

EXPLORING COMMUNITY IN DISCUSSION BOARD ACTIVITIES

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ABSTRACT

This study focuses on the best practice of building community in the online classroom, with a specific interest in how this best practice can be achieved through discussion activities. In particular, we investigate the relationship between the structure of discussion board activities and the extent of community that is developed within discussion threads. We define the important elements of discussion board structure to include: (1) the prompt (2) expectations and guidelines, (3) incentives for participation, (4) instructor facilitation and guidance, and (5) tone of interactions. Then, through an analytical coding of discussion board threads, we explore this relationship between structure and community building in three undergraduate online economics courses. We find that the nature and extent of community building within discussion board activities is largely determined by their structure. Additionally, we investigate whether student perceptions of community correlate with differences in the structure of discussion board activities. Our findings suggest a positive relationship between the optimality of discussion board structure and student perceptions of community. We conclude with a discussion of practical strategies for community building through discussion activities in the online classroom.

Introduction

Online classrooms are increasingly being utilized by institutions of higher education in the United States (Ginder, Kelly-Reid, & Mann, 2017; Seaman, Allen, & Seaman, 2018). This rapid growth in the use of the online classroom has placed many capable, but inexperienced, instructors in a new and unfamiliar environment, since most are trained and experienced only in traditional instruction. While there are many similarities between the online and on-campus classroom, traditional teaching methods do not often map perfectly into the online classroom (Palooff & Pratt, 1999; Elison-Bowers, Henderson, Sand, & Osgood, 2010). The idiosyncrasies of online versus traditional instruction have generated a literature that outlines *strategies of effective practice* for online instructors (Haughton & Romero, 2009; Clark-Ibanez & Scott, 2008; Elison-Bowers, Henderson, Sand, & Osgood, 2010). These studies emphasize strategies of effective practice, or what some have called *best practices*, in areas such as course policies and expectations, time and assignment management, technological fluency, and community building. In this study, we are interested in the best practice of community building in the online classroom.

Specifically, we investigate the extent and nature of community that is developed within discussion board activities in the undergraduate online classroom. Research suggests that discussion boards, when properly structured, can be instrumental in promoting community, deep learning, and learner satisfaction in an online setting (Kasl & Yorks, 2016; Block, Udermann, Felix, Reineke, & Murray, 2008; Clark-Ibanez & Scott, 2008; Bender, 2003; Misanchuk, Anderson, Craner, Eddy, & Smith, 2000). Given this knowledge, are discussion boards typically being structured in ways that achieve the desirable outcomes of community, deep learning, and learner satisfaction? Our study undertakes an analysis of the discussion board activities in six undergraduate, online economics classes offered by the Department of Economics at Colorado State University (CSU) – a department that has been experiencing rapid growth in its online enrollments over the past five years. We investigate three research questions at the intersection of discussion board activities and community building; (1) How are discussion board activities currently structured in these courses? (2) What is the nature and extent of community that is developed within discussion board activities in these courses? And (3) Do differences in discussion board structure and the associated characteristics of community correlate with student perceptions of community? Our ultimate aim is to provide instructors with practical knowledge and strategies that can be utilized to promote meaningful interaction and community building within discussion board activities.

Literature Review

Defining Community

We begin our literature review by defining what is meant by *community*. In the most fundamental sense, community is created when students are comfortable, feel welcome, and can connect with others. This conception of community is consistent with Brown's (2001) foundational level of community, which is "making online acquaintances or friends." Further, this foundational conception of community falls within the "social presence" element of Garrison, Anderson, and Archer's (2000) community of inquiry and within Wenger's (1998) "potential" and "coalescing" stages of community development. In a more advanced sense, we define community as a fully functioning community of learners (Cross, 1998), community of practice (Wenger, 1998), or community of inquiry (Garrison, Anderson, and Archer, 2000); this advanced conception of community builds upon the foundational conception of community. A community of learners requires that a group of students be "engaged in intellectual interaction" (Cross, 1998, pp. 4). These three elements (i.e. engagement, intellectuality, and interaction) can be mapped into the three key elements of a community of inquiry – teaching presence, cognitive presence, and social presence (Garrison, Anderson, and Archer, 2000). At this advanced level of community within the online classroom, students not only feel welcome, comfortable, and connected, but they are motivated and encouraged through guidance, they engage each other in rigorous discourse and dialogue, and they build camaraderie through participation in casual, or non-formal, social interactions (Brown, 2001).

The Importance of Community

Building a sense of community in the online classroom is important for several reasons. According to the constructivist perspective, the creation of knowledge is a social phenomenon, and therefore learning is best achieved in community (Cross, 1998; Wenger, 1998). Essentially, knowledge is above all else, inter-subjective (i.e., existing between conscious minds) and therefore, its creation and transference requires interaction and connection between individuals. Community is also important due to its positive relationship with student experience. Building a sense of community through interaction promotes strong relationships between students and the instructor which creates a space where students want to be. This ultimately encourages a positive learning experience and reduces isolation – both of which are essential to student learning and persistence (Murdock & Williams, 2011; Ke & Hoadley, 2009; Chernish, Defranco, Dooley, & Linder, 2005; Richardson & Swan, 2003; Swan, 2002; Swan, Shea, Fredericksen, Pickett, Pelz, & Maher, 2000). Lastly, participation in a learning community is practical in preparing students in multiple facets of life beyond the classroom (Cross, 1998; Shellenbarger, 2017). Students' abilities to engage in discourse and dialogue and their abilities to effectively take part in teamwork and collaboration are practical skills that will enhance their social, civic and economic life.

Building Community in the Online Classroom

Promoting a sense of community in the online classroom is achieved through meaningful interactions resulting from shared interest, collaboration, and support. Online classrooms are often administered through a learning management system (LMS) that includes features such as discussion boards, chat rooms, group hangouts, and other resources. Yang and Cornelious (2005) argue that "email, listserv, threaded discussions, and chat rooms provide an efficient tool to build effective online community" (p. 9). However, additional portals (Gee, 2005) can be created for collaboration and the development of community between participants. Learners often connect on social media, Google documents, wikis, etc. (McKenna, 2018); and engagement in, and creation of, these external portals strengthens online communities (Yang & Cornelious, 2005). Other mediums, such as chat, promote meaningful interaction by allowing students additional ways to ask questions and connect with other students and the instructor. Discussion boards have the potential to initiate meaningful interaction within the LMS and can be used to assess student knowledge and build community simultaneously.

Discussion Boards as a Tool for Building Community

A number of studies suggest that discussion boards, when optimally structured, are a useful tool in promoting meaningful interaction and the development of community in the online classroom (Clark-Ibanez and Scott, 2008; Misanchuk, Anderson, Craner, Eddy, and Smith, 2000; Brown, 2002, Palloff and Pratt, 2005; Hoey, 2017). However, what does *optimally structured* mean in the context of discussion boards? Drawing on the literature referenced, we broadly define structure to include the following:

- (1) *The discussion prompt*. Is the prompt open-ended and thought-provoking, or straightforward and non-thought-provoking?
- (2) *Discussion board expectations and guidelines*. These outline the what, when, and how of interactions within the discussion thread.

- (3) *Incentives for participation.* Enhancing a student's grade for robust, meaningful participation, for example.
- (4) *Instructor in facilitation and guidance.* This can be achieved through participation within the discussion thread, feedback outside of the thread, or both.
- (5) *The tone of interactions.* Do discussions maintain a causal, social tone that encourages participation from all students in the online classroom?

These five elements guide our exploration of optimally structured discussions.

Structure and Community Building in Discussion Board Activities

The structural elements of a discussion board can be classified regarding their ability to promote or obstruct community building within these activities. In other words, we argue that given any discussion board activity, one can investigate the five elements of structure and determine which elements promote community building (i.e., are optimally structured) and (or) which elements obstruct community building (i.e. are sub-optimally structured). Table 1 describes this relationship.

Table 1 – Structure and Community Building in Discussion Board Activities

Element of Discussion Board Structure	Relation to Community Building	
	<i>Sub-Optimal</i>	<i>Optimal</i>
(1) Prompt	Non-thought provoking, closed-ended, and only one correct answer.	Thought-provoking, open-ended, and many correct answers.
(2) Expectations and Guidelines	No expectations and guidelines given. OR Expectations and guidelines are minimal or over-rigid with respect to interaction.	Expectations and guidelines are provided. AND Expectations and guidelines promote interaction and are purposefully ambiguous.
(3) Incentives for Participation	No incentive for actively participating and initiating interactions.	Active participation is encouraged through grade enhancement and/or encouragement.
(4) Instructor Facilitation and Guidance	Instructor guidance is completely absent from discussion. OR Instructor presence is overwhelming and hinders student-to-student interaction.	Instructor guides the discussion by instigating interactions between students, keeping the discussion on topic, and emphasizing main themes.
(5) Tone of Interactions	Discussions are too informal resulting in a less rigorous and stimulating discussion. OR Discussions are too formal resulting in the alienation of some students.	Discussions are casual yet stimulating, resulting in a discussion that is engaging and accessible to all students.

Different elements of structure are clearly interconnected. For example, the expectations and guidelines may enhance or diminish an instructor's ability to incentivize active participation, especially when expectations for interaction are rigid, or over defined. Additionally, if an instructor participates in a discussion using a conversational tone, students may mimic this behavior and, consequently, the discussion would encourage informal, meaningful interaction. These examples show how the different elements of structure can work together to build community within online discussion board activities.

Methods

In order to answer our research questions, we collected data and conducted analysis regarding the structure of discussion board activities, the nature and extent of community within discussion threads, and student perceptions of community (Table 2).

Table 2 – Research Questions and Strategies

Research Question	Research Strategy	
	<i>Data Collected</i>	<i>Methods of Analysis</i>
(1) <i>How are discussion boards currently structured in these courses?</i>	Discussion board threads	Coding of discussion board threads
(2) <i>What is the nature and extent of community that is developed within these discussion interactions in these courses?</i>	Discussion board threads	Coding of discussion board threads
(3) <i>Do differences in discussion board structure and the associated characteristics of community correlate with student perceptions of community?</i>	Discussion board threads	Coding of discussion board threads
	Research Survey – Community Module (5, 6, 18, 19)	Descriptive Statistics OLS regression

Settings and Participants

Participants in this study were enrolled in six undergraduate online economics classes [Principles of Microeconomics (PM), Intermediate Microeconomics (IM), and History of Economic Thought (HET)] each taught consecutively for two semesters (Fall 17 and Spring 18) at CSU. PM is an introductory applied economics course, is part of the university core curriculum, and is typically the first economics course that students take at CSU. IM is an upper-division theoretical economics course, is required for undergraduate degree completion in economics, and is typically taken in a student's third year. HET is an upper-division elective course, it satisfies the "Political Economy" requirement for majors, and is typically taken in a student's third or fourth year.

Discussion boards are in all online economics courses to facilitate student-to-student interaction and to build community. All three courses are administered through the LMS Canvas which includes a discussion board tool. Information regarding enrollment sizes and the utilization of discussion boards in each course can be found in Table 3.

Table 3 – Course Enrollments and the Utilization Discussion Board Activities

Course	Semester	Enrollment Numbers (End of Semester Census)	Number of Consenting Students	Number of Discussion Board Activities
<i>PM</i>	Fall 2017	33	21	10
	Spring 2018	37	31	10
<i>IM</i>	Fall 2017	29	23	4 + Introductory Post
	Spring 2018	34	21	4 + Introductory Post
<i>HET</i>	Fall 2017	13	11	15 + Introductory Post
	Spring 2018	15	14	15 + Introductory Post

Data Collection

Discussion threads. For each course, one discussion thread from the first half and one discussion from the second half of the semester was analyzed (i.e., 6 per semester, 12 total). Due to differences in course schedules and to limit the influence of selection bias, a random number generator was used to select discussion threads from each course independently. To maintain the anonymity of the participants during the analysis, each semester every student was given a random identification number that differed between the two threads and names were removed from the content of each individual post, if necessary.

Survey. Students had the opportunity to complete a voluntary research survey, administered through Qualtrics, in two rounds—once early in the semester and once late in the semester.

This survey included a variety of questions and prompts related to demographics, self-regulated learning, and community, among others. For the purposes of this study, the four prompts that made up the community module were most salient (Table 4). Using a Likert scale, students responded to these prompts by selecting a level of agreement ranging from strongly disagree (0) to strongly agree (10).

Table 4 – Community Module Prompts from Research Survey

P1	I learn best when I feel connected to other students.
P2	I learn best when I feel connected to the instructor.
P3	My learning is improved when I can connect with classmates through discussions or other ways.
P4	I do better in class when I know something personal about my instructor and fellow classmates (such as hobbies or pets).

Of the 161 students enrolled, 57 students completed one of the surveys (either early or late in the semester) and 59 students completed both surveys (early and late) for a total of 175 completed surveys.

Data Analysis

Coding of Discussion threads. Our coding analysis allowed us to measure the nature and extent of community that was developed in discussion board activities across the three courses of interest. The coding rubric that follows measures the presence of community within discussion board activities through its ability to measure both the quantity and quality of interactions taking place within discussion threads, a link that is clearly outlined in the work of Rovai (2002) and Swan (2002). The coding of discussion threads occurred in three stages; preliminary calibration, intermediate calibration, and final coding. The primary purpose of the first and second stages of coding were to calibrate both coders and the coding rubric to strengthen the reliability and validity of the exercise. All three stages of coding were performed by two coders to further ensure the legitimacy of the analysis. The final stage of the coding exercise produced the findings that will be discussed in our findings and discussion section.

The coding rubric. The rubric that was used to code discussion postings is given in Figure 1. Each row of the rubric represents a single post made to a discussion thread. The rubric columns represent important features of the thread that were used to characterize the development of community. To better understand these features, more detail is provided for each

Figure 1 – Coding Rubric

Administrative		Message Poster		Audience			Communication			
First Number	Second Number	Student	Instructor	Instructor	Individual Student	Collective	Original	Response	Subsequent Response	
PM DT1	120	x				x	x			...
PM DT1	TR		x		x			x		
PM DT1	22R	x			x			x		

Content						
Resources	Social/Personal	Question	Answer	Internal Reference (to something or someone else)	External Reference (to something or someone else)	
			x			...
x		x	x		x	
		x				

Tone			Other		
Professional	Personable /Casual	Inappropriate	Examples	Prompt	
x				Example of shortage/surplus in a market	
x			Provides link to statistics	Example of shortage/surplus in a market	
x	x		Uses smiley face	Example of shortage/surplus in a market	

Administrative and Message Poster. The administrative numbers identify the study participant and discussion thread that the particular post is a part of. Under the feature “Message Poster”, each post is coded as being made by a student or the instructor.

Audience. This feature identifies the intended audience of each individual post. It is often the case that all discussion posts can be seen by everyone participating in the thread, and in that sense all posts have a collective audience. However, it could be determined that some posts are made generally to the group and others are made specifically in response to another student or the instructor.

Communication. This feature identifies the nature of a post with respect to its level of communication as either an original post, a response, or a subsequent response (i.e., a response to a response). This analysis does not focus on identifying who interacts with who, as might be done in a social networking analysis. Instead, this analysis focuses on interaction and documenting the distribution of posts according to their place within the discussion.

Content. This feature was non-mutually exclusive and identifies the content characteristics of each discussion posting. When a post included a reference to an article, a link to a website, a graphic, etc. the post was coded as containing a “Resource”. Discussion posts that contained “Social/Personal” content must have contained unsolicited personal information or social content. Instructors often ask for students to answer a discussion prompt using a personal example, however, unsolicited personal content describes a social aspect of community that is different from similar required content. If a post contained a question, either directed to another participant in the discussion or posed generally, the post was coded as containing a “Question”. A post was coded as “Answer” if the nature of the post was an answer to a question or, in most cases, an answer to the discussion prompt. Responses and subsequent responses were coded as having “Answer” content if they made a content related contribution to the discussion. A “Resource” can be differentiated from a “Reference” in that a post which contained a resource provided access to the information within the post, whereas a reference provided information without also providing what was needed for another participant to access that information themselves. This distinction mostly applied to posts containing an “External Reference”—information external to the discussion thread itself. Lastly, a post was coded as containing an “Internal Reference” if there was a reference to an earlier post made by another student or the instructor.

Tone. This feature attempts to determine the affective nature of discussion postings. Determining the “Tone” of a discussion post can be complicated. To simplify the analysis, three non-mutually exclusive subcategories were included: professional, personable/casual, and inappropriate. The category “Professional” was used as the default tone. Discussion posts were coded as “Inappropriate” if they were explicitly hurtful or divisive and the existence of these posts would have a negative impact on the development of community in the online classroom. Postings were coded as having a “Personable/Casual” tone if the message poster was informal, friendly, and/or outgoing when posting. For instance, one student wrote “I don't really dig doing dishes...” in a

post and another student included directions for building a bee hive followed by a smiley face in their post. These are both examples of posts that were coded as having a “Personable/Casual” tone.

Other. Lastly, examples were retained for reference in the “Example” section of the rubric and the discussion prompt was also included.

Survey. We examined student responses to the community module prompts from the research survey by computing descriptive statistics to observe differences in student responses across courses. To test if these differences are significant, we employ simple Ordinary Least Squares (OLS) regression. Our regression analysis also measures the extent to which student survey responses changed over the two survey rounds.

Given differences in course content, demographics, and structure, we might expect mean responses to vary significantly across courses. Further, differences in course structure, including differences in the structuring of discussion board activities, may produce variation over time—between the first and second rounds of the survey—as students were able to interact and connect to each other and the instructor throughout the semester. We tested for significant differences in mean responses across courses and over time by estimating versions of the following equation,

$$A_{ir}^j = \alpha_1^j + \alpha_2^j IM_i + \alpha_3^j HET_i + \delta_1^j R_{ir} + \delta_2^j IM_i \times R_{ir} + \delta_3^j HET_i \times R_{ir} + e_{ir}^j$$

for each of the four prompts. Here, student i 's agreement (A) with prompt j in round r is conditional on the course that the student is enrolled in and the round that the survey was completed. The variables IM and HET are course dummy variables that allow for differences in mean responses across courses, while the variable R is a survey round dummy variable that allows for differences in mean responses over the semester. The interaction between the course and survey round dummy variables ($IM \times R$ and $HET \times R$) allows for temporal differences in mean responses that are specific to each course. Also note that PM is the reference course and Round 1 is the reference survey round. Table 5 shows how to obtain the estimated mean responses to prompt j for different course-round combinations.

Table 5 – Calculating Differences in Means

	Survey Round	
	Round 1	Round 2
Course	<i>Principles of Microeconomics</i>	α_1^j
	<i>Intermediate Microeconomics</i>	$\alpha_1^j + \alpha_2^j$
	<i>History of Economic Thought</i>	$\alpha_1^j + \alpha_3^j$

Findings and Discussion

We present our findings in two parts. First, we discuss the findings given by the coding of the discussion threads followed by a presentation of the survey findings. These findings are combined and general conclusions are drawn in the final section of the paper.

Discussion Threads

There were differences in the expectations and guidelines of discussion board activities in each course. PM and IM discussion board expectations and guidelines are very similar in that students were expected to make only one original post and no responses were explicitly required. In particular, in PM interaction with other students was “optional” and in IM students were “encouraged” to respond to other students’ posts but were “not required to.” In HET, students were expected to make three posts. First, they were asked to make an original post in response to the prompt. Then, after the instructor had responded to every student’s original post, students were expected to make a subsequent response to the instructor’s response and then also respond to another student.

Alternatively, the discussion prompts were similar in all three courses in that they were open-ended, thought-provoking questions for which there was more than one correct response. This element of discussion board structure (Element 1) was considered to be optimally structured in each of the three courses and contributed to the development of community within these activities.

Table 6 displays the results of the coding analysis by course and the timing of the discussion (i.e., early (1) versus late (2) in the semester). No posts were coded as “Inappropriate”, so we exclude this portion of the coding rubric from the table.

Table 6 – The Distribution of Discussion Posts within the Coding Rubric

<i>Course/ Discussion</i>	<i>Number of Posts</i>	Message Poster		Audience			Communication		
		<i>Student</i>	<i>Instructor</i>	<i>Instructor</i>	<i>Individual Student</i>	<i>Collective</i>	<i>Original</i>	<i>Response</i>	<i>Subsequent Response</i>
PM DT1	57	100.0%	0.0%	0.0%	10.5%	89.5%	89.5%	10.5%	0.0%
PM DT2	48	100.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%
IM DT1	52	100.0%	0.0%	0.0%	25.0%	76.9%	76.9%	17.3%	7.7%
IM DT2	47	100.0%	0.0%	0.0%	18.8%	81.3%	79.2%	20.8%	0.0%
HET DT1*	65	100.0%	0.0%	30.3%	34.8%	36.4%	34.8%	30.3%	34.8%
HET DT2*	55	100.0%	0.0%	34.5%	30.9%	38.2%	36.4%	23.6%	40.0%
HET DT1	88	72.5%	27.5%	22.0%	52.7%	26.4%	25.3%	48.4%	26.4%
HET DT2	75	71.4%	28.6%	24.7%	50.6%	27.3%	26.0%	44.2%	29.9%

<i>Course/ Discussion</i>	<i>Number of Posts</i>	Content						Tone	
		<i>Resources</i>	<i>Social/ Personal</i>	<i>Question</i>	<i>Answer</i>	<i>Internal Reference</i>	<i>External Reference</i>	<i>Personable/ Casual</i>	<i>Professional</i>
PM DT1	57	3.5%	26.3%	0.0%	98.2%	3.5%	1.8%	17.5%	98.2%
PM DT2	48	4.2%	12.5%	0.0%	100.0%	0.0%	0.0%	10.4%	100.0%
IM DT1	52	3.8%	25.0%	3.8%	96.2%	3.8%	0.0%	23.1%	100.0%
IM DT2	47	4.2%	8.3%	4.2%	97.9%	6.3%	4.2%	10.4%	100.0%
HET DT1*	65	3.0%	3.0%	6.1%	95.5%	0.0%	0.0%	4.5%	100.0%
HET DT2*	55	1.8%	1.8%	9.1%	94.5%	5.5%	3.6%	3.6%	100.0%
HET DT1	88	5.5%	2.2%	30.8%	81.3%	2.2%	1.1%	4.4%	100.0%
HET DT2	75	1.3%	1.3%	35.1%	72.7%	3.9%	2.6%	2.6%	100.0%

* Instructor participation not included.

The first take away from Table 6 is the absence of instructor presence within discussions in PM and IM as shown in the “Message Poster” columns. In these courses, instructor engagement did not occur within the discussion thread except for creating the initial discussion prompt. On the other hand, the instructor of HET heavily participated in discussion boards, responding to the initial post of every participating student. This finding led us to separate the HET data into two sets. The first set of HET rows, denoted with an asterisk, excludes any response made by the instructor and the second set of HET rows includes all posts and responses made in the thread. This separation allows us to compare the content of student posts in HET to the content of student posts in PM and IM. The role of the instructor in motivating and guiding discussion board interaction is a key component of discussion board structure (Element 4) that contributes to a high level of community. However, we conclude that PM and IM are sub-optimally structured in this respect due to a lack of instructor presence, while HET is also considered to be sub-optimally structured due substantial instructor presence that seemed to crowd out meaningful student-to-student interaction.

The second take away from Table 6 is that students in PM and IM engaged in meaningful interaction early in the course but this diminished as the semester progressed, suggesting a decrease in the level of community. This can be seen in the amount of posts that are coded as having an “Individual Student” audience, which falls from 10.5 to 0 percent in PM and 25 to 18.8 percent in IM over the course of a semester. Additionally, the percentage of posts having “Social/Personal” content fell by more than half and the percentage of posts that were coded as having a “Personable/Casual” tone also decreased by half. When students casually respond to another student who is sharing social and/or personal content, this corresponds to a higher level of community and it is troubling to find this diminished over the semester. We see this finding as having two structural sources. First, discussion board expectations and guidelines (Element 2) in these courses (PM and IM) were structured sub-optimally since they did not require student-to-student interaction. Second, this decrease suggests that students may not

have been rewarded for active participation early in the semester (Element 3). Therefore, this finding suggests that these discussion activities were structured sub-optimally. This contrasts to HET where meaningful interaction was maintained throughout the semester.

Third, discussion posts by students in HET were much more diverse than discussion posts in PM and IM. In particular, the “Audience” columns of Table 6 show that student discussion postings in HET are roughly evenly distributed between “Instructor” (30-35 percent), “Individual Student” (30-35 percent), and “Collective” (36-39 percent). When instructor posts are included, about half of the discussion posts are directed towards individual students, a quarter of posts are general responses to the prompt, and the remaining posts are directed at the instructor. However, once the discussion board expectations and guidelines are taken into consideration, the systematic distribution of audience makes student participation seem more perfunctory than diverse. This notion of perfunctory participation is further explored in Table 7.

Table 7 documents the extent to which students meet the expectations and guidelines of discussion board activities. The only course where participating students didn’t fully meet the expectations was in HET, where students were expected to make at least three posts in each discussion thread. In PM and IM, all participating students met the baseline expectation by merely making a single post—this is why the number of participating students and the number of expected posts is equal. Additionally, just because the number of realized posts exceeded the number of expected posts, does not necessarily mean that students are making more posts in one course compared to another. In fact, the student who did the least in HET, making one out of the three expected posts, made just as many posts as the student who fully met expectations in PM and IM.

Table 7 – Meeting Expectations in Discussion Boards

<i>Discussion Thread</i>	<i>Students</i>	<i>Expected Posts</i>	<i>Realized Posts</i>	<i>Realized/Expected Ratio</i>	<i>Non-Expected Posts</i>	<i>Students Contributing to Non-Expected Posts</i>	<i>Students Meeting Minimum Expectations</i>	<i>Not</i>
PM – DT1 – FALL	21	21	24	1.14	3	2	0	
PM – DT2 – FALL	19	19	19	1.00	0	0	0	
PM – DT1 – SPRING	30	30	33	1.10	3	3	0	
PM – DT2 – SPRING	29	29	29	1.00	0	0	0	
IM – DT1 – FALL	20	20	27	1.35	7	6	0	
IM – DT2 – FALL	21	21	24	1.14	3	2	0	
IM – DT1 – SPRING	19	19	25	1.32	6	4	0	
IM – DT2 – SPRING	17	17	23	1.35	6	4	0	
HET – DT1 – FALL	9	27	25	0.93	0	0	2	
HET – DT2 – FALL	9	27	22	0.81	0	0	4	
HET – DT1 – SPRING	14	42	40	0.95	3	3	3	
HET – DT2 – SPRING	11	33	33	1.00	1	1	1	
All	219	305	324	1.06	32	25	10	

The fourth column of Table 7 displays what we call the realized/expected ratio, which is the number of realized posts divided by the number of expected posts and a ratio close to one suggests students did exactly what was required by the expectations and guidelines. IM exhibits the highest realized/expected ratios out of the three courses with an average of 1.29 across the four discussion threads we analyzed. After looking at the data more closely, however, we found these results to be a bit misleading. For instance, of the 22 “non-expected” posts found in the IM discussion threads, 14 were unacknowledged student responses (i.e., students attempting to interact with other students without success). Put another way, only 8 of the 22 “non-expected” discussion posts in IM were contributing to ongoing student interaction. HET displays the lowest realized/expected ratios with an average of 0.92. These realized/expected ratios that are less than one can be attributed to students who failed to make one, or two, of the three expected posts. The second to last column of the table shows that there were only a handful of participating students (11 percent in total) that contributed to non-required discussion participation. Additionally, only 4.6 percent of participating students (all in HET) failed to meet the minimum expectations of the discussion board activities. The last row of Table 7 shows that, on average, students are extremely good at meeting expectations. The total number of expected posts was 305 and the total number of realized posts was 324 (including the 32 non-expected posts) for a realized expected ratio of 1.06. So, while discussion board

expectations and guidelines in HET were structured much differently than those in PM and IM, Table 7 suggests that each set of expectations and guidelines elicited perfunctory student participation in discussions. Therefore, we conclude that expectations and guidelines (Element 3) were sub-optimally structured in each course since they seemed to limit the extent of meaningful interaction and, therefore, community development.

Lastly, we characterize student-to-student interactions in HET discussion boards as significantly contributing to the cognitive presence of community, while the few student-to-student interactions that occurred in PM and IM can be characterized as contributing to the social presence of community. This is evidenced by the number of discussion postings in HET that contained “Social/Personal” content and had a “Personable/Casual” tone, relative to discussion postings in PM and IM (Table 6). We found this phenomenon to be linked to differences in instructor presence and guidance (Element 4), which then had an impact on the tone of interactions (Element 5). Instructor presence and guidance in HET was overwhelming and, consequently, this limited the amount of student-to-student interaction that occurred in discussions. Additionally, the overwhelming presence of the instructor caused interactions to be less social and more formal in content and tone. On the other hand, the absence of instructor presence in PM and IM led to a small number, or absence, of interaction—which at times were off topic. Therefore, instructor facilitation and guidance (Element 4) and the tone of interactions (Element 5) were sub-optimally structured in each course leading to lower levels of community development.

Survey

Table 8 displays the descriptive statistics of student responses to the prompts given as part of the community module of the research survey and Table 9 displays the OLS estimation results. There are five findings we will emphasize.

First, students don’t realize the importance of connecting with other students when it comes to improving their learning outcomes because they fail to internalize the important relationship between community and learning. For instance, students are indifferent to the prompt “I learn best when I feel connected to other students” (P1)—the mean response across all courses was 5.24 (Table 8). Additionally, the estimation results in the first column of Table 9 suggest that students in History of Economic Thought (HET) respond more positively to this prompt—6.34 compared to 5.14—though this response is still closer to indifference than strong agreement. Similarly, students neither agree nor disagree with the prompt “My learning is improved when I can connect with classmates through discussions or other ways” (P3)—the mean response being roughly 5 (Table 8)—and column three of Table 9 shows that there are no significant differences in means across courses.

**Table 8 – Community Survey Descriptive Statistics
(Both semesters included)**

Course	Round		P1	P2	P3	P4
All	All	Mean	5.24	7.57	4.98	4.37
		SD	(2.72)	(2.01)	(2.74)	(3.03)
		N	174	175	174	174

Table 9 – Testing for Significant Differences in Means, by Course and Round

	P1	P2	P3	P4
IM	-0.29 (0.61)	0.24 (0.45)	-0.46 (0.65)	-0.29 (0.69)
HET	1.20* (0.71)	0.68 (0.48)	0.79 (0.70)	2.06*** (0.76)
Round	0.06 (0.57)	-0.27 (0.45)	0.05 (0.52)	-0.20 (0.62)
IM x Round	-0.12 (0.72)	-0.50 (0.59)	-0.20 (0.70)	0.66 (0.82)
HET x Round	-0.32 (0.95)	0.44 (0.66)	-0.69 (0.95)	-1.67 (1.09)
Constant	5.14*** (0.39)	7.5*** (0.31)	5.07*** (0.42)	4.16*** (0.45)
<i>N</i>	175	175	174	174
<i>Individuals</i>	116	116	115	115

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$. *N* is the number of survey responses answered and *Individuals* is the number of distinct students who generated these survey responses—the latter is important for the calculation of “clustered” standard errors in a panel data setting.

Second, students do realize the importance of creating a connection with their instructor. The average student in each of the three courses we observed agreed with the statement “I learn best when I feel connected to the instructor” (P2), which can be seen in column P2 of Tables 8 and 9. Third, the survey results indicate that students in HET agree to a greater extent with prompts concerning community in the online classroom which means that these students, ever so slightly, were more likely to recognize the overall importance of community. In all columns of Table 9, the estimated coefficient associated with the course variable HET is positive and this positive difference is statistically significant for two of the four prompts (P1 and P4). Although this finding may be a result of a number of factors including student demographics, it might also be a function of the structure of discussion board interactions in HET, where there were clear expectations of engagement with peers.

Fourth, the round of the survey seemed to have no impact on student responses to prompts concerning community in the online classroom. Table 9 shows that the differences in mean responses across rounds are statistically indistinguishable from chance. In other words, student perceptions of community didn’t change over the course of the semester. Lastly, students were given the opportunity to write comments at the end of each survey. We have provided three comments as examples to further explore the student’s perception of community and these comments support earlier findings that students do not recognize the importance of community to improve learning and how discussion board activities can promote community.

1. “Yeah I don’t find any real point to having discussion posts...” (PM)
2. “[T]alking to classmates when it is necessary or having a way to if needed helps but being forced to through discussion posts does not. When forced no one really cares what responses are or what they are responding [to] they just do it for points.” (PM)
3. “It would be nice to have small, randomized groups to get to know better so that we feel like we have friends in the class.” (IM)

The first comment is unhelpfully telling. Our coding analysis, for PM and IM specifically, suggests that there is little, if any, student-to-student interaction taking place within discussion boards. Moreover, the survey results indicate that students, on average, view discussion board activities as merely another tool to test their knowledge, not a way to connect with other students. Given that students seem to hold this belief on average, it is easy to see why this student doesn’t “find any real point in having discussion posts.”

The second student eludes to the point we made earlier, which was the prevalence of unacknowledged response within the discussion threads we studied. This student seems frustrated by the fact that “no one really cares what responses are or what they are responding [to] they just do it for points.” It seems that this student experienced what we found in our analysis—students trying to initiate interaction but failing (Table 7)—and the student suggests that this is due to students being “forced” to participate. We have already discussed the importance of requiring students to participate in discussions, however, forcing students to participate while making interaction with their peers “optional” could be classified as sub-optimal structuring.

The last student suggests that discussions should be organized in “small, randomized groups” and they make an explicit connection between how discussion boards are structured and making friends in the class. Our analysis of the survey responses suggested that, on average, students don’t see discussions as a place where they can connect with other students and improve their learning. Interestingly, this student seems to think that discussion boards, when optimally structured, do have the ability to facilitate connections between students and build community. We think so too.

Conclusions and Implications

Our research contributes to a literature that outlines strategies of effective practice when using discussion board activities as a tool for community building in the online classroom. We combine the previously existing literature and broadly define the important elements of discussion board structure to include: (1) the prompt, (2) expectations and guidelines, (3) incentives for participation, (4) instructor facilitation and guidance, and (5) the tone of interactions. We then explored the relationship between discussion board structure and community development in three undergraduate, online economics courses through an analysis of discussion threads and an investigation of survey responses related to student perceptions of community. To reiterate, our research questions were; (1) How are discussion board activities currently structured in these courses? (2) What is the nature and extent of community that is developed within discussion board activities in these courses? And (3) do differences in discussion board structure and the associated characteristics of community correlate with student perceptions of community?

Our findings suggest that community development was lowest in two online courses (PM and IM) due to expectations and guidelines that failed to emphasize interaction, a lack of incentives for active participation, and the complete absence of instructor guidance within discussions. These discussion board elements were sub-optimally structured leading to low levels of community building. Community was more developed in the one online course (HET) due to the presence of more interaction generally. However, we conclude that expectations and guidelines were over-rigid in defining when and how interactions should take place. Additionally, instructor facilitation and guidance was overwhelming, limiting the amount of social student-to-student interactions and, as a result, the tone of interactions in this course were very formal. Again, these discussion board elements were sub-optimally structured leading to lower levels of community development. Overall, we found that the various elements of discussion board structure were important in determining the presence and development of community within discussion threads.

Our investigation of student perceptions of community in the online classroom showed that, on average, students don’t realize the importance of connecting with other students when it comes to improving their learning outcomes. And not only do students fail to realize the benefits of community, but students also fail to realize that discussions are a place where the positive effects of community building—deep learning and learner satisfaction—can be realized. Student responses to the survey also indicate that students in HET, the course with highest amount of interaction within discussion threads, seemed more likely to agree with survey prompts about the importance of community, on average, though we are not inclined to make any causal inference.

We see our research as generating three practical implications. First, the structure of discussion board activities is important for the development of community both within discussion threads and in the online classroom generally. Students appreciate clearly defined expectations when it comes to assignments, however, discussion board expectations and guidelines that fail to emphasize interaction or are over-rigid seemed to limit the extent of meaningful interaction and community development in online discussion boards. Such expectations and guidelines can also limit the extent to which instructors can incentivize active participation, further limiting the development of community in online discussions. To improve community development within discussion board activities, expectations and guidelines should be less well-defined and greater emphasis should be placed on student-to-student interaction with instructor guidance. This implication does not rule out the use of discussion board rubrics—which can improve grading consistency and reduce student anxieties (McKinney, 2018)—but instead it suggests that such rubrics should contain a certain level of ambiguity and place extra emphasis on informal, meaningful interaction, to discourage the perfunctory participation that can limit community

development. Instructors should also consider their participation within discussion threads. Providing guidance, motivation, and example posts within discussion threads can encourage advanced community development at every level—i.e. instructor presence, cognitive presence, social presence. However, too much participation on the part of the instructor can limit meaningful student-to-student interactions which could discourage community building between students.

The second implication is the need for instructors to create an online community expectation throughout the course. We touched on this earlier when we suggested that student-to-student interaction should be emphasized in discussion board expectations and guidelines. However, the development of community should be emphasized throughout the course. Creating a community of practice should be identified as an objective of the course and how to establish this community should be articulated. Students often appreciate understanding pedagogical decisions made by the instructor. Having the foundational knowledge of why community development is important in the online classroom will also encourage students to capitalize on community building opportunities when presented with them.

This leads us to our last implication, which is that instructors should inform students of the objective of community building through discussion and collaborative efforts. In this study, students valued community when they experienced it, but they didn't realize how it was built or what it entailed. Given that an online community expectation has been created, instructors can inform students that discussion boards can be used as a tool to collaborate, build community, and improve learning. Primed with the goal of community development in addition to assessment, students may be more likely to interact and connect with each other in meaningful ways as opposed to the standard perfunctory participation that is often observed in discussion board activities. In fact, multiple studies of discussion board activities have found that "understanding the purpose of the discussion" promotes higher levels of interactions. (Zhou, 2015)

In the end, community building in the online classroom is about creating positive outcomes for students. Building community in the online classroom accommodates the formation of collective knowledge, encourages student learning and persistence, and prepares students for social, civic and economic life. Our findings and implications specifically stress the importance of discussion board structure as a way to support the development of community within discussion board activities. Ultimately, however, our study contributes to a larger literature that is broadly focused on providing online instructors with information and tools to improve student outcomes.

References

- Bender, T. (2003). *Discussion-based online teaching to enhance student learning*. Sterling, VA: Stylus.
- Brown, R.E. (2001). The process of community-building in distance learning classes. *Journal of Asynchronous Learning Network*, 5(2), 18-35.
- Block, A., Udermann, B., Felix, M., Reineke, D., & Murray, S. R. (2008). Achievement and satisfaction in an online versus a traditional health and wellness course. *Journal of Online Learning and Teaching*, 4(1), 57 – 66 .
- Chernish, W. N., DeFranco, A. L., Lindner, J. R., & Dooley, K. E. (2005). Does it matter? Analyzing the results of three different learning delivery methods. *Quarterly Review of Distance Education*, 6(2), 87.
- Clark-Ibanez, M. & Scott, L. (2008). Learning to teach online. *Teaching Sociology*, 36(1), 34 – 41.
- Cross, P. K. (1998). Why learning communities? Why now? *About Campus*, 3(1), 4 – 11.
- Davidson-Shivers, G. V., Thongsawat, S., Rand, A. D., Mitchell, T. S., & Thomas, C. A. (2017). Content analyses of student asynchronous discussions in online and blended sections of a graduate course. In J. P. Johnston (Ed.), *Proceedings of EdMedia: World Conference on Educational Media and Technology 2017*. (pp. 621- 629). Waynesville, NC: Association for the Advancement of Computing in Education (AACE).
- DiRamio, D. & Wolverton, M. (2006). Integrating learning communities and distance education: Possibility or pipedream? *Innovative Higher Education*, 31(2), 99 – 113.
- Elison-Bowers, P. R., Henderson, K., Sand, J., & Osgood, L. (2010). Resolving instructor challenges in the online classroom. *International Journal of Learning*, 17(1), 339 – 346.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education model. *The Internet and Higher Education*, 2(2-3), 87 – 105.
- Ginder, S. A., Kelly-Reid, J. E., & Mann, F. B. (2017) Enrollment and employees in postsecondary institutions, Fall 2016; and Financial statistics and academic libraries, fiscal year 2016: First look (provisional data). NCES 2018-002.
- Haughton, N. A. & Romero, L. (2009). The online educator: Instructional strategies for effective practice. *Journal of Online Learning and Teaching*, 5(3), 570 – 576.

- Hoey, R. (2017). Examining the characteristics and content of instructor discussion interaction upon student outcomes in an online course. *Online Learning*, 21(4), 263-281. doi: 10.24059/olj.v21i4.1075
- Kasl, E., & Yorks, L. (2016). Do I really know you? Do you really know me? Empathy amid diversity in differing learning contexts. *Adult Education Quarterly*, 66(1), 3 – 20.
- Ke, F., & Hoadley, C. (2009). Evaluating online learning communities. *Educational Technology Research and Development*, 57(4), 487.
- McInnerney, J. M. & Roberts, T. S. (2004). Online learning: Social interaction and the creation of a sense of community” *Journal of Educational Technology & Society*, 7(3), 73 – 81.
- McKenna, K. (2018). The online classroom: A thorough depiction of a doctoral distance learning space. *The Journal of Continuing Higher Education*, 66(1), 13-21. doi: 10.1080/07377363.2018.1415633
- McKinney, B.K. (2018). The impact of program-wide discussion board grading rubrics on students and faculty satisfaction. *Online Learning*, 22(2), 289-299. doi:10.24059/olj.v22i2.1386
- Misanchuk, M., Anderson, T., Craner, J., Eddy, P., & Smith, C. L. (2000). Strategies for creating and supporting a community of learners. Annual Proceedings of Selected Research and Development Papers Presented at the National Convention of the Association for Educational Communications and Technology. <https://files.eric.ed.gov/fulltext/ED455785.pdf>
- Murdock, J. L., & Williams, A. M. (2011). Creating an online learning community: is it possible?. *Innovative Higher Education*, 36(5), 305.
- Palloff, R. M. and Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco, CA: Jossey-Bass.
- Richardson, J.C. & Swan, K. (2003). Examining social presence in online courses in relation to students’ perceived learning and satisfaction. *Journal of Asynchronous Learning Network*, 7(1), 68 – 88.
- Rovai, A. P. (2002). Building sense of community at a distance. *The International Review of Research in Open and Distributed Learning*, 3(1).
- Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade increase: Tracking distance education in the United States*. Babson Survey Research Group. Retrieved from: <http://www.onlinelearningsurvey.com/highered.html>.
- Shellenbarger, S. (2017). Taking one for the team: Companies foster collaboration. *The Wall Street Journal*, Dow Jones & Company, 29 Nov. 2017.
- Swan, K. (2002). Building communities in online courses: the importance of interaction. *Education, Communication and Information*, 2(1), 23-49.
- Swan, K., Shea, P., Fredericksen, E., Pickett, A, Pelz, W. & Maher, G. (2000) Building knowledge building communities: consistency, contact and communication in the virtual classroom. *Journal of Educational Computing Research*, 23(4), 389-413.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, U.K.: Cambridge University Press.
- Zhou, H. (2015). A Systematic Review of Empirical Studies on Participants' Interactions in Internet-Mediated Discussion Boards as a Course Component in Formal Higher Education Settings. *Online Learning*, 19(3). doi: <http://dx.doi.org/10.24059/olj.v19i3.495>