Teaching to Learn and Learning to Share: Assessing a Culture of Sharing Amongst Information and Knowledge Management Students in a Virtual Environment

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Abstract: Knowledge and information sharing has become synonymous with the concept of creating value and power for organisations. Knowledge is being recognised as a valuable asset and the promotion and distribution of information and knowledge in its digital work is the aim of creating learning organisations. The sharing of information and knowledge creates a community where participants can collaborate with each other in achieving their goals. In a knowledge management course in the Department of Information and Knowledge Management, at the University of Johannesburg (South Africa), students are introduced to these concepts as part of their training to pursue various careers as information and knowledge workers within organisations where these concepts have to be applied. Using a philosophy of teaching by example, students are encouraged to share information and knowledge, making use of discussion boards in a virtual learning environment as part of a multi-modal learning approach that includes face-to-face lectures as well as an online interactive environment. Discussion topics are provided in line with a case study that students are requested to analyse. Students' reflections on the learning that has taken place, based on the responses to the discussion topics, form part of the case study analysis which is assessed. The purpose of the research is to gain insight into the effectiveness of information and knowledge sharing in a virtual environment using discussion boards in terms of its role to generate a learning culture. A mixed methods approach is applied to 210 registered students in a second year group and 123 registered students in a third year group by monitoring their discussions on allocated topics. Firstly, content analysis methodology is applied to assess the knowledge sharing that is taking place in the virtual environment. Secondly, a survey is conducted at the end of the discussion period to determine student experiences, perceptions and opinions on the knowledge sharing processes and is used to adapt and develop the course design. Thirdly, students are requested to reflect on the learning experiences as part of the submitted case study analysis assignment. The discussion monitoring will investigate the following variables: (1) student participation rates, frequency and patterns; as well as (2) cognitive and metacognitive components of student messages. The survey and reflection will be used to assist the students' (3) perception of learning through sharing; (4) experiences of group dynamics and (5) their perceived individual performances based on the participation rates, frequency and use patterns; as well as (2) cognitive and metacognitive components of student messages. This research includes an investigation of using different group dynamics to compare the effectiveness of students being managed in a randomly selected group as opposed to students signing up to a group of their own choice. It is hypothesised that the findings from this research will provide important answers and recommendations that will assist students with diverse skills and socio-economic backgrounds in their cognitive and meta-cognitive development for information and knowledge sharing when making use of online discussions boards.

Keywords: Knowledge and information sharing, learning organisations, virtual environment, discussion boards, content analysis methodology

1. Introduction

"We believe most people have a natural desire to learn, to share what they know, and to make things better" (O'Dell, Grayson & Essaides 1998).

Drucker (1988) predicted that typical businesses in 2008 would have half the levels of management and one-third the managers that they had twenty years ago. He predicted that work would be done by specialists across traditional departments, that information technology would lie behind the changes, that knowledgeable users would be transforming data into information and that businesses would be knowledge-based with disciplined, self-directed specialists that measure their own performance through organised feedback from colleagues, customers and headquarters. Drucker (1988) further describes the revolutions that have been taking place in the concept and structure of organisations. The current revolution is the third revolution that describes which is the start of the constant changes and knowledge organisations to the knowledge-based organisations that is continuously learning in order to survive and grow. Authors such as Malhotra (2001, 2004), Stewart (2001) and Koegel (2004, 2006) confirm the existence of this third revolution. Confirming the existence of this third revolution, Gley and Maycunich (2000) defines a learning organisation as one that "learns powerfully and collectively, continuously transforming itself to more effectively manage knowledge and empower its people to learn as they work, utilising technology to maximise learning and production". If tertiary institutions are to train knowledge workers for these knowledge-based organisations, a link between learning, working and organisation should be fostered within the teaching philosophy.

Knowledge-based organisations have to supply context, support and stimulate activities for creating knowledge. Tobin (1997) is of the opinion that organisations learn through experience and discovery, supported through sharing knowledge and providing access to knowledge. 

This approach has been taken in a second (equivalent to sophomore) and third year (equivalent to junior) undergraduate Information and Knowledge Management course at the University of Johannesburg, South Africa. Through a combination of face-to-face and online delivery by means of an interactive environment, students are introduced to the sharing of information and knowledge that has taken place in terms of its role to generate a learning culture. The objectives are to:

- assess the content of discussion groups on prescribed topics;
- gauge student experience, perceptions and opinions of knowledge sharing through discussion boards;
- monitor discussions in terms of student participation rates, frequency and use patterns;
- assess variations in group dynamics.

A mixed methods approach is applied to 210 second year students and 123 third year students by monitoring their discussions on allocated topics in terms of content, discussion patterns and following up with a survey on their perceptions, opinions and experiences.

2. Research methodology

A mixed methods approach, combining qualitative and quantitative methods is decided on to offset the weaknesses inherent within one method with the strengths of the other method (Creswell 2007). The approach follows an exploratory and descriptive design (Creswell 2007) and Babbie (2005) to satisfy the researcher's understanding of the topic to test the feasibility of undertaking a more extensive study and to develop the methods employed in any subsequent study. Furthermore, a case study research design is followed based on case studies being the preferred strategy when "how and why" questions are being posed, when the researcher has little control over events and when the focus is on contemporary phenomenon within real-life context (Yin 2003:2).

In order to address the objectives that have been set a four-pronged approach is used to gather primary data.

2.1 Content analysis methodology

Content analysis methodology is used to assess the knowledge sharing that is taking place in the virtual environment for this research. Content analysis methodology is regarded as the preferred approach for content analysis. The methodology as described by Henri (1992) consists of five elements that evaluate computer-mediated communication. The five elements are participation, interaction, sociocultural as well as cognitive and meta-cognitive evaluation. According to Koz, Banik and Angell (2000) cognitive and meta-cognitive evaluation is used for measuring reasoning, self-awareness and critical thought. Cognitive presence is defined as "the extent to which participants in any particular configuration of a community are able to construct meaning through sustained communication" (Garrison, Anderson and Archer 2000). The content analysis methodology is applied to address the first stated objective, namely to assess the content of discussion groups on prescribed topics.

2.2 Survey and reflection of experiences, perceptions and opinions

The second objective namely gauging students' experiences, perceptions and opinions of knowledge sharing through discussion boards will be achieved by designing and administering a survey at the
Information and knowledge sharing has become a strategic tool applied by people to achieve their goals. According to Yuen & Majid (2006) students are very fortunate with the large amount of information to their disposal in furthering their studies. Walker (2002) mentions that knowledge sharing through group collaboration platforms can create positive learning amongst students. Students can thus experience a positive learning outcome which can impact positively on their academic results. Some research findings on virtual learning environments are provided.

3.1 Previous research on virtual learning environments

Virtual learning environments include learning applications such as e-learning (mostly web-based platforms accessed via computers) and lately m-learning (access gained via mobile technology such as personal digital assistants and mobile phones) (Hockley 2009:24). Although e-learning cannot be regarded as a new way of learning it remains a popular way of learning in businesses and the academic world. Regardless of e-learning’s initial enthusiasm to replace face-to-face learning it has grown into a significant part of blended learning approaches (Hockley 2009).

Harasim in Wu and Hiltz (2004) provides a distinction between computer mediated discussion and face-to-face discussions indicating that they are based on their richness and communication structure as well as the time and place dependence. Larkin-Hein and Inone (1998) describes online discussions as relatively new applications that can be used by learners to facilitate their active role in the learning process. Wu and Hiltz (2004) reported research by Harasim which showed that learners’ perceptions of learning are more focused in an online interaction than in a face-to-face encounter. The theory behind the active participation suggests that students involved in an intellectual online environment establish a platform for better learning because active, thoughtful and equal contributions are made possible (Althaus 1997). The study done by Althaus (1997) determined whether face-to-face discussion and/or computer-mediated communication (CMC) can contribute to undergraduate students’ academic performance when they are part of a large lecture group. The study showed that a superior learning environment was created by the participation of one hundred and forty-two undergraduates who used the combination of face-to-face and computer mediated communication in comparison with the traditional face-to-face discussions only. Rodgers (2009:22) found that an extra hour of e-learning engagement increased average student’s module mark.

Larkin-Hein and Inone (1998) reports a pilot study from the American University in terms of the effectiveness and understanding of Physics of sixty two students that volunteered to participate in online discussions. The study results concluded that online discussions were found useful and beneficial and that most students had the perception that online discussions must be continued for future classes, but on a voluntary basis and that instructors should give constructive feedback. Larkin-Hein and Inone (1998) acknowledge online discussions as a tool to provide additional learning where students can apply the information they have gathered. According to a study done by Thomas in Wu and Hiltz (2004) high levels of cognitive engagement and critical thinking can be achieved in online discussion boards, but this virtual learning environment lacks the coherent and interactive dialogue that is necessary for conversational modes of learning. A way of overcoming this is through active involvement of the facilitator or instructor.

Wu and Hiltz (2004) reports on a survey conducted by the SUNY Learning Network with the purpose of establishing three factors which can have an influence on the success of online courses. The sample included 800 registered students in 264 courses. Three factors played a vital role in the success of these online courses namely the clarity of course objectives, the quality of the course design, contact with the instructor as well as active discussion. The students’ perceptions of learning were related to interactions from the instructors, other people and the value placed on participation.

Numerous differences between males and females have been shown in previous research. Some studies showed that females experience more problems during computer supported learning due to a lack of computer ownership and lack of computer skill confidence (Wu and Hiltz 2004). However some studies have shown superior verbal skill amongst females outweighing those of males. Female students showed higher confidence levels in online discussions as opposed to males (Wu and Hiltz 2004). Rodgers (2009:23) confirms female students outperforming male students, however he found that the benefit that female students derived from a given level of e-learning was less than that gained by male students. A possible reason for this was reported to be the reality that male and female students learn systematically different and that a male academic developed the learning package. Rodgers (2009:23) cautions that these aspects should be considered when developing e-learning.
3.2 Advantages and disadvantages of online discussions

According to De Bryn (2004) an online discussion or CMC gives students the opportunity to communicate irrespective of time and place. Small groups can be formed to create questions, opinions and quotes based on communication. Students are furthermore able to follow and trace conversations that are specified by label and recognised by structure. De Bryn (2004) summarises the associated advantages of online discussions as described by several authors (Harasim, Hiltz, Teles & Turoff 1998; Hewitt 2001; Mason & Kaye 1989, 1990). Further advantages as described by Emmer and Gerwels (2002) as well as Hara, Bonk and Angeli (2000) are listed below:

- Communication skills, group dynamics and more active sharing of knowledge are increased.
- Assist students with understanding of work, answering questions and solving problems.
- Increase in connectivity and accessibility through online discussions shows an increase of group interactions. Students participating in an online interaction finds that resources are accessible.
- Equal communication is encouraged because communication is spread equally amongst students instead of them having to take turns.
- Reflection of students increases through re-reading and revisiting the messages before replying to messages.
- Student conversation becomes boundless seeing that there are no time or place restrictions to contributions from all students.
- CMC allows students control in reflective learning giving students the opportunity to reflect on thinking and communicating ideas.
- Comments can be reused by students to refer back to discussions and answer patterns and a progress report can be created that can keep an update on students' developments of online discussions and can also predict the development factors necessary for assisting a learning group.

The same authors have also reported a number of disadvantages:

- Technical difficulties are often experience associated with hardware and software access problems.
- Communication anxiety towards interaction due to students perceiving their messages as wrong, or do not allow for social cues.
- Lack of social presence due to the online environment that operates as a platform of learning and teaching.
- Lack of support of convergent process.
- Time management problems where students have a time limit when engaging in a face-to-face encounter could hamper communications.
- Information overload often overwhelm students due to the amount of information coming in.
- Misconceptions can be created when feedback are not given to students regarding their discussion.
- Lack of support of convergent process.
- Traditional roles in terms of students and the instructor are not always clear.
- Lack of visual communication of facial expressions leave students in a position to make their own assumptions of their audience.

Based on the lessons learned through the findings of the previous research that has been reported, as well as building in possible avoidance strategies to counter the disadvantages identified in the previous research the online discussions were developed in the second and third year groups at the Department of Information and Knowledge Management at the University of Johannesburg.

3.3 Discussion boards for teaching and learning at the University of Johannesburg

The online learning environment at the University of Johannesburg is known as Edulink and is based on the Blackboard learning management system. Blackboard is according to Greasley and Bennett (2004) a web based server software platform which offers structures for subject materials and course management. The learning management system is part of the learning portal and student registration system. This platform offers the content needed for teaching a subject which can only be accessed by students and their instructors. The Blackboard consists of course content, announcements, assignments, tools, grades, resources and discussion boards which supports learning and teaching functionalities. The functionalities are divided according to:

- Information and communication tools including a calendar, e-mail, discussions and chat.
- Assessment and assignment tools consisting of quizzes and surveys.
- Management tools that involves tracking and grading of students' results.

The discussion board functionality is a collaboration medium which allows interaction between students and their lecturers via the internet on Edulink. The purpose of the discussion board creates the opportunity of interaction between students as peers, as well as students and lecturers based on information about the specific subject. It can be seen as a learning environment between participants in creating an understanding and sharing new knowledge. This is seen as a great opportunity for students who want to attain higher grades by engaging in this interaction. The value of online discussions according to Simpson (2004) is to create a rich learning environment through interaction and to engage in collaborative learning experiences in tertiary education.

This statement resides on the belief that the knowledge conversion life cycle and the SEC1 model as developed by Nonaka and Takeuchi (1995) does in actual fact transpire during and after discussions have taken place. Students would have experienced tacit knowledge being converted into explicit knowledge and again into tacit knowledge as part of the creation of new knowledge.

4. Lessons learned during the research process

Weekly discussion topics were designed for the second years for the first four weeks of the second quarter of the first semester and for the third years for the first three weeks of the second quarter of the first semester. Both second and third years received topics requesting students to critique, debate or explain topics relating to a larger case study report due respectively within the third and fourth week of the semester. The reasoning behind this approach was to facilitate students in an early engagement with the case study as experiences has shown that students tend to procrastinate at the last minute with submission work. A part of the case study report requests students to reflect on the learning that has taken place during the discussions and the reflection contributes 20 % towards the final assessment mark. This was done to ensure student participation in discussion boards by adding a value (assessment) mark to the purpose of participating in online discussions. At the time of writing this paper the discussions are progressing in the third week and concrete results have not been received in the form of the feedback or survey results and content analysis had not been finalized. However preliminary results in the form of observations of the monitoring of the process have been done. The following observations and possible reasons have been made. In most cases corrective actions have been taken as well. Major disruptions to the second quarter of the first semester have been experienced in terms of the year planner of the University of Johannesburg for an autumn recess as well as in terms of public holidays during the month of April. Next week one discussions commenced prior to the autumn recess on 26 March (the autumn recess commenced 28 March 14 April). Class attendance was very poor at the time of announcing the discussion topics. The autumn recess ended a day after the Easter weekend and with three academic days remaining on the calendar class attendance was very poor for week two. Week three of the second quarter of the semester had a public holiday on the Wednesday and week four had a public holiday on the Monday. Although most students attended class in weeks three and four they had to catch up on missed discussions that took place in weeks one and two. The initial planning was to allow a week window period for discussions after which time the discussion topic would be closed for new entries. This idea was abandoned when the logistical problems surrounding the holidays became apparent. All discussion topics then remained open to allow for improved frequency and responses to postings. As
6. In conclusion

It is with bated breath that the results of this research are awaited. Not only will the results provide valuable lessons in the instructional design of discussion boards within syllabus contents but it will also show the quality of learning that students experienced when analysing the content of the messages as well as their reflections on the learning. The comparison in the group dynamics of the second and third years, as well as the survey results will provide valuable answers in making future decisions regarding the assigning of groups and the running of the process. Most importantly the results are expected to show whether an application such as a discussion board as part of a value and power creating process by having communities of practice share knowledge with the aim of not only creating learning organisation, but creating new knowledge – the pathway might be paved for innovation.

References


