

Situated Learning Designs for Professional Development: Fundamental Principles and Case Studies

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Abstract

This paper articulates and discusses fundamental principles of a model of learning and teaching that is particularly suited for professional development programs. These principles suggest that learning is most effective when learners are engaged in working on and solving real-world problems in a meaningful context and with the guidance of critical others; where their learning activities are clearly articulated and closely aligned with their learning outcomes; and where assessment of the learning outcomes is aimed at helping learners further develop their knowledge, skills and problem-solving abilities. Cases of several professional education programs that have utilized this model of learning and teaching are briefly described.

Introduction

When faced with the task of developing any educational program, the tendency of most program developers is to begin with identifying *what* is it that needs to be taught. There are several problems with this point of departure and line of thinking. First, it preempts an approach to teaching and learning that is content-centric. Its focus is foremost on the teaching and learning of a body of subject matter content. Second, it is too teacher-centric, with a focus on teachers and what they would do to ensure that students learn this body of subject matter and demonstrate their understanding of it through assigned tasks.

This approach to teaching and learning pays little attention to the learners, and the alignment of the subject matter content with their nature, learning needs, and the learning context. As a result, quite often, there is a mismatch between learners and their needs, the learning outcomes, the approach to teaching, and the selected subject matter content. The result of this lack of congruency in the learning and teaching transaction is ineffective, inefficient and un-engaging teaching (see Spector, 2008).

These results are accentuated when the prospective learners are adults, many of whom would have already been exposed to the subject matter content as part of their undergraduate studies and they would know from where and how more could be accessed. Of course they would be interested in what might be current and in upgrading their knowledge of the subject matter in the field. But above all, they would be most interested in improving their professional practices and competencies.

A program of education with content 'piled higher and deeper' would not necessarily translate into skilled performance and appropriate utilization of that knowledge without additional skills in competencies such as critical thinking, reflection and problem-solving (see Romiszowski, 2006).

Why content piled higher and deeper won't do

To enable skilled performance and ensure appropriate utilization of subject matter knowledge, what is needed is an approach to teaching and learning that has its focus on *learners, learning and the learning context* (see Naidu, 2006; Naidu, 2007). The design of this kind of teaching and learning experience

needs to begin with what prospective learners already know in the form of knowledge and skill, what they are doing as part of their work, and where they are living and working. It needs to develop among these learners the ability to apply and utilize that knowledge and improve their practice. Such an approach to teaching and learning would be *learner-centric* no doubt, but more importantly, it would be *centered on the learning experience* and deeply grounded in its *learning context*. This means that the learning experience and the learning context of the learners, and not the subject matter content, would drive the teaching and learning process.

What are the basic principles of a *learning-centric* curriculum?

A *learning-centric* curriculum is grounded in the principles of situated cognition (see Brown, Collins, & Duguid, 1989; McLellan, 1996; Wilson, 1996). These principles and how these have been applied in several professional development programs are discussed in the following. They draw on the works of Dave Merrill, Mike Spector and Tiffany Koszalka (see Merrill, 2002; Spector & Koszalka, 2004).

1. *Learning is optimized when learners are engaged in solving meaningful and real-world problems and where they have opportunities to work on a variety of related problems and tasks of increasing complexity with feedback from a variety of sources (Barrows & Tamblyn, 1980; Hattie & Timperley, 2007; Merrill, 2002; Naidu & Oliver, 1996).*

The concept of *problem-centered learning* is articulated in a variety of ways and its strengths in promoting meaningful learning and understanding is widely recognized and documented (see Barrows, 1994; Barrows & Tamblyn, 1980; Evensen & Hmelo, 2000; Savery & Duffy, 1996; Schank, Fano, Jona, & Bell, 1994). Several issues are critical in the selection or development of suitable problem situations.

First, one problem situation might not be enough to develop among the learners all the required competencies in most settings. The selection and development of problem situations should begin with the targeted learning competencies. If one problem situation for one learning competency isn't enough, then another problem situation or an extension of the existing situation will need to be developed.

Second, good problem situations are those that most closely reflect real life. This means that they have the richness, complexity and *variety* which resembles those in real-life situations (see Clemson, 1984).

Third, there is ample opportunity within these problem situations for regular feedback to learners and from a variety of sources as they proceed with their assigned tasks. These sources would include teachers, tutors, and other support staff (see Bangert-Drowns, Kulik, Kulik & Morgan, 1991; Kulik & Kulik, 1988; Shute, 2008).

2. *Learning is optimized when it is situated within a meaningful context and within the culture and the community in which learners live and work (Merrill, 2002; Naidu, 2006; Naidu, 2007).*

In order to facilitate a problem-centered approach to learning and teaching, it is important that students' planned learning activities are *situated* within the context, culture and the community within which they live and work. The concepts of context, culture and the community in this instance would take on the broadest meaning and include such things as time, space and the resources that students have access to for their study and work (Lave, 1991).

The problem situations, however interesting they might be, have to be relevant, realistic and meaningful to the learners. They would need to be contextualized (Lave & Wenger, 1991). This would be achieved by identifying realistic and meaningful scenarios and/or problem situations from the learners' local context, community and culture. When this is so, they will serve to provide the necessary *anchor* for all learning and teaching activities (Cognition and Technology Group at Vanderbilt, 1990).

3. *Learning is optimized when the learning tasks and activities in the problem situations are clearly articulated and explicitly linked to knowledge and skills already mastered (see Merrill, 2002).*

The learning activities in these problem situations, both assessable and non-assessable ones, need to be very clearly defined and articulated, otherwise we run the risk of unleashing students in the wilderness of the learning and teaching space, leaving them to flounder, not knowing what they were required to do, and in relation to what performance criteria and standards.

How much structure and direction in learning is enough? Too much of it in most settings would run the risk of spoon-feeding and limiting innovation and creativity from those who might be inclined to be more enterprising. Too little help and direction might leave those needing a little bit more help even further behind. In group-based educational settings, the trick of course is in getting the mixture right for different learners, and in selecting and matching learning strategies with learners and the subject matter content (Naidu, 1994).

The learning and teaching activities would need to be carefully choreographed to *scaffold* the role that learners would be required to perform in the scenario or problem situation (Azevedo, & Hadwin, 2005). These roles would be those that the learners would be arbitrarily assigned in the learning scenario (Schank, 1997). They would be very similar to the roles with which they would be confronted in their workplace. Playing out those roles in a safe educational setting would provide learners with the necessary training and experience they will need to cope with similar settings in real-life settings and in their work.

In order to adequately play out these roles and successfully resolve the problem with which they are confronted in the contrived learning scenario, learners will be required to access relevant subject matter content and the experience of others. These would include published material in textbooks, journals and other media, as well as the experience of practitioners (Schank, 1990). In this manner, the learning and understanding of this knowledge base becomes meaningful, immediately relevant and a necessary component of the learning and teaching process, as opposed to learning it in preparation for some future context and application.

4. *Learning is optimized when learners are working on problem situations where they are required to think for themselves by reflecting in and upon their actions and regulate their own performance (Naidu & Oliver, 1999).*

In these problem situations, learners would be required to undertake a variety of learning activities and make critical decisions at various points in order to be able to satisfactorily resolve the presenting problem(s) in the scenario. On the part of the learners, these decisions would require critical thinking, reflection and problem solving skills. They would require subject matter knowledge to support, substantiate and defend the decisions learners would have made (see Romiszowski, 2006).

This comprises a form of *cognitive apprenticeship* (Cognition and Technology Group at Vanderbilt, 1993). The activities in the learning scenario that require learners to engage in this kind of practice are designed to sharpen learners' innate skills such that these can be unleashed automatically in the event of a similar event in real life. This is not unlike what experts and master performers always do, and are good at doing. Through sustained practice, experts and master performers are able to refine the tools of their trade, i.e., their skills, such that they become an effortless and automatic response during competition and in real life (Collins, Brown, & Holum, 1991).

5. *Learning is optimized when the development of understanding is promoted as a social process with learners acting upon authentic problem situations in groups and with dialogue, discussion, and debate (Bandura, 1977; Naidu, 2007; Naidu, Ip & Linser, 2000; Vygotsky, 1978).*

The refinement of learner skills in critical thinking, reflection, and problem solving is a desirable goal. Many would argue that these skills are best developed in settings where learners are acting upon situations in groups, negotiating meaning and understanding through discussion and debate. Of course these competencies can be achieved by learners working independently. But even then learners are consulting other sources of information in the form of published material. So it is arguable that the social context of learning is critical in the development of understanding (see Vygotsky, 1978).

Regardless of one's position on this view, there is little contention with the view that dialogue, discussion and debate are critical to the development of meaning and understanding, and beyond that, they are critical in the development of satisfaction, communication, cooperation and collaborative skills, all of which are integral to success in the workplace (see Gunawardena & Zittle, 1997).

Learners need to be afforded the opportunity to develop these attributes and skills as an integral part of their learning experience. These can be achieved with proven learning and teaching strategies such as *role-play*, and *group-based cooperative and collaborative learning* (see Koschmann, Kelson, Feltovich, & Barrows, 1996; McLaughlan, Kirkpatrick, Hirsch, & Maier, 2001; Naidu, 2007; Naidu, Ip, & Linser, 2000).

6. *Learning is optimized when the assessment of learning outcomes is closely aligned with the learning context (Spector & Koszalka, 2004).*

No amount of attention to promoting problem-centered learning is going to be enough without careful alignment of the assessment activities with the problem situation and the learning context. Often we find that the assessment of learning achievement is unrelated to the learning activities, experiences and the learning context.

This inconsistency is a major cause of student apathy, disengagement and poor performance on assessment tasks. Assessment of learning achievement is meaningful and worthwhile when its relevance is made clear to learners. When this is the case, assessment tasks are a natural extension of the learning activities, i.e., they are alike in form and function to what the learners have been doing as part of their learning activities.

7. *Learning is optimized when the assessment of learning outcomes is linked to meaningful problems and tasks, and it is aimed at helping students further develop knowledge and skills and their problem-solving abilities (Spector & Koszalka, 2004).*

Good learning assessment is designed to do more than simply measure performance. It serves to motivate learning and help learners develop and refine their skills not only in the subject matter domain, but also in performance under pressure, creative and critical thinking, problem solving and argumentation.

8. *Learning is optimized when the assessment of learning outcomes is designed to develop self-regulatory and meta-cognitive skills (Spector & Koszalka, 2004).*

Meaningful assessment tasks are those that are intrinsically motivating and challenging. These require from learners more than recall of understanding of the subject matter. They require learners to synthesize, apply and evaluate information to novel problem situations. Such tasks offer opportunities to learners to continually assess their performance and revise their cognitive approaches.

A model of situated learning design -- Scenario-Based Learning

A model of learning design that embodies these fundamental principles is *scenario-based learning* (see Naidu, Menon, Gunawardena, Lekamge, & Karunanayaka, 2005; Naidu, Menon, Gunawardena, Lekamge, & Karunanayaka, 2007). At the heart of scenario-based learning (SBL) there are one or more learning scenarios which present learners with meaningful problems that they are required to resolve with the help of carefully orchestrated learning activities (some assessable and others not assessable), and carefully chosen learning resources, learning tools and other support mechanisms (see Figure 1).

Insert Figure 1 about here

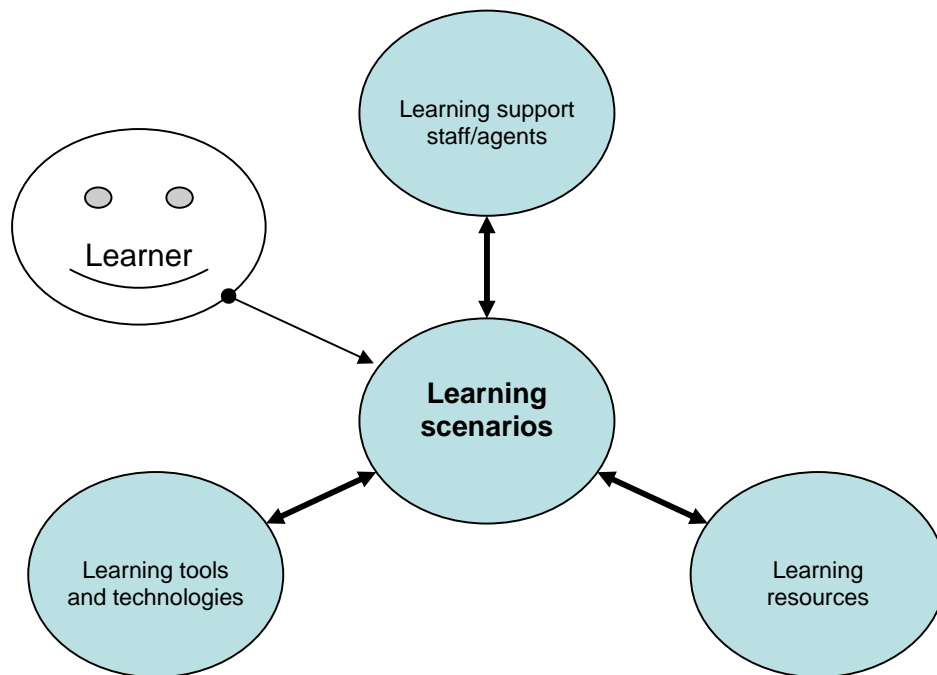


Figure 1. A model of situated learning design -- *Scenario-Based Learning*

The learning scenarios in this operational model provide the context for all learning and teaching activities, and in so doing, they provide an anchor for achieving meaning and understanding of the relevant subject matter content. A critical feature of the learning scenarios is what is called *precipitating events*. These are incidents which serve as triggers for a number of chain reactions. The learner, who assumes a key role in the scenario, is required to resolve the problem caused by this event. In order to resolve this problem, the learner has access to a wide range of *learning resources*, *learning support staff/agents* and *learning tools and technologies* from within and without the context.

The learning resources may include reading and reference material, including lecture notes, online and library resources, and the experiences of expert practitioners. Learning support staff and agents are people who the learner can approach for advice, assistance and feedback as and when necessary. Learning tools and technologies are various instruments for engaging with the task, and may include anything from paper, pencils, and charts, to computers and other electronic or audio-visual equipment.

The learner's role is to deal with the repercussions of the precipitating and related events efficiently and effectively. Learners are guided through this process with learning activities that will serve as suitable scaffolding. At various points in this process, learners will be required to take actions and make critical decisions. In order to make these decisions learners will need the help of the learning resources, support staff and tools. The accuracy of their actions and the quality of their decision making will reflect, among other things, their understanding of the context, the task at hand and what others and the literature say on the subject. Efficient and effective execution of these activities and successful resolution of the problem situation will reflect learners' understanding of the issues at hand and their skill and competence in being able to deal with such situations in real life.

Implementation of scenario-based learning – Case studies

The Master of Arts in Teacher Education, the Open University of Sri Lanka

The Master of Arts in Teacher Education is a program of the Faculty of Education, the Open University of Sri Lanka. This program was developed to improve the skills and competencies of the country's teacher educators. As such, its focus is less so on the study of subject matter content, although that too is important. It comprises the study of six subjects and the completion of a portfolio project. Study of the subjects is centered on problem-solving activities and reflection upon those activities.

Bachelor of e-Teacher Education (I-CONSENT), Maharashtra Knowledge Corporation, India

The Bachelor of e-Teacher Education program is being developed by members of the Indian Consortium of Educational Transformation (I-CONSENT) and the Maharashtra Knowledge Corporation Limited (MKCL) and offered by several universities in the State of Maharashtra in India. This program is unique in two specific ways. First is its focus, which is on the improvement of the skills and competencies of teachers teaching in technology-rich schools. As such, its subject matter content is different from subjects in regular teacher education programs. Second, it is delivered online via a learning management system that has been developed by MKCL.

Certificate in Environmental Education, Center for Environmental Education, India

The Certificate in Environmental Education is a program of the Center for Environmental Education in Ahmedabad, India. Its target is the development of school teachers' skills and competencies in the integration of environmental education issues and content in their regular curriculum and teaching.

Professional Education Programs at Indira Gandhi National Open University, India

A number of programs in the School of Humanities and the Social Sciences at the Indira Gandhi National Open University, India, have begun to integrate scenario-based learning in their self-instructional materials and their teaching and learning processes. Some of the programs include teacher education, engineering, library science, agriculture, legal studies, and medicine.

Concluding remarks

Scenario-based learning promotes the view that learning and teaching activities are optimized when they are closely embedded in the context, culture and the community within which learners live and work. When this is the case, learning and teaching activities are meaningful, realistic and motivating. While its focus is on problem-solving and the development of critical thinking skills, this view of learning and teaching does not negate the role and importance of subject matter knowledge.

As a model of learning and teaching it might be more suitable for learners who are practitioners and for the acquisition of professional development skills and competencies, such as those implicated in the foregoing programs. However, there is no reason why this approach to learning and teaching could not be just as suitable for novice learners in any subject matter domain.

There is also no reason why a predominantly learner- and learning-centric approach promoted in this model could not also incorporate periods of direct instruction in the development of specific knowledge, skills and competencies as and when necessary. This could include the demonstration and practice of a range of skills and capabilities. It might also include the application of this knowledge by learners to demonstrate their implementation skills and competencies.

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- Naidu, S., Menon, M., Gunawardena, C., Lekamge, D., & Karunanayaka, S., (2005, November). *Quality teaching and learning in the Master of Arts in Teacher Education program at the Open University of Sri Lanka*. Paper presented at the biennial conference of the Open and Distance Learning Association of Australia, 9–11 November, 2005, Adelaide: South Australia.
- Naidu, S., Menon, M., Gunawardena, C., Lekamge, D., & Karunanayaka, S., (2007). How can scenario-based learning engender and promote reflective practice in online and distance education. In M. Spector (eds.), *Finding Your Online Voice: Stories Told by Experienced Online Educators* (pp. 53–72), Lawrence Erlbaum, New Jersey.

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