

Online Asynchronous Discussion Boards. Busywork or Beneficial?

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Asynchronous and blended learning venues are experiencing rapid growth worldwide. Research which provides data to support student success in the increasing sector of online and blended delivery venues can be invaluable for students, course developers and instructors. A mixed-methods survey was sent to all Business students at Embry-Riddle Aeronautical University (Worldwide) in both graduate and undergraduate programs. There were 513 usable responses that contained rich data about student perceptions of online discussions boards. Elements evaluated include faculty engagement, student engagement, overall activity value, good and bad practices, as well as student engagement preferences and naming conventions. Statistical analysis and text mining were performed to identify relationships and trends in the qualitative and quantitative data. The results indicated that students find value in online discussion boards although they do not accurately replicate a traditional classroom discussion. Many additional components of good and bad discussion board practices were discovered.

Keywords: discussion boards, online learning, learning management system, asynchronous discussion

Introduction

Traditional delivery of education and training has been synchronous, primarily focused on face to face classroom interactions in brick and mortar institutions. With the growth of technology, programs and processes started to emerge that offered alternative delivery methods, many of which were asynchronous or had elements of asynchronicity designed into the delivery methodology. Given this growth, and the changing needs of learners, the nature of education delivery must change to meet the needs of students who are interested in online and blended learning solutions. The influence of online and blended learning solutions continues to grow. The growth as cited by Clapp (2016) and Poulin and Straut (2016), supports the unique position that online and blended delivery can serve to increase the number of learners seeking to achieve new skills and growth opportunities. The research conducted by (author) et. al (2015) clearly shows that both students and professors agree the discussion board is an effective learning tool.

The discussion board is a unifying element to all courses that are delivered in an online venue. Student satisfaction with the discussion board as a learning tool is a key factor in their learning experience. Researchers asked students if they found discussion boards helpful in their overall learning experience, and what elements of them were the most useful. The findings suggest that students feel that discussion boards are helpful, but the percentage of the grade they represent should be minimal. Students also felt that the most valuable aspect of them is the interactions with their fellow learners and the professors.

Literature Review

Online learning may seem like a relatively new phenomenon, but research offers a longer-range view. Sun and Chen (2016) cite Mclsaac and Gunawardena (1996), who suggest that the first distance education course originated in the United States in the 1800s where learners and teachers tried to connect through correspondence programs. Clapp (2016) details an 1881 distance education course at the Chautauqua Correspondence College followed using broadcast television as the next iteration of distance education, and that began in 1934 State University of Iowa (now Iowa State University). Other efforts followed which increased the ability educational institutions to reach students. Picciano (2017) stated that before the advent of the Internet as a delivery system, there was a well-established distance education community committed to delivery using venues such as television, “The first wave of online and blended learning commenced with the establishment of the Internet in the early 1990s” (2017, p. 18). By the late 1990s, more than 80% of public institutions of higher education offered online courses (Clapp, 2016).

The introduction of the World Wide Web (WWW) has changed the way we communicate and learn. Chafee (2018) citing findings from the 16th annual USC Annenberg Center for the Digital Future states that “Since the internet became mainstream less than 20 years ago, its use in the homes of Americans has increased more than 400 percent to nearly 18 hours per week.” (para 1). Given this growth, and the changing needs of learners, the nature of education delivery must change to meet the needs of students who are interested in online and blended learning solutions. The influence of online and blended learning solutions continues to grow. Poulin and Straut’s research (2016) asserts that “Overall higher education enrollment fell by 2% from 2012 to 2014. Education enrollments grew by 7% for those taking ‘At Least One’ and rose by 9% for those enrolled ‘Exclusively’ at a distance” (p. 3-4). Graham, (2006) concurs with Poulin and Straut (2016) in asserting that universities are creating and delivering with a combination of both synchronous and asynchronous delivery methodologies. The growth as cited by Clapp (2016) and Poulin and Straut (2016), supports the unique position that online and blended delivery can serve to increase the number of learners seeking to achieve new skills and growth opportunities.

The discussion board is a unifying element to all courses that are delivered in an online venue. Mooney, Southard, and Burton (2014) as cited in (author) et. al (2015) described typical online threaded Discussion Boards as opportunities for students to respond to an instructor-posted assignment, using supporting materials and direction in a time-controlled environment. Instructors often participate in and monitor responses, providing additional support where needed. Diep, Cocquyt, Zhu, and Vanwing (2016) cite (Laurillard, 2012) and asserted that through online participation, learners can articulate and refine new skills. Aloni and Harrington (2018) cite Thompson (2006) by stating “The unique feature of asynchronous online discussions, as opposed to traditional in-class discussions, is that students can respond to the questions, and to each other, at their own pace without the constraint of time and place (Thompson, 2006)” (para 4).

Student satisfaction with the discussion board as a learning tool is a key factor in their learning experience. The research conducted by (author) et. al (2013) clearly shows that both students and professors agree the discussion board is an effective learning tool. Researchers (Freeman, 2014, Aloni & Harrington, 2018, (author) et. al 2015), agree there are some standards which should be integrated into the creation of discussion board content which include: supporting the key objectives of the course (Freeman, 2014), the use of rubrics for direction (Wyss, Freedman & Siebert, 2014), and appropriate instructor support (Freeman, 2014, Mandernach & Garrett, A. 2006).

There are though, challenges to ensuring maximum use of this tool. Some common causes can be; lack of familiarity or ability to use the technology that are the basis of the discussion boards. (Bawa, 2016, Lai & Hong 2015, Muilenburg & Berge, 2005), the lack of visual and aural cues resulting from the online discussion, (Murphy & Coleman, 2004), and the clarity of grading expectations (Rovai, 2007; Birch & Volkow, 2007) that contribution to student motivation.

Methodology

This study sought to determine if asynchronous discussion boards are an effective tool in an online course. A mixed-methods survey was sent to all Business students at Embry-Riddle Aeronautical University (Worldwide) in both graduate and undergraduate programs. The data collection instrument housed online contained 26 questions and was comprised of 12 Likert-style questions, one percentage question, one yes/no/maybe question, and five qualitative write-in responses, and seven demographic questions

including one's computer savvy. The purpose of the computer savvy questions was to identify respondents whose computer savvy may influence their opinions on the use of discussion boards and therefore those responses would be weighted accordingly. Requests for participation were sent via email invitation and URL to all students in the College of Business at Embry-Riddle Aeronautical University (ERAU). This email was sent to a dynamic mailing list of 7,917 College of Business students with a response period of 30 days before the survey closed.

Survey Instrument

The survey instrument was created with the assistance of experts from the Center for Teaching and Learning Excellence (CTLE). Unlike a traditional instrument that seeks to understand only the what, a mixed-methods approach was used to understand both the what and why so both numerical and narrative questions were used. It was also understood that universities present information to students differently and have different student/faculty cultures as it relates to discussion boards, and Learning Management System itself may have an influence. Therefore, this instrument would be considered a pilot based on the case of this particular university and student population (Yin, 2009). The instrument itself was validated in two ways. First, an expert panel of both faculty and educational experts (CTLE) reviewed the instrument and provided feedback in a virtual focus group environment (Ouimet, Bunnage, Carini, Kuh, & Kennedy, 2004). Second, a small group of 10 students tested the instrument and provided direct feedback on the quality, flow, and format of the instrument. Based on this feedback, multiple questions were edited to clarify the language presented to make each construct more discrete, and several questions were discarded as redundant and overlapping other questions. The instrument itself as well as the research methodology were approved by the university's Institutional Review Board. It is intended that this instrument, with appropriate modification based on the nature of the university (e.g., online only, hybrid, etc.), be used by other universities to where cases can be compared in a larger study.

Data Analysis and Results

The data set was analyzed using three methods; descriptive statistics, inferential statistics, and content analysis with text mining. Both RapidMiner© and SAS© Analytics software platforms were used to conduct text mining and statistical analysis. Descriptive statistics were obtained directly from the online survey platform.

Descriptive Analysis

Of those students who responded, 69% (n=316) of respondents were male and 31% (n=142) were female with 55 respondents choosing to skip this question and similar demographic questions. Age distribution mirrored the known student population with a normal distribution with a mean of 30-39 years of age. There was roughly equal representation of Graduate (54%, n=249) and Undergraduate (46%, n=212) students. The majority of Embry-Riddle Aeronautical University students take classes online, so it was not surprising that most respondents felt comfortable using computers. Based on the computer literacy percentages, it could be said that computer literacy played little to no role in any sentiments relating to discussion boards (Table 1).

Table 1.
Computer Literacy

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am comfortable using new technology (e.g., software, hardware, tablets, cell phones, etc.)	69% n=318	27% n=124	3% n=15	1% n=14	0% n=0
I know many advanced features in the software I use.	39% n=178	43% n=199	12% n=56	4% n=20	2% n=8
I am very comfortable with computers.	66% n=306	29% n=135	4% n=18	0% n=1	0% n=1

The descriptive data on the primary research questions shows some interesting trends. First, discussion boards were analyzed as a teaching and learning tool. Student perceptions of discussion boards were mixed. Two summary questions were asked to capture general sentiments of discussion boards; *I feel that online discussion boards are an effective teaching and learning tool.* The other summary question was *I feel that online*

discussion boards contribute to my learning. These questions are similar but view discussion boards from two different angles; teaching and learning. It is expected that the student results would be similar, and they were, which enhances the internal validity of the question set (Table 2).

Table 2.
Target Variable Questions (Teaching and Learning)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel that online discussion boards contribute to my learning.	11% n=56	36% n=186	20% n=103	21% n=106	12% n=62
I feel that online discussion boards are an effective teaching and learning tool.	12% n=61	36% n=186	21% n=108	19% n=100	11% n=58

Students were asked four questions about whether the label discussion boards was misleading, should be changed, whether or not online discussion boards replicate a traditional classroom discussion, and if they should be graded as true discussions, (Table 3). The findings of researchers (Rovai, 2007; Birch & Volkow, 2007) support the use of grading with specific deliverables included in the rubric can increase motivation and help students stay on course when responding to discussion board posts.

Table 3.
Discussion Board Labels and Synthesis

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I feel that online discussion boards accurately replicate a traditional classroom discussion.	7% n=35	18% n=92	18% n=94	35% n=182	21% n=110
I feel the label “discussion board” is misleading because an online asynchronous discussion is not truly a discussion.	15% n=79	33% n=168	23% n=118	24% n=121	5% n=27
I feel that relabeling the “online discussion board” to something different (e.g., message board, participation board) may better define what we currently call an “online discussion board”	8% n=42	30% n=155	36% n=181	19% n=99	6% n=32
I feel that it is appropriate to grade student contributions even though contributions may not resemble an in-person discussion.	12% n=59	38% n=192	22% n=111	18% n=90	11% n=57

The next section of the survey focused on faculty/student interaction and the elements of interaction that students would traditionally see in an online discussion. Questions were asked about faculty-to-student and student-to-student interaction as it relates to enjoyment as well as what interactions defined a quality discussion board experience. What was most interesting is whether or not students felt that student-to-student interactions or student-to-faculty interactions determined the quality of the discussion board experience. The majority of students (58%) agreed or strongly agreed that faculty-to-student interactions contribute to a quality online discussion board experience (Table 4).

Table 4.
Discussion Board Enjoyment and Quality

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I enjoy interacting with the faculty member in the discussion board.	15% n=78	37% n=188	27% n=135	14% n=73	7% n=35
I enjoy interacting with other students in the discussion board.	14% n=72	32% n=165	23% n=116	19% n=96	12% n=64
Discussion board quality depends on professor	29%	29%	22%	16% n=81	4%

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
participation.	n=146	n=146	n=110		n=20
Discussion board quality depends on interaction with fellow students.	29% n=146	40% n=200	15% n=77	11% n=57	5% n=23

The last section of the main survey focused on the specific of the online discussion board such as the use of APA format and participation grade percentages. Discussion board rules and the interpretation of those rules differ so these questions seemed important to obtain the students perception of how formal or informal discussion boards should be. The majority of students (40%) felt that online discussion board posts, per course, should account for 10% of the grade. Very few students felt it should account for more than 20% of the grade while nearly one quarter (21%) thought that the activity should be an ungraded activity (Table 5).

Table 5.
Grade Percentage Responses

% of Grade	Responses	
0%	21%	105
10%	40%	200
20%	23%	116
30%	11%	55
40%	2%	12
41% or more	3%	15

The use of APA format in discussion boards is not uniform. Students were asked if APA format should be required when posting discussion boards. The majority of students (61%) said NO that APA format should not be a requirement. Some students felt it depended on the nature of the activity (31%) but very few felt that APA format should be a requirement (8%) (Table 6).

Table 6.
APA Format Requirements

Answer Choices	Responses	
Yes	8%	40
Maybe / It Depends	31%	157
No	61%	306

Additional Analysis

The two summary questions acted as target variables with a focus on whether online discussion boards are a good teaching tool (pedagogy) and whether or not they contribute to student learning (learning outcome attainment). In addition, other analysis could be conducted. A correlation analysis identified the following correlations:

There was a strong correlations $r = (>.69)$ between:

- Students who felt discussion boards were an effective teaching and learning tool felt discussion boards contributed to their learning. ($r=.843$)
- Student who enjoy interacting with the faculty member in the DB and students who enjoy interacting with other students in the discussion boards. ($r=.707$)

The correlation data is informative in identifying relationships between the variables. SAS Enterprise Miner© identified a single most predictive variable using a regression analysis. When the target variable of *I feel that discussion boards contribute to my learning* was selected, the most influential factor was discussion board quality as a function of student interaction ($p=.004$).

Narrative Text Analysis

Within the narrative text, some additional themes were discovered. Respondents were asked 5 narrative questions. Text analytics was conducted to identify common themes based on *n*-grams of two or three-word phrases. Each question was coded based on the identified themes and examples of each theme will be provided for each question.

Q1: What do you generally LIKE about the current use of the discussion board activity?

Table 7
What respondents liked about discussion board activity

Category (Top 3 by frequency)	Frequency
Thought provoking	35
Student interaction	51
Peer learning	64

A representative example is provided below:

- It simulates to a certain extent a real-life classroom setting, where everyone in the class shares their thought and views.
- Good opportunity for interaction with professors and faculty.
- It allows me to share my thoughts on the topic and to learn the viewpoints from the professor and other students.

Q2: What do you generally DISLIKE about the current use of the discussion board activity?

Table 8
What respondents disliked about discussion board activity

Category (Top 3 by frequency)	Frequency
Busywork / waste of time / pointless	67
How they are designed / not a discussion	74
Posting requirements /APA	101

A representative example is provided below:

- I don't think it promotes meaningful dialogue between the students. It's a check in the box for a grade.
- Too many of them. Don't need it every week and sometimes twice a week.
- I don't like having to reply as part of my grade. Sometimes students don't have a additional thoughts to add to the conversation outside of their post.

Q3: Think back to worst discussion board in which you participated. What made it bad?

Table 9
What respondents felt was the worst discussion board

Category (Top 3 by frequency)	Frequency
Student behavior / participation	57
Poor instructor participation	69
Posting requirements / APA	71

A representative example is provided below:

- A discussion board dictated a minimum word count where participants added unnecessary "fluff" with no value.
- The worst discussion board experience was when the student's wait till the last minute to post their discussion and in turn I have to respond to at least two especially in a smaller class.
- Students were not held to the same standard I met as far as quality content/contributions. Contributions from other students were off-base or just inaccurate (perhaps because the reading could not be completed in time).

Q4: Think back to the best discussion board in which you participated. What made it special?

Table 10

What respondents felt was the best discussion board

Category (Top 3 by frequency)	Frequency
Free flowing / little structure / informal	36
Continuous interaction w/ faculty & students	72
Strong faculty facilitation / prompts / feedback	91

A representative example is provided below:

- Unique perspectives provided by each student, while the instructor asked pointed questions that encourages students to critically think.
- Best discussion board had teacher and students list experiences of a topic and what they've learned from the experience. It helps me understand real world application and avoid mistakes others have made.
- A truly interactive instructor. One that not only simply grades your input but also provides thoughtful discussions based upon their background.

Q5: What could be added to all discussion boards to enhance your learning?

Table 11

What respondents felt could be added to discussion boards for enhanced learning

Category (Top 3 by frequency)	Frequency
Media	35
Faculty engagement	39
Better design	55

A representative example is provided below:

- Ability to rate (stars, thumbs up, etc.) fellow classmate original posts and responses.

- Encouraging video or sound clips would be cool. An ability to record and respond would be a different approach to creating a circumstance more like an in-class discussion than what is currently in place.
- My biggest frustration is when students just comment "I agree" or ramble on in circles to meet a specific word requirement.

Limitations

The students who were surveyed for this study were ones who check their school email regularly and had a high degree of computer savvy. This may suggest that the students who participated were more frequent users of computer-aided social interactions, and therefore more open and receptive to an asynchronous environment. If these students are more open and receptive, the use of discussion boards and their perceived effectiveness may be skewed. Further, student acceptance rates at Embry Riddle University is 71% ("Acceptance Rate Details on Colleges and Universities", n.d.). It is unclear if other universities that are more or less selective might net other responses. Finally, a non-response bias was not present for the narrative results and coding. The median values of each multiple-choice question were compared to those who chose to respond and those who chose not to respond to the narrative questions with no meaningful difference noted.

Recommendations

The researchers conducting this study support the common theme as cited by other research of the importance of discussion boards as integral parts of asynchronous courses, with specific response requirements for each student so that interaction between students and peers/professors is encouraged. Because discussion boards are an essential element of communication within asynchronous courses, and communication is an area that employers emphasize for post graduate students in the hiring process, the quality of student interactions should be more closely assessed. Continued research in methods to improve the quality of discussion boards will be valuable in supporting the building of needed job skills. The following recommendations support the conclusions by Sun and Chen (2016) that gaining student perspectives will be valuable in developing online learning courses.

This research suggests that there is reason to explore the faculty/student expectations that are set when using the label discussion board and whether renaming this feature may be prudent. The data also shows that there is a mixed message between the ungraded, organic nature of an in-classroom discussion and the synthesis of same in the online environment where some discussions are graded, must be in a certain format, or must follow a certain response pattern. This disconnect could be partially responsible for the variety of responses found within the narrative results. The role of faculty/student and student/student interactions must be further evaluated as there are different types of interactions; social, academic, etc. A clearer understanding of what types of interactions would improve the online discussion board experience is needed. Finally, there appears to be a disconnect between the term discussion and the rules applied to the discussion board. For example, students are clearly not fond of any formatting requirement and grade weighting was minimal. This could suggest that what students want is a more authentic discussion experience as opposed to a learning assessment or activity wrapped in a discussion board medium within the LMS. But, synthesizing an authentic classroom discussion or debate seems to be larger challenge for the online learning environment.

Suggestions for course developers:

Consider whether the discussions are or are not a proxy for the classroom. If discussions are, they should be based less on essay-type responses that also require particular formatting. A more free-flow discussion may encourage more students to participate more often, and with more depth.

Professors typically are required to respond to a percentage of student posts weekly, and the depth of the responses varies greatly. It may be prudent to require the professor to respond to each student at least once weekly. Further, more oversight regarding the quality of the responses may be encouraged. A sampling of a professor's responses by another party who has authority to mentor may be a reasonable approach.

Though students typically do not like discussions being graded, more participation may be encouraged should there be a grade reward. Of course, if this technique is used, all responses should be monitored for their ability to substantially contribute to the theme.

The researchers recommend a larger study conducted across a wider variety of universities to further validate this study or to further generalize these findings and identify how or if different universities implement the same LMS activity type. In addition, students who may self-report as less computer savvy or who are new to online learning may have differing views but were not sampled here based on the nature of the population. Within the scope of the presented results, we believe this research contributes to the literature in several ways. First, it provides insight from a large group of students on how to improve the current discussion board concept. Second, it provides Educational Technology companies with ideas as to how to build new educational products in search of a better online discussion. Third, it provides faculty and instructional designers with a view into student perceptions as to the importance of faculty/student and student/student interactions as well as some illustrations as to how to best succeed in the development and deployment of online discussions. These findings should further the conversation on how to build more authentic discussions and improve the online student experience.

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