USING ONLINE LEARNING TO ENABLE REFLECTION UPON AUTHENTIC TASKS

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Abstract

Industry-based projects and experiential learning enable learners to apply their knowledge of theory to a real-world scenario. Where reflection follows the project assignment then learners can benefit even more from the insights they have gained during the project. This paper will report on the process of the Information Technology Project undertaken by third year undergraduate students at UNITEC and examine the role of the Learning Management System (Blackboard) in raising the learner's level of reasoning through postings to group discussion forums that report on progress throughout the project life cycle and reflect upon the insights generated from the issues and challenges encountered. Constructive and timely feedback delivered online by the supervisor, who is also an industry practitioner, assists students to glean additional layers of learning from the project that may not have been possible in the traditional classroom or work environments.

Keywords

Reflective process, Graduate capabilities, Discussion forums, Industry based learning, student project

Introduction

The industry-based project is the final course of the Bachelor of Computing Systems (BCS) degree at UNITEC. In this course, students undertake a real-world project, preferably as a member of a group. Industry demands capabilities-driven graduates, who are smart, skilled and adaptable (Denning, 2001) and for BCS graduates these capabilities are encapsulated in a set of professional skills that along, with their technical skills, include the ability to be interpersonally effective; analytical, critical and reflective and responsive to problem solving; responsive to change and being committed to continuous learning in a fast-paced industry. Competencies are the internal capabilities that people bring to their activities and the industry-based project aims to develop competencies that include technological awareness and skills, problem-solving, systems thinking and understanding, industry awareness, leadership, interpersonal and communication skills, understanding of business concepts and organisation, negotiating and contracting skills and the ability to gain a 'buy-in' across a range of colleagues and stakeholders. Since the project is compulsory, students must pass this course in order to graduate. The philosophy behind the course is to integrate the knowledge acquired across the technical, business and communication courses studied and apply this experientially in a 'real-world' project setting (Fielden & Williamson, 2002).

Background

Placed in a business context, Gremler et al. (2000) suggest that experiential learning is more likely to develop students' interpersonal and communication skills, their ability to work in teams and groups and sharpen their critical, analytical and problem-solving skills. Kolb (1984) suggests that we learn best when we learn in ways that suit us. Through experiential learning, industry-based projects enable learners to apply existing theory to gain new knowledge in a real-world scenario. Kolb highlights reflection as an important learning style and a reflective process, where students interact with each other, their industry-based partners or simply engage in their own personal evaluation, within the project can benefit students by providing an opportunity for examining insights they have gained during the process. Reflective

practice has been described as the ongoing process of a proactive examination of beliefs and practices that explores the origins and impacts of those beliefs (Stanley, 1998). Refining ideas through experience and shaping the concepts of reflective practice are two of the anticipated learning outcomes of the industry-based project.

The Project Life Cycle

The project is a single semester, double-credit course requiring approximately 360 hours of work to be performed by each student. During this time, students are expected to demonstrate the integration of knowledge gained throughout the degree in a practical situation that requires them to utilise a wide range of skills. On completion, students are expected to be able to demonstrate that they can:

- Integrate and apply the learning outcomes from other BCS courses;
- Successfully undertake original work;
- Maintain a professional attitude; and
- Integrate the required technical, business and communication disciplines.

The project itself follows a formal life cycle consisting of five phases (see figure 1) which span not only the semester in which students are enrolled but also the previous semester, at which time students are expected to form teams, source projects and prepare their project proposals. The project has a number of critical milestones, for which sign-off is required, such as: Initial approval of the project; the project proposal; project presentation and final project documentation and deliverables.

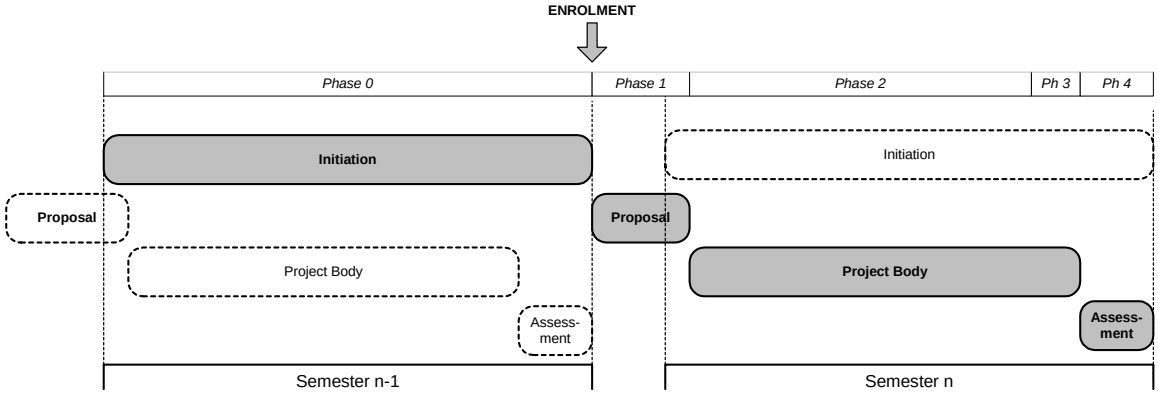

Figure 1 Project Life Cycle

Industry Involvement

Significant emphasis is placed on situating student projects in realistic industry settings (Fincher, Petre & Clark, 2002). To assist with this, Project Proposals are vetted and signed-off by the School's Industry Advisory Committee and the student presentation is jointly marked by this committee and the supervising staff. The proposal in particular places a serious and somewhat daunting challenge in front of the student team early on in their project. The value of this exercise is that the industry panel approaches it not as a hurdle but as a mentoring exercise. During this time they assist the students to identify oversights, weaknesses and naïve assumptions within the proposal. In effect the industry panel performs a rigorous and formal risk analysis exercise and only after they are satisfied can the project proceed. The theory being that risks are reduced later on if the project is well understood at the outset (Schwalbe, 2000).

The Project Management Process

In Semester 1, 2002, one of the authors supervised six projects: One individual; two groups of two and the remainder groups of three. Projects ranged from an online video streaming capability to more traditional software and website development. Fincher et al. (2002) maintain that staff commitment is a key to project success in these changing times and so a supervision contract is verbally negotiated between the supervisor and the project team. In this instance all six teams agreed on the same terms, namely that they would meet with their supervisor face to face on at least a two weekly basis and that

they would post a project report on the group discussion board by midday on Monday every week for the duration of the project. The design of the report was drawn from the supervisor's own extensive experience in managing commercial ICT projects and designed to be a simple but effective tool for communicating progress (or lack of) and identifying issues quickly. The report was not intended to be comprehensive. Students were told that the level of detail required would typically take them fifteen minutes to write and their supervisor five minutes to review. The report consisted of four sections:

- Work completed since last report
- Work in progress
- Work due to start this week
- Issues

This gave students a basic structure and some simple rules to follow but did not rigidly define the content or the level of information they were required to report on. The only additional rule was that an issue once raised remained until a resolution was reported. The other logical process was that tasks rippled up the report from "work due to start" into "work in progress" and eventually to "completed". From the supervisor's perspective, this provides an attention report so that the project can be monitored and tracked against a more detailed project plan if required. For the students this was an encouragement to employ good project management practices. A second factor was that in posting this report to the online discussion board, it was also available to the other groups, for the supervisor to comment on online and it allowed a reporting history to be created such that students could go back and reflect on how their project (and others) had evolved.

Authentic Environments and Deep Learning

The pedagogical underpinning of this reporting process was to encourage reflection on what Brown et al. (cited in Roblyer & Edwards 2000, p.65) refer to as "authentic experiences" – these include learning activities that emulate real life situations, problems and tasks; activities that the learner considers to be important. Such activities can be aligned with the learning modes that we use in real-world situations, namely *concrete experience, reflection, model building* and *trial-and-error learning* (Kolb, 1984). Biggs (1999) discusses learning activities as "approaches to learning" and discusses the *deep* and *surface* learning that can occur as a result. A surface learning activity is one that might encourage inappropriate recall or can result in fragmented outcomes, failing to communicate meaning. The reflective reporting process employed in this course was designed to encourage a deeper level of understanding and promote a students capability to handle tasks appropriately. This is similar to Laurillard's (1993) conversational framework, which encourages a deep approach to learning by engaging students and giving meaning through structure. Students gain understanding through discussion and can then relate their understanding to an authentic task and/or context and gain feedback through further dialogue. In this environment, the discussion board goes beyond supporting the learning experience by extending the learning experience and therefore has the potential to enhance the learning experience.

The Role of the Learning Management System

We took a proven industry-based reporting model and used the asynchronous discussion board to create a learning space where reflection could occur (Williamson & Nodder, 2002). In a commercial setting this report provides an attention reporting mechanism and a history of the project. In the academic setting this was still the case, indeed all but one group used these reports in their final project documentation to demonstrate their project management process. However this was seen as secondary in terms of the pedagogical value of making these reports available on the discussion board so that groups could review them and reflect on tasks, progress (or lack of) and the issues raised by themselves and the other teams.

Deriving our ideas from Bain et al's (1999) conceptual framework for understanding the nature of reflection and their five-point scale identifying levels of reflection to define levels of reasoning, we were able to create discussion board forums that gave students the ability to asynchronously report on events and make observations of the challenges and successes that they encountered during a project life cycle. In this environment, students were able to report issues and problems to their supervisor and then step back in order to relate the experience to their understanding of theory, hopefully gaining an understanding

as to why something had happened. Many were then able to identify a course of action from that reflection and interaction.

Conclusion

The group discussion forum was used for members of the six project teams, their supervisor and the course co-ordinator. All team members were consulted about the open reporting and were happy to proceed. We have replicated a realistic project reporting environment but extended this by providing a reflective learning space where students are able to explore perceptions and build knowledge through experiential dialogue in a setting that allowed them to reflect on both dialogue and on the learning that had already taken place.

For this to be successful the supervisor needed to support students to gain understanding through discussion and reflection and allow them to integrate this learning in a real world setting. In this environment, the discussion board goes beyond supporting the learning experience extending its potential to recreate experiential learning environments and support the students to learn in ways appropriate to themselves and their situation. The choice of such a learning activities aligns well to an overall graduate profile where the student is being guided to develop a reflective approach to their acquisition of knowledge and an ability to reason.

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