

## Do rewards shape online discussions?

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### *Abstract*

*This research attempted to test whether the granting of points for receiving the most votes as the “best post” would affect the quality of subsequent postings to online discussions. Five online discussions were held in a small graduate-level course in leadership theory, and postings were coded into Bloom’s taxonomy. Quality was defined as the percent of postings in the upper three levels (Analyze, Evaluate, and Create), but did not change. By asking students their reasons for choosing a posting as best, content analysis resulted in five reasons: “personal,” “new,” “stimulating,” “informative,” and “like me,” which are compared to the instructor’s views. When asked if the availability of points affected their performance, nine students felt the points did not affect their postings and two students tried harder because of them. While these results do not capture a link between receiving rewards and improved quality in online discussions, this exercise may capture the process whereby compliments for good postings may set the standard for how graduate students think and contribute online.*

### **Introduction**

Faculty are continuously searching for ways to understand what motivates students to learn and to perform better. This search continues in the online setting, where faculty need to understand how to encourage students to participate in online discussions and improve the quality or quantity of their postings. One theory that may be useful relies on feedback theory to explain how students respond to rules that may influence the quality of their effort and/or performance in future postings to online discussions.

### **Review of Literature**

#### *Feedback Theory*

This section will describe feedback theory as it has been traditionally conceptualized and review research that applies feedback theory to the web, online communities (especially Slashdot.org), and online discussions. Feedback theory is important on its own, but it is also fundamental to systems theory. Systems theory was first popularized in the 1950s by Wiener (1954) as “cybernetics” and developed further in the 1960s as General Systems Theory (Bertalanffy, 1968). The importance of feedback was due to its role in a system to regulate, adjust, or magnify an effect in the system. A simple example from electrical engineering is the thermostat in the home or office that detects when air temperature has altered from the temperature set by a cooling or heating system, which in turn triggers the air conditioning or heating system to turn on to return the temperature to the preset level.

Put simply, a system has interacting parts and feedback provides information to those parts in ways that maintain the system (as in the heating/cooling example) or push it in one direction or another. For example, until the air temperature reaches its set temperature, feedback

will turn the cooling system on and keep it on, thereby pushing the system toward an objective. In this fashion, feedback acts as a governor of the system or a means for the system to become self-governing or autopoietic (Maturana, 1991). Systems theory was studied as a way to understand a number of problems in organizations and economics, but has not as yet been applied to online learning.

### *Feedback Theory and the Web*

It is with Johnson (2001) that feedback theory is first applied to the web. The early structure of the web did not allow for feedback (Johnson, 1997). It was built with one-way links, shuttling readers from one site to another with no way for the reader to comment on the value of the link. Corporate sites – or any site held by an organization – tend to tightly control the content of their sites. In contrast to these static and feedback-free sites are those that use “wikiware,” made popular by Wikipedia (<http://www.wikipedia.org>). Wikipedia is a site that has been created, modified, and evaluated by the users of Wikipedia, creating a living encyclopedia that changes as input from readers, users, and experts is given. The quality of the information, which is not always vetted by experts, can be both better and worse: in other words, it includes more comprehensive viewpoints, but also may include viewpoints of participants with particular agendas. In any case, the process is collaborative and built upon feedback loops from users to the site. In this instance, feedback guides the development of the web, helping it to become self-organizing and supportive of higher-order learning (Johnson, 2001) as both participants and recipients of the wiki information are pushed to explain and justify their contributions and resulting interpretations.

Feedback theory has also been applied to improve services to web customers. Amazon (Johnson, 2001) has the most widely experienced feedback system, which learns what the customer might prefer by tracking purchases, recognizing possible preferences, and providing additional choices of similar products. When the customer chooses additional products, the system can adjust its analysis of the buyer’s preferences and improve future suggestions. Versions of this process initiated by Amazon are now used by other online vendors, such as eBay, Craigslist, MySpace, and Netflix (Anderson, 2006). Firefly is another example of an intelligent agent that also discovers patterns, although in this case, the patterns are the customer’s musical tastes (Johnson, 1997). Intelligent agents deal “only with patterns . . . of likes and dislikes among thousands of people . . . [so that] the agent can make subtle distinctions between appetites” (Johnson, 1997, p. 197). Based on the customer’s feedback to some initial selections, Firefly identifies possible new musical performers he or she might like.

Feedback theory is also applied in the gaming world, where feedback rules alter the pace of the game, its challenge level and speed, goals, acceptable routes, and ultimately the player’s sense of accomplishment. Game theory (see Ross, 2006) has been applied to a variety of fields, but most recently it has been influential in the development of online games as well as online learning. Applied to online learning environments, feedback rules take into consideration different student motivations, learning curves, responses to reward or failure, and reinforcement rates and skill levels in an effort to keep the student “playing” or learning. For example, a weaker student may be provided greater encouragement and a few easier steps, while a strong student may receive more challenging tasks or opportunities to see how they perform compared to other students. Prensky (2001, 2005) has written passionately about the importance of gaming to learning, and makes the case that the game must be complex, rich with decision-making, collaboration with others, adaptive, and fun. Feedback from the player/learner to the game

interacts with the rules to make the game harder or easier, whichever would work to keep the learner involved.

And finally, there is the feedback system used by Slashdot.org, an online bulletin board (Johnson, 2001). This bulletin board exploded in the number of users as well as the number of postings from “cranks,” a pejorative term implying persons with unorthodox or false ideas, who are also unwilling to change those ideas despite logical arguments to the contrary. In an effort to “promote quality, discourage crap” (Johnson, 2001, p. 154), a Slashdot user would be asked on occasion to moderate a discussion for a short time period. The moderator would rate contributions, using only a discrete number of points. This system results in a type of “karma: if your contributions as a user are higher rated by the moderators, you earn karma in the system. . . Your subsequent posts begin life at a higher rating than usual, and you are more likely to be chosen as a moderator” (Johnson, 2001, p. 155). This works much like movie or book reviews, where some reviewers may earn greater credence among the public than other reviewers. Over time, quality submissions would be encouraged and leaders arise.

What is important in this discussion is the understanding that online interactions – be they bulletin boards or class discussions – require the researcher to “analyze the message, the medium, *and the rules*” (Johnson, 2001, p. 158). Feedback provides the means for the rules (Johnson, 2001, p. 158) to influence online interactions. New and different rules – masquerading within and as feedback – will in turn shape what happens online.

What is intriguing about the theory behind the power of feedback is its role in shaping the online environment. Johnson (2001) put it thus: “Adjust the feedback loops, and a new type of community appears on the screen” (p. 162). All of these examples transform the web into a more interactive entity, where the participants can affect the product but also other participants. The question is whether feedback theory as here conceptualized applies to the class environment, and especially to online discussions. In other words, do students participating in class-related online discussions respond to feedback in the same way as individuals participating in bulletin boards?

### *Feedback Theory and Online Discussions*

Clearly, online community bulletin boards as in the Slashdot.org example are not perfectly analogous to classroom online discussions. Bulletin boards allow posters to use a pseudonym, posters are not paying for the privilege of participating, and postings to some sites are rated (as in Slashdot.org). Student contributions to an online class discussion are not anonymous, students pay tuition and fees to enroll in the course, and their postings are not rated in a public manner. (Postings made be part of the course grade, but grading is normally a secret function, between instructor and individual student.) Students in online class discussions may be more accountable – to both classmates and instructors – for their postings since they are identified, but on the other hand, their postings go unrated by the students or instructor in a public way, which might decrease their accountability to the class. Therefore, it is not clear whether systems of evaluating postings, like the point system of Slashdot.org, will work in online class discussions.

In addition, “cranks” may be rarer in online discussions in courses and may not present as much of a problem as in the online bulletin board. Students, who are concerned about their grades, are normally trying to impress rather than annoy. But clearly, instructors want to find ways to improve the quality of online discussions, which is made more complicated by two problems. First, instructors do not always know what a student considers to be a quality posting,

and therefore the student's judgment may conflict with the instructor's. If students were in the position to grant points for a good posting, this might send messages about what is quality to other students that conflicts with the instructor's point of view. This is important if the instructor's judgment is the basis for grading but student evaluations of the postings actually influence other students' subsequent postings. Second, we do not know whether student postings can be influenced by a reward structure that grants points toward a grade for good postings to an online discussion. This study attempts to address both of these holes in our understanding.

Certainly, online discussions have been amply studied, both in terms of what happens in these settings but also how to evaluate these educational activities (see Meyer, 2006). But only one study so far has looked specifically at the role of feedback on student performance in online discussions (Meyer, 2007). Graduate students were asked to select a "best posting" from among all those posted to each weekly online discussion; this was done across five online discussions. This process was also public (everyone saw the selections for best post and also each student's reasoning for why the post was best), but there were no consequences for the vote recipients other than being chosen by their peers for a compliment. Based on both instructor analyses of the online discussions and student impressions, there seemed some evidence that the discussions both improved over time and stayed approximately the same. The current study will replicate this research, but add consequences for the vote recipients. It will focus on understanding the rules of what "gets selected and what doesn't" (Johnson, 2001, p. 158). Many analyses of online discussions do not pay attention to this third element.

Despite the lack of research, feedback theory is a solid theory to test in online learning. It may be a novel application of systems and feedback theory to online discussions, but it may be a useful lens for evaluating whether students in online discussions can eventually come to govern and regulate themselves by recognizing and rewarding students who make valuable contributions.

### *Research Questions*

This research has three aims or questions. First, did student postings to the online discussions change over time? Second, what do students perceive to be a good posting? And are these reasons consistent with the instructor's views? Third, do students feel that either the public nature of the nomination process or the granting of points toward a course grade changed or shaped their postings?

## **Methodology**

### *Sample*

This research was conducted at a mid-south, urban university in a graduate-level course on leadership theory in a doctoral program in higher and adult education. The course was held during Summer 2007 and enrolled 13 students, composed of 10 doctoral students and 3 students preparing to apply to the doctoral program. Both the short duration (5 weeks) of the online discussions and the small number of students limit the generalizability of the study's conclusions until repetitions of the study can be undertaken. The course is a required course, normally taken at the beginning of doctoral study, and uses a blend of face-to-face sessions over three weekends of Friday evening and Saturday classes, online materials, and the five online discussions that are of interest to this study.

### Method

The discussions were scheduled in weeks two through six of the course; the delay was intended to allow students to become familiar with others in the class before engaging in the discussions. Each discussion began on Monday and continued through the week, concluding on the following Monday. While there were assigned readings on various leadership theories and texts, the discussion was taken from issues that arose in the face-to-face class discussions. Each online discussion was initiated by a question posed by the instructor as shown in Table 1.

Table 1.  
*Questions for Online Discussions*

Discussion	Question
1	Despite being touted as the best higher education system in the world, U.S. institutions of higher education are being criticized by several parties as costing too much, being inefficient, not being accountable, and caring more for the organization than the society it serves. As a president of a public college or university (you can pick whichever institution you want), you face numerous challenges, including changing student demographics, stagnant funding from the state, a restive faculty and staff who get 1% raises, a crumbling infrastructure, and a sometimes hostile public. How can the frames from Bolman and Deal (2003) help you to understand and solve these problems?
2	One of the most interesting issues in leadership is who is/was a great leader. Be sure to expand upon the “why” and give reasons for your choice of best or greatest leader.
3	How would you help someone else (or yourself) navigate the stages of Theory U (Senge, Jaworski, & Flowers, 2004)? How do you go from one stage to the next? What would you say or do or ask? Remember, you can answer this as if it were for yourself or someone else.
4	First, how, when, and why should ethics be affected by context or conditions? How do we know if it is right to “adjust” our ethics? Second, why do smart people do unethical things? How does that happen? Why does that happen?
5	One of the situations you will find most challenging is dealing with opposition. How do you handle opposition (from followers, colleagues, those above you in an organization, those outside the organization, etc.)? Are there theories that help with this (either leadership theories or other theories)?

Each student was requested to post two to three times during the week’s discussion, and then to post one final time on Monday to select the posting that he/she felt was best or most valuable in the prior week’s discussion and also explain why the post was “best.” There was no further attempt on the part of the instructor to define what “best” should be or what “value” ought to encompass. Two points were given to the student for posting to the discussion during the week and for posting with their choice of which student’s posting was most valuable. The points were for participation and not for the quality or frequency of postings. Because the points

for participation were the same for all students, they are not part of the analysis of whether rewards shape the quality of students' subsequent contributions to online discussions.

The variable of interest is the reward for receiving the most votes for "best post." For the recipient of the most votes for that week's discussion, two points were added to his/her course total. This may not seem a large reward, but it represents 2% of the total points available for a course grade. Furthermore, it was in addition to the 100 points possible through completing all course tasks (online participation, a final paper on the individual's leadership philosophy, and a final exam). In other words, these points could either make up for points lost on other assignments or push the student's course total beyond the 100 points possible. However, it is also important to recognize that since the students' naming of "best posts" was public – posted to a class online discussion thread available for everyone to see – the reward may be characterized as contributing to one's self-image and/or regard by class members. It has to be recognized that receiving any votes for "best post" may be regarded as rewarding in this sense; one did not need to gather the most votes to receive this psychological reward or boost to one's ego. This study specifically focuses on whether the availability of a reward for receiving the most votes as "best post" may be a mechanism by which the process of voting shaped the quality of subsequent postings for the students.

At the end of the course, a question on the Final Exam for the course asked the students:

Tell me your impressions of the online discussions. (a) Did the postings (yours and/or others) change over the five-week period? (b) Did you have a tough time deciding which were the best posts? Why? (c) Can you see any consistencies among the posts that you thought were the best? (d) Did the possibility of receiving some modest points for having the "best post" motivate you at all? Did you write differently or say something that you thought might get a point? Or were the points irrelevant?

Notes kept by the instructor/researcher on the process comprise the final source of information to include in the analysis.

### *Analysis*

The analysis for this research comprised several steps. First, the online discussions were analyzed by the researcher using Bloom's taxonomy (Bloom & Krathwohl, 1956) as updated by Anderson and Krathwohl (2001), who reversed the last two categories so that the six levels are: Know, Understand, Apply, Analyze, Evaluate, and Create. This required that the researcher review each posting (often several times), and code each posting at one of the six Bloom levels.

Using Bloom's taxonomy had three advantages. First, it focuses the analysis on the level of students' thinking, not their knowledge of the specific topic being discussed (e.g., leadership theory). Second, Bloom's taxonomy was well-known to the researcher (having been used in several prior studies) and its classifications and distinctions were clear and understandable, which would help ensure more consistent ratings across discussions and more reliable results. Third, Bloom proposes various levels of thinking, from a lower level of Know to higher levels of Create; this characteristic would allow the analysis to focus on whether postings at the higher levels of Analyze, Evaluate, and Create increased in either absolute numbers or proportion of the total postings across the five discussions. This process would provide a more objective analysis of whether the quality of postings changed over the five online discussions and help answer the first research question. In addition, content analysis of students' answers on the final exam that

captured their perceptions of whether change occurred or not were incorporated into an answer to this research question.

Three important decisions guide this part of the analysis. First, coding of each posting relied on the key words or verbs for Bloom's taxonomy found in Krumme (n.d.), reproduced in Table 2. This aid was helpful in ensuring more accurate classifications of postings. Second, if an individual posting within a discussion could not be categorized, it was deemed "not coded" and dropped from further analysis. Third, the unit of analysis chosen was a single "posting" to the discussion. Choosing the entire posting as the unit of analysis meant some postings that were quite lengthy could be categorized at multiple levels; in these cases, the level or category most consistent with the entire posting was used.

Table 2.

*Taxonomy of Educational Objectives: Bloom (1956)*

Category	Verbs
<b>1. Knowledge</b> of terminology; specific facts; ways and means of dealing with specifics (conventions, trends and sequences, classifications and categories, criteria, methodology); universals and abstractions in a field (principles and generalizations, theories and structures): remembering (recalling) of appropriate, previously learned information.	defines; describes; enumerates; identifies; labels; lists; matches; names; reads; records; reproduces; selects; states; views
<b>2. Comprehension:</b> Grasping (understanding) the meaning of informational materials.	classifies; cites; converts; describes; discusses; estimates; explains; generalizes; gives examples; makes sense out of; paraphrases; restates (in own words); summarizes; traces; understands.
<b>3. Application:</b> The use of previously learned information in new and concrete situations to solve problems that have single or best answers.	acts; administers; articulates; assesses; charts; collects; computes; constructs; contributes; controls; determines; develops; discovers; establishes; extends; implements; includes; informs; instructs; operationalizes; participates; predicts; prepares; preserves; produces; projects; provides; relates; reports; shows; solves; teaches; transfers; uses; utilizes.
<b>4. Analysis:</b> The breaking down of informational materials into their component parts, examining (and trying to understand the organizational structure of) such information to develop divergent conclusions by identifying motives or causes, making inferences, and/or finding evidence to support generalizations.	breaks down; correlates; diagrams; differentiates; discriminates; distinguishes; focuses; illustrates; infers; limits; outlines; points out; prioritizes; recognizes; separates; subdivides.
<b>5. Evaluation:</b> Judging the value of material	appraises; compares & contrasts; concludes;

based on personal values/opinions, resulting in an end product, with a given purpose, without real right or wrong answers.	criticizes; critiques; decides; defends; interprets; judges; justifies; reframes; supports.
<b>6. Synthesis:</b> Creatively or divergently applying prior knowledge and skills to produce a new or original whole.	adapts; anticipates; categorizes; collaborates; combines; communicates; compares; compiles; composes; contrasts; creates; designs; devises; expresses; facilitates; formulates; generates; incorporates; individualizes; initiates; integrates; intervenes; models; modifies; negotiates; plans; progresses; rearranges; reconstructs; reinforces; reorganizes; revises; structures; substitutes; validates.

Sources: Bloom and Krathwohl (1956); Krumme (n.d.)

The second analysis employed content analysis of students' postings wherein they selected one person as having the best post and explained their reasons for why that post was best. This process followed standard qualitative analysis procedures (Maxwell, 1996). For example, one student might give a particular reason for choosing a post as best which was given a code that described the concept; different reasons were given new codes. Once codes were identified, they were grouped into logically consistent categories and frequencies noted; inconsistencies were also identified as well as relationships among concepts. Then various explanations for the findings are explored. This is a recursive process that yielded themes found across students and their choices for the "best post" and, on occasion, exceptions to those themes (see Meyer, 2004 for a description of this process). This analysis answers the second research question about what students believe is a good post. By adding the instructor's notes to this analysis, we can discuss whether student reasoning about what makes a "best post" seems reasonable for doctoral students and/or coincides with the instructor's views or objective measures.

The third and final analysis used content analysis of the students' answers on the final exam. This analysis helps to connect the first question (whether change occurred) to student perceptions of whether the points mechanism was influential or not. Without this connection, we cannot know if the points affected student performance. At this point, it was critical to compare these student perceptions to the results of the analysis of the discussions using Bloom's taxonomy. These analyses allow us to answer the third research question of whether a change occurred in the quality of online discussions and whether the points (or rewards) mattered.

There are some clear limitations to the current design and study. First, the class was small, which is excellent for instructional purposes but still small for a research study. Second, results will be limited to the perceptions of doctoral students who are also adults and working professionals. Third, one might argue that the level of points given for "best post" was not significant enough. Fourth, the 5-week timeframe for the online discussions may be insufficient to see a change. It is certainly the researcher's hope that replication of this research design by others with access to larger groups, younger students, a longer timeframe, and a willingness to grant more points will be undertaken to extend or modify the results of this study.



## Results

Table 3 presents the analysis of the students' postings to the five discussions as coded into Bloom's taxonomy. The numbers capture the frequency of postings at each Bloom level and the percent of postings at that level for the discussion. The "uncoded" category captures such postings as "Nice job, John!" or "I agree."

Table 3  
*Online Discussions Coded into Bloom's Taxonomy*

<b>Bloom Level</b>	<b>Discussion 1</b>		<b>Discussion 2</b>		<b>Discussion 3</b>		<b>Discussion 4</b>		<b>Discussion 5</b>	
	<b>#</b>	<b>% of total</b>	<b>#</b>	<b>% of total</b>	<b>#</b>	<b>% of total</b>	<b>#</b>	<b>% of total</b>	<b>#</b>	<b>% of total</b>
Create	7	16.7	12	37.5	7	20.6	8	22.2	7	28.0
Evaluate	0	0	7	21.9	9	26.5	7	19.4	3	12.0
Analyze	6	14.3	4	12.5	7	20.6	8	22.2	5	20.0
Apply	14	33.2	3	9.4	5	14.7	4	11.1	2	8.0
Understand	13	31.0	2	6.3	5	14.7	6	16.7	8	32.0
Know	1	2.4	4	12.5	1	2.9	0	0.0	0	0.0
Uncoded	1	2.4	0	0.0	5	14.7	3	8.3	0	0.0
Total	42	100.0	32	100.0	34	100.0	36	100.0	25	100.0

NOTE: Percentages may not total to 100% due to rounding.

Across all five discussions, the most frequent postings were at the upper three Bloom levels (Create, Evaluate, Analyze), totaling 64.2% in Discussion #1, 71.9% in Discussion #2, 47.1% in Discussion #3, 63.8% in Discussion #4, and 60% in Discussion #5. Based on this analysis, there is no evidence that the level of postings changed over the five discussions.

Two interesting insights unfolded during the analysis of the discussions. First, it is clear that some discussions elicited more higher-level postings than others; this was particularly true for Discussion 2 and also to a lesser extent for Discussions 1, 4, and 5. This may be the result of the question asked. Meyer (2005) found that the level of the question "triggering" the discussion influences the level of subsequent responses, in effect bringing the level of the responses up to the level of the question (or vice versa). There appears to be some evidence in these results that this phenomenon occurred. For example, the question for Discussion 2 asked students to select a great leader and justify their choice, which triggered more Create responses than any other triggering question. The question for Discussion 1 asked students to apply ideas from a textbook to a situation, and therefore it is not surprising that the majority of responses are Apply (33.2%) and Understand (31.0%).

Second, although this information is not captured in Table 3, it became clear as the postings were being coded that some students are consistently at one level; for one student, 90% of the postings were at the Create level and another's postings were primarily at the Create or Evaluate levels; for another student, 83% of the postings were at the Understand or Know levels. Other students moved among levels. This finding implies that students respond in similar ways or levels to online discussions; in other words, some individuals may have a "set point" or a fairly consistent level of thinking.

The lack of change is not confirmed when students were asked their perceptions of the postings in the final exam. Eight students felt the posts changed over the 5-week period,

generally becoming more “insightful,” “thoughtful,” and “critical.” Therefore, the answer to research question one is complex: while the number and quality of postings did not appear to change in Bloom level over the five discussions, students perceived that a change had occurred, perhaps largely as a result of their growing comfort with the medium, with each other, and with the process of thinking about the course material.

To answer the second research question about students’ reasons for selecting a post as best, a content analysis was performed on all of the postings where students explained their reasons for selecting a post as best in a particular discussion. A common answer was this: “I had a very difficult time choosing whose post was the best, but . . .” and then proceeding with a rationale for choosing one post. Five main themes resulted (in descending order of frequency): “personal,” “new,” “stimulating,” “informative,” and “like me.”

“*Personal*” (20 mentions) refers to a number of themes that involved incorporating personal experiences or examples, also called “real-life experiences,” where the examples brought the material “to life,” “hit home,” or was timely given the student’s personal difficulties at work. Exemplary of these types of reasons was “[Name of student] made this theory come to life for me by sharing his personal journey. I was able to understand it from a personal perspective.” Another student wrote that one student’s personal experience, shared in a posting, had “started me to think about my own personal experience, how those experiences related to the theory.”

“*New*” (11 mentions) refers to a quality of the posting, its “adding something I missed,” “stretched my mind,” adding a “new viewpoint,” bringing in “outside readings” (material not on the prescribed reading list), going “off the beaten path,” and contributing an analogy, image, or symbol that was especially powerful. As one student noted, “[Name of student] wrote about an ordinary individual who was charged with an ordinary job that he did extraordinarily.” In other words, this individual chose as a “best leader” an ordinary person, not a major leader one might find covered by the media or found in history books.

“*Stimulating*” (nine mentions) captures two similar qualities that were represented among the “best posts:” the ability of the student to begin or stimulate an entire discussion or issue and the ability of the student to respectfully disagree with another student. In the first case, a best post “inspired the conversation” that followed; in the second case, “[Name of student] disagreed in a way that I thought was respectful and thoughtful. I think a little dissent helps to stimulate conversation and it takes a certain amount of courage and tact to do well.”

“*Informative*” (nine mentions) relates to the importance that information, assigned readings, or current events brought to the posting, or the poster’s ability to provide a comprehensive treatment. As one student wrote, “She comprehensively explained her rationale that touched on virtually every aspect of leadership that we have covered so far.” What is of importance is not that new information was brought forward, but existing information (theory, readings, etc.) was used well. Also, students used such descriptors as “insightful” and “improved my understanding of the readings.”

“*Like me*” (six mentions) includes a number of comments that the best post captured their own thinking, they agreed with the posting, or the posting was a good expression of their thoughts. As one student wrote, “My vote goes to [name of student]. . . because that is also my viewpoint.”

The next step is to compare and contrast these categories of reasons for choosing a posting as “best” with the instructor’s perception of what makes a good contribution to a discussion by a graduate student. We know that adults use personal experiences to ground or

scaffold their learning by relating theory to their lives which in turn improves their grasp of concepts. It is not surprising that the most numerous mentions for choosing a post as “best” fall into this category. It is gratifying that the next two categories in terms of frequency of occurrence – “new” and “stimulating” – represent ways students are expanding their understanding and pushing the boundaries of their thinking. These are precisely the sort of changes that graduate education attempts to bring about.

The next two categories – “informative” and “like me” – are more problematic. “Informative” might be seen as consistent with the type of logical, reading-based thinking encouraged in graduate study, which is good as far as it goes. One hopes the student eventually grows beyond this level to become more creative later in his/her studies. However, of all the categories, “like me” may be both understandable (we like those who we agree with and we agree with those who are like ourselves), but also the most problematic when education is attempting to change students’ knowledge and/or perspectives. These represent issues the instructor must address in future courses by challenging existing viewpoints and pushing students to consider views different from their own.

Let us tentatively answer research question two about what students perceive to be a good posting and if these reasons are consistent with the instructor’s views. The majority of reasons for choosing a post as best seem to be aligned with the instructor’s own goals for students in doctoral courses and include thinking that is “personal,” “new,” and “stimulating.” The final two categories -- “informative” and “like me” – appear less supportive of the aims of graduate study, although they are clearly valid levels of thinking.

To answer research question three (did the availability of extra points change the student’s postings?), a content analysis of the final exams was performed. As was noted earlier, eight of the students felt the postings did change over the 5-week period as they became more comfortable with their classmates and could think more “critically about the theories,” as one student put it. The larger issue is whether the granting of points (two points for the student receiving the most votes for the best post for that week’s online discussion) motivated the student to write a better post. In other words, this is the link between the reward structure and contributions to online discussions.

In their answers to the final exam, the majority of students (nine) did not feel the points motivated them or changed their performance. Comments such as these were common: “I’m not really motivated by money or points,” “I try to do my best at everything,” and “it didn’t cross my mind.” Two students specifically recognized that points might be good to have (“I would have liked to have won an election”), but it did not affect their postings. On the other side, two students mentioned being motivated by the reward of extra points.

So did the availability of points influence students’ contributions to online discussions? It appears that these rewards did not affect students’ motivation to prepare good postings, which may be due to two factors. Perhaps these adult, graduate students are secure enough in themselves that their basic motivations and personalities are not so easily modified or shaped. And perhaps the points available were not enough to change behavior. Therefore, it may be important to test the role of rewards on students’ contributions to online discussions with different types of students and different rewards.

## Discussion

What can be made of these conflicting results? Do rewards matter or not? At least in this study, using a relatively short (5-week) timeframe and few (five) online discussions, there is no evidence that the reward structure affected the quality of the online discussions, as captured by Bloom's taxonomy. But perhaps the students are learning something important, which could not be captured by the current measures.

Feedback theory posits that the rules governing the feedback help to regulate, adjust, and even magnify an activity, behavior, or air temperature. In the current study, through the voting process where each student voted for the "best post," novice doctoral students were able to see how others in the class think, how they tackled answering the question, and/or analyzed the problem. The social dynamic of every class supports and magnifies each student's need to figure out what he/she ought to do, how to think by emulating others' performance and attempting to surpass that performance. In other words, perhaps more shaping may have been going on than could be captured by the methods and questions used in the current study design. This is clearly something that needs further exploration.

Feedback is also a means to helping a system become self-governing. By relying on students' rationales for choosing a post as "best," could an instructor leave students alone in the online discussion and trust that good reasoning, or continually advanced reasoning, would occur? If the students are like these adult doctoral students, perhaps the answer could be positive. But the answer to the question would depend on the nature of the students and their current level of reasoning and/or whether leaders would emerge to push the class to higher levels.

In other words, perhaps online discussions such as these serve multiple missions – to share knowledge and to discuss ideas -- but also to learn how to think like a graduate student (or a college student or major in the discipline) as well as how to engage others in complicated topics online. That includes disagreeing and challenging ideas, but also leaping out of whatever box the student's thinking is currently in. Online discussions can serve as ways to provide examples of graduate-level thinking that will both stimulate each student's thinking and push the entire class into higher or deeper understanding of the issue at hand. But perhaps it would take more than 5 weeks to bring such changes about. In any case, using various rules of feedback in online discussions need to be examined by others to detect any influence they may have on developing and improving student thinking.

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