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A pilot discussion board for questions about referencing: What do students say and do?

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Abstract

While some commencing university students quickly become familiar with academic conventions from generic materials or instruction, for others it takes more effort and an extended time to master the basic conventions. Online resources could potentially increase accessibility and efficiency of student support related to referencing and to other academic skills. This paper reports the trial of an online discussion board for questions about referencing. The discussion board was designed to provide asynchronous but personalised referencing support and to promote sharing of knowledge between students. While the opportunity for peer interaction was not realised, the main advantages of this board from the student perspective were its availability, the increased speed with which questions could be resolved, and the opportunity it provided for increasing their confidence with the conventions of referencing. From an academic skills advisor's perspective, the questions and answers posted resulted in a record of conversations that maintained their interpersonal vitality for students beyond the original participants.

Introduction

Many university students struggle to master the conventions of referencing, but often do not access academic support in this area until an assignment is due urgently. Such behaviour puts unnecessary pressure on academic support services and may result in delays that discourage students from furthering their understanding. An online discussion environment has the potential to complement face-to-face academic support by providing 24-hour asynchronous accessibility, developing a record of frequently-asked questions, and encouraging students to learn by sharing their knowledge.

This paper focuses on a discussion board designed as an alternative to individual consultations to assist students to acquire referencing skills. Students' requests for individual assistance with referencing are often associated with the large range of unusual source types that are not addressed in generic materials yet are concerned with issues that can be answered quickly. Such queries are ideally suited to the online discussion environment. Students' responses to this form of support provide a useful basis for evaluation of whether or not an online discussion tool is an effective means of providing academic skills assistance. In particular, this study investigates how students used the discussion board, the extent to which it was beneficial to students, and factors affecting its use.

[1] Much of the work towards this study was completed while the author was employed by Flinders University of South Australia.

Relevant literature

While many benefits of computer-assisted learning are assumed, little is yet known about how students learn online and the factors affecting their learning (Beaudoin, 2002, p. 147). Nevertheless, some differences in interaction with online environments have been reported. Females have been reported to access online resources more at the outset of learning programmes and males towards the end, and overseas students have been shown to use discussion boards more than local students (Hood & Montague-Gallagher, 2005). However in the area of academic support, and with the exception of off-campus students for whom there is no face-to-face alternative, the characteristics of the target group for online assistance are not fully known.

Debate related to the effectiveness of online learning focuses in part on the visibility of students' participation. The proportion of students who 'lurk' (i.e., belong to a discussion but do not post messages) varies from 0 to 99% in published studies (Preece, Nonnecke, & Andrews, 2004, p. 202). These students may be referred to in strongly negative terms such as "selfish" and "freeloader" (Waters & Gasson, 2005, pp. 3, 5). Such references are usually made in connection with learning programmes grounded in social constructivism that view "the articulation of ideas … as an inherently critical element of the learning process" (Beaudoin, 2002, pp. 149, 154). Alternatively, they may be associated with positive concepts such as "browsing" (Office of Continuing Medical Education & Office of Professional Development, 2003, p. 17), being a "spectator" (Northover, 2002, p. 481), and "overhearing" (Schober & Clark, 1989, cited in Cox, McKendree, Tobin, Lee & Mayes, 1999, p. 434), which are seen as strategic behaviours resulting in learning. This unresolved debate invites evaluation of whether students who do not post their own questions can benefit from a discussion board for academic support.

Research methods

Context

This study was carried out in a modern, medium-sized Australian university with a large proportion of students from non-traditional backgrounds. During 2005, 290 students were enrolled in a discussion board (DB) for questions about referencing; 48 students self-selected to enrol and 242 international students had been enrolled in conjunction with preparation programmes delivered between 2003 and 2005. The students were enrolled in all faculties of the university, and the majority were studying at Masters level and in the second year of their course or later. The DB was constructed within WebCT. It included guidelines for how to post questions and answers appropriately, and specified that an advisor would reply to messages within two working days. Between March and September, 2005, 52 messages were posted to the DB: 17 student postings contained questions, six responded to answered questions, one student answered another student's question, and 28 messages were posted by the researcher who was also the sole moderator of the discussion. Of the 290 enrolled students, 88 students accessed at least one message during this period.

Research design

To answer the broad question of whether a discussion tool is an effective means of language and academic skills assistance, data from three sources were analysed: content of postings to the discussion board, access data from WebCT log files, and student questionnaires. Data from these sources were compared wherever possible to provide more reliable results than could have been expected from observation or surveys alone (Andrews, Nonnecke, & Preece, 2003, p. 186).

Content of postings and analysis

Messages posted to the discussion board were classified in terms of categories drawn from literature (e.g., Gopee, 1999), referencing materials available from the institution's academic support unit, and WebCT records. Variables spanned broad function (e.g., single question, multipart question or answer), authorship (student or moderator), reference location (e.g., intext),

text type (e.g., common and electronic), referencing system, and frequency of student accesses (from access data). Hierarchical cluster analysis and exploratory factor analysis were used to reduce these data. Resultant factor values multiplied by the frequencies with which students accessed corresponding articles and threads (sets of linked articles) were summed and included as variables of student access behaviour.

Access data and analysis

Log data of student activity in WebCT for March to September 2005 were condensed to individual student summaries of sessions related to the discussion board. To account for the likelihood of students interspersing use of the DB with other activities, a new session was recognised whenever a student initially accessed the entry page to the DB or whenever there was a lapse of greater than three minutes between accessing new pages or greater than two minutes before accessing a non-initial entry page (boundaries for 95% of activity in each case). Data included maximums as well as averages where distribution of these variables differed. Hierarchical cluster analysis and exploratory factor analysis were also used to reduce these data. Where pairs or small groups from the initial full range of variables loaded strongly on a factor for which all other variables had weak loadings, the full range of variables was further reduced by eliminating from subsequent analysis all variables in the group excepting the one with the least absolute sum of loadings on the remaining factors.

Questionnaire and analysis

In October 2005, email questionnaires were sent to the list-based sample of the 278 students enrolled in the discussion board who were still studying at the university. Principles discussed by Andrews et al. (2003) were applied in the questionnaire design and administration. The questionnaire was kept short (23 questions, 21 of which were multiple choice) and used only simple text to maximise accessibility. The questions, drawn from literature and student evaluation forms used for face-to-face teaching, were grouped in four sections: demographics, participation and factors affecting this, perception of benefits, and open questions. Slightly different versions of the questions were tailored for the two broad groups evident in WebCT student records: students who had both accessed and read messages on the discussion board (readers, n=88 students) and students who had either not accessed the discussion board or not read any messages (non-readers, n=190 students). Piloting of the questionnaire led to refinement of multiple-choice options. A preliminary invitation was emailed prior to the questionnaire and one subsequent reminder email was sent. Identifying data in the participants' reply emails were removed by an independent research assistant prior to the analysis of the responses.

Responses to questions on participation, factors affecting participation, and perception of benefits were tested for relationships with questionnaire type and demographics using the Chi-square test, Fisher's exact tests, and Spearman's correlation coefficient as appropriate. Relationships between participation and benefits were also considered. For analysis of these relationships, some data for corresponding questions from the two versions of the questionnaire were combined by reducing Likert scale responses to 'yes', 'no' and 'not applicable'. Students' comments on questionnaires were coded into five broad inclusive categories, with sub-categories exhibiting internal homogeneity and external heterogeneity in terms of lexicon and apparent intent, consistent with grounded theory (Patton, 2002; Strauss & Corbin, 1998).

Results

Questionnaire respondents

A total of 70 students completed the questionnaires (25% response rate), with proportionately more responses from readers than from non-readers (see Table 1). Some students may not have received the questionnaire most applicable to them. Log data did not align with student records within WebCT. According to log data, 117 students had accessed messages within the discussion board (accessors, cf. 88 readers) leaving 173 students who had not (non-accessors, cf. 190 non-readers).

Moreover, students' reports of visits to the discussion board evidenced even greater variation for reader and non-reader groups ($p<0.04$ see Table 1).

Table 1. *Response rates and reported visits to the DB*

Questionnaire type	Distribution	Responses	Responses by reported visits	
			No reported visits	> 1 reported visit
Readers	88	29 (33%)	6 (21%)	23 (79%)
Non-readers	190	41 (22%)	18 (44%)	23 (56%)
Total	278	70 (25%)	24 (34%)	46 (66%)

Demographics for the 70 questionnaire respondents, summarised in Table 2, suggest that gender and age were consistent with the population pool of the co-opted students. However, the respondents appeared to be slightly biased towards students studying at Masters level and students in the first year of their course. Additionally, responses for experience with the internet and online discussion were higher than what anecdotal evidence suggested for the coopted students. Demographic differences between readers and non-readers were not statistically significant.

Table 2. *Demographics of questionnaire respondents*

Variable		Number of respondents
Gender	Male	35 (50%)
	Female	35 (50%)
Age group	21-30 yrs	25 (36%)
	31+ yrs	44 (63%)
	Not specified	1 (1%)
Level of study	Undergraduate (including Hons)	6 (9%)
	Graduate entry	1 (1%)
	Masters	56 (80%)
	PhD	7 (10%)
First year of study	No	36 (51%)
	Yes	34 (49%)
ICC Experience	<1 yr	3 (4%)
	1-2 yrs	10 (14%)
	3+ yrs	57 (81%)
OD Experience	<1 yr	29 (41%)
	1-2 yrs	26 (37%)
	3+ yrs	15 (21%)

Key: ICC – Internet capable computers; OD – Online discussion

Cluster and factor analyses

Hierarchical cluster analyses with a variety of distance measures revealed no natural groupings of data for the content of postings or student access. Exploratory factor analysis and correlations between variables for the content of postings suggested similarities in postings authored by the moderator. Separate analysis of the 24 student-authored postings resulted in four factors that explained 74% of the variance in the content of postings. Factors for student access were essentially stable with and without variables from posting factors. For access data alone, six factors explained 78% of variance. These factors are reported where relevant below.

Use of the DB

A total of 9% of the 70 respondents reported having posted, or being likely to post, messages to the board. Around 12% of enrolled students logged in to the DB at least four times and 27% of sessions consisted of four or more transactions (actions requesting new information from the server). In the majority of sessions (68%), students entered the DB direct from login, and they were most likely to exit a session from the entry page (38%; possibly indicative of click in, click out sessions). The students who accessed messages accessed more threads than individual articles (249, cf. 56 transactions). Students read threads largely independently of the level of detail (e.g., referencing location and referencing system) in the postings they contained ($p>0.05$ for all correlations). Instead, students tended to read articles that addressed common referencing issues (i.e., addressed in brochures available from the academic support centre) more frequently than articles that addressed less common aspects of referencing ($\rho=-0.34$, $p=0.055$), even though few postings related to these common issues (8 of 52).

How did students benefit from the DB?

The average overall questionnaire rating of the DB at 5.1 (on a scale of 1, very poor, to 7, very good) indicates that respondents considered the board to be slightly good. However, this result may be understated as the Likert scale was skewed with a mid point of 'OK' (rather than a neutral option) chosen by 18 students. A total of 16 respondents (cf. 24 who reported no visits to the DB) chose the 'not applicable' response to this question. For the 54 students who answered the question (cf. 46 who reported visiting the DB), the distinction between readers and non-readers was not significant, however respondents who reported more visits to the DB rated it more highly ($\rho=0.53$, $p< 0.001$).

Average reader and non-reader responses regarding potential and actual benefits of the DB are shown in Table 3. These results suggest that the greatest benefit of the DB was in knowing that it was there if it was needed. More than 75% of respondents slightly agreed, agreed or strongly agreed that this had helped them move forward in their academic work, with respondents who reported visiting the DB more also rating this benefit more highly ($p=<0.01$). For those who had used the board, the benefits of introducing new aspects of referencing and providing a means for obtaining out of hours support were similarly highly rated. In contrast, those who did not use the DB ascribed higher value to it for potentially providing answers to their individual problems.

The groups reported or predicted behaviours that were consistent with their perceptions of potential benefits of the DB. The majority of non-readers (68%) would be likely to read messages matched to their concerns if they accessed the DB in the future ($p<0.05$), whereas readers were also likely to look to see what was happening ($p<0.02$) and read a few messages when logged in ($p=0.001$).

Table 3. *Reader and non-reader rankings of potential and actual benefits*

Benefits	Readers (*n*=29) Reported benefits			Non-readers (*n*=41) Potential benefits[b]	
	Rank	Mean[a]	SD[a]	Rank	%Yes
aspects of referencing I didn't know about before	1	5.6	1.1	6	15
knowing the DB would be there if I needed it	2	5.6	1.1	1	68[c]
access to support outside of working hours	3	5.6	1.2	7	10
clarification of misunderstandings about referencing	4	5.4	1.2	5	24
ideas to help with assignments for my course	5	5.2	1.2	4	24

answers to my specific problems with referencing	6	5.1	1.3	2	59
assistance to improve my referencing skills	7	5.1	1.4	3	29

[a] Likert scale of 1, strongly disagree, to 7, strongly agree
[b] responses to the question 'If you used the DB in the future, what would you hope to gain?'
[c] condensed from Likert scale of 1, strongly disagree, to 7, strongly agree

Benefits of the DB also featured in the largest category of comments on the questionnaire (37 of 104 comments), with sub-categories related to confidence with the conventions of referencing and the timeliness or accessibility of DB support (see Table 4). The sub-category of convention possibly gives further support to the benefit of introducing students to new aspects of referencing, whereas sub-categories of information and skills possibly align with the benefits of answers to specific problems and help with assignments.

Table 4. *Sub-categories of student comments related to benefits of the DB*

Category	Characteristic lexicon	Number of comments
convention	confirmed, confident, not sure, requirement, important, authoritative, rules	12
timeliness	half time, within hours, quick, when needed	11
information	information, know, how to, understand	5
accessibility	24 hours, access, flexibility	4
skills	skill, improve	3
language/culture	international students	2

Accessibility also featured throughout the data for this study. In agreement with its prominence in ratings of and comments on benefits, 34% of all student sessions were outside work hours. This variable was unique among variables of individual student access because it exhibited natural clustering. While for 64% of the 117 accessors at least 80% of sessions using the DB were during work hours, 16% of accessors used the DB exclusively outside of work hours. The benefit of accessibility was also reflected in 31% of all student sessions being from off-campus computers.

What characterised students' use of the DB?

According to the factor that explained most variation in access data (general extent of access, 30% of variance), there were two distinct categories of student access of the DB. The largest group of students accessed few articles and threads in sessions of low durations with minimum time between transactions. A smaller group of students executed more transactions in sessions of longer duration with at least one delay between transactions of above average length. Other factors reflected extreme behaviour linked to posting (e.g., 6 sessions in 9.5 hours for one student), the 47% of students who reported visiting the DB only once, and variation in the maximum number of articles students read in a session (SD 3.23, cf. mean 0.46).

Time was most frequently cited as a factor preventing greater use of the DB (23% of responses: see Table 5), featuring strongly for both questionnaire versions, but especially for non-readers (27%). Fewer readers than non-readers indicated that not liking to learn online prevented greater use of the DB (7%, cf. 10% respectively). Readers chose not to post because they learned as much or more from reading what others wrote (28%) and other people had already posted what they would have asked (17%). Difficulty accessing the Internet did not limit non-readers' use of the DB. Instead, already understanding what they needed to know about referencing (20%) and identifying as

independent learners unlikely to engage in discussions (20%) were the main reasons why these respondents did not use the DB more.

Table 5. *Factors preventing use of or posting to the DB*

Factor preventing greater use of DB	Percentage Yes		
	All respondents (*n*=70)	Readers[a] (*n*=41)	Non-readers[b] (*n*=29)
other demands on time	23%	17%	27%
already understanding referencing	19%	17%	20%
not being sure how to phrase issues/ideas	16%	17%	17%
not understanding the topic well enough	13%	14%	12%
none of the above	11%	14%	10%
not liking learning online	9%	7%	7%
learning from reading	n/a	28%	n/a
issues/ideas already posted by others	n/a	17%	n/a
being an independent learner	n/a	n/a	20%
difficulty accessing the internet	n/a	n/a	0%

[a] responses to the question 'Which of these prevented you from posting more messages to the Referencing Discussion Board?'

[b] responses to the question 'Which of these prevented you from using the Referencing Discussion Board more?

Both versions of the questionnaire also invited comparison of the DB with other modes of referencing support and 10% of student comments referred to other preferred forms of support, some of which were not included in the questionnaire (e.g., asking teachers). Non-readers reported using all forms of support less than readers. On average, non-readers responded that they would benefit from all other modes of support more than from the DB (see Table 6), expecting slightly more benefit from handouts than from individual appointments and respectively more than from group sessions. This preference for handouts is consistent with the frequency with which this group of students cited being an independent learner as a reason for not using the DB more.

Table 6. *Non-readers - comparison of expected benefits from DB and other modes of support*

Rank	Comparison between DB and other modes of support	Mean[a]	SD[a]
1	more benefit from handouts	4.8	1.3
2	more benefit from individual appointment	4.7	1.6
3	more benefit from group session	4.5	1.2

[a] Likert scale of 1, strongly disagree, to 7, strongly agree

The reader group also ranked printed materials highest in having been helpful to them (see Table 7). However unlike the non-readers, this group ranked all electronic forms of support more highly than face-to-face support and ranked course-specific materials more highly than generic materials, both for paper and web-based support. A category of comments from the questionnaires (11 of 104 comments) reinforced the finding that some students prefer detailed, specific information.

Table 7. *Readers - helpful modes of support for referencing*

Rank	Modes of support	% Yes [a]
1	printed materials from course	59%

2	academic support print materials	59%
3	referencing discussion board	31%
4	web materials from course	24%
5	academic support web materials	21%
6	academic support 1-1 appointments	21%
7	academic support group sessions	14%
8	none of the above other supports	0%

[a] responses to the question 'Which types of support for referencing have been helpful to you?'

Relationships between demographics and questionnaire responses provided further illumination of characteristics of student use of the DB. Age was significant to the other types of referencing support used or expected to be helpful. Surprisingly, rather than shying away from web resources, older students were more likely to have used them or to think they would be useful ($p=0.03$) and were similarly positive regarding group sessions ($p<0.03$). Older students were also more likely to identify with reading most or all messages when accessing the DB ($p=0.005$ and 0.055 respectively). In contrast, younger students were more likely to indicate they had not used or did not expect to benefit from referencing supports ($p=0.01$).

Respondents with less computer and online discussion experience were also surprising in rating the DB more highly ($p<0.06$). Furthermore, while previous experience with online discussion was understandably linked to increased posting or likely future posting behaviour and more confidence with phrasing questions, it was also linked with decreased use of or expected helpfulness of academic support web materials on referencing ($p<0.05$ for all). This resonates with the second largest category of student comments (28 of 104 comments), which comprised suggestions for improvements to the DB in terms of software and content management.

Discussion and conclusions

These results show that students, including inactive students, regard a discussion board for referencing questions as helpful. Students, especially international students, might tend to give a positive report as a default and to exaggerate their use of a new service. However, most students in this study valued the availability of an online discussion forum, presumably because they anticipated that they would at some time have problems related to referencing. Higher ratings by students who used the DB in this study also confirm that responses to authentic, or simulated, student questions constitute an effective format for information about referencing.
Overall participation in the DB was lower than that reported for online discussion in scheduled programmes of instruction (e.g., 25.6% in Abras, Maloney-Krichmar, & Preece, 2003) and proportions of students posting or likely to post messages to the board were lower than for faculty-based surveys at the same institution (cf. averages of at least 30% and 11% in contemporary surveys of Health Science and Science and Engineering topics). However, the lower rate of participation is consistent with literature that suggests high rates of participation are unlikely without links to assessment or vested interest in the topic of discussion (see O'Reilly & Newton, 2002).

While the majority of students appear to value printed information about referencing systems above electronic forms of support, some students value web-based support above face-to-face forms of support. Students who value learning about new aspects of referencing to refine their understanding of its conventions are likely to access a DB more and rate it more highly. These students appear to read everything available in their first visit (or an early visit) to a DB, investing

time in careful reading of some messages; then on multiple return visits they check quickly for anything new and interesting, skimming smaller numbers of messages. In contrast, a larger group of students who value the potential of a DB for providing solutions to specific referencing issues are likely to visit a DB on few occasions checking quickly for information related to specific issues and skimming very few, if any, messages. These categories of students appear to relate less to preference for or difficulties with the online medium and more to preferred learning patterns or orientations. Attitudes of the first group suggest they may have a deeper approach to learning and a mastery (cf. performance) orientation (see Ames & Archer, 1988; Vermunt, 2005). Mature students in particular appear to belong to this category, reporting more use of available resources and greater benefit from a DB than their younger counterparts.

Few students posted messages to the DB in this study, and those who did predominantly sought answers to specific referencing issues that were not addressed in printed information. Rather than promoting peer-learning, therefore, the most effective use of a DB to support students with referencing may be to target the student who does not post while providing the opportunity for students to ask specific questions.

Students in this study reported that they found specific information about referencing that they needed by reading the postings of others and hence did not need to post their own questions (cf. Beaudoin, 2002, pp. 148-151; Preece et al., 2004, p. 209). The messages students read most were those related to common referencing issues for which information was already available in printed materials. This implies that a DB targeting students who do not post will duplicate support already available. However, duplicating information in an effective online format could potentially increase the proportion of students who access that information. Time pressures were especially of concern to the participants in this study (identified by 23% of respondents, cf. 17% in Beaudoin, 2002). Related to this, their access behaviour, reported benefits and comments all highlighted the value of information about referencing available off-campus and out-of-hours.

Results of this study also suggest that as students become increasingly familiar with online discussion environments, they will demand more purposeful design of those environments. Students in this study wanted to read more specific information about referencing, particularly related to their disciplines, and preferred reading threads which grouped related information. This implies that DBs should be structured carefully to enable students to quickly find information relevant to them. In line with usability principles (Nielsen, 2000), involving students in designing the structure of DBs for academic support could achieve the best results.

Together these results suggest that many student issues with referencing can be predicted and that publishing online records of individual conversations about referencing may be an effective alternative to multiplying those individual conversations. Data from the limited participants and respondents in this pilot study suggest further exploration of learning patterns and their relevance to student use of online academic support, of what students themselves (cf. computerised records) consider to be ‘using’ a DB, and of the potential for online academic support to extend the base of students accessing available information by reducing the burden on students’ time. Additionally, as the fixed systems of referencing formats provided little scope for analysis or opinion that might constitute extended student-to-student interaction, further research of DBs with other foci could be undertaken to better inform the potential of DBs for promoting sharing of knowledge.

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