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Information and Knowledge Sharing by Undergraduate Students in Singapore

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ABSTRACT

Active information and knowledge sharing is an essential element of effective learning at the tertiary level. The purpose of this study was to investigate the knowledge sharing patterns of undergraduate students in Singapore, their perceptions of the knowledge sharing activity, avenues of knowledge sharing, preferred communication channels, and the factors inhibiting or motivating information and knowledge sharing among the students. A questionnaire was used for collecting data and 180 respondents from three public universities in Singapore participated in the study. It was found that students preferred sharing knowledge during classroom and tutorial discussions as well as with their own team members for completing group projects. There was only a limited information and knowledge sharing with the members of other groups and while working on individual assignments. An interesting trend was observed where students freely shared their information and knowledge with peers for those projects and assignments that were not graded. Finally, the paper suggests certain measures for improving information and knowledge sharing among students.

1. INTRODUCTION

Active information and knowledge sharing is considered an important attribute of a learning organization. However, several studies suggest that many organizations experience knowledge sharing problems among their employees. In addition to certain other factors, it is possible that the reluctance to share information and knowledge could have its roots in the prevailing education systems in certain countries where students face pressure to outperform their classmates. There is likelihood that this intense competition might have created some anxiety in the minds of these students, resulting in avoidance to share knowledge with their peers. This attitude, developed during the students' life, could then become part of their personality and likely to continue at the workplace.

1.1 Learning Styles and Knowledge Sharing

Many studies have highlighted the fact that information and knowledge sharing plays a vital role in the learning and development of individuals (Robson et al, 2003; Rafaeli & Ravid, 2003). In addition to lecturer-centric approaches, several new instruction strategies such as problem-oriented teaching, contextualised teaching, target-oriented teaching and collaboraive teaching are gaining popularity. These innovative teaching methods have already turned instruction into sharing (Hong & Kuo, 1999).

Educators agree that students prefer different learning methods which suit their personalities and learning styles. According to the Grasha-Reichmann Student Learning Style Scales (GRSLSS), the students can be categorized into the following six groups according to their learning styles:

a) *Independent* learners - prefer independent study, self-paced instruction, and would prefer to work alone on course projects than with other students.
b) *Dependent* learners - look at their teacher and peers as a source of guidance and prefer an authority figure to tell them what to do.
c) *Competitive* learners - learn in order to perform better than their peers do and to receive recognition for their academic accomplishments.
d) *Collaborative* learners - acquire information by sharing and by cooperating with teacher and peers. They prefer lectures with small group discussions and group projects.
e) *Avoidant* learners - not enthused about attending class or acquiring class content. They are typically uninterested and are sometimes overwhelmed by class activities.
f) *Participant* learners - interested in class activities and discussion, and are eager to do as much class work as possible. They are keenly aware of, and have a desire to meet, teacher expectations.

These different learning styles can be categorized into 2 general groups according to their social aspect: individual-oriented (*Independent* and *Avoidant* learners) and collaborative-oriented (*Dependent, Collaborative, Competitive* and *Participant* learners). As social communication is considered to be an essential component of the educational activities, another popular learning style has been developed and is called the interactive learning style (McShannon & Derlin, 1999). Grantham (2005) highlights that many learning institutions are incorporating group-based discussion and cooperative activities in their instruction approaches. These interactive learning activities bring benefits such as higher student achievement, better communication skills, promote group cooperation and encourage information sharing. In addition, the peer group also serves to support students emotionally in coping with the pressures of academic work, fulfil personal needs and social status, and enhance interpersonal development (Educational Broadcasting Corporation, 2004). It is, therefore, quite evident that interaction and sharing of information and knowledge among students is a basic and essential ingredient of the learning process. Similarly, student achievement is likely to be higher in cooperative situations as well as result in more frequent use of higher-level reasoning strategies, more frequent process gain, and more positive attitudes towards their fellow students (Johnson & Johnson, 1990). It can also help students answer questions and solve problems, learn new things, increase understanding regarding a particular subject, or merely acts as a means to help one another (Hogberg & Edvinsson, 1998).

1.2 Barriers to Information and Knowledge Sharing

Despite the various advantages that are inherent in knowledge sharing, there are many instances where knowledge is not shared effectively. There are many situations where students show the tendency of 'hoarding' their information and knowledge or feeling reluctant to share it with their classmates which defeats the spirit of cooperative learning. This can be attributed to various physical, technological, psychological, cultural and personality factors. People tend to recognise the importance of knowledge as a source of power which is based on the thinking that knowledge is an individual's private asset and a source of competitive advantage. This motivates them to either hold it back or share it with selected individuals (McLure & Faraj, 2000). Another factor that promotes or restricts information and knowledge sharing is the mutual trust which develops over the time period through interpersonal rela-

tionships. Strong personal ties and mutual respect can also motivate individuals to share their knowledge with their peers (Von Krogh, 1998). For this reason, it is important that adequate time and opportunities should be provided to students to frequently communicate with one another to foster close social relations (Poulfelt, 2003).

Davenport and Prusak (1998) observe that knowledge has a value to an individual and its sharing should be matched by appropriate incentives and rewards. They identify reciprocity, repute and altruism as three important factors that can motivate knowledge sharing. Certain other knowledge sharing barriers, highlighted by several other studies, include: lack of time; lack of understanding what to share and with whom to share; absence of knowledge sharing culture; and the fear of sharing wrong information (Ardichvili et al., 2003; Skyrme, 2002; Chow et al., 2000).

Collaborative learning is considered as one of the more established, popular and effective learning approaches. However, an essential element of the collaborative learning is the active and voluntarily sharing of information and knowledge by the learners. It is, therefore, highly desirable for educators and other academic stakeholders to properly understand the knowledge sharing behaviour of students and the barriers that impede this vital activity. Unfortunately, most of the information and knowledge sharing studies have been done in organisational settings and very little is known about the knowledge sharing patterns of tertiary students. The main objective of this study was to investigate the information and knowledge sharing behaviour of undergraduate students in Singapore, the type of information shared by them and the communication channels used for this purpose, and the factors that inhibit or motivate knowledge sharing among students.

2. METHOD

The study used a pre-tested questionnaire for eliciting responses from the participants. As some of the questions were of a sensitive nature, this method allowed participants to remain anonymous and provide honest responses. The online questionnaire was constructed by using the *NSurvey* software and the survey was hosted on one of the University's servers. The online questionnaire was considered advantageous as compared to other distribution channels because it allowed error checking in the submitted responses as well as ensured that all questions were answered. Besides, the functions of consolidation and tabulation saved time and reduced human error in manually collating the data. Information about the study was disseminated to students in all the three public universities in Singapore by sending an email, indicating the objectives and the URL of the survey. The data was collected over a period of 6 weeks, from March till end of April 2005.

3. FINDINGS

A total of 180 students participated in the study and 71% of them were female while the remaining 29% were male respondents. The respondents came from a wide variety of disciplines such as arts, business, engineering, physical and natural sciences, and computer science and information technology. The distribution of respondents by their year of study was also fairly spread.

3.1 PREFERENCE FOR INFORMATION AND KNOWLEDGE SOURCES

The respondents were asked to rank, on a scale of one to five, various information and knowledge sources that they prefer to consult for seeking answers to their study-related queries. The Internet, as expected, appeared at the top of the list with a mean score 4.28 (Table 1). It was interesting to note that classmates appeared second in the ranking (mean score 3.84), followed by the library (mean score 3.25) and course instructors (mean score 3.22). It was not surprising that the Internet ranked first due to its enormous resources, easy accessibility and convenient use. It was, however, heartening to note that the respondents valued their peers as an important source for acquiring the needed information and knowledge.

Table 1: Preference for Information and Knowledge Sources

Source	Mean Score	Standard Deviation
The Internet	4.28	0.92
Classmates	3.84	0.98
Library resources	3.25	1.23
Course instructors and tutors	3.22	1.17
Other friends outside the university	1.99	1.07

Table 2: Perceived Frequency of Information and Knowledge Sharing by Peers

Situation	Sharing Frequency		
	Frequently	Less Frequently	Never
While working on group assignments (within their own group)	167 (92.8%)	12 (6.7%)	1 (0.5%)
During class and lab discussions	125 (69.4%)	52 (28.9%)	3 (1.7%)
While working on group assignments (with students from other groups)	42 (23.3%)	116 (64.4%)	22 (12.2%)
While working on individual assignments	40 (22.2%)	115 (63.9%)	25 (13.9%)

3.2 Knowledge Sharing Frequency

Through an indirect question, the respondents were asked to indicate their opinion regarding the frequency of knowledge sharing done by their peers with other students in various study-related situations. A large majority (92.8%) of the respondents felt that their peers share knowledge more frequently with their own team members while working on group assignments (Table 2). It was followed by knowledge sharing during class discussions (69.4%). On the other hand, based on the perception of the respondents, the information and knowledge sharing was limited with the members of other groups as well as while working on individual assignments.

It appeared that students were more likely to share information and knowledge with other students when they were expected to contribute as a team member or when their own interest was involved. They were less likely to share with those students with whom they were competing for grades. In order to verify this assumption, a supplementary question was used to ask respondents about the possible frequency of information and knowledge sharing by their peers if grades were not involved. It was interesting to note that for two situations where limited information and knowledge sharing was expected, a major change in the attitude was observed. Earlier, only 23.3% of the respondents expected their peers to 'frequently' share information with the members of other groups and now this figure jumped to 54.4% respectively. Similarly, if grades were not involved, the number of respondents expecting 'frequent' information sharing by their peers surged from 22.2% to 53.3% of the respondents. It appears that keen competition among students to outperform each other for obtaining better grades is likely to inhibit information and knowledge sharing by them.

3.3 Attitude towards Knowledge Sharing

The respondents were given different statements to determine their overall attitude towards information and knowledge sharing. It was interesting to note that, in general, a majority of the respondents exhibited a positive attitude towards sharing (Table 3). Nearly 72% of the respondents 'agreed' or 'strongly agreed' that knowledge sharing was beneficial to students. Another 53.9% of the respondents 'agreed' or 'strongly agreed' that students should share information voluntarily while 45% of the respondents gave the same rating to the statement that 'sharing is caring'.

A split response was received for the statement that students should only share their knowledge when their peers asked for it. A majority of the respondents disagreed with the remaining three statements which put information and knowledge sharing in somewhat negative context. It

Table 3: Attitude towards Information and Knowledge Sharing

	Perception	Response Level				
		Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1	I feel that it is important to share knowledge with other students for the benefit of all	26 (14.4%)	103 (57.2%)	44 (24.4%)	6 (3.3%)	1 (0.6%)
2	Students should voluntarily share information with their peers	14 (7.8%)	83 (46.1%)	56 (31.1%)	25 (13.9%)	2 (1.1%)
3	I feel that "sharing is caring"	11 (6.1%)	70 (38.9%)	67 (37.2%)	27 (15.0%)	5 (2.8%)
4	Students should share information with their peers only when approached	3 (1.7%)	59 (32.8%)	53 (29.4%)	61 (33.9%)	4 (2.2%)
5	Many students feel that they might be penalised by lecturers for sharing information	5 (2.8%)	21 (11.7%)	14 (7.8%)	96 (53.3%)	44 (24.4%)
6	It is better to avoid sharing information with peers whenever possible	3 (1.7%)	6 (3.3%)	27 (15.0%)	103 (57.2%)	41 (22.8%)
7	Many students have the mindset that sharing information is a type of plagiarism	3 (1.7%)	18 (10.0%)	17 (9.4%)	107 (59.4%)	35 (19.4%)

Table 4: Preferred Channels for Sharing Information

Communication Channel	Mean Score	Standard Deviation
Face-to-face interaction	4.67	0.64
Online chat (ICQ, MSN Messenger, etc.)	3.22	1.27
Email	3.18	1.11
Telephone	2.91	1.15
Online message board	2.32	1.22

appeared that, on the whole, the respondents were convinced and supportive of information and knowledge sharing among students. However, their actual behaviour could be different due to certain other de-motivating factors.

3.4 Channels Preferred for Information and Knowledge Sharing

The respondents were asked to rank, on a scale of 1 to 5, some most commonly used communication channels for sharing information and knowledge with their peers. The face-to-face interaction was ranked first (mean score 4.67) due to its obvious advantages (Table 4). Various chatting services were ranked second (mean score 3.22), closely followed by email (mean score 3.18). Surprisingly, the online message boards ranked the lowest.

3.5 Motivators for Information and Knowledge Sharing

Table 5 shows the possible motivators for information and knowledge sharing, as identified by the respondents. It was found that 63.3% of the respondents felt that the most motivating factor to share information and knowledge with their peers was the desire to learn from one another. Two other motivating factors were the wish to help others (50.6% respondents) and to maintain reciprocity in the relationship (41.1% respondents). It appeared that the respondents had a clear and positive understanding that learning is a collaborative and interactive effort and information and knowledge sharing can help achieve this objective.

Table 5: Information and Knowledge Sharing Motivators

Motivator	Number of Respondents
To learn from each other	114 (63.3%)
To help others	91 (50.6%)
To maintain reciprocity in relationship	74 (41.1%)
Self satisfaction	36 (20.0%)
To obtain reward or recognition	31 (17.2%)
To cultivate image of expertise	11 (6.1%)

Table 6: Possible Barriers to Information and Knowledge Sharing

Reason	Number of Respondents
Lack of depth in relationship	157 (87.2%)
Afraid that others would perform better	138 (76.7%)
People only share with those who share with them	118 (65.6%)
Do not want to be perceived as a 'show-off'	113 (62.8%)
Afraid to provide the wrong information	112 (62.2%)
Lack of knowledge sharing culture	106 (58.9%)
Shy to provide own opinions	106 (58.9%)
Lack of time	83 (46.1%)
Lack of appreciation of knowledge sharing	82 (45.6%)
Afraid that an opinion mismatch would offend others	66 (36.7%)
Do not know what to share	58 (32.2%)

Table 7: Suggestions for Improving Information and Knowledge Sharing

Suggestion	Number of Respondents
Instil a sharing culture	17
Eliminate or less emphasis on grades, less competitive learning	14
Give more group assignments	10
Create online forums, discussion / message boards	10
Provide incentives (bonus marks, rewards) for sharing	10
Foster familiarity and interaction among students	9
Include more interactive classes, discussion sessions and study groups	9
Encouragement and guidance by lecturers and tutors	8
Provide conducive environment (notice boards, study rooms)	7
Change students' mindset – 'Grades are not everything'	5

3.6 Barriers to Information and Knowledge Sharing

The respondents were asked to indicate possible reasons that restrict active information and knowledge sharing among students. An overwhelming majority (87.2%) of the respondents felt that it was due to lack of depth in relationship (Table 6). Some 76.7% of the respondents revealed that students usually do not share their information and knowledge because they feel other students will outperform them. Lack of reciprocity in relationship was another inhibitor which was pointed out by 65.6% of the respondents. Certain other information and knowledge sharing barriers, reported by several studies, such as lack of time, lack of appreciation, fear of providing wrong answers, and not knowing what to share, were not considered hindering the information and knowledge sharing activity. As reported by many earlier studies, it appeared that a lack of trust and competition among peers were the two major barriers to information and knowledge sharing.

3.7 Suggestions for Improving Information and Knowledge Sharing among Students

The suggestions, offered by at least 5 or more respondents, for improving information and knowledge sharing among students are summarised in Table 7. It appeared that students felt that creating an information-sharing culture, having less emphasis on grades, assigning group projects, conducting interactive classes, and creating more opportunities for interaction among students can help improve information and knowledge sharing among students.

CONCLUSION

In the so called 'knowledge society', actively and voluntarily sharing of information and knowledge is imperative. Citizens should fully understand and appreciate the value of sharing for the overall betterment of the society. Students, being the most crucial segment of the society and the main driving force for future growth and development, need to infuse the information and knowledge sharing habit in their personality. It was interesting to note that the respondents valued their peers as an important source of knowledge and, on the whole, showed a positive attitude towards information and knowledge sharing. However, a lack of depth in peer relationship and the urge to outperform peers academically were probably the two main inhibitors to information and knowledge

sharing. The fear is that unnecessary competition during a student's academic life could leave an imprint on their thinking and personality. This attitude, if left unchecked, is likely to persist at the workplace which may be aggravated due to intense work pressures and competition among colleagues for better career advancement. It is, therefore, desirable for the academic institutions to reconsider their teaching approaches and put more emphasis on collaborative learning to avoid unnecessary competition among students. They also need to review their student assessment policies and procedures to make them less competitive and threatening. In addition, academic institutions need to create a conducive knowledge sharing environment by providing ample interaction opportunities to students for developing cordial relationships which will help promote mutual trust and respect. Once they start regarding their classmates as their learning partners instead of competitors, they are likely to share their ideas and knowledge more frequently.

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