Passive Forum Behaviors (Lurking): A Community Perspective

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Abstract: Utilizing an integration of social learning and situated learning approaches, this study identifying 89 of 487 members as lurkers in an inquiry-based online learning community consisting of 81 groups is designed to explore the characteristics and positions of lurkers from a community perspective by addressing three questions: why do they observe, what do they post, and are they non-participation learners? Using log-in frequency counts and postings as the basis of analysis, together with interviews revealing the views of community members on lurkers, this study aims to clarify the perception of the lurkers and their lurking trajectories. The findings of this study reveal a tendency toward intentional learning on the part of the lurkers. Given the opportunities to observe other groups engaged in similar tasks and going through similar procedures of inquiry activity in the online community, these lurkers were attracted to the discussion and, through unintentional learning, benefited their respective groups. From a participation framework perspective, the high online frequencies do contribute to group cohesiveness. Lurking contexts in relation to the dimensions of observational learning are discussed.

Introduction

As collaborative learning becomes an important component of learning activity on the Internet, evaluation of group learning in virtual communities becomes the major interest of most research studies. Few, however, examine individual learners exhibiting diverse levels of participation (Wenger, 2002; Kim, 2000), the drop-outs, the lurkers, the peripherals, etc. Of these, lurkers are reported to make up over 90% of online communities (Katz, 1998; Mason, 1999). Hence, understanding the behavior of lurkers becomes an essential part of investigation in a virtual learning community.

For most of the studies done in the CMC (computer-mediated communication) field, lurkers comprised the majority of members in online groups and in Discussion Lists (DLs) in particular (Mason, 1999). In DLs, the members receive messages automatically, and whether they are read or replied to is left to the discretion of the recipient. Aside from the "no subscription" process used by most BBSs and newsgroups, participation in a membership oriented learning community, as in the present study, implies a distinct sense of responsibility to the group. In the context of an online joint learning community, learners may not be able to remain silent all of the time. There are, in fact, very few members who post little or nothing in such learning communities.

According to The online Jargon Dictionary (1999), the term “lurker” is defined as: One of the ‘silent majority’ in an electronic forum; one who posts occasionally or not at all but is known to read the group's postings regularly. From the perspective of participation, this definition presupposes two kinds of behavioral patterns: a high level of commitment on the one hand and limited or absent article contribution on the other. What interests us then, is the context in which learners login most of the time while posting relatively little. Viewed as a vicarious learning behavior within a learning community, further exploration is required to determine what would define lurking as a type of learning behavior, and what this means from a community perspective.

The increase in prevalence of online groups, coupled with the relative ease with which persistent and traceable messages can be gathered and analyzed, has made them fertile ground for research. Most studies have used login data to create a profile of these learners. However, in order to understand the underlying group dynamics and the role of lurking behavior, the use of data provided by transcripts as a unit of analysis cannot

reveal the entire picture. Instead, this study intends to take an interactive perspective (or provide an interactive lens) to explore the lurking context.

Given that the term “lurk” has normally been given a negative interpretation, (for example, Kollock and Smith (1996) describe lurkers as “free-riders”, noncontributing, resource-taking members) this study first proposes to use the definition provided by The Online Jargon Dictionary (1999) and then places the specific learners in each group of the community into categories. Based on an analysis of their postings and using interview protocols from members of their respective groups, mentors, and from the lurkers themselves, the lurkers’ repertoires are revealed. The Lurker’s habitus in a community will be uncovered and its stereotyped negative impression will also be discussed.

Theoretical Background

In the following section, we first explore the use of two social-cultural learning theories on the most visible behavior of lurkers, observation. We also focus upon varied forms of participation. These issues were addressed by Bandura’s social learning theory (1977), and Lave and Wenger’s work on situated learning theory (1990). In the observational learning section, we attempt to create a synthesis of Bandura’s notion of observation and Lave and Wenger’s unintentional learning. In the participation section, we discuss Bandura’s ideas on the importance of reinforcement and modeling and Lave and Wenger’s concept of legitimate peripheral participation. Taken as a whole, our intent is to answer the research question: are lurkers non-participation learners?

Bandura (1977) states: "Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action." Bandura emphasizes the importance of observing and modeling the behavior, attitudes, and emotional reactions of others. He describes human learning behavior as attention (including modeled events and observer characteristics) retention (such as motor rehearsal, motor reproduction, including physical capabilities, or self-observation of reproduction) and finally, motivation (including external and self-reinforcement).

Lave argues that learning as it normally occurs is a function of the activity, context and culture in which it occurs (i.e., situated). Social interaction is the most important aspect of situated learning, as learners become involved in a "community of practice" which forces them to acquire certain beliefs and behaviors. As the student moves from the border of this community to its center, s/he becomes more active and engaged within the culture and assumes the role of expert. This process may be considered "legitimate peripheral participation."

At a glance, both Bandura and Lave stress learning that occurs in the relationship between people and their environment and in full participation within communities of practice and utilization of resources. But for Bandura, knowledge is acquired through observation of the environment and social interaction which, in turn, lead to modeling, or mirroring. In particular, social learning involves the observation of admirable things, which are thus modeled, or mirrored. In slightly different view, situated learning involves observation and concerns the effect of the environment (rather than that of other people) on the individual. In most cases, situated learning is unintentional rather than deliberate, as in Banduar’s concept of observational learning.

Together with making this comparison, we are also interested in exploring how the lurkers in this study are observing. Do they find particular models to mirror in order to exhibit appropriate behavior? Or do they observe other things besides people/models? What are they looking for? What things that they were not intended to observe do they find useful and interesting? What are the attitudes of others toward their lurking behavior?

On the other hand, in response to the popular negative notion of lurkers and their minimal discussion forum contributions, we are interested in investigating the type and quantity of their participation as demonstrated in a co-constructive learning activity. In short, a community perspective is introduced in this study as a lens to provide a richer picture of this particular group of learners—the lurkers.

Methods

The Community

The online community is formed each year for a web-based science contest in an inquiry-based learning environment called Learning Atmospheric sciences via the Internet (Lain), which is constructed mainly to allow high school students in Taiwan to participate during the summer. Those volunteer individuals who chose the same topic from a list of five topics were sorted into a set of groups with 5-7 individuals per group. Members in the same group did not normally know each other, nor did they engage in face-to-face communication throughout the contest.

This web-based science contest lasted six weeks with one stage scheduled for each week. The six stages were: Individual claim formulating, Team hypothesis building, Detailed planning, Data locating, Data transforming, and Hypothesis justifying. Participants in this activity could receive a certificate if they completed the process and all required tasks. As contributions varied among members of each group, those members were charged with determining who should receive the certificate at end of the contest.

The online community was constructed of several layers. At the bottom layer, each group had its own discussion forum. Except for the assigned mentor, participants outside this group were not allowed to post articles though they were permitted to lurk in all discussion forums. At the middle layer, two boards called "Daily" and "The Mentor's Diary" were open to posting by mentors only and contained news or profiles on any groups or individuals. At the top level, there was a public board open to everyone allowing communication among all participants on any subject. Permission to post in this community was restricted to registered participants. To others, the forums were read-only.

Participants

In this present study, the community was composed of 487 individuals in 81 total groups. Participants were sorted according to their non-ability rating as determined by a pretest on scientific reasoning ability in general, and on the ability to utilize primary data related to atmospheric sciences in particular. The members in each group were chosen to reflect a similar combination of differing abilities. Each group was assigned a secondary science teacher as mentor. In practice, many groups shared an identical mentor due to the limited number of the mentors available.

Data Collection and Analysis

There were four major data sources. 1) logging, 2) discussion forums, 3) lurker's weekly self-statements, and 4) interviews. Each set of data was then analyzed.

1) Logging.

The frequency of participants' postings was tallied and analyzed to identify potential lurkers. As participants could not post articles in the discussion forums of other groups, the extent of online postings per individual was calculated as a percentage of postings within the group. The three criteria used to identify lurkers were:

a. The lifespan consisted of six weeks during which each individual logged into the community every week through out the activity.
b. The Z score of postings per week was below the average of the group members.
c. The Z score of postings divided by login frequency count was above the average of the group members.

Basic characteristics of these identified lurkers were displayed in relation to those of the community as a whole in terms of online frequency and number of postings.

2) Discussion Forums.

Content analysis of the postings of the lurkers was analyzed in the following three ways in order to understand the nature of the postings of the lurkers and their interaction with group members.

a. The postings were sorted into three categories (Chen, & Jiang, 2003): i) coordination about knowledge (the content), ii) coordination about scientific procedures and collaboration (the task), and

iii) affective and supporting aspects (off-task), to demonstrate a general picture of the nature of the postings of these lurkers.

b. To determine the lurker's role in threaded discourse, we classified the lurker's posts in each thread into the following four categories based on her appearance in the threads (Chen, & Jiang, 2003): i) Initiator, the one who throws the ball and begins the discussion. ii) Follower, the one who catches the ball and helps peers to continue their discussion. iii) Terminator. The thread is ended with a post by the lurker. iv) Soloist. The lurker initiates a post but gets no response.

c. Lurkers' level of negotiation in each thread in which they posted was analyzed: the number of posts by a single lurker in each thread was tallied to determine the extent to which the lurker engaged in group negotiation. For example, one lurker made 31 posts total, with 25 threads containing only one post and 3 threads containing 2 posts.

3) Weekly Self-Statements.

Each week, all the participants were required to share their impressions of the week. The size of these articles ranged from several hundred to thousands of words.

4) Interview.

Informal interviews were done with lurkers, group members, and the mentor individually. The lurkers were asked to describe their life in the community. For example, they were asked how they felt, what they were observing, when they felt free to post articles, their perception on group collaboration, etc. The group members and mentors were asked to describe their perceptions of the lurkers in their group as well as of group collaboration. The mentors' observation notes on the online community were also collected and considered supplementary. One-third of lurkers were interviewed by phone conversation of open duration generally lasting between 30 minutes and 2 hours, and focusing upon the interviewee's participation in online groups. Prompting was minimal, and the interviewer did not validate whether a group or topic was worth discussing.

Results and Discussions

The results are presented in two parts. First, comparisons of the lurkers and the whole community of participants are made on the basis of quantitative summaries of the frequency of online posts. In the second part, the role of the lurkers was investigated based on an analysis of their postings and on interviews of group members as well as the lurkers themselves.

1. Identify the Lurkers

Of the 487 registered members, 270 participants logged in every single week throughout the activity. Of these, 89 were identified as lurkers. The lurkers were quite persistent in their participation in comparison with the 255 drop-outs. The main reason for the high drop-out rate was the challenging nature of the task -- evidence-based inquiry learning. This conclusion is supported by the fact that there were fewer certificates awarded (232) than there were six-week sustained participants (270).

There were 56 groups of which 30 contained only one lurker, 21 had two lurkers, and 3 groups had more than 2 lurkers. Due to different collaborative styles within the groups, lurkers were identified by calculating relative numbers of posts and online frequency within each group rather than across groups. However, when groups were categorized as units for the purpose of providing a general picture, the set of lurking groups does show a marked difference from the rest of the community members (Table 1). Weekly variations were reported in Figure 1. The post/online mean of non-lurkers doubled the number of lurkers. An interesting point is that, although such differences were not that significant in themselves, the lurking group was composed of all six-week sustained learners while the average life span averaged only 4.5 among non-lurkers. In other words, more time was spent by the lurking group but it resulted in less productive performance. Detailed analysis was needed to explore the context of the lurkers.

Table 1. Logging Comparisons between lurkers and non-lurkers

	Lurkers (89 members)	Non-Lurkers (398members)
Post mean	56.1	93.5
Online mean	75.2	64.4
Post/Online mean	0.75	1.45

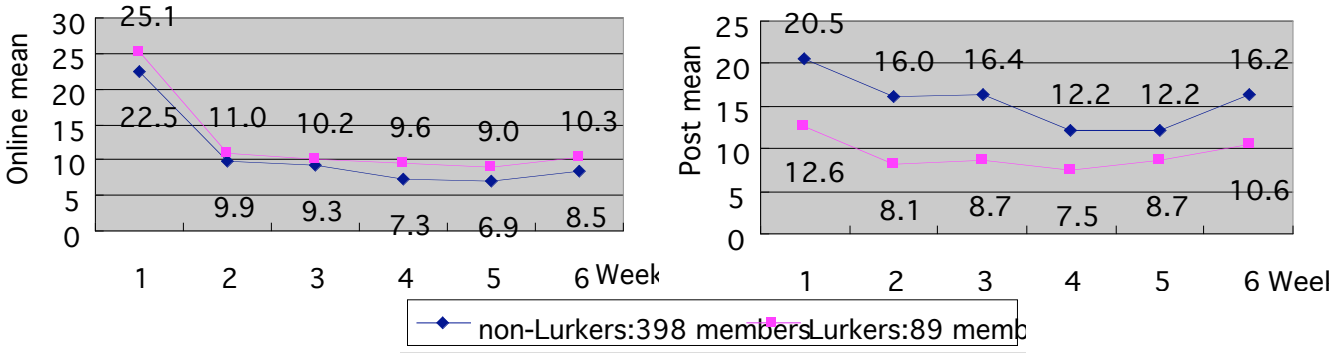

Figure 1. Comparisons of online frequency and postings between lurkers and non-lurkers

2. What Do the Lurkers Post?

We randomly selected one third of all the lurkers for a category breakdown according to the nature of the articles posted. The postings were roughly distributed into the previously established three categories. A fourth category "sharing website information" was added as a sub-category of Knowledge due to the large number of posts containing "copy and paste" content from the website (Table 2). The fact that lurker postings were fairly evenly distributed over the three categories indicated moderate participation in all aspects of group interaction.

As to the position of lurker posts, they appeared predominantly in the middle of the thread (Table 3). In other words, the lurkers tended to be a follower. Few of their posts appeared at the end of a thread or initiated a thread in which there were no responses.

Table 2. The nature of the posts of the lurkers

Aspects of coordination	Frequency	Percentage
Procedures and collaboration	270	.34
Affective and supporting	249	.31
Knowledge	201	.25
Sharing website information	81	.10
Total	801	1

Table 3. The positions of postings of the lurkers

Position of the post n a thread	Frequency	Percentage
Follower	537	.67
Initiator	134	.17
Terminator	75	.09
Soloist	55	.07
Total	801	1

In addition, an analysis of the extent to which these lurkers handled negotiation in each thread posted revealed that a total of 801 posts were from 443 threads. The distribution of the appearance of posts in each thread is reported in Table 4. 90% of the threads contained fewer than 3 posts by lurkers. It seems that they were

less skilled in negotiation and turn-taking than their colleagues. Together with playing the role of followers in a thread, lurkers showed an inability to participate fully.

Table 4. The distribution of lurker's posts in a thread

Number of post in a thread	1	2	3	4	5	6	7	8	9	10	11	12	13	
Frequency	295	74	26	22	9	4	4	1	2	1	2	2	1	443
Percentage	66.6	16.7	5.8	5	2	.9	.9	.2	.5	.2	.5	.5	.5	100

3.Why Do They Observe Instead of Posting?

It is clear that lurking is not a simple single behavior but a complex set of behaviors, rationales, and activities within in a rich range of possibilities. In the context of a science contest, a shared enterprise is needed in order to co-construct a project. Lurking behavior implies a lack of responsibility and minimal participation. How do lurkers lead themselves in such trajectory?

Interview data from 26 lurkers revealed that they were basically a group of low self-esteem individuals. In many cases, they would hesitate to press the enter key when sending their written articles. Instead, they would have doubts about the value of their ideas and, on occasion, gave up at the last moment leaving their contribution unposted. The superb articles and the level of negotiation carried on by their collaborative partners apparently intimidated them, reducing them to lurking. Similarly, when a lurker finally posted an article, s/he would quite often log in to check if that article had received a reply. If it had been ignored for a period of time, the lurker would feel disappointed and lose the confidence to post again. These situations lurkers encountered explain, at least partly, the reason for the common lurker behavior pattern characterized by minimal postings and high login frequency. It seems clear that observation of intellectual models at work does not necessarily lead either to performance or acquisition. Close collaboration with models may even cause withdrawal.

Some interviewees admitted that they simply could not grasp the meaning of a post by another group member and therefore preferred to function purely as observers. Having marginalized themselves, a number of interviewees mentioned experiencing a sense of engagement while lurking. In one example, the interviewee stated:

> They were so desperate for data to support their hypothesis, to look for solutions to their problems around the clock. It really inspired me.

They not only lurked in their own discussion forums, but also in others they found interesting. In fact, forums in which they were not members became major targets for lurking. There were 81 groups, each with its own respective forum and each group was following a similar procedure. They became curious about how other groups dealt with the same problems (i.e. modified their hypothesis to be workable, transformed three sets of data into one figure, etc.) and found that by looking at the thoughts of others in the discussion forums, they came up with ideas not previously considered. Observation also had an influence on the affective aspect. One interviewee mentioned in her weekly self-statement:

> Each time when I observed their discussion forums, I realized that some group had given up…, others were barely sustained…., I was a little bit worried about them, at the same time I was so proud of myself being in such a cohesive group.

Another place the interviewees frequented was the "The Mentor's Diary" in the middle layer of the community. Most of the participants enjoyed reading the mentors' diary, especially when the mentor commented on the process and unique aspects of certain groups. Such mechanisms provided the participants with an opportunity to be singled out for special mention. The lurkers sometimes followed "The Mentor's Diary" as a tour guide for browsing. Some interviewees mentioned that they paid attention to certain groups because they had discovered that they had acquaintances in those groups while some groups, showing tight coordination, developed a huge number of postings. Lurkers spent a lot of time in such places and some indicated that it helped them a lot:

> After reading the work of other groups, I feel quite helpful and begin to think about our work. I did not simply copy and paste these artifacts to our discussion forum, instead, I often thought about them for one or two days, and then posted in our board.

It appears that a strong sense of group identity can be developed with only limited postings. While lurking elsewhere, lurkers may acquire varied resources and repertoires which, when posted in their own groups, may be of significant benefit. This trajectory of learning mixes intentional learning (Bereiter & Scardamalia, 1989) together with unintentional learning. This unintentional learning aspect was a major factor in reducing the drop out rate.

4. Lurkers in a Group

Since lurking behavior is a social phenomenon, lurkers' accounts alone are not enough to provide a complete picture of the lurking context. The perceptions of the group members around him/her also require investigation. Our 32 interviewees described 26 groups containing lurkers. Six of them shared groups with lurkers. As expected, there were two contrasting opinions about lurking behavior: some members criticized the lurkers for being helpless and out of touch while others praised the faithful and supportive role lurkers played in their groups.

From the point of view of the critic, which can be easily understood, lurkers were regarded as freeloaders who strove to avoid attention and responsibility. Group members also complained about the shallow questions they asked, as well as their tendency to keep a low profile when tasks were assigned. However, it would be interesting to explore the level of acceptance lurkers would encounter in other groups.

Analysis of the nature of postings, in which lurkers provided a very similar number of articles in knowledge, procedure, and social support categories, suggested that there were two reasons for group members' acceptance of lurkers. Firstly, the drop out rate of almost 50% always discouraged the residual group members. As participants dropped out gradually over the whole six weeks, group members suffered uncertainty and insecurity. Under such circumstances, the loyal remaining partners would be appreciated. Some interviewees agreed that it was not always necessary to post articles with highly valuable content because warm and encouraging postings were important as well. Even peripheral intermittent participation was better than none. Secondly, we observed that these high school participants were used to having synchronous discussions, due largely to the current pervasiveness of the MSN environment. However, participants did not adapt readily to the asynchronous environment of the Lain project used in this study. They were eager for their group members to be online as in a chat room or MSN. Therefore whenever they logged in, they checked the names on the online list first and if they found members of their own group there, they did not feel alone. Their lurking companions provided a sense of cohesion for them. Although lurkers were considered less knowledgeable, the group members were aware that they actively played a supporting role and demonstrated their engagement by sharing website information. Under such circumstances, peripheral participation itself qualifies as a dimension of contribution to group learning.

Concluding Remarks

Most online communities include members who exhibit differing levels of participation (Wenger, 2002), such as coordinator, core members, active members, peripheral members, and even outsiders-to-be. It would seem that their respective levels of importance would be easily identified. In this study, we explore a specific group of lurkers and their varied lurking contexts. With an attempt to understand lurking behavior from both Bandura's view of social and observational learning, and Lave and Wenger's view of legitimate peripheral participation in situated learning, we summarize the characteristics of this expanded concept of the lurker.

Lurking behavior has its roots in the context of group learning. In most cases, learners with low self-esteem or less knowledge would have a greater chance to become involved as members of a lurking group. However, the psychological well-being of lurkers is jointly determined by the group context. Some group members are demanding and abrasive while others are more patient and accepting. Lurkers, through observation of the repertoires and performance of fellow group members, gradually develop their individual trajectories. It is the intentional learning aspect that prevents them from dropping out but it is also intentional learning that keeps

them away from full participation. We suggest that it would be interesting to explore the role of reluctance and reticence in observational learning, as compared with the role of reinforcement in Bandura's notion of social learning.

Another issue concerns the sustainability of these lurkers. What prompted them to assume a supporting and lurking role online? In a community composed of dozens of groups engaged in similar learning tasks, there are specific communities of practice that can be observed, for example, the evolving forms of mutual engagement, understanding and tuning the enterprise, and developing the repertoire, styles, and discourse (Wenger, 1998). Some students found that lurking could be considered a vicarious form of alternative learning from a community perspective.

Lurking and lurkers will continue to be an important area of study as more learning communities go online and are investigated with not only a CMC approach, but also a learning perspective. In this study, we have attempted to articulate the concept that the mix of participation and non-participation that shapes the identities and roles of learners directly influences the communities to which they belong and within which they function. Our next step will be to explore how this mix affects the ability (e.g. negotiability) of lurkers to shape the foundations that define the community.

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Acknowledgements

This work was supported, in part, by National Science Counsel Grants NSC 90-2520-S-008-018. We owe our sincere acknowledgement to all the researchers, participating teachers, and research assistants in the Lain Project for their crucial contributions. Special thanks to Denis Titchenell for editing the manuscript.