Applying situated learning theory to the creation of learning environments to enhance socialization and self-regulation

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Authentic Learning Environments in Higher Education

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Chapter XV

Applying Situated Learning Theory to the Creation of Learning Environments to Enhance Socialisation and Self-Regulation

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Abstract

Although much effort is devoted to investigating the use of technology to teach course content, an emerging area of some importance in online teaching is how to enhance the student experience of learning and communicating online. Associated with this is the creation of social and supportive environments for learning when there is little face-to-face contact between distance learners and their teachers. An examination of the literature on authentic learning suggests that there are a variety of frameworks and approaches on how to foster positive learning experiences through online delivery. While there are many frameworks that emphasise
the cognitive aspects of learning, it is clear that the socio-affective aspects are of equal importance in creating a positive learning experience for students. Two approaches that balance cognitive and social aspects of learning are: the creation of online knowledge building community, and Social Presence Theory which emphasises interpersonal and social strategies that reduce psychological and physical distance between teachers and students. By synthesising findings from these two areas of research, this chapter provides a framework and a set of strategies that can be used to create an authentic learning climate, and illustrates a range of tasks that create positive social, learning experiences.

The Student Experience Online

Evaluations of technology innovations have shown that the weakest part has been the implementation of the technology, and the failure to consider environmental and contextual factors that impinge on the learner and the teacher (Alexander & McKenzie, 1998). Social and contextual support for learning is essential, as online learners often have little direct contact with tutors and other students. Constructivist theory provides guidelines and principles indicating that successful learning occurs when it is contextualised, social, conversational, collaborative and reflective, yet translating these principles into effective pedagogy and support for learning remains the greatest challenge. There are several empirical studies attesting to negative learner experiences online, and to feelings of anonymity and isolation. Wegerif’s (1999) study of an online group of learners found that individual success related to the degree to which participants were able to cross a threshold from feeling like outsiders to becoming insiders. Social factors such as the degree of support, connectedness and peer feedback have been found to be powerful determinants of success and satisfaction in online courses of study (Barab, Thomas & Merrill, 2001). Constraints that operate in online computer conferencing environments are often what Sherry (2000) refers to as “finding a voice and having something to say.” Affirmation that students need to feel the human touch in online learning has long been recognised by adult and distance learning theorists (Rowntree, 1992; Kearsley, 2000). Social, contextual and affective dimensions of the learning experience remain powerful determinants of successful learning, according to research in social psychology. Common themes that distance educators embrace are the need to make the learning experience personalised, affective, interactive and positive (Hiltz, 1998).
What Learning Experiences Do Students Value?

Investigations of student perceptions of online learning have provided evidence that students value the increased peer interaction, control, convenience, flexibility and sharing of personal experience (Coomey & Stephenson, 2001; Collis & Moonen, 2001). In-depth studies of student learning and interaction online have shown that students value the following aspects of online interaction (e.g., Laurillard, 2002; Salmon, 2000):

- Active participation and sharing of ideas;
- The provision of responsive and constructive feedback; and
- An affective climate for learning focused messaging.

These aspects of student support are depicted in Figure 1.

Despite the many acclamations that online experience is positive and valuable, there remain valid calls from educators and researchers to improve and investigate online learning, and provide the authentic learning experience with a view to creating more effective learning environments (Barab, Makinster, Moore & Cunningham, 2001; Herrington & Oliver, 2002). Eastmond (1995) maintains that learning tasks and human factors are central to successful teaching and learning online, while Coomey and Stephenson (2001) suggest that paying attention to pedagogy and overcoming negative aspects of the student experience are also important. This means addressing issues of engagement, motivation, the need for connectedness and personalised feedback. Overall, the most salient issues to emerge from the literature on online learning are the need to increase feedback, reciprocity and support for interpersonal and social interaction (Gunawardena, 1995; Chickering & Erhmann, 1996).

Figure 1. Student expectations of the learning environment
Supporting Sociability

Throughout the literature there are common factors that emerge in discussions of students learning online. Tait (2000) proposes a threefold functional model of student support that includes cognitive, affective and systemic elements. The cognitive dimension covers provision of appropriate learning resources, the affective includes the provision of a supportive student-centered environment to enhance self-esteem and the systemic aspect entails the provision of administrative process that are effective, transparent and student-friendly. The literature refers to many kinds of support needed by individuals to assist them to perform tasks and interact online. Most frameworks are supported by theories of socio-cultural learning and refer to the pedagogical roles of the teacher as coaching, scaffolding and guidance (Hannafin & Land, 1997). Barab et al. (2001) refer to the term sociability as the social policies and structures that facilitate and support a shared purpose and a sense of belonging in an online community.

Bonk (2000) responds to the call for increased learner support by suggesting that there are four overlapping roles for the online instructor. These are: administrative, pedagogical, social and technological. Rourke, Anderson, Garrison and Archer (1999) propose a community-of-inquiry model where learning occurs through the interaction of three core components: cognitive presence, teaching presence and social presence. Laurillard’s (2002) iterative model of conversational dialogue leading to learning is an example of a communication model that can involve learners socially and cognitively. All three theorists recognise the primacy of the social dimension.

Research also indicates that there are intersecting concerns that need to be addressed in assisting the learner: affective, regulative and cognitive (Vermunt, 1999) (Figure 2). If we conceptualise these concerns from a socio-cultural perspective, all three dimensions of supporting learning can be viewed as essential. For example, teaching online requires attention to the cognitive dimension and this might be achieved by creating tasks and problems sufficiently complex so as to stretch students’ current level of understanding: having them present cases, arguments and conflicting views so as to encourage articulation and justification of ideas. Tutors can provide the affective dimension by giving students personal responsibility for learning, by enabling them to achieve success and by emphasising the importance of setting personal goals that can be realised. The regulative or metacognitive dimension of learning may be supported by allowing students to monitor their own and others’ progress, by fostering reflection through learning logs or diaries and by incorporating self-assessment.

Other indications of the need for socialisation support are signalled in the literature through social presence and knowledge building communities. These are discussed next.
Social Presence Theory

Presence can be defined as the degree to which a medium allows the user to feel socially present in a technology-mediated situation (Short, Williams & Christie, 1976). This means the degree to which the person is perceived as “real” and able to convey messages through facial expression, voice, posture and attitude. Gunawardena and Zittle (1997) found that both the medium and the communicator can convey aspects of presence. Further, Steuer (1992) found that perception of presence was more powerful than actual physical surroundings, and that telepresence referred to participants’ feeling of belonging to a virtual world. Emerging from this is the issue of how to create a feeling of social presence in a text-based medium such as computer conferencing (Leh, 2001).

Early uses of computer-mediated communication (CMC) involved the coordination of tasks among dispersed populations, not necessarily in educational settings (Hiltz, 1994). The lack of social contact cues was regarded as a positive attribute in settings where the exchange of information could be achieved without the hindrance of hierarchical status. In addition, many early uses of CMC did not last long enough for participants to develop socio-emotional communication, and it was regarded as positive that computer conferencing enabled participants to shift focus from the affective to the functional aspects of communication and remain task-focused. More recent studies conducted on social presence and learning effectiveness found that students often see the presence of others such as peers, tutors and mentors as an essential part of the learning experience (Fazey & Fazey, 2001), and that student satisfaction with the tutor and course are linked with their perception of social presence (Richardson & Swan, 2001).

In summary, the literature on social presence in computer-mediated communication provides contradictory perspectives, and yet effective utilisation of online
technologies in educational settings is evident (Swan, 2001). If there is any agreement in the literature on social presence theory it is this: attributes of environment design, how technology is used, and the pedagogies adopted by teachers influence student perceptions of social presence, and therefore instructional design becomes an important consideration. This places the onus squarely on teachers and designers of learning environments. It is also clear from studies of social presence that both interactive and affective experiences can be used effectively to support student learning, and when combined with effective pedagogy, can focus students on both skills development and the process of online learning (Murphy & Cifuentes, 2001).

## Supporting Process-Based Learning Through Authentic Activity

The second major area of research exploring social support in online environments derives from social constructivist and situated learning theories. Social presence theory places the onus on the teacher to provide social support and demonstrate positive immediacy behaviours, whereas the concept of an online community is regarded as a function of both teachers and learners. Balancing this view of socialisation support with that suggested by constructivists means that educators must relinquish control and students must assume more responsibility. According to Jonassen, Mayes and Aleese (1993), the challenge is to provide supportive rather than intervening learning environments. Instead of learners being focused on acquiring established knowledge, the emphasis needs to change to learners making contributions to collective knowledge, and teaching as supporting knowledge building communities (Scardamalia & Bereiter, 1996). According to this framework students and teachers have responsibility in supporting knowledge building. Three key elements that characterise this approach follow:

1. Students create knowledge “products” that are made available to the learning community and used as the foundation of more advanced products.
2. Knowledge creation is collaborative and products created by individuals or groups become stepping stones for others. Learning is dynamic, social and adaptive rather than static, personal and inflexible. Assessment processes need to reflect these dimensions.
3. Every student shares responsibility for planning, organising, questioning and summarising.
In this environment, the teacher becomes a co-learner and sometimes a model for students. While knowledge advancement is the core activity of a knowledge building community, it requires authentic activity and productive interaction. According to Herrington and Oliver (2000), “Authentic context is the cornerstone of the situated learning model, the fundamental premise upon which the theory rests” (p. 23). Essential factors include the creation of a climate and a commitment to advancing knowledge through peer interaction and feedback while the broader community ensures that students view ideas from the perspective of multiple expertise.

Cognitive approaches to Web-based instruction do not sufficiently acknowledge the social and contextual dimensions of learning and tend to highlight the cognitive processes involved in learning such as information organisation and access, and acquiring declarative knowledge (Sugrue, 2000). Authentic learning theory recognises that the socio-affective attributes of learning need to be supported in online learning environments, as these are features that characterise competent, achieving learners. For example, the social-psychological aspects of behaviour such as motivation, decision-making, and self-regulation need to be acquired and developed in all learners, and recognised as personally meaningful (Fazey & Fazey, 2001; Shaffer & Resnick, 1999). The following recommendations on supporting learning as authentic social experience are derived from a synthesis of the literature on authentic learning, situated cognition and frameworks for knowledge building communities (Barab et al., 2001; Herrington & Oliver, 2000).

### Design Recommendations for Provision of Socialisation Support in Online Environments

The elements described below are derived from theories of situated cognition and are instantiations of Herrington and Oliver’s (2000) framework for authentic learning. The difference in focus is that while activity drives the learning environment, the social aspects are given priority. These strategies include metacognitive aspects of planning, monitoring and evaluation, that is, regulative as well as affective aspects.

#### Strategy 1: Design for social activity and interactive learning

In order to ensure a motivating learning context, learning activities should not only seek to foster cognitive outcomes but also develop group and individual
social skills and processes. Cooperative learning activities such as group investigations, team- and project-based learning enable the integration of interpersonal, social and cognitive aspects of learning online. Providing effective models and examples of group interaction protocols online, or by direct modelling in computer conferencing, provides scaffolding for the social aspects of learning (Herrington, Oliver & Reeves, 2002).

**Strategy 2: Foster intentionality and goal-setting in learning**

Scardamalia and Bereiter (1993), in their work on creating knowledge building communities, state that the capacity to acquire expertise and high-level reasoning is determined by intentionality. Intentional learning is defined as cognitive processes that have learning as a goal rather than an incidental outcome. This kind of intentionality can be fostered by giving students more agency in learning, and by allowing expression of personal and collective goals for learning. Students need to perceive themselves competent in self-managing their learning and coming to terms with new knowledge, while being given the opportunity to reflect on new skills. Among distance learners, self-perceptions of scholastic competence are essential to motivation (Tait, 2000). It is important to provide resources to students that allow them to acquire interdisciplinary competence across fields of study.

**Strategy 3: Employ role differentiation to foster multiple perspectives**

Online environments provide scope for students to assume multiple participatory roles, enabling varying levels and forms of responsibility for contributing, questioning, mentoring and demonstrating expertise. Role differentiation puts learners in alternating roles of novice, researcher and expert. Reciprocal teaching enables learners to develop process skills, self-regulation and confidence (Bonk & Cunningham, 1998).

**Strategy 4: Ensure that learning becomes a constructive social experience**

The provision of regular, timely and personalised feedback is important in counterbalancing the impersonal effects of online learning. Well-timed constructive feedback increases students’ perception of positive social presence (Gunawardena, 1995). Another strategy for feedback in online forums is to focus on group problems of understanding and to clarify misconceptions to the group as a whole. Students can also be encouraged to provide responses to teacher and peer feedback openly, and engage in dialogue and articulation so that tacit knowledge becomes explicit.
Strategy 5: Foster metalearning
Students new to online learning often need an orientation to learning in this new mode and an opportunity to talk about and reflect on their experiences. Often student satisfaction with online learning is a product of their use and comfort with the technology. In creating a supportive environment for online study, with attention to self-appraisal, reflective practice and peer review, students learn metacognitive skills and the capacity to judge their own performance and that of others (Lin, Hmelo, Kinzer & Secules, 1999).

Strategy 6: Enable student autonomy and a sense of ownership
Ownership for learning is linked to self-regulation as it sees learners as socially, metacognitively and motivationally proactive in their own learning (Zimmerman, 1995). Equally, to participate in the knowledge building community, learners need to take primary responsibility for setting learning goals, accomplishing tasks and self-evaluating their own performances. Teachers need to foster self-regulatory behaviours and self-directed learning, by offering tasks that require both collaborative and independent work.

Strategy 7: Balance both personal and interpersonal orientations in creating a motivating climate for learning
While learners need to orient themselves to the content domain and course outcomes, they also need to be given scope to discuss the perceived relevance of the course and articulate reasons for taking the course. This can be achieved through conferencing and discussion. The relational element of learning is a product of our desire for affiliation, association and connection (Walther, 1992). Establishing relationships with students online is therefore a priority, while ensuring that students know that sources of help are available. The following examples, depicting an authentic online environment, exemplify these principles.

A Case Study
Final year students enrolled in the Interactive Multimedia course at Edith Cowan University are required to develop skills and expertise in project managing the development of multimedia products. These skills are taught through a Project Management Methodology unit where students practice creating Web sites using project management models, performing needs analysis, developing design specifications, and conducting formative and summative evaluation. The unit consists of 13 three-hour class sessions and runs over a full semester, or 13
weeks. Each session consists of a one-hour lecture followed by a two-hour, team-based activity. Social and communicative skills and collaboration are continually promoted and reinforced throughout the unit with teams of four or five students working together to build the Web site. Learning outcomes include:

- Working in teams to develop a team-based, Web-based product
- Creating and developing suitable project management models
- Documenting and reporting on quality assurance procedures, communication strategies, timesheet estimates, overall costs, proposal, legal, design, etc., which are representative of industry expectations
- Evaluating the quality and effectiveness of the product
- Communicating and collaborating in a team-based environment to solve problems, resolve conflict and make appropriate decisions

As shown in Figure 3, learning activities are designed to promote self-regulation, team skills, social and peer accountability as well as reflection and metalearning through peer and self-assessment. Using these seven instructional strategies outlined above, the design process focuses on developing learning activities to support the required outcomes. This process firstly required decisions to be made about the form of assessment and what proportion would be allocated to team and individual activities.

As shown in Figure 4, the main interface of the Web site was designed for functionality and context and contains icons such as an in-tray for weekly tasks, a journal for weekly self- and peer assessment, a contract to gain commitment at the beginning of the semester, a pin-up board which shows weekly requirements, a video player with streaming video of industry representatives, a filing cabinet which contains support materials, a conference centre where students post weekly solutions to problems (as well as assessing three other teams’

Figure 3. Learning activities and reflective tasks

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solutions), and a computer screen which allows forum discussions and views of other students’ work. The whole environment supports the seven principles outlined above as well as supporting social learning, interactivity and reciprocity.

**Example of Strategy 1: Design for social activity and interactive learning**

An example of social learning activity based on self and peer assessment uses the Conference Centre in which all student teams complete weekly tasks based on key concepts related to the unit outcomes. Students are given both print and online resources to help develop solutions for these tasks. Solutions have to be submitted to the conference centre at a specific time, as after this the system is locked to prevent late postings. Student teams are then asked to peer review other team submissions. Tutors also provide feedback to solutions and post grades and feedback to the conference centre, as well as the best three solutions for the week. This approach to learning is highly social and engaging, while allowing student opportunities for peer interaction and review.

**Example of Strategy 2: Foster intentionality and goal setting**

To help foster intentionality, students are encouraged to complete a student contract at the beginning of the semester, signed by themselves and team
members. The contract outlines students’ responsibilities needed for developing the Web site and weekly tasks. Students are expected to choose a project topic, define their team role, choose topics for their portfolio, and plan the amount of time they intend to commit to achieve these tasks (Figure 5). This is completed in Week 3, with a meeting of all team members so that there is agreement on roles, tasks and responsibilities. This helps both individuals and teams to set realistic goals and also creates a collaborative environment in which there are clearly agreed and negotiated objectives.

Examples of Strategy 3: Support role differentiation and feedback, and Strategy 4: Support learning as a constructive social experience

Throughout the semester students perform a number of different roles such as redesigning Web pages, supporting peers, giving critical advice, researching and synthesising information. In most cases, students were assessed on their performance and given feedback on these roles through an assessment system that allowed students to consider their own and other team members’ contributions through online weekly journals completed at the end of each week. This gave an indication of team members’ progress in completing a variety of different tasks to the required quality and within time. The weekly journal allowed students to assess how they perceived others had performed and also gave comments in support of their assessment.
Example of Strategy 5: Foster metalearning

The approach to assessment based on self and peer evaluation, combined with the online facility for the online journal and conference centre, provided scope for the adoption of multiple roles and gave students multiple sources of feedback and opportunities to reflect on their own learning. Once formed, student teams remained together for the whole semester, and relied on each other to develop the Web site and solve weekly problems. The learning environment promoted activities that were highly representative of real-life industry practice. Project proposals, design specifications, budgets, progress reports and legal contracts are all needed in commercial jobs. Students were engaged in developing these reports for clients who had “real” needs within the industry. Within this context, students recognised that clear and effective communication protocols were needed to convey messages between the team and the client, as well as within the team. This included written documentation, speaking skills, listening skills, and presentation skills. For example, Sue (pseudonyms used) discusses the importance of these reports, and was focused on developing a range of quality assurance document templates to help promote effective communication. Also, she felt that these templates would give her an advantage in job interviews, when asked about report writing and communication skills:

*The reports we were producing were just like industry ones. We had to scope the project, and then develop a contract the client was happy with, as well as giving him an accurate costing. This had to be presented in a way that was professional and easy to read. In industry, if this isn’t done well, you just don’t get the job. I can see why employers would want new employees to have these skills, that’s why I developed templates that I can show people as part of my portfolio. (interview with Sue)*

Almost all the students made comments about the importance of communicating effectively within their teams to save time. For example, Liz considered that communicating effectively with her team was an essential skill needed in the industry:

*When we get a job, we’ll have to communicate sensibly all the time. We’ll always be in a team, and we’ll always have to talk to people and write reports. You have to do it properly otherwise you get problems and waste lots of time. (interview with Liz)*
These meta-comments expressed by students on the development of effective communication skills were drawn from real-life activities promoted through the learning environment.

**Example of Strategy 6: Enable student autonomy and a sense of ownership, and Strategy 7: Balance both personal and interpersonal orientations**

In this course, students were given an orientation and advice on how to structure teams, and the importance of effective teamwork. Much time was spent at team meetings considering how the team would develop their product, and within this setting all team members were expected to contribute ideas and solve problems. For example, one student (Jeff) recognised that it was important to actively contribute ideas at team meetings to support the development of the teams’ product. He realised that by sitting back at team meetings and not listening carefully, he would miss opportunities to contribute ideas that could help the whole team perform better:

> At the beginning of the semester I was happy to sit back and listen to others say all sort of things. I would only really push a point or say something if nobody else had anything to say. After a few weeks I realised that things I didn’t say could have really helped the team. If you have ideas, you’ve got to get in there and let everybody know. (interview with Jeff)

Many other students made comments about helping others whenever possible, with a view of improving the quality of the final product. For example, Chris describes how he helped one of his team members when they were having trouble using animation software that he was skilled with. By helping his peers learn how to use this software, Chris felt that the whole team benefited as the required animation was completed on time, and the team didn’t have to waste time rescheduling and discussing alternative action:

> I noticed Pat was having problems using Flash to produce the opening sequence. He kept asking dumb questions that showed a basic lack of understanding. So, I took some time to help him get going with it. It was better to help him do it, rather than have team problems that would cause everything to slow down and cause arguments. Another team had major problems with one team member not doing his jobs because he didn’t know how to do it. Nobody helped him out, and in the end the whole team suffered for it. (interview with Chris)
As the semester progressed, most students gained a greater appreciation for the value of helping others in their team. They saw or experienced the effects of teams in conflict, as well as the negative effects of team members not completing their tasks on time, and wanted to avoid this whenever possible. Thus, the environment was extremely motivating and engaging for students, replicating real-life issues and concerns. Table 1 shows the features of the learning environment and how they meet the design guidelines depicted by Herrington and Oliver (2000).

Table 1. Situated learning elements in the learning environment

<table>
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<tr>
<th>Element of Situated Learning</th>
<th>Implementation</th>
<th>Example from the Learning Environment</th>
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| An authentic context that reflects the way the knowledge will be used in real life | • Environment reflecting real use  
• Large number of resources  
• No attempt to simplify | • Students work in teams and to develop a multimedia product to meet the needs of a “real” client.  
• The final product hosted on university server for students to use as a CV item |
| Authentic activities | • Authentic tasks that have real world significance  
• Ill-defined activities  
• Student negotiation of tasks | • Students consider what roles to adopt (project manager, content developer, programmer, or graphic designer)  
• Student negotiation on who they should team up with and which project topic and client they should choose  
• Negotiating contracts (online) with their peers to determine, roles, duties, standards and time commitment |
| Access to expert performances and the modeling of processes | • Access to expert thinking and modeling  
• Access to other learners  
• Sharing of expertise | • Multiple employer perspectives presented through streaming video of local multimedia developers  
• Online product and documentation available of past student projects, annotated by tutors and clients |
| Collaborative construction of knowledge | • Tasks for group work rather than individual effort  
• Incentive structure for whole group participation | • Fifty percent of the overall assessment is allocated to teamwork  
• Tutor-led peer assessment focus, with confidential student reporting to tutors to enable moderation of marks based on effort and quality |
| Reflection to enable abstractions to be formed | • Authentic context and task  
• Opportunity for learner to compare with experts  
• Collaborative grouping for tasks | • Weekly confidential self and peer assessment (online) to give students the opportunity to reflect on how well they have performed, as well as their peers.  
• Students estimate time for given tasks, and continually compare against actual times to develop metrics for costing  
• Tutor-led peer assessment sessions |
Summary

Research now recognises the need to create active learning environments in which learners engage in conversations and inquiry processes that are authentic and relevant to the needs of students. The authentic learning framework adopted in this chapter emphasise the social, interactive and generative nature of learning tasks and forms of engagement. The activities are selected because they are socially engaging rather than purely cognitive, and the underlying pedagogy is
community and learner-centered rather than didactic. The whole design concept is based on theories of situated and authentic learning, social psychology and constructivist knowledge-building communities. It is not being suggested that cognitive aspects are less important, but rather that social aspects of learning, interaction and engagement may be overlooked in many teaching contexts.

This chapter challenges purely cognitive approaches to learning and affirms the centrality of situated cognition where content and context are related and knowing and doing are linked to activity. Authentic learning theory provides educators with a holistic perspective and a framework for supporting learners by creating environments that value the social, experiential, participatory and interpersonal dimensions of experience. For educators, the most important lesson learnt from a decade or more of research on online learning is that students need authentic environments that provide support for learning through social interaction, engagement and community building.

References


