Experience with Using Anchored Asynchronous Online Discussions in Business Analytics Courses

Completed Research

Nimer Alrushiedat
California State University, Fullerton
nalrushiedat@fullerton.edu

Lorne Olfman
Claremont Graduate University
lorne.olfman@cgu.edu

Abstract

We conducted this research following the qualitative action research paradigm to improve the experience of business students enrolled in business analytics courses. Many students have struggled in these courses as they have become bottleneck courses for these students. Students’ attitudes toward business analytics have been generally negative. As faculty, we have seen anxiety and lowered course grades. We employed anchored asynchronous online discussions as a means to extend students’ connections and interactions beyond the face-to-face class meeting. We collected data through essays written by the students about their experience with using the anchored synchronous online discussions (AAODs) in these courses. We coded and analyzed the data using Qualrus, a qualitative analysis software program. Students found that AAODs to be more inviting for their involvement, felt the freedom to select any segment from the subject, enjoyed their interactions, and were pleased with the discussions overall.

Keywords

Anchored asynchronous online discussions, virtual learning environments, business analytics, role of experience, action research.

Introduction

Over the past two decades, academics have progressively acknowledged the significance of students’ social interaction and its effect on sharing and building knowledge through online environments (Alrushiedat and Olfman, 2014, 2012a, 2012b). The ubiquitous nature and dissemination of social media over the Internet have generated changes in creating, gathering, saving, disseminating and sharing, and presenting information in many ways, some of which include textual content, images, and videos. We considered students through their contributions can as “prosumers,” a designation which makes them both producers and consumers of this information. In a networked global economy, innovations and changes are being created regularly. Faculty members have to adjust and adapt to the new desires of their students. New teaching methodologies to complement the face-to-face interactions with other means of communicating and discussing course material may embrace other ways to discuss, collaborate, and share information and knowledge to aid learning beyond the class-only meetings. Eid and Al-jabri (2016) found that the use of social networking sites evolved from social interaction and communication into knowledge sharing and learning for individuals and organizations.

Awidi, Paynter, and Vujosevic (2019) showed using Facebook improved student learning experience of a learning community through student participation and social bonds that were created among the learners. They further suggested that one of the main emphasis for faculty is to integrate online and in-class activities effectively and build a sense of community so that students can showcase knowledge of the material. Successful teaching practices are highly dependent on effective learning outcomes. Hinchy (2008) suggested that a teacher-researcher should conduct practical action research when the purpose is to improve learning conditions. Schon (1983) promoted practical action research as an accepted body of research to improve practice. Hinchy (2008) noted, “The practical action researcher consciously identifies
a concern, collects data systematically, analyzes it carefully, and produces an action plan to improve the original situation” (p. 39). AR is well-suited as practice-based research that allows for iterative and flexible processes (Beck and Kosnik, 2006).

Theory of experience emphasizes the value of the subjective quality of student’s experience and that knowledge is experience-based (Dewey, 1938/1997). From Dewey’s lens, the instructor bore the responsibility of designing an educational experience that would help the students to open up to “fulfill their potential” as members of society. Furthermore, Constructivism proposes that learning creates modifications to our understanding as we mirror or try to imitate our own experiences (Akers, 2001). Moreover, the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), considers several independent factors of which experience is one, aimed at developing behind the acceptance so that targeted “interventions” can be employed. Research that examines anchored online discussion beyond the classroom environment is highly appropriate and important to improve the educational experience of the students, which in turn will help advance departmental and college goals, as continuous improvement in student learning is critical.

Virtual learning environment

Virtual learning environment (VLE) can provide the environmental setting via the web for online discussion forums. A VLE is an online software application that provides an online space for various aspects of delivering learning material to students. Dillenbourg (2000) specified the following characteristics for a VLE: 1) designed space for information, 2) educational interactions, 3) explicit representation of an information/social space (i.e., text), 4) students co-construct the virtual space (i.e., through interactions), 5) not restricted to distance education but may supplement classroom activities, and 6) multiple pedagogical resources (i.e., content and communication methods). A blended course environment (part face-to-face (F2F), part asynchronous) provides a flexible approach to course design for the benefit of accommodating students with various learning types (Poon, 2013). A VLE such as Moodle (a six letter acronym for modular object-oriented dynamic learning environment) may encompass computer supported collaborative learning (CSCL) tools of which synchronous and asynchronous online discussion applications can be implemented. We chose anchored asynchronous online discussions as a means to aid the students with their interactions and communications outside of the classroom.

Anchored asynchronous online discussions

Anchoring in the online discussion creates a highlighted annotation and a reference marking between parts of the subject of discussion from the article and the discussion space designed as a part of the discussion system in the VLE. The anchored system enables students to select any segment of the document by clicking the mouse over it and highlighting it. The link between the part and the discussion creates a focus for that particular piece of the article. It also creates a thread for students to post in the online forum. As a part of their dialog, they reflect and share their thoughts, understandings, and inquiries. The link helps in directing attention to the annotated word, sentence, or paragraph (text) part of the article to the students’ posts which are situated alongside (left side of the selected text) on the same screen (Kaplan and Chisk 2005). Shin, Kim, and Jung (2018) suggested that this linked annotation can play a key role in establishing a shared frame of reference to create higher level solutions by building common grounds with less mental and coordination efforts.

Eryilmaz, Alrushiedat, Kasemvila, Mary, and van der Pol (2009) found anchoring to reduce the mental load for students when performing tasks related to online discussions. Guzdial and Turns (2000) used anchored online discussions and found that it helps with providing a focus for the discussion. Furthermore, Van der Pol (2007) found anchoring to be useful for collaboration. Additionally, Plevinski, Weible, and DeSchryver (2017) found that employing anchored annotation discussions can support construction of knowledge in terms of interpretation and explanation of ideas while reducing management activities.
Instructional design theory

As anchoring in online discussions create a highlighted annotation and a reference marking, it also creates a discussion space focused on deliberating the specific idea from the selected part of the article. Students reflect and share their thoughts, understandings, and inquiries as a part of their dialog. The link helps in directing attention to the annotated word, sentence, or paragraph (text) part of the article to the students' posts which are situated alongside (left side of the selected text) on the same screen (Kaplan and Chisk 2005).

The instructional design is learner-centered as supported by the constructivist paradigm according to the instructional design theory (IDT) (Reigeluth, 1999). Reigeluth (1999) suggested four characteristics for IDT:

1. Design-oriented to highlight the goals of learning and development.
2. Method of instructions to sustain and simplify learning.
3. Methods to divide the process into smaller tasks and parts.
4. Probabilistic effects do not guarantee the desired learning but rather aims to improve the chances that the desired outcomes will occur.

IDT (Reigeluth, 1999) requires two components; 1) methods to facilitate learning and development, and 2) situation or context (see Figure 1).

1. Desired outcomes include:
   a. Level of effectiveness (e.g., correctly solving three out of four mathematical exam questions by applying the right equation).
   b. Level of efficiency is the level of effectiveness/time (e.g., the time it requires students to solve the four mathematical questions).
   c. Level of appeal implies the extent of enjoyment for contributing.

2. Instructional conditions comprise:
   a. Understanding what is to be learned.
   b. The motivation of the learner.
   c. The learning environment in which to offer the course as online, face-to-face, or both.
   d. The constraints to consider in terms of time and cost.

Figure 1. Components of Instructional Design Theory (Reigeluth, 1999).
Furthermore, the teacher’s commitment is to facilitate interactions between students and to enable them to reflect and share their notions and ideas about the topic (Garrison, 2003). Dewey (1938/1997) maintained, “primary responsibility of educators is that they are not only aware of the general principle of the shaping of experience by environing conditions” (p. 40), and, “they should know how to utilize the surroundings, physical and social, that exist to extract from them all that they have to contribute to building up experiences that are worth-while” (p. 40). Dennen (2008) proposed the discussion itself as a learning artifact, and that online discussions involve reading articles, others’ contributions, and then provide feedback according to their understanding. Students may post comments or ask questions while seeking further clarifications.

**Role of experience**

Dewey (1938/1997) highlighted the value of the experience as it is to be judged by its effect to develop the means and goals of education. The online environment provides an opportunity for this to happen. The role of experience is at the heart of Dewey’s practical inquiry model (see Figure 8). The process of learning is closely associated with the process of inquiry (Garrison 2003).

The perception of a need initiates the cycle of inquiry for the model; the learner then explores (deliberation phase) for “relevant knowledge” to construct comprehension and understanding (conception phase), which resolves the dissonance (action phase). The model relates the inquiry process to the learning process. The awareness of these phases is useful in understanding the nature of activities in discussions. For example, the deliberation and action phases of the model correspond to the reflection and collaboration in the discussions. Garrison (2003) stated that “reflective inquiry represents constructive (internal) and collaborative (external) aspects of cognition” (p. 5). Reflection is a state of mind that represents knowledge that is induced by learning (Garrison, 2003). Dewey (1916) also noted, “Learning in school should be continuous with that out of school” and “there should be a free interplay between the two” (p. 272).

Dewiyanti, Brand-Gruwel, Jochems, and Broers (2007) research showed positive students’ experiences with working in asynchronous computer supported collaborative learning (CSCL) environments and found that using asynchronous CSCL supports collaborative learning as an intended approach to stimulate “new learning.” Furthermore, Dewiyanti et al. (2007) revealed that their satisfaction mean scores for the asynchronous approach were consistently above the midpoint of the scale, which indicated that students were reasonably pleased with learning from this mode. The more pleased students are with their online learning experience, the higher the probability of their success in their courses (Puzziferro, 2008).

**Methodology**

Does the use of anchoring in online discussions provide students with a quality learning experience? As a part of the design of this study, we aim to obtain a rich data set to enable us to examine and provide a more descriptive approach for the students’ actual experiences from using anchored online discussions.

**Action research**

We conducted this research as action research (AR), which consisted of a sequence of proactive endeavors undertaken to advance a precise understanding and awareness of problems (Muirhead and Juwah, 2004). In general, the central goal of AR is to develop a deeper understanding of making improvements. In education, there is wide agreement among researchers that the purpose of AR is practical, emancipatory, or both sometimes (Hinchy, 2008). The core of AR in education is to understand the effect of actions on student learning (Tomal, 2010) because continuous improvements in student learning have always been the main goal in higher education.

The action researcher identifies the problem, gathers the data, interprets the data, acts based on the data/evidence, evaluates the results, and decides on the next step (Ferrance, 2000). These steps flow in an orderly manner forming an action research cycle (see Figure 2). Each cycle represents a study that informs a subsequent study. Baskerville (1999) found widespread agreement among action researchers that AR involves iterative stages. Baskerville (1999) suggested the main aim of action research is to increase the understanding of the social situation in a complex and multidimensional setting (Baskerville, 1999).
Baskerville (1999) identified four characteristics for action research: 1) orientated towards action and change, 2) focused on a problem, 3) systematic and iterative; and 4) collaborative and participative. The fundamentals of action research involve questioning the assumptions, seeking clarifications of values, discovering mismatches between adopted values and actual practice, and understanding the social perspective which encompasses the environment of practice (Green, 1998). Hence, I believe that the action research methodology is ideal for this context because the learning of the students is a genuine issue of great concern to other colleagues in my department and us.

![Figure 2. Action Research Cycle (Adapted from Ferrance 2000).](image)

If we can exploit and utilize educational technology successfully for this purpose, then we can design and develop more effective teaching approaches. Baskerville (1999) suggested the ideal social setting for information systems (IS) research is having:

Active involvement of the researcher with the expectation of benefit for the researcher and the institution. We conducted this research as a disciplined inquiry by the teacher-researcher paradigm according to the action research process. Knowledge can apply in a timely way. This AR aims to inform and make changes in the teaching practices for a specific course. The research process links to the theory to be guided by the constructivist theoretical paradigm.

By moving beyond the traditional course environment, we found that learning theories support the use of blended courses (part face to face (F2F), part asynchronous) to provide a flexible approach to course design. Therefore, we began to use action research to revise the teaching approach whereby interventions are applied to support course goals and objectives. Coghlan and Brannick (2001) suggested that action research can be effective when conducted in a series of spiral research cycles. Each research cycle can be adjusted based on evaluations and lessons learned to improve understanding. However, Nunamaker et al. (1991) suggested that a multimethodological approach for understanding a complex research area makes a very effective research strategy. To this end, given the complex and multi-dimension nature of learning, and to understand and determine the effects of anchoring in a natural setting. The research design will follow the action research (AR) paradigm. Coghlan (2004) noted, “Action research is an application of the scientific method of fact-finding and experimentation to practical problems requiring action solutions...the desired outcomes of the action research approach are not just solutions to the immediate problems; they provide important learning outcomes, both intended and unintended, and a contribution to scientific knowledge and theory” (p. 2).
Data Collection

On the last day of class instructions, we gave the students a take-home essay to examine the student’s experience and acceptance of the anchored asynchronous online discussion (AAOD) based on their experience with AAOD that contains a critical open-ended question: Would you like to use online discussions in future courses? If yes, explain why and describe any changes that you would like to see in the online discussion system you used for this course. If no, explain why and describe any changes that you think would make the online discussion system useable for you. We did not obtain additional personal information from the students.

The students were asked to email their answers on or before the final day of the semester, thereby giving them about a week. Most of them emailed their responses on time. The students were undergraduate students enrolled in two Business Analytics classes (one section of Business Analytics I (n1 = 23) and one section of Business Analytics II (n2 = 18)) and one Business Analytics MBA course (n3 = 10).

Researcher-as-an-instrument

We applied the “researcher-as-an-instrument” model. We were cautious in precluding any implications of preconceived notions and strived to protect the reliability of the analysis. Robson (2002) highlighted the debatable nature of reliability and trustworthiness of findings from qualitative research. The main threats to validity are due to both respondent and researcher biases. We provided the same directions to all of the student respondents. We provided limited information reasoned as sufficient to help students’ participation while they navigate through the anchored online discussion system.

Our awareness of preconceptions that may represent biases within the research helped us in maintaining controls to avoid any potential unintended effects. We were mindful of the responsibility to follow instructions and record the results accurately, regardless of whether we agree or disagree with the findings. We consider any findings to be a potential contribution to the body of knowledge.

Findings

We grouped the data into three source files and saved with a rich text format (.rtf) extension. We uploaded the source files into Qualrus (a qualitative analysis software program) for qualitative analysis. Table 1 provides the summary statistics for the number of posts that the students made.

The students’ answers to whether they would like to use the online discussion in other classes were largely positive. We attribute to the students’ answers to the experience they had while they were using the anchored asynchronous online discussions. We considered a “yes” reply a most likely indication of a positive learning experience, while a “no” reply would most likely indicate a negative experience. In their answers, most of the students said “yes” that they would like to use the anchored online discussions again in their future courses. For the three classes, the “yes” percentages of the answers were 87%, 94%, and 100% respectively.

<table>
<thead>
<tr>
<th>Class</th>
<th>Participants</th>
<th>Mean # of Comments</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Analytics I</td>
<td>23</td>
<td>15.09</td>
<td>5.94</td>
</tr>
<tr>
<td>Business Analytics II</td>
<td>18</td>
<td>22.72</td>
<td>8.08</td>
</tr>
<tr>
<td>Grad. Business Analytics</td>
<td>10</td>
<td>15.3</td>
<td>4.76</td>
</tr>
</tbody>
</table>

Table 1. Summary statistics of the number of posts students made

Furthermore, their positive experience indicates their level of satisfaction and motivation for their persistent contributions. As one student from Business Analytics II answered,
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“I posted on the online discussion because I enjoy online forums, I like to showcase my knowledge to others, and I had a really positive experience last time I participated in this kind of discussion board.” [Student: K from Business Analytics II]

A student from Business Analytics I wrote,

“I would like to use online discussions in future courses because it gave me an opportunity to be engage with my classmates and learn from them as well as they learned from me. It made me understand the concepts in a student point of view not just the professor’s view or explanation. Furthermore, it made me realize as a class where we were having trouble and what questions to ask the professor. I actually liked the online discussion system I used [Anchored online discussion]. At first it’s confusing on how to post or reply to comments but after you learn it’s pretty straightforward that’s the only thing I found confusing, but other than that this tool is great.” [Student: M from Business Analytics I].

Moreover, another student from the graduate Business Analytics course noted,

“I would like to use the online discussions in future courses. The most important aspect of it is that I am able to practice ideas learned in class with others reaffirming my answers.” [Student: R, from Grad. Business Analytics]

Most of the students wrote positively about their experience and attributed their intentions to use the AAOD in the future to improved learning and understanding, increased confidence, enjoyment, benchmarking and guidance, better interaction, communication and collaboration, and usefulness and practicality of the system. On the other hand, a couple of students indicated that they preferred the face-to-face interaction and to make the online discussion optional, rather than making a required part of the course. A few of the issues cited were that it was not easy to input mathematical equations and statistical symbols, that there was repetitious of information by other students, and it was time-consuming. However, the majority expressed their experience of using the AAOD positively in terms of their comfort for discussing and posting, having 24 hours and seven days a week access, saw it as a valuable resource, and a potential alternative to going to the instructor for office hours.

The students suggested making a few changes for the AAOD system in terms of system changes and organization and administrative changes. For the system changes, they suggested making it easier in input mathematical equations and statistical symbols, showing a picture of the poster, add buttons to give definitions of concepts, enabling them to run analytics of their participation and to integrate the system with the course management system. For the organizational and administrative changes, they wanted to see more posts from the instructor, provide a turn-taking mechanism, create groups and assign fewer students to each group and use it as a part of the group project.

Conclusion

Students are more likely to be more determined and thorough with their contributions when they have previous and successful experience with similar activity (Bandura 1977, 1986). The findings showed that AAOD produced promising outcomes for both undergraduate and graduate students, but more so for undergraduate students. Many students conceptualized their experiences in points that are closely associated with learning (i.e., improved understanding, better comprehension, and problem-solving). Moreover, they found AAODs to be more inviting for their participation and felt that the system gave them the freedom to select any segment from the subject (article) of discussion without any restraints. The students’ discussions began once a part of an article is selected and decided to comment on that particular part according to their understanding of the subject matter. The AAOD may have facilitated students contributions not only because of interest in the subject matter but also for social motivations such as to fashioning better impressions of themselves and possibly for other social aims (Horst et al., 2007). Additionally, their positive experience with using the AAOD may have contributed to their satisfaction and desire to use the AAOD in the future.

The anchored online discussion tool became a valuable information source as it linked students with the course and with each other. Since these classes meet once or twice per week, the AAOD effectively helped
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students by staying current with the course instead of allowing the remaining days of the week when they are not in class to simply just pass by.

This study contributes to the use of AAODs as a means of making instructional improvements for bottleneck courses to alleviate some of struggle of students in these courses. AAODs embody both social and learning values that can provide a benefit to students. Improving the pedagogical experience of students is of high importance and can help advance higher educational goals toward creating meaningful interactions and communications for students in overly difficult courses. The implication of the research is that it can enhance the students’ experiences and make their participation more pleasant. The increased participation can help students with improving their understanding and learning. Additionally, employing AAODs can be useful for business analytics courses, which are perceived as difficult by students.

However, a limitation of this study is the research findings were based on business analytics/statistics courses and may not be generalizable to other courses. Key assumptions for faculty members who teach such courses are to be motivated toward making improvements in their instructional designs, willing to integrate online discussion applications into the course to enhance the experience of students, and to increase the interactions among student peers with the course and with the instructor.

REFERENCES


