The Absent Graduate Student: An A-B-A Single-Subject Experiment of Online Discussion Participation

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Abstract

It can reasonably be said that the discussion board is the "heart" of an online course. The discussion board can and should help the learner to make meaning of the content or topic and to find relevance to their lives. When this "engagement" does not occur, the individual does not benefit from the discussion, and it becomes merely "busy work" and no deep learning takes place. The primary purpose of this study was to investigate an individual master's student who was not participating in the course discussion and apply a single-subject experimental design (A-B-A) in an effort to increase the student's participation in the course. The method was to observe the baseline behavior, apply the treatment, withdraw the treatment, and then re-assess the baseline behavior. The results of the experiment were astounding to the researcher. Not only was the experiment successful with the non-performing student, but other students in the course also dramatically increased their level of participation. The results of this study can serve as a best practice to remedy the sometimes disembodied nature of online learning.

Keywords: Individual discussion participation, engaging best practices, modeling discussion, teaching strategies, effective engagement.

If the discussion board is the "heart" of the online course, then the professor is the life-blood that nourishes the body-the student body. Many professors use course management systems to deliver course content, but some are still confused by the use of threaded discussion (Palloff & Pratt, 2007). Discussion about topics learned is vital for a thorough acquisition of knowledge, whether the class is a hybrid or is conducted entirely in cyberspace (Bender, 2003).

Literature Review

In Bloom's (1956) taxonomy, "knowledge" is the lower foundational level of a sequence of progressive contextualization of material. For purposes of this introduction, the discussion board is where the student can place material given by the professor into a context, make meaning of the material, and then progress upward through Bloom's taxonomy toward comprehension, application, analysis, synthesis, and evaluation (Figure 1). With this understanding of the importance of the discussion to online learning, professors are

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charged with finding ways to encourage and motivate students to participate in the discussion board.

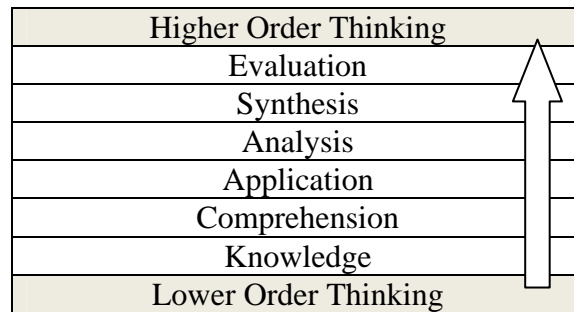| Higher Order Thinking |
|:---:|
| Evaluation |
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| Knowledge |
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Figure 1. Adapted from Bloom's Taxonomy (1956)

A professor who proactively encourages and motivates students to actively engage in the online discussion thread has intentionally or unintentionally taken on a certain role. McKeachie (1978) describes six roles for the campus teacher: facilitator, expert, formal authority, socializing agent, ego ideal, and person. Bender (2003) adds, "All of which can be applied to online teaching" (p. 11). These roles can all come into play at different times and in different components of an online course, but the author suggests that for the discussion board, the role of facilitator is the primary role. In this role, says Bender, the facilitator enhances student learning by encouraging active participation in discussion. See Table 1 below.

Robles and Braathen (2002) as cited in Fjeltstul, Tesone, and Bougae (2008) in an article in *The Journal of Online Learning and Teaching* (JOLT) place additional importance on the threaded discussion. "Discussion in a traditional face to face environment allows for knowledge sharing between and among instructors and students. Similar discussions take place in an online environment; however, such communication is through threaded discussions. Certainly, arguments can be made for benefits and challenges of both environments. Threaded discussions afford students the flexibility of their engagement, time for thorough reflection and thought prior to engagement, and eliminate the often uncomfortable public speaking that reduces and sometimes all together prevents students from active participation in class discussion. Students also have the ability to respond to every question/issue raised in the online learning environment" (p.293).

The instructor's role in personalizing the online learning experience cannot be understated. Gallien and Oomen-Early (2008) remind us that there is no doubt that instructor feedback is important to enhance student learning, and recent findings have shown that online learners' levels of satisfaction, performance, and sense of community are related to the interactions they have with their instructors, including the type and frequency of feedback they receive on assignments and course material.

From this, it can be seen that the role of the professor is crucial and important to the discussion as well as the benefits/advantages to students when they actively engage in the discussion board.

Table 1. Adapted from Bender (2003) and McKeachie (1978).

Role	Description
Facilitator	A facilitator enhances online learning by encouraging active participation in discussion and by helping the student to see education as meaningful and relevant.
Expert	An expert communicates expertise through lectures and discussions and is able to stimulate students without overwhelming them.
Formal Authority	A formal authority helps students by establishing boundaries such as acceptable conduct and dates of submission.
Socializing Agent	A socializing agent who has contacts within the larger academic community, and as such can be helpful to students in providing such things as letters of recommendation and links to research and publication resources.
Ego Ideal	An ego ideal is charismatic and shows commitment and enthusiasm not only to the subject matter, but also to the students themselves.
Person	A person who demonstrates compassion and understanding of student needs.

The threaded discussion is a public place for discussion that allows time for reflection. While there is a flow of discussion and it is linear, it is not subject to the tyranny of the ever present "now" of the face-to-face classroom that doesn't allow the participants the benefit of an "instant replay." The discussion forum allows as many replays as a participant wants of what was said. A discussion can be revisited and commented on as long as the forum is open, while in a classroom, often the moment is lost and is difficult to revisit.

With the incorporation of Bloom's (1956) six hierarchical levels: knowledge, comprehension, application, analysis, synthesis, and evaluation, threaded discussion can be improved. These levels build upon each other as the learner gains knowledge and expertise therefore leading the student to complex understandings and knowledge (Christopher, Thomas, & Tallent-Runnels, 2004). Using complex, higher order questions in the threaded discussion will not only force the student to flex intellectual muscles when re-

sponding, but will also lead the student to more understanding and less recitation (Foote, 2001; Lord & Baviskar, 2007). Depending on the learning objective, using Bloom's Taxonomy will provide a starting place for the instructor in designing an appropriate level of question.

Instructor response and student response are the key components to the construction of shared knowledge within the discussion forum. The deepest learning is in the writing and "talking" about the content of the course within the community of learners. It is a pedagogically sound practice, based on cognitive learning theories, to design and engage in discussion forums with students. More opportunities are provided for students to become actively involved with the course content to construct their own deeper and lasting learning.

Realizing the crucial role of the discussion thread in an online course, and accepting the role as "facilitator" of that discussion, it then becomes imperative for professors to find ways to involve students in online threaded course discussions. The purpose of this study was to conduct an experiment that was designed to engage an "absent" student in the online threaded course discussion.

Method

In the fall semester of 2009, the researcher was teaching an online graduate course entitled, "The Foundations of Adult Education". The 15 week course included weekly discussions. The weekly topics were posted seven days prior to the beginning of the discussion. The course "week" was designed to be Tuesday through the next Monday. The students were emailed again at the beginning of the week to inform them of the topic, and remind them to begin their discussion after they had read the material in the text or other articles posted in the course. The students then had seven days in which to discuss the topic.

It was the practice of the professor to e-mail students individually whose participation was not sufficient in the course. It was also the practice of the professor to respond to each student post at least one time by adding information, asking questions, providing support, or redirecting the conversation.

"A-B-A Single Subject Experiment" vs. the "Case-Study" Approach

Single case research comes in two basic varieties, single case experimental designs and case studies. Single-case experiments are used most frequently to study the effects of basic learning processes and to study the effectiveness of behavior modification. A case study is a detailed, descriptive study of a single individual, group or event. The case is described in detail, and conclusions, solutions, or recommendations are offered (Leary, 2010). Since a treatment was applied in this study, the method is said to be experimental, and not simply a "case study".

The baseline behavior (lack of participation in the discussion) is assessed; the treatment is provided (professor directly engaging the subject), and then withdrawn, and the baseline behavior is reassessed.

Figure 2 is a representation of this type of experimental design where "O" represents and observation or measurement, and "X" represents an exposure to an experimental variable or event, and the effects are to be measured.

Baseline A	Treatment B	Baseline A
O-O-O-X-X-X-O-O-O		

Figure 2. Representation of A-B-A Method

Limitation of the Study

This experiment was conducted only to increase the participation of one student in the course. It was not the intention of the study to increase overall student discussion or to imply these methods would work for all students; therefore, general conclusions cannot be drawn about the effectiveness of the treatment. It could also be stated that more participation does not mean better participation, as the experiment was only geared toward increasing participation in the discussion.

Baseline

The researcher indentified the subject of the study, who will be called "Mary" as having "less than satisfactory" participation in the discussion board. The baseline data was collected for 3 consecutive "sessions" in this case, week one through three. Mary's baseline behavior was that of established lack of participation; total discussion posts-two.

Table 2 shows a breakdown of Mary's discussion participation for Week 1 through Week 3. The design involved multiple observations of a single individual. The target behavior of a single individual is established over time and is referred to as a baseline behavior (Creswell, 2009).

It was clear from weeks one through three that teacher intervention was necessary in addition to simply emailing Mary of her performance issues. After three weeks of insufficient participation, the professor emailed Mary and explained that in Week 4, he wanted her input on a few topics and he needed her help to keep the discussion going.

Treatment

The treatment was then administered in weeks four, five, and six of the course. The treatment consisted of posting a question in the discussion board on the first day of week

Table 2. Baseline Observations

Week 1	Week 2	Week 3
1 Post 2 Sentences No references to readings or material Only opinion based statements such as "Good point", "I agree", etc.	1 Post 1 Sentence No references to readings or material Only opinion based statement, "Very Interesting".	0 Posts

4 with the subject line "Hello Mary" and subsequently directly addressing Mary throughout the week. This solicited Mary's direct response. (Note: In an effort not to be cruel or single Mary out, all posts to all students by the professor began with the students' first names, as to get their attention). The second day of class in week 4, when the professor checked in on the discussion, Mary had responded to the prompt and her response included the answer to the question directly from the text. This was a sign of improvement. The Professor then addressed Mary directly in the discussion by thanking her for a correct and timely response, and asked her what she thought about "John's" critique of the theory we were studying. The third day the professor logged in and there was a post from Mary, although brief, saying that she thought "John" had done a good job of describing the theory under discussion. We were making progress with getting Mary to participate. In the first week of the treatment (week 4 of the course), Mary had already made a noticeable improvement in her engagement in the discussion. Even though Mary seemed to only respond when the professor called her by name in the discussion, she was in fact being "trained" on how to engage. Week five and six of the course progressed with the professor continuing to engage Mary individually in a no-threatening way, and at the end of week 6, Mary had completely "caught on" and was engaged in the course. Table 3 below describes Mary's engagement during the treatment. Notice the difference that the treatment made in Mary's performance from week's one through three in Table 2 above. It should also be noted here that perhaps the intervention as prescribed to Mary may have well been conducted for all students in Week 1 instead of waiting until week 3 or 4.

As noted previously in Table 1, the professor may take on several roles in order to engage students in active discussion participation. In this case, the professor took on two major roles. First, the professor became the facilitator, or the one who encourages active participation. This involved moving beyond the authoritarian role of simply stating the requirements in the syllabus. Second, in a non-threatening way, the professor took on the role of "person" by demonstrating interest in Mary's contribution to the course. In essence the teacher modeled the consistent communication that is needed to engage Mary in the discussion and make the course more meaningful to her. As a result, Mary took responsibility and realized that the discussion was a necessary and meaningful part of the course.

Table 3. Treatment Observations

Week 4	Week 5	Week 6
3 Posts Post 1 – Two sentences based on terms from the reading. Post 2 – One comment about another student's work. Post 3 – One sentence - only opinion based.	3 Posts Post 1 – Three sentences – direct responses to the professor about the reading. Post 2 – Asked the professor a question. Post 3 – One sentence – replied, "Thank you" to the professor's response.	4 Posts Post 1 – Three sentences in response to the topic. Post 2 – Two sentences – asked a classmate to clarify a question. Post 3 – Posted and opinion on the discussion topic. Post 4- Posted an opinion only statement, "Good point!"

Return to Baseline

In weeks seven, eight, and nine of the course, the professor withdrew the "treatment", and observed the baseline- Mary's participation in the discussion. In week 7, the professor did not engage Mary by name, did not e-mail her soliciting her engagement in the discussion. However, it appeared that Mary had developed a pattern of engagement in the course that continued. She had a total of 14 posts in weeks seven through nine. To the professor, this was a break though. Table 4 depicts the number of posts.

Table 4. Returning to Baseline Observations

Week 7	Week 8	Week 9
5 Posts - Three responding to topic and classmates postings. Two posts asked questions of classmates.	3 Posts - Two responding to topic and classmates postings. One post asked a question of classmates.	6 Posts - One post responding directly to the topic. Two posts were questions to classmates. Three posts were in response to classmates questions.

In considering the change in Mary's performance, it simplifies matters to define the variables. In the traditional sense of research methods, the treatment-professor directly engaging the subject in the discussion-is the independent variable (IV). The dependent variable (DV) is the amount of participation of the subject in the online discussion. Simply put, the level of participation by Mary was dependent on the interaction directly solicited by the professor. However, there are possible confounding variables-possibly many. Mary may have been driven to participate by the professor e-mailing her at the beginning

of the course about his concerns. Mary may also have simply needed time to adjust to the beginning of the semester, and getting in the "swing" of things with a new teacher. Also, Mary's prior experience in classes may have lead her to negate the importance of the discussion board in the course.

The method used may also have other limitations. There is no replication of the "B" condition on Mary. Since there are no replications within the design, there needs to be several A-B-A investigations to support the findings. Also, triangulation, in the form of an individual "needs assessment" or a questionnaire administered to Mary may have revealed the reasons for her lack of participation. For example, it was not known if Mary had even taken an online course prior to this experience.

Results

The results of this A-B-A single-subject experiment showed that the baseline was affected by the treatment. The subject in the study showed noticeable improvement in the level of activity and engagement in the discussion board as evidenced by more posts per week, questions to the professor and classmates, which showed a deeper interest in learning, and posting supportive comments about classmates' postings. Weeks one through three without teacher active solicitation and engagement resulted in three total posts.

Weeks four through six, with the professor's active engagement of the student, there were ten total posts by the student. And as the final weeks of the course progressed, the student maintained active and "deep" participation in the course.

Figure 3 depicts an evaluation of the effects of teacher solicited engagement on individual student engagement during the baseline (A) observations, the treatment (B) observations, and the newly observed baseline (A) behavior.
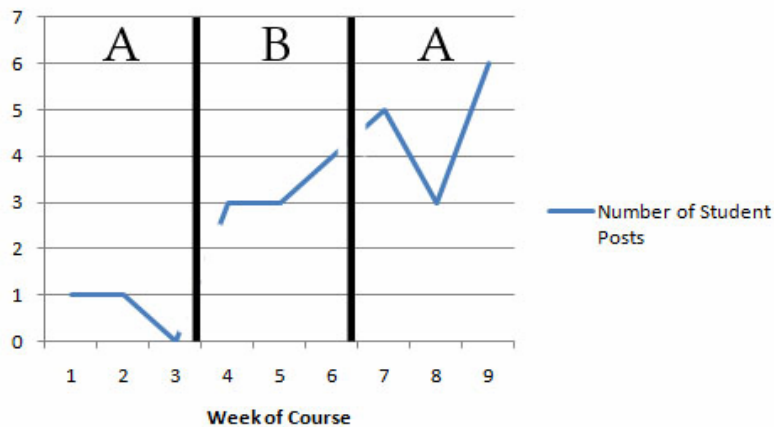

Figure 3. Representation of Increase in Student Posts

The average rating for the baseline phase was .66, the treatment phase was 3.33, and withdrawal phase was 4.66. So, there was an increase in student engagement for the in-

tervention phase followed by an increase in the withdrawal phase. The association between the numbers of postings would support the inference that teacher intervention tended to increase student participation in the discussion board.

However, the overlapping of the number of posts between the treatment and the return to the baseline phase (weeks 4, 5, and 8) would reduce our confidence in such an inference. Further, another limit of this type of inference would also be the possible presence of confounding variables.

Another pleasant result, which was unexpected, was that my presence in calling each student by name, and my interaction with Mary resulted in increased active participation largely by the rest of the class. What was intended to help one student become engaged actually increased the activity of the entire class in the discussion board.

Discussion

Although the course syllabus stated the number of posts required for participation and the grade weight associated with those posts, it was apparent that only stating guidelines for participation are not sufficient for some. Palloff and Pratt (2007) suggest that buy-in from the participants is essential in an online course. Participants must first agree to minimum participation standards and understanding what they are committing to. Minimum levels of participation should be "established and agreed upon in order to create a high level of discussion" (p. 21). As seen in this study, one possible way of establishing these standards of participation is to actively and directly engage those students who are at risk of low participation. Also, as seen in this study, when a professor attempts to increase the engagement of one student, it can have an overarching positive impact on the rest of the students. Further, not only is student teacher interaction increased, but student-student, and student-content interaction is also increased. As Stanford-Bowers (2008) states, "an ideal online learning environment is highly interactive with all participants consistently involved with content, the facilitator, and each other" (p. 40). One of the most influential models that deals with interactions in an online course is the one developed by Moore (1989). Moore categorizes interactions into three types:

> 1. Learner-Content - "learner-content interaction is the interaction that occurs between the learner and the content or subject of study" (p. 2). The learner's interaction with the intellectual content can the affect learner's understanding, the learner's perspective, or the cognitive structures of the learner's mind" (p. 2).

> 2. Learner-Instructor -, Learners consider learner-instructor interaction highly desirable and necessary (Moore 1989). Interactions involve motivation, feedback, and dialog between the learner and the instructor. After planning a curriculum, the instructor should try to motivate the students and maintain their interest in the subject matter.

> 3. Learner-Learner interactions - Moore states that "learner-learner interaction deals with the exchange of information, ideas, and dialog among learners: be-

tween one learner and other learners, alone or in group settings, with or without the real-time presence of an instructor "(p. 3). The purpose is to share information and ideas for problem solving as a group. Whenever more than two learners interact, group interaction occurs. Successful interaction depends on considering the learner's age, experience, and level of autonomy". (pp. 131-132)

4. Hillman, Willis and Gunawardena (1994) added a fourth type of interaction called learner-interface interaction, which occurs when learners use technologies to communicate about the course content, ideas, and information with the instructor and their classmates. Hillman et al, define learner-interface interaction as "the interaction that takes place between the learner and the technology. To be successful, this interaction requires the learner to operate from a paradigm that includes understanding not only the procedures of working with the interface, but also the reasons why these procedures obtain results" (p. 34). As distance education programs use more advanced technologies, the learner's interaction with those technologies becomes increasingly important. The four types of interactions are described in Table 5 below, and as this study supports, still very relative to online learning in 2011.

Table 5. Four Types of Interaction

Learner-Content Interaction	The interaction that occurs between the learner and the content or subject of study
Learner-Instructor Interaction	Interactions involve motivation, feedback, and dialog between the learner and the instructor.
Learner-Learner Interaction	The purpose is to share information and ideas for problem solving as a group. Whenever more than two learners interact, group interaction occurs.
Learner- Interface Interaction	The interaction that takes place between the learner and the technology. To be successful, this interaction requires the learner to operate from a paradigm that includes understanding not only the procedures of working with the interface, but also the reasons why these procedures obtain results" (p. 34).

From this study, educators who teach online can take away several important tips or best-practices to engage students in online discussions. Perhaps behaving in these best practices will avoid the issues of student disengagement in online course. Below is a list of the best practices suggested as a result of this experiment, and following each one is a more detailed discussion based on the literature.

Best Practices for Discussion Board Engagement

1. Clearly communicate your expectations regarding student participation in discussions in the syllabus and in an email that is personalized. Detail how often you expect students to read the posts, how often you expect them to post messages, and how you want them to post, such as replying to other students' messages as well as posting their own original messages.

Discussion: Clearly defining expectations for online discussion is important in fully realizing the potential to create an exchange of information and ideas. According to Bender (2003), these must include the expected frequency of participation, how participation counts in the student's grade, the style of online responses, and the rule of civility.

2. Closely monitor students' participation, particularly in the beginning of the course, giving encouragement, guidance, and advice to those who are not participating in discussions.

Discussion: It is important to recognize early in the course when students are not participating or meeting the expectations that have been set for discussions, especially if these are a large portion of the students' grades. Attendance is easy to monitor in a face-to-face course, but is very difficult in an online course and its components. According to Beaudoin (2002), in an online course the potential for cognitive non-attendance is higher. Unless video is used it is not possible to see how attentive students are. In face-to-face interactions an instructor can monitor cognitive attendance by observing a student's gaze, facial expression, and general demeanor. However, a student could easily log on to an online class and spend his time watching television. Cognitive attendance is more difficult to measure than physical attendance. Thus, most studies focus on physical attendance and make the assumption that it equates with some form of cognitive attendance. It is possible to either mandate physical attendance, or to provide an incentive by including a participation grade based on attendance. It is more difficult to mandate or create incentives for active participation in learning. Beaudoin (2002) states, "Most literature on participation focuses on the reasons that students do or do not participate. In distance courses much or all of the interaction is asymmetric, and participation can be defined by activities such as logging in to symmetric class sessions, participation in discussion boards and forums, and reading class materials." (p. 316). Thus these are the important ways to monitor students' attendance in an online discussion.

3. Email students individually who are not participating and show that you are concerned and that you are truly interested in their success and that you are willing to help them all you can, but they must "help you help them".

Discussion: If after making the expectations clear, and then monitoring the participation of the students, and the level of participation is still not satisfactory for

engaging in the topic, the teacher can try to lure the students in by "a friendly word privately expressed through email, phone, or in person" (Bender 2002, p. 74). Students approach the learning environment with a variety of learning styles and personality traits and thus may respond or feel comfortable with various activities at different rates than other students. Fisher (2001) does however inject the idea that students should be responsible mature adults who should be aware of the consequences of not participating and asks the question, "If students continue to "lurk", should we continue to try to do anything about this?" So while it is important to initially encourage students' participation, the question is left to the judgment of the teacher as to how long this should continue so as not to make the student fell targeted.

4. Do not hesitate to offer praise for participation in the discussion board. While some students are more self-directed, some students may find the praise of the professor a strong encouragement to continue in the acceptable behavior. When awarding praise, address why a comment was good, rather than just praising the student. For example, "I like how you incorporated what you learned in social studies into your answer about this story," is better than, "Excellent!". However, either can be very beneficial when giving feedback or praising students in the discussion. Learning is not just cognitive, but also affective, in the sense that it can produce an emotional reaction (Vella,1997; Fardously, 2001). So, feedback to students likewise can be both. So, giving the student a compliment and then telling them why can have the most benefit to encouraging their participation in the discussion.

Conclusion

This was an experiment that was designed to increase the discussion participation of a single student in an online graduate course. As previously stated, just because the number of posts increased, does not increase the quality of the posts. However, the results of the experiment yielded much more benefit than was expected. Not only was learner-instructor interaction increased, but learner-learner, learner-content, and learner-interface interaction were also increased. Additionally, there were broader implications that can serve to inform the practice of all faculty who teach and facilitate online learning. First, enough cannot be said about the importance of noticing early-on the "red-flags" of a student who may be struggling and falling behind in an online discussion. This study showed that with creative thought and energy, a professor can and should be proactive and intervene before a student falls irreversibly behind in a course.

Further Research

More of these A-B-A single subject experiments need to be done to affect change in the behavior of students in online courses. Further, the results of several such studies can be compared to recognize difference in student responses to the "treatments" in terms of age, learning styles, prior experience, and level of autonomy. The results can then further the importance of planned, deliberate, teacher interaction in the discussion board and in

online learning as field of study. This could also serve as a springboard for future, larger and more quasi experimental designs that might include a mixed-methods study with qualitative open-ended questions that would help add to the meaning and understanding of the "treatment's" impact on the learner.

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