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Tracing legitimate learning in formal vocational education

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Abstract

Situated learning theory and the concept of communities of practice provide a rich conceptual framework for analyzing the processes by which apprentices become full participants in their communities of practice. This article uses case study evidence from the maritime vocational education to show how this framework can be developed to identify and thus improve upon authentic learning in formal educational settings. We suggest that inter-related factors including students' common objective, pedagogical method, nature of the course and affordances of the context underpin the creation and success of the students' community in the classroom.
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1. Introduction

This study is part of an ongoing exploratory qualitative research project concerns with the competency development processes of practitioners (mariners) in their vocational education and training system (Emad and Roth, 2008; Emad and Roth 2009). In my qualitative ethnographic study, I attended and collected data from a series of vocational courses in a maritime training institute in Canada. All of the course participants have work experience as mariners. In the process of promotion to become a navigating officer they attended a specialized education and training institution to prepare for the certification examinations. These examinations are conducted by maritime certification authorities and not by the training institute.

The Data collection process spread over two academic years. In this paper I contemplate on a case regarding one of the courses, which resulted in a very high success rate of its participants in a competency certification assessment. The result exceeded the initial anticipations of the school. My in-depth analysis of the data from the course revealed that a common objective and a considerable amount of social engagements in and out of the classroom, among the students and between students and instructor, might provide a rationale for participants' effective learning and the resultant success.

Lave and Wenger (1991) have developed the concept of 'communities of practice' to convey how people learn through mutual engagement in social activities. They have provided a rich conceptual framework for analyzing the

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process by which people engaging in a shared enterprise can learn and gradually reach their objectives and become competent.

2. Theoretical framework

The idea of distributed and socio-cultural learning has been known to educators and researchers for more than two decades. Based on Vygotsky's cultural-historical psychology, which emphasized "mediated action in context" (Cole, 1996 p xii), learning is thought to be a set of social practices. Concepts such as communities of practice and communities of learners shifted the central view on learning from an individualized action to a collective activity or practice mediated by history and culture/society (Roth & Lee, 2006). The Idea of communities of practice is "one of the most influential concepts to have emerged within the social sciences during recent years" (Hughes, Jewson, & Unwin, 2007, p 1). As Pór (1995) described, the community of practice is the type of community that learns. Lave and Wenger (1991) suggested that the proper unit of analysis of skilled human activity is a community of practice rather than an isolated individual. Although the members of a classroom do not fully constitute a community of practice (Roth, 2008), the idea of learning through participating in a shared enterprise might be useful in thinking of quasi-communities of practice, when the unit of analysis also includes the activity of the vocational domain from which the practitioners come to attend college courses.

3. Community development

The analysis of data in our study shows that the participant students in our research had different types of motives and as a result objectives when attended school. The primarily reason we found is that the students are from different shipping industry and as a result have dissimilar job description and diverse tasks to do on their ships—e.g. ocean going, passenger ferries, tug boats, and fishing industries—and although they have to attend the same course to learn and acquire maritime knowledge and skills but the types of competencies they are looking for are different. This is the authentic shared objective that makes a group a community of practice, as the Pea (1993) described communities of practice form by people as they pursue shared enterprises over time. Based on that because the students in our study are not sharing the same objectives they cannot be considered as an authentic learning community.

However, we claim, this might not be an accurate perspective. As the courses proceed, it becomes increasingly evident that the course participants realize that they have a common objective. They are willing to become marine officers. Although they are applying for different certificates but part of the requirements for all of these certification is the success in the same examination. That is, a common goal emerges and creates a motive for the students to work collectively in order to accomplish success.

Attending the course is not mandatory but historically those who attended the course have a higher possibility of success in the respective examination. Based on the curriculum, the objective of the school for presenting the courses was to teach the students to be competent mariners. This contradicts the objectives of students, as one of them mentioned:

> I am a doer not a, [ ] you know… there are not many people around that can operate a boat better than I can. But when it comes to the theory that's where I fall flat, so by attending the course I'm getting much better grasp of theory, you know getting led by the hand, by my classmates as well as the teacher. (Mark)

As the assessment is based on written examination, it may only evaluate the theoretical rather than practical aspects of competency requirements for the job. In the above excerpt the participant mentioned that his aim of attending the course is not much of gaining practical competency— not many people around that can operate a boat better than I can —but to get better grasp of theory—required by the exam. He also emphasizes on the social aspect of learning, when he suggests learning (even in school) realizes through participation in practice and getting help— led by hand—from colleagues as well as the teacher.

The students' common objective motivates them to engage socially from very early in the course. They discuss and share their knowledge regarding the certification processes and the quality and nature of related examination. During the course of time the engagement of all the participants in these discussions become a legitimate part of their in and out of classroom activities. In this way participants create a community, which allow them to pursue

their joint enterprise and develop a shared repertoire. One of the initial activities encompassed is obtaining and sharing the past competency examinations questions. They gradually create a bank of questions. It becomes a common consensus among the students that working on the sample questions would prepare and give them the competency they require for success in the examination. The students' body as a community recognizes this as a legitimate practice and discuss with the teacher to incorporate it as part of the classroom activities. The teacher recognized this as an appropriate demand, particularly as it was aligned with the teacher's previous experience with the certification's examinations. As the teacher's practice in the classroom aligned with the students common demand, it promoted collaboration among the students and created a sense of community in the classroom. The students become socially engaged and share their knowledge—or lack of—with the rest of the class. As the course proceeds "there is very little observable teaching; the more basic phenomenon is learning" (Lave and Wenger, 1991 p. 92).

The high success rate of the students in the competency exam can be used to indicate the effect of creating communities of practice in promoting and facilitating students' learning. In order to better understand the contributory factor, which facilitate the creation and success of the students' community I make use of the concept of affordances. This analytical tool allowed me to do an in-depth analysis of my data and shed light on the legitimate aspects of the resources and practices, which make a meaningful contribution to the students' success in achieving their goal.

4. Available affordances and the teaching pedagogy

The analysis of my data show that the affordances of the course and how the classroom offers opportunities plays an important role in the students' participation and engagement. Gibson (1979, 1986) coined the term affordances to refer to what the environment provides. He used the notion of affordances to refer to properties of objects, mainly the functional properties that ascertain how an actor can possibly utilize them. Thus it refers to the action possibilities, which it creates for the actor in that context. The constituted affordances may provide support—or inhibit—engagement in activities and access to resources. Given the relation between learning and participation, how affordances motivate—or discourage—participation became relevant for understanding the students' learning in my study. The concept allows me to understand how the practices utilize the resources. The availability and nature of affordances indicate the potential of students' agency to shape their engagement and collaboration. These can advance learning processes by shaping—and subsequently advancing—the possibilities of students' participation.

In this study I draw on the concept of Affordances as an analytical framework that is used after the fact. This framework allows me to observe how the practice mobilizes an object to offer certain usability and how affordances defined by that practice. Gibson introduced the term affordance to indicate the relation between the organism and its environment and what the environment offers to the living beings. He argues that the term affordances "implies the complementarity of the animal and the environment" when they interact (p. 127). Baerensten and Trettvik (2002) denote that the affordance is emergent and exist when an organism actively lives in an environment. My analysis show that a major factor that defines the affordances of an object is not necessarily the structure of the object or the purpose that is designed and built for, but the affordances emerge from the practice that involve the object. Thus the affordances constituted in the action and are realized when the actor cognizes their possibilities. The resources (e.g. teaching aids) in the classroom do not afford being resources unless the students and teachers realize their possibilities through their actions. For example the whiteboard in the classroom normally afford to be used as a tool to assist teaching. In my study I analyzed that the practice expand it affordances to be a hub where the students can facilitate their participation.

In the analysis I do not limit the affordances to physical resources or to what environment physically afford but to the cultural possibilities available to the students. Gibson (1986) confer that the richest affordances of the environment are provided by other people. In this study I analyzed that the affordances are not much the property of the others in which they have a control on but is a product of the engagement and participation in the practice/culture. These cultural possibilities made available through the course participants' actions/interaction and the teachers' pedagogy. The teacher's practices facilitate students' interaction with the environments, resources (artifacts), and others or simply promote the authentic participation in activity. I analyzed that some of the features, which normally consider as constrain to the learning processes to act as learning resources for students, when the

activities allow them to be realized as such. For example heterogeneity (age, knowledge, and experience) is not normally considered to be a resource and valuable asset in teaching practices. Using this framework I realized that the practice conceived the heterogeneity as an affordance for motivating the collaboration and participation in practice. In the following I discuss some of the affordances that promote and facilitate students' engagement in practice. it follows by the teaching methods the I found in my analysis to be the most effective in promoting students collaboration within their community.

4.1. Affordances

4.1.1. Common history/culture

The students were from the similar industry and all but one from the same region. This eased communication, as many of them already knew each other. They had common interests, concerns, and similar cultural backgrounds and shared stories and experiences. These factors afford the participants to easily relate to each other and facilitate developing a shared repertoire and creating a community.

4.1.2. Limited number of participants

A limited number of students in the class speeded up the creation of the community. All the participants were visible to one another. More time dedicated to each person to know rest of the participants leads to a more friendly and colloquial environment, which allows easy connection of students and equal opportunity for sharing resources, such as their colleagues' and teacher's expertise and available teaching aids.

4.1.3. Classroom setting and resources

The physical layout of a work setting is an important dimension of learning, since apprentices greatly benefit from observing others and from being observed (Lave & Wenger 1991). The setup and available facilities in the classroom had a clear effect on facilitating the students' communication and sharing and effective use of the resources. These include but are not limited to whiteboards that covered two sides of the classroom walls, the availability and use of computer and online Internet resources, the accessibility of teaching aids such as scale models, charts and drawings, and student's handbooks and reference materials.

4.1.4. Clear understanding of the common objectives

All of the students had prior experience in the domain and the process of certification. They had a clear indication of their objectives and thus knew what they want to achieve in the course. This played a very important role in finding their common objectives, shared enterprise, and so initiation of the community.

4.2. Teaching methods and its effect on students' collaboration in their community of practice

The teaching methods that have been practiced by the teacher for this course played a significant role in promoting and supporting the students' community of practice and maintaining its proper function. These may include promotion of collaboration and group work, hands on activities, and the availability and use of teaching aids and other resources.

4.2.1. Creating Time-Space for Students' Collaboration

The teacher created and facilitated the opportunities for the students to work collaboratively, to get help from each other, and to compare and share their findings. One of his techniques was having the problem written on the whiteboards and related charts, drawings and graphs to be drawn in large scale beside it. He assigned group projects and asked the students to solve the problems in different groups. The teacher recommended them to work together and write down on the whiteboards all their ideas and calculations. This allowed most of the group members to be able to physically attend, share solving problems and be able to clearly observe how their peers solve the problem at hand. In many occasions all the groups were assigned to work on identical questions, and thus the whole classroom community was able to observe, interact, discuss and share their findings with their peers in other groups. This

method allowed the use of whiteboard to be extended beyond a teaching tool to become a valuable resource and a hub, which facilitated the learning through developing and sharing knowledge by students in a collaborative process.

4.2.2. Focusing on the Process and the critical thinking

The teacher encouraged the students to aim at learning the process of solving the problems and not only getting the right answers. He initially provided the students with the final answers of the questions that they were going to work on, so the focus of the students was not to find the answer but a valid process of getting the right answer. He resisted the request from the students for providing a template for solving each type of problem. Instead he was helping them to develop their own templates. He then encouraged them to compare their templates together in order to realize that a problem can be solved in different ways using different methods and so promoted critical thinking.

5. Conclusion

This research showed in a case study how a group of practitioners in a vocational education setting interact, find a shared enterprise, collaborate, create a community of practice and learn through the process to be competent in reaching their assigned goal. Using the analytical framework of affordances we discussed how by helping the individuals in a classroom to identify relevant resources and expertise and providing them with the time and space to build relationships in a common context and by creating an environment where people are afford to recognize and being recognized for their competencies and contribution, communities can flourish and reach its objectives.

Schools need to actively promote the creation and cultivation of students' communities of practice in the classrooms in order to develop an environment in which they can authentically learn and prosper. Schools should value these learning processes, encourage participation, and make time and other resources available for the students' community to prosper.

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