

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/215774113>

Read-only Participants: a Case for Student Communication in Online Classes

Article in *Interactive Learning Environments* · March 2009

DOI: 10.1080/10494820701501028 · Source: OAI

CITATIONS

32

READS

2,816

3 authors, including:



[Lynette Nagel](#)

University of Pretoria

31 PUBLICATIONS 131 CITATIONS

[SEE PROFILE](#)



[Seugnet Blignaut](#)

North West University South Africa

78 PUBLICATIONS 389 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Teaching with Technology [View project](#)



Coursework Masters degrees in Hybrid delivery mode [View project](#)

All content following this page was uploaded by [Seugnet Blignaut](#) on 25 November 2015.

The user has requested enhancement of the downloaded file.

Read-Only Participants: a Case for Student Communication in Online Classes

L. Nagel^{a*}, A. S. Blignaut^b & J. C. Cronjé^a

^aUniversity of Pretoria, South Africa; ^bTshwane University of Technology, South Africa

Abstract

The establishment of an online community is widely held as the most important prerequisite for successful course completion and depends on interaction between peers and the facilitator. Beaudoin (2002) reasons that online students sometimes engage and learn even when not taking part in online discussions. The context of this study was an online course on web-based education for Masters in Computer-integrated Education students at the University of Pretoria. We used a mixed methodology approach to investigate how logins and discussion postings relate to learning and course completion. We also investigated how student collaborative behaviour and integration into the community related to success. Although the quantitative measured indices showed highly significant differences between the stratifications of student performance, there were notable exceptions unexplained by the trends. The class harboured a well-functioning online learning community. We also uncovered the discontent students in the learning community felt for invisible students who were absent without reason from group assignments or who made shallow and insufficient contributions. Student online visibility and participation can take many forms, like read-only participants who skim over, or deliberately harvest others' discussions. Other students can be highly visible without contributing. Students who anticipate limited access due to poor connectivity, high costs or other reasons, can still manage their login time effectively and gain maximum benefit. Absent and seldom-contributing students risk forsaking the benefits of the virtual learning community. We suggest how to avoid read-only-participation: communicate the required number of online classroom postings; encourage submission of high quality, thoughtful postings; grade discussions and give formative feedback; award individual grades for group projects, rotate members of groups; and augment facilitator communication with internet-independent media to convey important information. Read-only-participants disrupt the formation of a virtual community of learners and compromise learning.

Keywords

Higher education; Web-based learning; Participation; Lurkers; Virtual community of learners

*Corresponding author. Department for Education Innovation, University of Pretoria, Pretoria, South Africa.
Email: lynette.nagel@up.ac.za

Read-Only Participants: a Case for Student Communication in Online Classes

Abstract

The establishment of an online community is widely held as the most important prerequisite for successful course completion and depends on interaction between peers and the facilitator. Beaudoin (2002) reasons that online students sometimes engage and learn even when not taking part in online discussions. The context of this study was an online course on web-based education for Masters in Computer-integrated Education students at the University of Pretoria. We used a mixed methodology approach to investigate how logins and discussion postings relate to learning and course completion. We also investigated how student collaborative behaviour and integration into the community related to success. Although the quantitative measured indices showed highly significant differences between the stratifications of student performance, there were notable exceptions unexplained by the trends. The class harboured a well-functioning online learning community. We also uncovered the discontent students in the learning community felt for invisible students who were absent without reason from group assignments or who made shallow and insufficient contributions. Student online visibility and participation can take many forms, like read-only participants who skim over, or deliberately harvest others' discussions. Other students can be highly visible without contributing. Students who anticipate limited access due to poor connectivity, high costs or other reasons, can still manage their login time effectively and gain maximum benefit. Absent and seldom-contributing students risk forsaking the benefits of the virtual learning community. We suggest how to avoid read-only-participation: communicate the required number of online classroom postings; encourage submission of high quality, thoughtful postings; grade discussions and give formative feedback; award individual grades for group projects, rotate members of groups; and augment facilitator communication with internet-independent media to convey important information. Read-only-participants disrupt the formation of a virtual community of learners and compromise learning.

Keywords

Higher education; Web-based learning; Participation; Lurkers; Virtual community of learners

Background

As more formal education courses are available online, quality and non-completion remain problems. While online course enrolments continue to climb, retention and success rates in such courses and programs are frequently reported as typically lower than those delivered in a traditional classroom format; those of us in roles that support online students have a role in reversing that trend! (Schreck, 2006 online).

Researchers often measure the success of online learning in students' perception of learning and course throughput rates. Drop-out rates for online courses range from 20-50%, often 10-20% higher than for equivalent contact courses (Bernard, Brauer, Abrami, & Surkes, 2004). Searching for a model to predict student success in online learning, Bernard and co-workers (2004) found that students' *frame of mind* can predict readiness for learning and affect course outcomes, while "prior achievement is still the best predictor of future achievement" (Bernard et al., 2004, p. 44).

Research shows that online participation is necessary to ensure successful course completion (Klemm, 1998; Rovai & Barnum, 2003; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000). Clark and Feldon (2005) concluded that a facilitator who participates and interacts with students prevents them from abandoning their course. Better cognitive outcomes occur when students engage and form a virtual community of learners. The development of community depends on online interaction with peers and the facilitator. Learner satisfaction, perseverance, and cognitive outcomes characterise the formation of a virtual learning community. Some contest participation as prerequisite to learning; they claim students learn sufficiently by observation (Beaudoin, 2002; Sutton, 2001) and lobby for lenience towards lurking or read-only participation. This article responds to Beaudoin's (2002) article: Learning or lurking? Tracking the "invisible" online student. He reasons that students sometimes engage and learn even when not taking part in online discussion with faculty and other students and shows that low-profile students ...

spend a significant amount of time in learning-related tasks, including logging on, even when not visibly participating, and they feel they are still learning and benefiting from this low-profile approach to their online studies (p. 147).

We investigated the importance of student online "visibility" apparent in the quantity and quality of participation. We explored as a case study the successful completion of a post-graduate online course by asking the following research questions:

1. How did online participation relate to learning and successful course completion?
2. How did participation influence the learning community?

Literature

The Debate for Online Participation

Taking part in discussions. An LMS tracks progress and performance and reveals students who do not login to their online classroom or who login without participating. Klemm (1998) blames classroom-based teaching where students expect entertainment for conditioning them to passive learning. Therefore, they seldom realize the benefits of participating actively in online discussions, naturally lurking. Well-facilitated online discussions can be more inclusive than classroom discussions by including introverted students and enabling better quality interaction (Cox, Carr, & Hall, 2004; Prammanee, 2003). Rovai and Barnum (2003) claim that passive online learning through "listening" without participation produces no measurable increase in knowledge, as they could predict perceived learning through the number of messages posted. Others also report that distributed students who participate in dynamic discussions had better course completion and that failing students interacted less frequently (Davies & Graff, 2005; Swan et al., 2000). Active online participation also benefits learning.

Improved learning. Deep cognitive learning (Prammanee, 2003) and high levels of interactivity are possible in online discussions, as students can prepare well-considered contributions (Kettner-Polley, 2005). According to Carr (2004), students who focused on building knowledge and collaborative interaction had a superior average performance, as challenging online interaction promotes understanding. Interactive learning

provides an instructor with insight into student misconceptions, difficulties, conceptual problems and verbal pitfalls. Asking leading questions elicit insight into what students understand, more than simply telling them the answer. Immediate feedback from peers and instructors and social interaction built into the online discussions contribute to learning (Collins, Brown, & Holum, 1991). Collaborative learning activities contribute to deep learning, critical thinking skills, a shared understanding and long term retention (Garrison, Anderson, & Archer, 2001).

Consistency in course design, interaction with course instructors, and active discussion - have been consistently shown to significantly influence the success of online courses. It is posited that the reason for these findings relates to the importance of building community in online courses (Swan et al., 2000, p. 513).

Community of learners

Interaction is conducive to the emergence of a community of practice (Collins et al., 1991) and a virtual community of learners (Collison, Elbaum, Haavind, & Tinker, 2000). Learning from peers in a structured way can ameliorate the social isolation online students often experience (Boud, Cohen, & Sampson, 1999). Collaborative learning groups solve problems while sharing and clarifying ideas (Cox et al., 2004). In a collaborative learning environment students develop critical thinking skills and a shared understanding and deep learning, while retaining learning over the long term (Garrison et al., 2001). In a community of practice, novices learn from the experts by observing authentic tasks and executing progressively more advanced tasks themselves under an expert eye (C. S. Johnson, 2001). Complex tasks can be learnt in a community of practice wherein “participants actively communicate about and engage in the skills involved in expertise” (Collins et al., 1991, p. 16). Frequent, meaningful, valued and dynamic discussions in an online course lead to the formation of a virtual learning community where students interact and support each other. According to Collison (2000), members of a healthy online community of learners post regularly, collaborate with other participants, as well as teach and moderate the online discussions spontaneously. Group cohesion, trust, respect and belonging further characterize a community of learning (Kreijns, Kirschner, & Jochems, 2003). However, some students do not participate fully.

The case for read-only participation

Legitimate non-participation. Non-participation may initially be legitimate, as peripheral online learners make limited entrances into the community remaining on the outskirts, observing the activities of more advanced participants and learning from it (Collins et al., 1991). Sutton (2001, p. 223) also reasons that “direct interaction is not necessary for all students and that those who observe and actively process interactions between others will benefit through the process of vicarious interaction.” As students increase their expertise, they move from the periphery to the centre (Carr et al., 2004), with increasing visibility. Beaudoin (2002) found that invisible students sometimes “spend a significant amount of time in learning-related tasks, including logging on, even when not visibly participating, and they feel they are still learning and benefiting from this low-profile approach to their online studies” (p. 147). Williams (2004) advocates using the term *read-only participants* (ROP) rather than the derogatory *lurker* for non-participatory students and vicarious inter-actors. He cautions that while the ROP-ing students may be satisfied that their learning needs are met, they do not contribute to the larger community.

Inadvertent non-participation. Students do not actively participate in online discussions because they procrastinate, they feel isolated, or they’re unfamiliar with technology. They may also miss the course structure or control of discussions and therefore remain unconvinced of the course’s benefits (Miller, Rainer, & Corley, 2003). Patterns of online participation and interaction can vary across cultural groups. In many developing countries the digital divide is increasing due to insufficient infrastructure and few internet subscriptions (Roycroft & Anantho, 2003). The exclusive use of English in non-English-speaking cultures, economic development and available bandwidth also affect student success.

Facilitator Participation

Student interaction is not the only factor influencing collaboration, learning and successful course completion. Students become more involved in an online conference when the facilitator participates as guide, providing extensive critique, feedback, and encouragement (Collison et al., 2000). An effective learning community requires an instructor with integrated social, cognitive and teaching presence (Cox et al., 2004). Facilitators should teach critical thinking, effective communication, and problem solving skills (Shavelson & Huang, 2003). The current vogue to embrace constructivist pedagogy where the instructor withdraws from the online learning environment, allegedly to promote discovery and experimental learning activities, is unsubstantiated (Kirschner, Sweller, & Clark, 2006). Automated e-learning or a lurking instructor presents an even greater impediment to learning than do lurking students.

Context of this study

We presented an eight-week course on web-based distance learning to Masters students in Computer-integrated Education at the University of Pretoria. This was an elective course in a programme usually presented in blended contact and online mode. We delivered this course entirely online using the WebCT™ Campus Edition as LMS (learning management system). The delivery mode enabled a diverse cohort of 22 geographically distributed students whose ages ranged from nearly thirty to nearly fifty to enroll. The course followed a constructivist approach and consisted equally of theoretical and practical applications structured around eight salient online learning topics. Each week the students had to research online scholarly literature on the topic and post their contribution to the LMS discussions area where they also posted peer-reviews. Concurrently, students had to create web-based artefacts applying the theory.

In the latter half of the course, students created group assignments in teams of five to seven. One of these was a rubric to score online collaborative behaviour, taking into account participating in discussions, contributing to group assignments, replying to pleas for help and offering tips and advice. We used this rubric to allocate a collaboration score for each student. Students aggregated a year mark derived from discussion postings, web artefacts, group work, peer review and collaborative assessment. The final course grade also included their reflective examination essays. Unlike Davies and Graff (2005), we did not use this final course grade as indication of success. Instead we used the year mark, representing course activities.

We used multiple windows on students' experience with online learning. These consisted of their private blogs (only shared with the facilitator) for reflection and self-assessment, open paragraph questions included in an online quiz, a reflective essay, and feedback questions e-mailed to the students about a month after completion of the course. The facilitator also documented observations in a diary.

Methodology

The course presenters simultaneously conducted research, using mixed methodology (Sharp & Fretchling, 1997). Qualitative methodology allowed us to probe the context of the non-participating students and the class's perceptions and reactions. We conducted content analysis using ATLAS.ti™ software on the following primary documents: students' blog postings, discussion posts, an online quiz, and examination essays. We validated the findings against the facilitator's field notes and used multiple documents and perspectives. The researchers also facilitated the online course, and as participant observers, ensured the reliability of the findings.

The student-tracking tool in the LMS provided a quantitative view of student activity in the course including the numbers of original postings and replies. We calculated their reply ratio by dividing the number of replies to others by their own original posts. Table 1 ranks students according to their year mark and shows the students' numbers of logins and discussion messages posted, their reply ratio, collaboration score, and

whether they returned the voluntary post-course feedback. Unlike the rest, the collaboration score is a qualitative measurement obtained by using a rubric to assess each student's collaborative behaviour.

Table 1. Summary of individual student grades and participation profile

Subject no	Year mark	Logins	Messages Posted	Reply ratio	Collaboration score	Feedback submitted
1	# ^a	424	24	0.8	0	
2	#	244	14	1.8	0	y
3	#	1161	30	0.4	2	
4	#	1706	50	0.9	6	
5	38.8	871	50	1.4	3	
6	48	223	10	0.1	0	
7	53	1406	68	1.5	3	
8	60.2	966	54	1.3	7	
9	60.9	776	30	1.0	8	
10	61.6	844	36	1.3	5	y
11	63.1	1503	73	1.1	8	y
12	64	1758	58	1.5	3	
13	66	1093	37	1.5	9	
14	66.3	1487	104	2.7	9	y
15	70.2	1675	53	2.3	8	y
16	80	1810	126	3.2	10	y
17	80.3	963	43	1.0	8	
18	80.9	1165	68	1.8	9	y
19	83.8	1226	68	2.0	9	y
20	85.4	1853	148	2.7	10	y
21	88.5	2980	112	1.7	9	y

^a These students did not complete the course.

We represent student online activities using the assumptions of Davies and Graf (2005), who categorised students according to final course grades. Our grade categories reflected the assessment stratification used in South African Higher Education. One student abandoned the course very early, and we did not include this data. We stratified the rest of the class into three grade group categories: the *Fail* group for students who did not complete the entire course or achieved less than 50%; the *Pass* group of students who aggregated between 50% and 74%. Those with 75% or more we called *Distinction* candidates. One student (subject 6) changed categories after the final essay and passed the course. We used this stratification for all statistics.

Table 2. Average number of hits, posts and follow-up posts per student in grade groups

Grade group	n	Logins	Posts	Reply ratio	Collaboration	Feedback %
Fail	6	771.5	30	1.06	2.2	17
Pass	9	1278.7	57	1.43	6	44
Distinction	6	1666.2	94	2.06	9.2	83
H-value / Chi-square:		H=26.3	H=34,5	H=24,7	H=52.8	Chi ² =47
Significance		>0,001	>0,001	>0,001	>0,001	>0.01

Like Davies & Graff (2005), we used the Kruskal-Wallis non-parametric test to investigate the significance of differences in online activities among these grade groups. We also calculated the significance of the difference in return rates of voluntary questions using *chi-square* with two degrees of freedom, as shown in Table 2. Figure 1 shows a graphical representation of the values given in Table 2. We show the average value for each criterion for each of the grade groups.

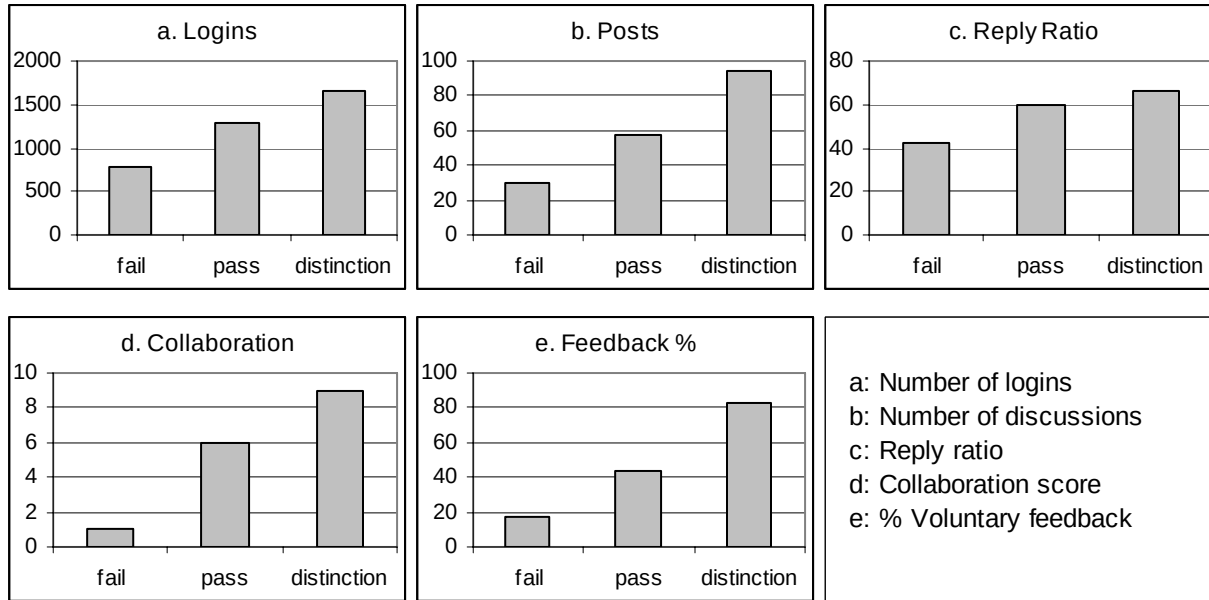


Figure 1. Average dimensions for each grade group

Discussion

Student Online Visibility and Learning Success

Like Beaudoin (2002), we did some tracking of our “invisible” students, trying to pinpoint reasons for their invisibility as well its effects. We compared their online participation profiles and indicators of their integration into the virtual community with their success in completing the course. Interested in improving course completion rates, we first identified the unsuccessful students, to see if their participation differed from the others.

Student Logins. One can approximate students’ participation in the online classroom quantitatively by the number of times they login, as shown in Figure 1a. It shows that the student group that aggregated a failing grade or did not complete the course, logged in significantly fewer times than the successful students. Students who achieved distinctions logged in even more than did the average students.

Learning success depends on interaction with reliable technology (Swan, 2003). The digital divide running through infrastructure, economic and cultural dimensions (Roycroft & Anantho, 2003), influenced connectivity and participation. Students whose infrequent logins rendered them invisible compromised their success. The blogs revealed that the students employed in the e-learning industry had practically unlimited bandwidth with state of the art computers and software. Others made do with much less and singled it out in the quiz as their biggest challenge:

Costly and demanding financially, time consuming, stressful ... Not for the poor people, under privileged students can be dropouts (Q).

Students experienced other technical problems that compounded their infrequent internet connectivity:
Sometimes my (dial-up) connection was not reliable (Q).

There are moments during this module where in my area I experienced a number of electricity cuts and this kept me anxious and waiting to get started with work (E).

Some students showed resilience in coping with poor infrastructure, regular electricity cuts, and poor connectivity; they managed successfully without compromising their studies. For others, technological problems were overwhelming.

... first three weeks of the course I couldn't work productively because of constant trouble with my PC (Wrong Internet Explorer program, needed Java program to read and send information and finally got the Blaster virus.) This made me very aware of the high-dependency on technology in the e-learning world. No Computer – No learning-No-success (E)

It is not always clear why some students persist against enormous odds while others give up. Motivation possibly played a role in the last two students, as the student with the electricity problems required the credits to graduate. Students perceived connectivity as the reason for erratic peer contributions, as they did not “see” the lurkers, but noticed that some withheld contribution.

When some of the peers are struggling for access, their level of contribution is hampered.

We are a nice bunch enrolled for this course. Some learners easily share and are spontaneous, while others hold back.

Even logging in often (Table 1) does not always indicate participation. Rovai and Barnum (2003) caution that attending courses without participation produces no measurable increase in knowledge, and students who wish to pass just through attendance do not succeed. Learning requires interaction not only with the learning content but also with co-learners (Swan, 2003).

The number of discussion posts. Discussion posts revealed quantities of student participation, as shown in Figure 1b. Like logs, there was a significant difference between the numbers of postings from the students in different grade groups. Students who failed or abandoned the course posted on average significantly fewer discussions than their successful counterparts, confirming Davies' (2005) results. We also observed a significant difference between average and excellent students, a trend Davies and Graff could not indicate.

On average, the high-performing students were also most active in the discussions. There were also average performing students (subjects 7, 14) who posted proliferate messages, constituting “noise” in the discussions (Williams, 2004), and an excellent performer (subject 17) who posted few (Table 1), reminiscent of vicarious or read-only-participation. The number of posts, therefore, does not reflect student involvement.

Ratio of reply to original posts per student grade group. This metric indicated a student's style of participation, whether peer or self-focused, and is independent of participation quantities. From Figure 1c, it is evident that the more successful students more readily interacted with peers. Successful students replied two or three times more often to other posts than they initiated original posts. The less successful students' replied less often than they originally posted. The difference between all groups is highly significant (Table 2). These observations confirm that, after a minimum interaction establishing the necessary support, the quality and dynamics of interaction further influenced online learning (Davies & Graff, 2005). This metric still does not indicate the real quality of contributions. To encourage rational discourse, Klemm (1998) urges facilitators to grade on the quality of the postings and not to settle for mere opinions. Absent students and those who contribute little of value or virtually “nod” their approval in threaded discussions do not deceive their peers (Collison et al., 2000).

Quality participation. Klemm (1998) proposes using peers to grade the value of each person's contribution. Therefore, we designed one team assignment to develop a rubric for scoring online collaborative

behaviour. The collaboration score (Figure 1d) is an average of assessment by two peers and the facilitator, using this rubric. While rudimentary, it indicates how students rated others' participation. Like all previously discussed quantitative measurements of student activity in the online classroom, the collaboration score showed highly significant differences among the three stratifications of students, as unsuccessful students had low collaboration scores and the highly successful ones scored highest. Interpretation of the score is problematic, as again, there are notable exceptions. Subjects 6 and 12 (Table 1) logged in often, but they did not score high on collaboration and present themselves as classic read-only-participants.

We also used peer-review extensively as a mechanism to improve interaction and learn collaboratively (Boud et al., 1999). The transparent learning gave students insight into each other's work. Most students were positive about the peer-assessment process and realised the advantages:

With traditional learning, nobody really has access to your assignments, except if you want them to. To me e learning proved to be a very transparent way of learning. For the first time in my life I had freely access to everybody else's assignments. I were able to position myself, to compare my own writing and most important learn from others. I was intrigued by the differing viewpoints from which the assignments were approached

Peer assessment sharpens a student's responses - the student knows he cannot "get away" with lazy work.

While the non-contributing students may be satisfied that their learning needs are met (Beaudoin, 2002), they do not contribute to the benefit of the community. We contend that the quality of a student's contributions to the course reflects integration into the community.

Group participation. Cooperative group assignments encourage students to participate online. As previous teamwork in this programme resulted in much unresolved conflict, we scheduled group assignments in the latter half of the course and allocated a smaller portion of the grades to these activities. Despite online support in the form of a dedicated discussion groups and synchronous chat rooms to ease the management of their assignments, some students participated insufficiently and created discontent. Prodded in the quiz, numerous students indicated teamwork as the biggest challenge in the course:

Collaborative work via the Internet (was) very difficult.

Team work - the response from people, ways of communicating within the group and I "think" the ability for people to "ignore" the postings in the hope that other people in the group would do it.

The challenge of online teamwork also emerged as a prominent theme in students' reflective essays at the end of the course.

The chat rooms were functioning well and the teams worked together beautifully. Unluckily not all team members could participate here.

I really HATE working in a group. My attitude is not to depend on others, and to make sure that I don't need to rely on others. I trust myself and my own work most of all. This all in all makes me a VERY bad team player!

As I expected, only three team members were actively involved during the group work assignment. We were supposed to be seven in the team.

It was once again not a very satisfactory experience, because only a few group members participated.

Team work, this proved to be a challenge. As the nominated team captain, I learnt a few lessons; these being people are demanding, they wanted to know I was online and on track. There were those people who tried to participate but when the chips were down and timelines tight they were nowhere to be found. Then there were those people whom I knew I could rely on, it seemed a bit of performance punishment, but they just got more work to do, because I knew they would cope. Working in a team online, there are still those who just don't get the meaning of the word team.

Group membership rotated. In constructivist fashion, students self-organized their groups and appointed their own leaders. Organization and leadership in online teams exhibit distinct dynamics. “In contrast to face-to-face teams, the leadership role of virtual teams is shared among team members” (S. D. Johnson, Suriya, Yoon, Berrett, & La Fleur, 2002, p. 379). When team members did not share responsibility, problems arose. Some contributions to group assignments were often late and unusable, reflecting low quality planning discussions, consisting of little more than affective messages. These students were very enthusiastic spectators, cheering from the sidelines and afterwards congratulating the team on good work, even if they did not expend much effort. Scott Johnson and his group (2002) suggested “Problems in the virtual teams came from a lack of willingness to participate, lack of planning, conflicting schedules, or individual disagreements. Most of these are social interaction issues” (p. 391). Not all our students were adverse to online group work.

When the peers are encouraged to work together, they better realise their collective potential.

Creating a rubric as a team was quite fascinating. I created my rubric and I felt good to see my work joined with the work of others (E).

We worked so hard with my teammates I call this team the A team because of the outstanding work we did (E).

Significantly, some of the accolades came from the very students that others complained about and in their reflective essays accused of withholding contribution. Many low-performing students had poor metacognition of their contribution.

Non-English speaking students can find it challenging to participate in fast-paced synchronous chats (Carr et al., 2004). Some students participated erratically in synchronous chats and some never mastered tool, in spite of clear online instructions. Some managed to log in but did not respond when other participants repeatedly encouraged them to contribute. This adversely affected other students, as they suspected those students might be spying.

The learning needs of some of the read-only participants were met, even if they contributed minimally. Some thought that affective participation was sufficient. Diverse students understand their responsibility to the online community differently.

Virtual Community

Voluntary participation. After exploring many factors that influence successful course outcomes, we investigated the role of the virtual community on learning and the effect of non-participation on the community. According to Collison (2000), students in a healthy online community support their community. Their concern became evident when they contributed without expecting rewards. After concluding the course, we e-mailed a request for feedback to clarify some outstanding issues. We assumed that voluntary responses would indicate prolonged involvement in their community. In Figure 1e, we display the results of the replies. As expected, the students who did not successfully complete the course nearly unanimously ignored the request. The difference between the average students and the distinction candidates was both interesting and highly significant.

Figure 1 shows that the successful students were not only most active online but were also the most involved in the virtual community, contributing more posts, replying to a larger percentage of fellow-student posts, displaying collaborative behaviour and readily providing voluntary feedback.

An integrated community. A core of students represented a high functioning, healthy online community (Collison et al., 2000). The ethnography showed the concern and support that existed in this community, with students informing peers of imminent absence from discussions. Reasons for absence were often work-related,-- teachers attending conferences or school tours, for example. Students were also willing to be vulnerable (Barab, Thomas, & Merrill, 2001) and shared personal circumstances like serious illness,

road accidents, and death among close associates. By extending support, close affective bonds and camaraderie developed. This resembled Barab's (2001, p. 105) community where "students readily shared their feelings, critically examined course issues, extended their support in helping peers". Our community was not inclusive. At its core students participated often, and at the periphery individuals participated less.

Facilitator support. Some of the less-connected students communicated with the facilitator by e-mail, telephone and short text messages. The distributed rural student with the intermittent electricity supply reported these by short text message or telephone and thus negotiated deadlines. A few communicated to the facilitator personal circumstances that precluded class participation. We accommodated them by allowing them to work separately. Their interaction with the facilitator possibly contributed to their success (King, 2002).

Other low-participation students used ordinary e-mail for communicating with the facilitator or for submitting assignments, thereby indicating that their lack of communication and participation was not caused by poor connectivity, but by poor LMS attendance. E-mails consisted mostly of excuses for missing deadlines, but we were often unable to respond due to overflowing mailboxes. The reasons for this poor participation remain obscure, as they did not return telephone calls or e-mails, nor did they reply to discussion postings. These poorly connected students seldom made valuable contributions, as they frequently missed important instructions. Online support went unheeded. They did not improve their work and did not integrate into the online community of learners. Many of these *invisible* students had poor completion rates and grades.

No amount of online coaching will improve the learning experience for unconnected students. They illustrate Bernard's (2004) finding that frame of mind and previous performance are the best indicators of online learning success.

Conclusions

We present evidence that in a predominantly participative class, the number of times students access the course, the number of contributions to the discussion, the ratio of replies to others' posts, and integration into the learning community, all significantly relate to successful course completion. These metrics, however, have poor individual predictive value because of the great diversity of students in the cohort.

Low online visibility and participation can take many forms, with students assuming different roles:

- read-only participants, merely skimming, or deliberately harvesting much of value from others' discussions
- highly visible without contributing much of value
- poorly visible due to poor connectivity or high costs, although some manage their login time effectively and gain maximum benefit
- absent due to other reasons, but interacting with the facilitator and staying on track
- absent and non-reading, non-participating for undisclosed reasons, not sharing the benefits of the virtual learning community.

Only students who contributed to the class or interacted with the facilitator completed the course successfully. Our calculations confirm that students who are at risk of not completing a course contribute less and of poorer quality, reflecting less interaction with fellow students and the facilitator. Because of low frequency logins, these students miss out on crucial support needed for success (Davies & Graff, 2005).

Also in professional list servers, people lurk, using content or ideas from a discussion contributing nothing in return (Klemm, 1998). While read-only-participants learn from others without visibly participating or adding value to the discussion (Beaudoin, 2002), the dynamics in an online community of learners depend strongly on diverse contributions from all its members. It is necessary that students post often and care for the community (Collison et al., 2000). In an online community, students spontaneously moderate the discussions and give cognitive feedback, allowing novice members to grow into full participation. Non-participating

students relinquish coaching, feedback and support from the facilitator and peers, as the affective dynamics in the community precludes non-participating members. We caution against Beaudoin's permissiveness towards lurkers. It is not in the interest of the community if a large number of the class are read-only participants. This also deters the isolated student.

To avoid read-only-participation, we endorse Klemm's (1998) suggestions, and further suggest a facilitator should

- Communicate the required login frequency clearly
- Encourage the submission of high quality thoughtful postings, and grade them accordingly
- Grade all discussions initially and give formative feedback, in private if necessary
- Grade individual contributions to group projects, and do not give the same grade for all
- Rotate members of groups, so students are not stuck with non-participating members
- Convey important information also with internet-independent media like mobile technology.

The problem of poorly performing and course-abandoning online students is complex. Students who did not contribute did not become part of the community and did not benefit from facilitation, tutoring or peer feedback. The other students reacted to this behaviour. We foresee that a large number of lurking students in an online class can prevent the formation of a virtual community of learners and compromise everyone's education.

References

- Barab, S. A., Thomas, M. K., & Merrill, H. (2001). Online Learning: From Information Dissemination to Fostering Collaboration. *Journal of Interactive Learning Research*, 12(1), 105-143.
- Beaudoin, M. F. (2002). Learning or Lurking? Tracking the "Invisible" Online Student. *Internet and Higher Education*, 5, 147-155.
- Bernard, R. M., Brauer, A., Abrami, P. C., & Surkes, M. (2004). The Development of a Questionnaire for Predicting Online Learning Achievement. *Distance Education*, 25(1), 31-47.
- Boud, D., Cohen, R., & Sampson, J. (1999). Peer Learning and Assessment. *Assessment & Evaluation in Higher Education*, 24(4), 413-426.
- Carr, T., Cox, G., Eden, A., & Hanslo, M. (2004). From Peripheral to Full Participation in a Blended Trade Bargaining Simulation. *British Journal of Educational Technology*, 35(2), 15.
- Clark, R. E., & Feldon, D. F. (2005). Five Common but Questionable Principles of Multimedia Learning. In R. E. Mayer (Ed.), *Cambridge Handbook of Multimedia Learning* Cambridge: Cambridge University Press.
- Collins, A., Brown, J. S., & Holum, A. (1991). Cognitive Apprenticeship: Making Thinking Visible *American Educator*.
- Collison, G., Elbaum, B., Haavind, S., & Tinker, R. (2000). *Facilitating Online Learning: Effective Strategies for Moderators*. Madison, WI: Atwood publishing.
- Cox, G., Carr, T., & Hall, M. (2004). Evaluating the use of Synchronous Communication in Two Blended Courses. *Journal of Computer Assisted Learning*, 20, 183-193.
- Davies, J., & Graff, M. (2005). Performance in E-learning: Online Participation and Student Grades. *British Journal of Educational Technology*, 36(4), 657-663.
- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical Thinking, Cognitive Presence, and Computer Conferencing in Distance Education. *The American Journal of Distance Education*, 15(1), 7-23.
- Johnson, C. S. (2001). A Survey of Current Research on Online Communities of Practice. *Internet and Higher Education*, 4, 45-60.
- Johnson, S. D., Suriya, C., Yoon, S. W., Berrett, J. V., & La Fleur, J. (2002). Team Development and Group Processes of Virtual Learning Teams. *Computers & Education*, 39, 379-393.

- Kettner-Polley, R. B. (2005). Virtual Professor + Virtual Student = Real Education. Retrieved 18 January, 2005, from <http://iiswinprd03.petersons.com/distancelearning/code/articles/distancelearnprof10.asp>
- King, F. B. (2002). A Virtual Student. Not an Ordinary Joe. *Internet and Higher Education*, 5, 157-166.
- Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why Minimal Guidance During Instruction Does Not Work: An Analysis of the Failure of Constructivist, Discovery, Problem-Based, Experiential, and Inquiry-Based Teaching. *Educational Psychologist*, 41(2), 75-86.
- Klemm, W. R. (1998). Eight Ways to Get Students More Engaged in Online Conferences. *Technological Horizons in Education Journal*, 26(1), 62-64.
- Kreijns, K., Kirschner, P. A., & Jochems, W. (2003). Identifying the Pitfalls for Social Interaction in Computer-supported Collaborative Learning Environments: a Review of the Research. *Computers in Human Behavior*, 19, 335-353.
- Miller, M. D., Rainer, R. K., & Corley, J. K. (2003). Predictors of Engagement and Participation in an On-line Course. *Online Journal of Distance Learning Administration*, 6(1), 13.
- Prammanee, N. (2003). Understanding Participation in Online Courses: A case Study of Perceptions of Online Interaction. *ITFORUM*, #68, 16.
- Rovai, A. P., & Barnum, K. T. (2003). On-Line Course Effectiveness: An Analysis of Student Interactions and Perceptions of Learning. *Journal of Distance Education*, 18(1), 57-73.
- Roycroft, T. R., & Anantho, S. (2003). Internet subscription in Africa: policy for a dual digital divide. *Telecommunications Policy*, 27, 61-74.
- Schreck, V. (2006). It Takes A Virtual Village: Practical Strategies for Improving Online Learning Retention Rates. Retrieved 06/01, 2007, from http://www.innovativeeducators.org/product_p/38.htm (4 of 4) 02:42:16 PM
- Sharp, L., & Fretchling, J. (1997). User-Friendly Handbook for Mixed Method Evaluations. Retrieved 22 December, 2006, from <http://www.ehr.nsf.gov/EHR/REC/pubs/NSF97-153/START.HTM>
- Shavelson, R. J., & Huang, L. (2003). Responding Responsibly to the Frenzy to Assess Learning in Higher Education. *Change*, January / February.
- Sutton, L. A. (2001). The Principle of Vicarious Interaction in Computer-Mediated Communications. *International Journal of Educational Telecommunications*, 7(3), 223-242.
- Swan, K. (2003). Learning Effectiveness Online: What The Research Tells Us. In J. Bourne & J. C. Moore (Eds.), *Elements of Quality Online Education: Practice and Direction* (pp. 13-45). Needham MA: Sloan Center for Online Education.
- Swan, K., Shea, P. J., Fredericksen, E. E., Pickett, A. M., & Pelz, W. E. (2000). *Course Design Factors Influencing the Success of Online Learning*. Paper presented at the WebNet 2000 World Conference on the WWW and Internet Proceedings, San Antonio.
- Williams, B. (2004). Participation in On-line Courses - How Essential is it? *Educational Technology & Society*, 7(2), 1-8.