, with age ranging from 24 to 44. Of the 18 participants, about 10 had some form of teaching experience, either as pretraining contract teachers or as relief teachers.

Given that our trainees are adult students, we feel that a greater amount of learner autonomy should be provided. We encouraged ownership of the learning activities by 1) engaging trainees in online discussions on pertinent issues; 2) awarding up to 40% of module assessment on participation to encourage active contribution; 3) encourage social collaborative learning through class and online discussions as well as peer critique; 4) invite the trainees to design assessment rubrics for the module; and 5) encourage both group and personal reflection by setting group discussion forums and personal reflection page.

Motivation

Our main strategy for enhancing trainees' motivation was to set an authentic task: the main assignment requires trainees to design knowledge building learning activities in a real school context and execute the lesson when they were did teaching practicum in schools. This is similar to the "Donate" principle, proposed by Kearsley & Shneiderman (1999), in which the learning outcomes contribute to authentic demand. To enhance motive matching, we provided general guidelines for the assignment but allowed the trainees to decide on the specific topic.

We encourage setting of learning goals by rewarding continual effort in contribution to knowledge advancement in online discussions via Knowledge Forum. Quality of ideas and depth of idea development made up 25% of the assessment criteria.

Activities

The module lasted for 7 weeks, with two face-to-face sessions per week for the first four weeks and one face-to-face session following that. The first session started with a simple ice-breaking activity and an instruction on the use of Knowledge Forum. The trainees discussed what they wanted to know about constructivist learning. Based on this discussion, the instructor decided on the following topics:

- What is constructivism and constructivist learning?
- What are some examples or models of constructivist learning?
- What is idea-based discussion?
- What are the roles of technology in learning?
- How does CSCL support constructivist learning?
- How is online discussion to be facilitated?
- How is constructivist learning to be assisted?

In a typical 2-hour face-to-face session, discussions in class focused on one of the topics listed above. Reference materials were given to the participants in the previous session for their reading. For example, for the topic "Idea-based discussion", the participants were provided with the article "Developing scientific literacy" (http://www.ikit.org/vt1/flash/KBScience.html). Video clips on how idea-based discussions were implemented in some Canadian elementary schools were shown. The participants were asked to compare idea-based discussion with a traditional classroom approach and to argue about its appropriateness for use in local schools. The last half hour was reserved for the participants to do personal reflection on Knowledge Forum and to discuss their final group assignment.

The assessment criteria for the module consisted of four components: class participation (10%), peer critique of assignment (10%), online participation (30%) and final assignment (50%). To encourage ownership, the trainees participated in drafting the assessment criteria rubrics.

Regulation/Management

Managing this group of trainee teachers was not a difficult task probably because the trainees had taken a module on classroom management and they saw themselves as would-be teachers. The strategy was then to encourage self-regulation. One approach was the use of "public personal reflection". Each trainee was given a personal page in which personal reflection on topics being discussed could be recorded. These personal pages, however, were "public" in that the instructor and other trainees could access them.

In addition, peer critique of the final assignment was conducted, contributing 10% of the module assessment. Peer critique gives credence to the peer's views and encourages shifting of power and autonomy to learners. Asking trainees to suggest the assessment rubrics for the module was consistent with this principle of encouraging self-regulation.

Technology

Complementing the KB approach, we used an online platform known as Knowledge Forum, developed by Scardamalia *et al.* (1989). Formerly known as Computer-Supported Intentional Learning Environment (CSILE), the software is designed primarily as an asynchronous discussion environment that helps direct discourse towards progressive inquiry and at the same time keeps records of collective knowledge in a communal database. The communal database gives voice to all participants and engenders the feeling for speaking and being responsible to a broader audience. Unlike other online discussion boards, Knowledge Forum (version 3) uses a graphical interface that displays the participants' interaction as connected notes, thus facilitating tracing of ideas development. It also encourages intentional learning through customisable metacognitive prompts, which helps to scaffold participant's thinking during discussion. It supports learning by exploiting the distributed intelligence in a learning community (Pea, 1993) and distributes the responsibilities of solving difficult and complex learning tasks among learners with different expertise. The learning environment also enables the decentralisation of discourse by allowing a free flow of information among learners. It eliminates turn taking and allows more time for reflection since one does not have to respond instantly. Given the affordances of the software and its underlying principles, employing Knowledge Forum in classroom learning helps promote active learning among the students. The KB approach, coupled with Knowledge Forum, makes it an appropriate instructional strategy in facilitating preservice teachers' understanding of constructivist learning activities.

The Learning Outcomes

To what extent has engaged learning occurred in the above module? We used the manifestations of engaged learning, discussed in an earlier section, as a framework for examining the module.

Active Engagement

The trainees participated actively in classroom and online discussions, achieving an average score of 72% on the assessment of participation. Many issues, initiated by the instructor and the participants, were discussed both in class and in online forums: What is learning? What is constructivist learning? How do we support learners? How do we assess learners in constructivist approach? What are some implementation issues?

Constructive Thinking

The trainees brought in their own experience and interpretations during the discussion. For example, one trainee related his own experience in teaching Design and Technology as an example of a constructivist approach:

> *"... Perhaps it is helpful to close examine a subject that is using constructivism learning: Structure of D&T ... Students are to complete a project folio which have the weightage of 60% for the final assessment result ... They are suppose to propose the required methods to solve the technical issue, proposed the material they required and source for them if necessary ... Student can use any sources of information or tools to design their artefact, teachers will be technical advisers to them ..."*

One trainee related his own experience in a school to highlight the implementation issues:

> *"Equipment. Most schools are still inadequately supported by IT.*
> *There are schools where IT labs are underused. With the requirement of almost all subjects using IT, there is a shortage of equipment. The school that I was contract teaching in sees a surge in Comp Lab users given project work in almost every subject. This is worsened by computer breakdowns (about one-third of the computers, in general). For implementation to work, students must be able to access and have equipment at all times."*

Reflective Thinking

The trainees invested effort in their personal reflection page, and many organised their pages with graphics to highlight their personal reflection on different topics being discussed. The trainees also reflected on theories learnt in the face-to-face sessions and applied the knowledge learnt in their assignment. For example, one of them wrote

> *"In order to bridge the students' actual cognitive level to the ZPT, we will have to work on scaffolding and coaching. In fact, our instructional strategies should gear towards bridging students to the ZPT ..."*

Another wrote

> *"[Elaboration]: Students must first have a desire to WANT to learn. Only then they will try to make meaning out of their knowledge. Thus, by giving them questions to ponder and think about prior to the teaching of knowledge is important. [Example]: What we did in the first session is essentially to ask them questions to 1) throw them in cognitive disequilibrium and 2) access their prior knowledge 3) to trigger their thinking."*

(*Note*: The words "elaboration" and "example" in square brackets are cognitive scaffolds in Knowledge Forum.)

Intentional Learning

There are a few indications that the trainees were engaged in learning goals rather than just completing the assignments:

1. The active participation of the trainees in the class and in the online forum, as discussed above.
2. The trainees constantly raised issues that show their genuine interest. For example, "What are the implementation issues?", "How do we achieve buy-in for teachers to use a constructivist approach?" and "How do we promote interaction in collaborative learning?"
3. When asked to suggest assessment rubrics for this module, the trainees were forthcoming with stringent criteria, fully cognizant that they would be used for assessment of their own performance.
4. Even though implementation in an actual school context was optional, all except one group implemented their plan with a small group of students. One group did not implement it due to a conflict in school schedules, but they presented their ideas to a senior teacher for comments.

Knowledge Gained

Did the trainees benefit from the module? Did they achieve the learning objectives? The result was evident from the average score of the final assignment: 81%. That means on average, the trainees achieved an A grade for their final assignment (criteria for A grade was 75%).

In addition, we asked the trainees 1) What do you think learning is? Where does learning normally occur? How does learning occur? 2) Suppose there are no practical constraints of time and resources, would you prefer to guide your students in discovery learning or would you rather give a lecture? Why?

Responding to question about the nature of learning, we classified the responses into three broad categories: the process of learning the product of learning and the conditions that initiate learning. On the process of learning, commonly cited ideas were "receiving information", "gaining knowledge", "observation", "assimilation", "accommodation", "making sense", "constructing meaning", "discovery", "reflecting" and "social interaction". An important observation is that ideas like "constructing meaning" and "reflecting" only appeared in the postsurvey. On the product of learning, most of them cited being able to apply the knowledge learned as the evidence that a person has learned something. All participants indicated learning could occur anytime and anywhere, with a few qualifying that schools are the most common places for formal learning. Most participants indicated curiosity or interest as the main initiator for learning. However, in the postsurvey, many also mentioned that relevant knowledge and problem situations prompted learning to occur. However, from pre- to postsurvey, fewer participants cited gaining knowledge (from six to three) and receiving information (from four to two) in their response. But the frequency of vocabulary associated with constructivist learning increases (e.g. "constructing meaning", "making sense", "contextualised knowledge" and "problem situations"). It seems that the participants in general had a disposition towards constructivist learning from the beginning of the module and this disposition seems to be enhanced after taking the module.

On the preference of lecture versus discovery learning, about 25% of participants chose a mixed approach and 75% opted for a discovery approach for both pre- and postsurvey. None of them chose a lecture approach. Commonly cited reasons were the following: 1) discovery learning is interesting; 2) it encourages ownership of learning; and 3) it results in better retention of knowledge. Interestingly, most participants who opted for a mixed approach believed that lectures should first be given to learners to provide foundation knowledge for discovery learning. It was also noteworthy that in the postsurvey, participants also mentioned the following reasons: 1) discovery learning is more meaningful; and 2) it leads to more effective learning. A few participants also added in the postsurvey that proper scaffolding needs to be provided for discovery learning to be successful. Given the participants' disposition towards constructivist learning, their preference for discovery learning is hardly surprising. It is noteworthy that some participants began to indicate the necessity for proper scaffolding after taking the module.

When asked to choose between individual learning versus group learning, about 45% of the participants preferred a mixed approach and 55% preferred group learning. Only one participant chose an individual approach in the postsurvey, reason being that learners need to take individual accountability. The most common reasons cited for preference of group learning were 1) it fosters social skills; 2) it increases motivation of learners; 3) it encourages sharing of multiple perspectives; 4) it results in reflection; and 5) it is a good way of modelling and scaffolding. In addition, those who chose the mixed approach believe that 1) both methods are required; 2) it is dependent on the subject matter and the learners; and 3) it will benefit learners of all abilities. Among those who chose the mixed approach, all except one indicated that individual learning should precede group learning. While many participants preferred group learning, quite a large proportion of them held a balanced view between individual and group learning. This coincided with the view of Hung and Nichani (2001) of the complementary roles of individual and collective levels of cognition.

Conclusion

Drawing upon studies on E-learning and distance learning, as well as cognitive and constructivist pedagogies, we presented a model of engaged learning by detailing the 1) manifestations of engaged learning; 2) the design of learning activities; 3) the motivational strategies; 4) the roles of technology; and 5) the roles of teachers or instructors. From the instructor's perspective, we suggest the use of the SMART framework. This framework elaborates on the five important dimensions that an instructor needs to consider in designing and implementing engaged learning: student, motivation, activities, regulation and management, and technology.

We also examined the viability of the SMART framework using a case study on blended instruction (knowledge building approach complemented with online discussion in Knowledge Forum) in engaging preservice teachers in understanding and applying constructivist learning in schools. Evidence abounded for the trainees' active participation in class and in online forums, their development of constructive ideas, the use of reflective thinking, their engagement on learning goals and their disposition towards a constructivist approach. It has profound implications for the application of this instructional approach to learning in other subject areas for adult learners. We see the potential of this engaged learning approach in fostering a learning community in which learners contribute collaboratively, both in online and face-to-face environments, towards advancement of collective knowledge.

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