



Situated Learning: Learning in a Contextual Environment

Virendra Gawande and Said Al-Senaidi
Information Technology Department, Sur College of Applied Sciences,
Ministry of Higher Education, Oman

Abstract

Situated Learning is a learning paradigm, based on a perspective of having learning in a contextual environment or the applied domain of the knowledge being transmitted. Situated learning was proposed by Jean Lave and Etienne Wenger, as a model of learning in a contextual environment. This paper suggests various possible approaches to employing the benefits of Situated Learning in Higher Education sector in Oman, in the contemporary era of advancing technology.

Keywords: Concept Based Learning, Situated Learning, Contextual environment, Augmented reality, Project based learning, Higher Education Institutes.

Introduction

In contrast to Concept Based Learning [19], Situated Learning is a learning paradigm, based on a perspective of having learning in a contextual environment or the applied domain of the knowledge being acquired, particularly more important in industrial sectors where practical skills are of vital importance. Situated learning was proposed by Jean Lave and Etienne Wenger [9], as a model of learning in a contextual environment.

Situated Learning

The theory of situated learning was developed by Jean Lave and Etienne Wenger [9], who believed that students were likely to learn more by actively participating in their learning domain as opposed to listening to lecturers in classrooms. Situated learning is a mechanism by creating meaning from the real life activities where learning occurs. This model of learning is a part of Lave and Wenger's theory of communities of practice, which also states that learning should not be merely viewed as transmission of knowledge but as an embedded and active process.

This section highlights the main theory of situated learning, which includes a particular model known as "*communities of practice*" [9], and also other related theories on learning.

Sullivan [17] has insisted that the lives of citizens can be enhanced by the public services that are provided by professionals. Professionals should be committed to ensuring that individuals and society as a whole continue to progress. Professional skills and academic knowledge both work together and allow graduates to move on to a practice where they are able to serve the public better. If one of the goals of higher education is to bring about meaningful change, then professional education serves as an important vehicle for this change.

According to Sullivan, *"the challenge for professional education is how to teach the complex ensemble of analytical thinking, skillful practice, and wise judgment upon which each profession rests"* [17].

Dzur [20] has suggested that, professionals would become involved in educating and helping the public, may address many social issues. In this process, which he has entitled, *"democratic professionalism"* [20], professionals, while maintaining their specialized knowledge, would work with citizens as peers to empower those citizens to engage in a more informed discourse, which in turn could lead to better decision-making. In recent years professional programs have neglected to include public policy as part of the curriculum. Dzur's solution is for professionals to act as *"bridge agents"*, who could link their institutions, their practice, and the public citizens to provide a collaborative effort to solve problems.

Researchers in the areas of professional programs such as Maudsley *et al.*[12] also agreed that education does not occur in a vacuum. Maudsley *et al.*[12], on the training of doctors, asserted that the clinical environment where *"experiential learning"* occurs includes observed behaviors, interactions, and the overall norms and cultures of that particular environment. This learning community plays an important role in the development of a student's value and attitude and hence the future of a profession overall.

According to Shulman [16], *"signature pedagogies"* must exist everywhere in education and have a very strong presence in professional education. This approach structures the basic ways in which students, are educated in their respective disciplines. Specifically, students must learn *"how to think, perform, and act with integrity"*.

Constructivism posits that learners are their own creators of knowledge. Jean Piaget [2] was an early pioneer of social learning theories and although his focus was on children, his theories have also informed adult development.

Previously theorists asserted that knowledge was based on transference from another individual or an object such as a book directly to the learner. In contrast, constructivists suggest that learners are continuously *"adapting to their environment in terms of their understanding of a phenomenon or changes in their social world"* [13].

According to one constructivist theory, transformational learning theory, knowledge for the learner *"does not exist in books or in the experience of the educator, it exists only in the learner's ability to construe and re-construe the meaning of an experience in his or her own terms"* [10].

Experience is an important component in constructivist theories of learning. In both andragogy (adult learning) and self-directed learning theories Knowles [3], the assumption is that adults bring their experiences with them into the learning environment. This prior experience serves as a building block for not only their learning but also that of other learners in that situation.

Michelson [11] has stated that experience can either be *"the shapeless, pre-linguistic product of unmediated sensory input"* or a socially constructed outcome. It is this second version of experience that can be *"deconstructed, acted on, and reconstructed"* and then serve as the essence for transformational learning [11].

Tennant [7] discusses how faculty can link learning to the student's prior experience and to any current situation. Faculty can also create learning experiences that require active involvement of the learner. This leads to newly constructed meanings based on experience, reflection, and dialogue with the teacher and other students. Finally, Tennant reminds that at times, a learner's experience may require a critical review: *"Any resulting disruption or doubt on the part of the student may allow them to move forward or transform"* [7].

Dewey [1] was one of the first theorists to state that *"all genuine education comes about through experience"*. He also had the insight to warn that *"not all experience educates"* and that some experiences *"mis-educate"* and *"distort growth"* which *"narrows the field of further experiences"* [1].

Bailey et al. [15] stated that *"the person does not simply undergo an experience, but participates in it, constructing its meaning as it evolves"*.

Fenwick [13] has written that the community of practice model [9], helps experiential educators design experiences that contain real-life situations for students that in turn may benefit the community at large. She cites service-learning and cognitive apprenticeships as two examples commonly used in experiential learning.

Giles [8] has written that to Dewey [1], all learning was situational. He later expanded this point to say that Dewey believed that in order for *"knowledge to be usable through recall and application"* it had to be *"acquired in a situation"* [8].

Situated learning has become a stronger focus in education theory and research and will be the focus of this particular proposal. Situated Learning Theory over 25 years ago Resnick [4] written that our educational system had been focusing on individual cognition even though the activities in and out of school were socially shared. Her version of situated learning also utilizes objects and events directly as part of learning as opposed to the usual practice in the classroom where often mere symbols are used.

Resnick [4] makes these claims based partly on her own study that found that the most successful educational programs all included three elements of situated learning:

- Socially shared activities
- Apprenticeship-like structures
- Course content designed to include student participation and meaning-making

Lastly Resnick [4] stated that in addition to the acquisition of knowledge, schools should focus on the development of *"reasoning and reflection"* using a *"shared cultural knowledge"* so that students can take their place not only in the workplace but in the social world as well. Brown *et al.* [6] have contested the belief that one can teach conceptual knowledge and that it can then be abstracted from the classroom setting. Their research shows that knowledge is *"situated"* and is connected to the *"activity, context, and culture in which it is developed and used"*, Brown *et al.*, [6].

Finally, with respect to professional education, recent research holds that identity can be analyzed from both a cognitive (psychological) and a sociological perspective. An individual will co-construct an identity when engaged with others but continue to define their own identity in terms of *"who they are"* and *"what do they want to be"* even if this individual identity is developed within the social environment, Beijaard [18].

Approaches to learning now emphasize context-based activity in a social setting. There is consensus concerning the inability of students to consistently connect classroom learning to activities in the field.

Situated learning is based on the idea that learning is enclosed in the *"situation"* in which the experience is occurring, and not in the individual. This is also the key difference between situated learning and other constructivists' theories of learning. Both recognize that learning occurs in the social world, but other theories of learning assigns more importance to the individual, while situated learning gives more emphasis to the social-context. A specific model of situated learning known as a *"community of practice"* has been used in formal

experiential settings, and therefore is an important framework to view participants' social experience in order to gain a better understanding of how knowledge is created in professional programs [13].

What is needed is research that explores how students construct knowledge as they move from the classroom to the field.

- How does their previous experience affect their new experiences?
- How can faculty best facilitate student learning during experiential rotations?
- Lastly, it is important to understand how context-based learning leads to meaning-making.

Many of the researchers have accepted that the computer technology can provide an alternative to the real life setting, which is a vital element in situated learning model.

Background

Student population is rapidly increasing every year in Oman, and now the employers have a greater choice to shortlist the graduate candidates as per their specific required skills and with relevant work or project experience. Graduates with mere conceptual knowledge have very limited opportunities in industrial sectors. In order to deal with this issue, situated learning paradigm may need to be implemented on large scale.

Situated learning is relevant to Oman, as the youth (under the age of 25 years) constitute its major portion of the population and there is no other way to take education to a larger scale without the intervention of technology.

No significant researches have been conducted with particular reference to Situated Learning, within HEIs in Oman. There are studies that have been done in the past but those are mainly in developed nations. This indicates a need for similar research, to be done within Oman.

Oman adopted ICT later than many developed economies, confronting challenges of providing adequate infrastructure for its widespread population.

Other challenges, includes increasing student numbers, gender segregation, lack of faculty members, and inadequacy of learning resources. Despite the challenges, the adoption of new technologies in education is a fundamental objective to the government of Oman.

Most of HEIs in Oman offers undergraduate degrees, and admits all Omani students. The establishment of new private universities and colleges across the country therefore enhances higher education access to majority citizens.

Benefits of Situated Learning

Collins [5] suggests four benefits of situated cognition as a theoretical basis for learning.

- Students' learn about the conditions for applying knowledge.
- Students' are more likely to engage in invention and problem-solving when they learn in novel and diverse situations and settings.
- Students' can see the implications of knowledge.
- Students' ability in structuring the acquired knowledge appropriate context.

Besides this, the prominent areas that demand situated learning are as follows:

1. Various Engineering discipline

Situated learning can play a vital role in learning disciplines of engineering, like Mechanical, Civil, Architecture, Electrical, Aviation, Automotive and Computer where the hands on experience is very much essential.

2. Space technology

Space technology is developed by space science or the aerospace industry for use in spaceflight, satellites, or space exploration. It includes spacecraft, satellites, space stations, and support infrastructure, equipment, and procedures.

3. Medical science

Medical science requires intensive practical experience in real life setup to gain actual knowledge and experience to work as an independent medical professional. Situated Learning may help in some areas of medical sciences.

4. Manufacturing

The manufacturing sector is part of the goods-producing industries. The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products.

5. Fire Engineering

Fire engineering is the application of science and engineering principles to protect people, property, and their environments from the harmful and destructive effects of fire and smoke. It encompasses fire protection engineering which focuses on fire detection, suppression and mitigation and fire safety engineering which focuses on human behavior and maintaining a tenable environment for evacuation from a fire.

Possible approaches to Implementation of Situated Learning

1. Project based learning (PBL)

Project based learning is an approach where students are engaged to solve real life problems related to the subject domain. John Dewey [1] also promoted this idea as "learning by doing".

2. Industrial visits

Industrial visits may be considered as one of the approach toward situated learning and can have its importance in a student's career, pursuing a professional course. It provides student a practical perspective on the real world of work and also an opportunity to learn practically through interaction, working methods and employment practices. Industrial visits may be useful in different sectors like Information Technology, Manufacturing, Finance and Marketing. It combines conceptual knowledge with practical knowledge.

3. Augmented reality

By using augmented reality, Situated Learning can be re-introduced in classrooms, wherein multiple courses can be handled simultaneously, without being spending a significant amount of time on internship in an industrial setup.

4. Teaching with simulations

Use of Simulations in teaching can provide an efficient learning environment for students. The use of simulated activities in the form of demonstrations or working models, or virtual environment is becoming recognized as an important tool in education. It offers several benefits like; these are often cheaper to create than their real life counterparts. For example, installing flight simulation software is much cheaper than buying an actual jet; and they are also free from risks and dangers as compared to real life situations.

Limitations of Situated Learning

- Learners can get hands-on experience only with standard procedures and operations. In real life there are many unexpected situations which may not be possible to simulate using situated classroom teaching.
- Trainers need to be equipped with extensive real life experience.
- This paradigm may be very expensive to implement.

Conclusion

In a developing country like Oman, Situated Learning paradigm can play a significant role in producing the graduates equipped with relevant skills. Innovations in technologies have now made it possible to bring the situated learning paradigm to classrooms. This paper suggests four possible approaches to implementation of situated learning in this era of advancing technologies.

Recommendation for future research

Following are the recommendations for future research;

- More research is required in the field of augmented reality;
- Classroom presentations may need to be simulation based;
- Project based learning may be an essential component for every course;
- Industrial visits may need to be an essential component in applied courses.

References

- [1] Dewey J. (1938). "Experience and education". New York: Simon and Schuster.
- [2] Piaget J. (1974). "Experiments in contradiction". Chicago: University of Chicago Press.
- [3] Knowles M. S. (1980). "The modern practice of adult education: From pedagogy to andragogy (2nd Ed.)". New York: Cambridge Books.
- [4] Resnick L. B. (1987). The 1987 presidential address: Learning in school and out. *Educational Researcher*, 16(9), 19.
- [5] Collins A. (1988). "Cognitive Apprenticeship and Instructional technology". BBN Labs Inc., Cambridge, MA.
- [6] Brown J.S., Collins A., & Duguid P. (1989). "Situated cognition and the culture of learning". *Educational Researcher*, 81(1), 32–42.
- [7] Tennant M. C. (1991). "The psychology of adult teaching and learning". In J. M. Peters, P. Jarvis & Assoc. (Eds.). San Francisco: Jossey-Bass.
- [8] Giles D. (1991). The process of experience: A case study in international service learning, report no. 1. Research report, Partnership for Service-Learning, New York.
- [9] Lave J., & Wenger E. (1991). "Situated learning: Legitimate peripheral participation". New York: Cambridge University Press.
- [10] Mezirow J. (1991). "Transformative dimensions of adult learning". San Francisco: Jossey-Bass.

- [11] Michelson E. (1996). Usual suspects: Experience, reflection and the (en)gendering of knowledge. *International Journal of Lifelong Education*, 15(6), 438–454.
- [12] Maudsley G.& Strivens J. (2000). Promoting professional knowledge, experiential learning and critical thinking for medical students. *Medical Education*, 34, 535–544.
- [13] Fenwick T. J. (2003). “Learning through experience: Troubling orthodoxies and intersecting questions”. Malabar, FL: Krieger Publishing Company.
- [14] Vincini P. (2003). "The nature of situated learning". *Innovations in Learning*.
- [15] Bailey T.R., Hughes, K.L., & Moore, D.T. (2004). “Working knowledge: Work-based learning and education reform”. New York: Routledge.
- [16] Shulman L. S. (2005). “Signature pedagogies in the disciplines”.*Daedalus*, 134(3), 52–59.
- [17] Sullivan W. M. (2005). “Work and integrity: The crisis and promise of professionalism in America”. San Francisco: Jossey-Bass.
- [18] Beijaard D. (2006). “Dilemmas and conflicting constraints in teachers' professional identity development”.
- [19] Erickson H. (2007). “Concept-based Curriculum & Instruction for the Thinking Classroom”. Thousand Oaks, California, USA. Corwin Press.
- [20] Dzur A. W. (2008). “Democratic professionalism: Citizen participation and the reconstruction of professional ethics, identity, and practice”. The Pennsylvania State University Press.