



The Role of Semantics in Knowledge and Learning Transfer in Online Discussion Forums

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This work was carried out in collaboration between all authors. Author JK designed the study and wrote the protocol. Author JPT anchored the field study, gathered the initial data and performed preliminary data analysis. Author SYG performed the data analysis and interpreted the data. All authors managed the literature searches and produced the initial draft. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This research examines the impact semantics may have on knowledge transfer between faculty and students in online discussion forums.

Study Design: Grounded theory qualitative method utilizing Nvivo10

Place and Duration of Study: Ashford University, Clinton, IA between July 2014- March 2015

Methodology: A qualitative analysis on 285 instructor replies derived from a set of 21 discrete online graduate organizational behavior courses was completed.

Results and Discussion: Researchers reviewed 21 discrete online course sections of a graduate organizational behavior course and two hundred and eighty five unique instructor responses in the discussion forum. The researchers evaluated the role of semantics and other factors perceived to influence the knowledge transfer process in the discussion forum. The research identified four primary themes in discussion forum responses by instructors: Instructional (unrelated to material,

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corrective in nature), declarative (recaps), critical thinking (expanded on student's response), and sage on stage (rhetorical, often corrective).

Conclusion: Only 22.61% of the instructor responses analyzed encouraged a dyadic response, which could have led to some form of knowledge transfer from the instructor to the student. Over 77% of the instructor responses resembled lecture type statements, which did not seem to encourage students to respond or continue the discussion. These findings suggest that discussion forums support administrative tasks such as attendance taking and participation credit in the online classroom but may not assist students in applying the skills and knowledge they acquire in the online classroom.

Keywords: Knowledge transfer; discussion forum; distance education; online learning; online facilitation; higher education; semantics.

1. INTRODUCTION

Working adults often seek the ease and flexibility of non-traditional, online environments to complete their higher education goals [1]. Unlike the traditional classroom, online classes rely on discussion forum activities as the main method of faculty-to-student and student-to-student engagement. Discussion forums, also referred to as discussion boards, are online message boards embedded in a learning management system, which allows for asynchronous written discussions between participants [2]. Discussion forums often drive connection time and attendance metrics as well as illustrate validity and quality in the online classroom. A primary goal of discussion forums in the online classroom is to help students apply what they have learned through effective discussions.

The definition of transfer of learning is the ability to apply skills and knowledge learned in one situation to another learning condition [3]. Research suggests that successful learning in the online classroom is a result of quality classroom interactions [4-6]. Activities in the online environment such as participation in the discussion forums can assist learners in sharing and gaining knowledge from each other [7]. Students enjoy the exchange of real world experiences as well as storytelling as a method of reviewing challenging concepts in an easy to understand format [8].

Semantics and structure in discussion forums influence the interaction between student and instructors [9]. Semantics is the meaning and relation between words, phrases or signs [10]. Unlike face-to-face interaction where there is a real time back and forth between participants and voice inflection and body language can assist the communication process, discussion forums rely on static interaction. Students participating in a

discussion forum respond to a previous post submitted by either the instructor or classmate. As more participants respond in the forum, the thread grows and the information included in previous posts may influence latter posts. Semantic differences and expressions may influence the dyadic exchange or interaction between student and instructors.

1.1 Problem Statement

While online class environments may provide some advantages over the traditional classroom setting in terms of collaboration and problem solving [11]. It is unclear whether the online discussion forum is a useful device in transferring knowledge from faculty-to-student and student-to-student. Knowledge transfer is considered an acceptable learning outcome [12], yet there is little empirical evidence that confirms whether measurable, authentic knowledge transfer occurs through classroom interaction. With the Department of Education placing a high premium on attainment of workplace skills as a primary outcome of higher education [13], measuring what students actually learn in the college classroom is critical.

The demonstration of competency within discussion forums is often measured using objective criteria such as the number of posts, word count, and timeliness, rather than on measures that seek to determine how the knowledge has been assimilated and applied. Assessing student outcomes in discussion forums should examine how well students produce knowledge and not just reproduce it [14]. Additionally, application of knowledge to real-world situations should be evident. There is little research that specifically examines knowledge transfer in online discussion forums as an effective measure of student learning outcomes.

A study by Tucker, YoungGonzaga, and Krause [15] found knowledge transfer occurring between students in an online discussion forum but no evidence of knowledge transfer, in any form, was found in the faculty-to-student interactions. The lack of evidence to support faculty-to-student knowledge transfer appears to contradict both current literature suggesting the importance of faculty in the online discussion process [16-18] and our own professional experiences. One possible reason for the results might include a lack of adequate faculty training or preparation for facilitating knowledge transfer in online discussion forums. This concern led to this study focusing specifically on instructor-to-student responses (ignoring student-to-student interactions) looking for trends or clues in the exchanges that might indicate the reasons for the lack of knowledge transfer in these responses. The focus of our study was to evaluate instructor responses in the context of semantics to determine if there were commonalities in responses that were perceived as engaging, and if those commonalities could be provided to instructors through additional training.

2. LITERATURE REVIEW

2.1 Theoretical Perspectives

When considering knowledge transfer as a practical application, knowledge management theory is applicable. Knowledge transfer is the process through which one person is affected by the experience of another [19]. Polanyi's definition of tacit knowledge included the knowledge that is embedded within the individual. It is difficult to express, but can be thought of as that instinctive knowing that we possess. Tacit knowing is often thought of as "we can know more than we can tell" [20]. Nonaka and Takeuchi [21] suggest that knowledge passes through stages as it transfers from one individual to another. These stages include socialization, externalization, combination, and internalization. As knowledge moves from tacit (implied) to explicit (conveyed through dialog) among individuals, these stages transform information to knowledge [20].

In the discussion forum world, moderation of dialog can be a facilitation to knowledge transfer in discussions, or it can be an inhibitor to learning. In one study by Mitchem, Fitzgerald, Hollingsead and Miller [22], students were split into two groups for online discussions. One group discussion was very structured and heavily

driven by the instructor, where the other group's forum was less structured and the participants allowed to interact at their own pace and drive their own discussions, with the instructor acting as a *participant* rather than as the proponent of the discussion. Mitchem et al. [22] found that a less formal structure led to a greater number of interactions among participants, including a greater degree of openness and sharing of experience by the participants. This speaks to the positive effect of less *formal* interaction between instructor and students both in discussion forum structure as well as instructor directive responses, as being more conducive for eliciting dialogue and sharing among forum participants.

In another study, Morgan [23] notes that an instructor's online presence is a key element in the didactic responses that students have in discussion forums has a significant effect on the way students respond in the forums. *Presence* in this study was identified as the perception of the instructor as an authoritative figure vs. a class participant. The differentiation between an authoritative figure and a class participant was implied by the semantics used in the responses by instructors, e.g. authoritative, directive response structures such as "It's important to remember ..." versus the opinion structure of "I think ..." [23]. The research suggests that the phrasing of instructor replies can inadvertently shut down lively and thoughtful discussions, as students feel precluded from offering their own perspectives, especially if their perspectives may contradict the perceived authority of the instructor's response [23].

In other literature, Jarosewich et al. [24] suggest that successful responses by instructors be monitored in a methodical way so the salient elements that seem to make responses engaging might be identified. These elements could potentially provide guidelines for other instructors. *Successful* responses were described as those posts that elicit additional thoughtful dialogue by forum participants [24].

Social learning theories which rely on integrative cognitive behavior of the social process of learning [25], suggest that there is a cyclical relationship between experience and application of knowledge [26]. Bandura [25] further suggests that individuals observe and model behavior they learn through social interactions. Additionally, the idea that we learn from more capable peers as a result of observation and engagement is evident

in communities of practice, where individuals from various levels of experience come together to share with one another [27].

Learning is not the same as transferring knowledge. Learning requires study as a means of acquiring new knowledge or skills [28]. Knowledge transfer is a highly social process that results in sharing of experiences through which individuals internalize information and begin the highly individualized process of converting information into sustainable knowledge.

2.2 Engagement

Significant research exists in the area of student engagement and online learning. Numerous reasons have been cited for a lack of student engagement. Some of these reasons include poor instructional design and lack of daily oversight [29] as well as a lack of active and collaborative opportunities or a lack of one-on-one experiences with faculty [30]. Fisher [30] reports results from the Center for Community College Student Engagement (CCSSE) survey of 2,085 online community college students. Online learners reported feeling less supported socially and academically by their institutions. Additionally, students reported that even though they were not as engaged as their on-campus counterparts, they felt they worked harder at their studies, suggesting that online learning is a more individual endeavor. Finally, the study found that students who attended college part-time reported being less engaged than their on-campus counterparts. This might be due to conflicting demands on their time [31]. It has been suggested that online courses may not be designed with enough channels for student engagement, collaboration, and communication [10] suggesting that students may not be receiving the experiences they need to meet their individual learning styles.

Benefits of student engagement include higher improved learning outcomes and higher retention rates [32]. Engaged students also report personal benefits, which include skill mastery and confidence [33]. "Engagement techniques may be one key to making online learning productive for the institution but, more importantly, ensuring that students are successful as they pursue a college degree [29]. Kuh [34] posits a definition of engagement as follows:

The engagement premise is straightforward and easily understood: the more students study a subject, the more they know about it, and the more students practice and get feedback from faculty and staff members on their writing and collaborative problem solving, the deeper they come to understand what they are learning (p. 5).

Engagement takes on many forms. One way to define faculty engagement is through teaching presence. A study of student perceptions of teaching and social presence indicated that both factors have a significant impact on cognitive presence [35]. Arbaugh [36] suggests that a significant emphasis placed on faculty engagement and interactions in discussion forums, suggesting that this may not be all there is to online teaching. Faculty role is emerging as an important indicator in student satisfaction. Formal vs. informal instructor roles and behaviors influenced student satisfaction in the course. Over a two-year period, Arbaugh [36] surveyed students in 46 MBA courses. Faculty roles were identified as teaching presence, which included course design and organization, facilitating discourse, direct instruction, and instructor immediacy behaviors. Results indicated that both teaching presence indicators and instructor immediacy indicators were significant predictors in satisfaction. While this finding itself is interesting, maybe a more important discussion is that of the value of the teaching presence roles of both facilitating discourse and direct instruction within the online classroom. Findings indicate that both facilitator and instructor (content expert) roles are needed throughout the discussion forum process; that the faculty needs to be both a "knowledge disseminator and interaction facilitator" [36] to assure effective teaching presence.

The Community of Inquiry model [35] offers a framework for understanding the importance of connection, or breaking down the barriers between faculty and student in the online classroom. Puziferro and Shelton [37] further suggest that "A cooperative, collaborative and social learning culture is part of the emerging academic practice and we know from research that collaboration, interaction, connection and relevance all enhance learning outcomes and the quality of the learning experience" (para. 23). Of importance to connection is effective communication [38]. For communication to be effective, the proper channel must be selected

for message delivery. Betts [38] found that personalized communication was critical to recruitment, engagement, and retention of online students. In fact, student data collected through annual surveys by Drexel University's online Master of Science in Higher Education Program (MSHE) indicates the more personalized the online educational environment is for students, the more likely students will be engaged throughout their courses and stay connected as alumni.

2.3 Retention

To address the need for retention of online students, Drexel University implemented a program called Online Human Touch [39]. OHT sought to engage students both inside and outside of the online classroom. One element of OHT is that of personal interaction and engagement with faculty. Techniques recommended through OHT derive from five conceptual areas of research: student engagement, community development, personalized communication, work-integrated learning, and data driven decision-making. With respect to student engagement, research indicates that the more students are engaged, the less likely they are to leave the program [40] and the more frequent they interact with faculty both inside and outside the classroom, the more motivated and involved they become [41]. The OHT program seeks to create engaged learners by providing as many opportunities for students that mimic that of on-campus activities. This includes advising, student support services, and conferences, to name a few. Faculty are trained and encouraged to promote OHT throughout their interactions with student learners.

2.4 Risk Taking

One factor that may influence student participation and engagement in online courses is that of *being known* [41]. Students reported that instructor caring behaviors, such as referring to the students by name, and providing recognition are positive factors in their motivation and comfort. Additionally, these same students reported an increased willingness to ask questions and take risks. This finding was demonstrated in both feedback and discussion forum participation by faculty. Indeed, Kolb's cycle of learning includes risk taking as part of active experimentation where learning occurs through getting things done [42]. When examining learning styles of students of the Case

Weatherhead School of Management MBA program, Kolb and Kolb [43] found a mix of active experimentation and reflection observation student learning styles. Yet, management education tends to be text-based, scientific, and theory driven by nature [43] with little time spent on performance. These researchers suggest that student learning spaces be better aligned to student learning styles.

2.5 Critical Thinking

Hall [44] suggests that employers are increasingly looking for employees who can exercise critical thinking. However, while discussion forums are a perfect vehicle for learning this critical skill, research indicates that critical thinking exercises and opportunities are not occurring in these forums. Hall [44] further posits that critical thinking, when it occurs in online discussions is an anomaly. Yet, the technology vehicle itself presents significant opportunity for critical thinking to occur. Moderating techniques are frequently cited as a reason for this lack. One problem identified was that of slowing discussions in which students stop participating because they do not know what to say or how to continue with the discussion. This is where the skill of the faculty facilitator in transitioning the discussion to higher level thinking is key to the overall success of the discussion. Prompts and probing questions are ways in which faculty can restart conversations and improve critical thinking responses [44].

3. METHODS AND RESULTS

The basis for determining competency in discussion forum learning is the measure of number of posts, word count and other similar quantitative measures. Eliciting interaction between students and instructors is one of the key factors in this process [7]. A qualitative analysis on 285 instructor replies derived from a set of 21 discrete online graduate organizational behavior courses was completed. The 285 instructor replies represent the total number of the instructor replies in the group studied. Identifying characteristics were removed from both the student and the instructor data (such as name or gender) prior to analysis. The average age of graduate students enrolled in this program at the university studied is 40-49, 70% female and 46% white. The faculty is a mix of adjunct and full-time faculty, 61% female with 27% of the faculty representing minority groups [45]. The application of Charmaz's [46] grounded theory

qualitative method utilizing Nvivo10 examined the nodes defining the data and developing themes. The coding of responses identified the differences in phrasing semantics to shed light on how the responses might be perceived as encouraging dyadic exchanges and what might be some of the semantic differences that encourage or discourage dyadic interaction between student and instructors. Thirty-three of the instructor responses did not fit into any category as they were one word responses such as *good!* or *thanks*. These responses were omitted from the analysis leaving us with a total of 252 instructor responses.

We considered the role of semantics and what factors it plays in online knowledge transfer in discussion forums. We chose to define semantics in this case as the *perception of the responses given by the instructor based only on the phrasing of the instructor's post*. Responses were not evaluated beyond the perception of the phrasing in the post, e.g. no tally of responses by students to instructor replies was done.

The primary questions focused on when reviewing each response were:

- Was the response perceived to genuinely encourage interaction?
- Was the response designed to draw more response from a student in areas where the initial post may have been lacking, e.g. missing or misunderstood concepts?
- Was the response designed to prompt the student to think critically about related concepts or opposing aspects of the material and encourage dyadic exchange?

Reviewing the instructor responses outside of the context of the whole discussion thread could be considered a limitation. However, it allowed for a focused study of phrasing and thus the development of an impression of the semantics

of the response, allowing impressions of phrases without the distraction of historical discussions in the classroom overall. Additionally, the blind responses and the obscured identity of the instructor eliminated any additional bias that may have occurred by knowing the identity or background of the instructor, or the student(s) in the initial post/response pairings. The coding identified four primary themes: Instructional (unrelated to material, corrective in nature), Declarative (recaps), Critical Thinking (expanded on student's response), and Sage on Stage (rhetorical, often corrective).

Declarative and Instructional responses were generally non-dyadic and did not seem to encourage student responses. To some degree, this was also true of the Sage on Stage though this theme tended toward responses that were somewhat lecture hall style, but often included elements that encouraged student response. The Critical Thinking theme had the most encouragement for dyadic response. This theme generally took elements from student responses and used them as springboards for bringing in new or opposing concepts for students to consider.

There was a preponderance of non-dyadic instructor responses in the replies examined. The Declarative response type is the largest type noted in the data set with 114 instances, followed by the Sage on Stage type at 71 instances that was similar to the Declarative, but had more *professorial* overtones to the responses than the general Declarative response type. A summary of the responses for each node type is in Table 1.

The data did not lend itself to a direct correlation of response types generating replies between instructors and students, and thus was not quantifiable in determining whether the semantics of the instructor's response did in fact elicit a reply from the student; however, there are a number of interesting findings nonetheless.

Table 1. Type and instances of responses

Type of response	# Of instances	# of Classes where present	Encourage student response
Instructional	10	6	No
Declarative	114	19	No
Critical Thinking	57	13	Yes
Sage on Stage	71	15	Sometimes
Total	252		

The following information provides definitions of the Nodes and examples of the types of responses that were coded in the Nodes identified:

3.1 Instructional

Instructor responses were defined *instructional* if posts related to APA, citations, references, assignment tasks, etc. and not related to material in the discussion and the tone was direct. An example of an instructional post in this category includes: *Student, Please discuss the topic elements in more detail - this is an insufficient response. Instructor.*

3.2 Declarative

Statements were defined as *declarative* if they were recapturing previous information with no additional support to encourage thought or response. Single and/or *throwaway* questions that appear with little or no support or context also fall in this category as well as *curiosity* questions - e.g. questions that satisfy one's curiosity about the response rather than elaborates on an issue/concept/aspect of the material. The tone is direct and can sometimes be perceived as rude. An example of a declarative post was: *Student, Good point - lack of good communication can cost not only money but the credibility and reputation of a company. A company's reputation for incompetence in client affairs (like billing and communication) is something that doesn't take long to get around in the industry. Pretty soon those who do the contracting start avoiding troublesome providers in favor of those who do a better job. Instructor.*

3.3 Critical Thinking

Critical thinking responses were defined as follow-on questions supported by elements in the student response, additional sources or instructor personal experience. The tone of these responses is contemplative and expansive, and seems to encourage dyadic response. An example of a response coded as critical thinking is: *Student, Good example of communication. Communication is an important element in well functioning teams, too. A group establishes norms during the forming of a team and members develop and understand the norms as they grow as a team. Many norms are unspoken rules that team members know and abide by because they were established at the outset of*

the team's formation. How are the unspoken norms established by the existing members communicated to a new member of the team? Instructor.

3.4 Sage on Stage

Sage on stage responses were defined as didactic regarding course material, but do not encourage dyadic interaction or response. Responses can be conversational or corrective in nature, and can include rhetorical questions. Questions are often offered as directives for addressing missing content or connections. This response was coded in the sage on stage category: *Student, let's not forget how we communicate based on the receiver. Accepted formats should be followed in written technical communication, including project proposals, customer surveys, problem statements and briefings, design project plans, progress reports, final reports, test plans, etc., as well as for summaries, tables and graphics. Verbal presentations can be a key in 'selling' the design to the company's decision makers, thus a focus on audience needs and an approach that enhances understanding and retention are very important.*

3.5 Additional Findings of Interest

Some instructors used the '*Student and Class*' or '*Student and all*' form of reply to encourage responses from the student and the student's classmates; however, phrases such as these must be used judiciously or it eventually becomes at best *noise* and at worst, irritating, which does little to encourage interaction.

Elements that gave the impression that interaction was encouraged were phrases such as:

- In my opinion/I think
- Given that
- I would add that
- What about
- I have found that
- What do you think?
- Your thoughts?

While these phrases often encouraged responses, interestingly, many can also be found in posts that clearly discouraged interaction. For example, this instructor response seems to stop the discussion: *Student, I think you touch on stereotyping. Personal team skills can be learned and practiced. A team will typically go through*

four stages of development: forming, storming, norming, and performing. Members of a team take responsibility for various roles to keep the team functioning efficiently.

Other phrases appeared to create barriers to dyadic response, even when followed with an inquiry phrase like *What do you think?* Some examples are:

- Given the fact
- As a matter of fact
- Research indicates
- The text states

Additionally, the more formal writing style felt less encouraging in the way of eliciting interaction, though this was often mitigated when the response had some elements from the student's reply or experiential information from the instructor, and by using phrases like *your thoughts?* Some responses felt as if the instructor was attempting to replicate on paper what is commonly done in a live lecture hall, and sometimes the posts were closer to pontifications rather than didactic colloquies or real syllogisms. Conversational style posts seemed more conducive to eliciting a response as they seemed warmer and more genuine versus the *professorial* voices that many instructors use such as those examples shown in this *lecture-hall* example: *Identifying the norm within a team is an important aspect of team building. Norms regulate how teams function both interpersonally and administratively. As drivers for behavior and performance, norms should be understood, developed, and at times modified to improve the overall team experience. Every team has a set of norms that dictate the standards and behaviors of the team. Norms tell us what is acceptable or unacceptable within the team; it is the team code of conduct.*

Some responses were more conversational with contextual information supporting a broad question – these felt more conducive to eliciting a response. An example of a conversational post is: *Hi, Student and Class! In this discussion question, we just examined team norms and the importance of communication. Teams play a vital role in most organizations and in the study of organizational behavior. What questions do you still have about teams or any aspect of teamwork? Instructor*

Finally, over use of superlatives and gratuitous hyperbole seemed to detract from the message

and could be perceived as sarcastic, especially if the post is in response to an average or poor student response. An example of this is: *Student; thank you for this beautifully presented discussion. Your real time example is perfect and compels me to inquiry how this breakdown in communication was ultimately resolved. In peacetime heated discussions are expected when erroneous orders are provided; however, in combat this has lethal consequences. I am anxious to read your insightful and valued feedback!*

In summary, using the qualitative grounded theory method, 285 instructor replies were examined and 252 substantive responses were coded as one of four Nodes, Declarative, Instructional, Critical Thinking, or Sage on Stage. The Nodes were defined during the review of the data. There were 33 non-substantive replies, such as one word answers, or conversational pleasantries, e.g. *Thank you* and *Good post* which were omitted from analysis. Only 22.61% of the instructor responses analyzed encouraged a dyadic response which could have led to some form of knowledge transfer from the instructor to the student. Over 77% of the instructor responses resembled lecture type statements which did not seem to encourage students to respond or continue the discussion.

4. DISCUSSION

Results in a previous study by Tucker, J., YoungGonzaga, S., & Krause, J. [15] indicated a lack of knowledge transfer occurring between faculty and students. In this follow up study, we posit that semantics might be a contributing factor to the lack of knowledge transfer observed in the online classroom discussion forums. Faculty may have a difficult time transitioning from classroom to online. Clay [47] found five barriers that faculty shared as reluctance to make the transition to distance education. One barrier was the altered role of the faculty member in the classroom. Understanding the transition from *sage on the stage* to *guide on the side*, or from a direct transfer of knowledge through one-way methods, to a collaborative and co-operative learning model may be causing some faculty discomfort [48]. Understanding the role of a faculty member as a moderator or facilitator promoting learning through instigating, modeling, promoting, and coaching [49] may be new to faculty transitioning from traditional classroom roles. A 2002 study of student's perceptions of faculty levels of participation in online

discussions indicated that discussions were shorter overall when faculty posted frequently [50] leading some to ask what the role should be for faculty in online discussions. Role clarification and additional facilitator training may benefit faculty in this regard.

Faculty may lack training and preparation for online teaching. A 2004 study of faculty teaching online revealed that although 89% of respondents received some training, over half indicated that the training received was inadequate and a full 60% felt that more training was needed [51]. Half of the faculty interviewed indicated that they received no preparation for online teaching, suggesting that they were thrown into the online classroom with little or no training or support. As a result, faculty may be challenged to understand and implement Socratic methods within the existing online discussion framework. Faculty is encouraged to facilitate *active learning* in the online discussion [17] but without adequate training and support, these faculty may not know how to implement active learning within an online classroom environment. There is little in the way of real metrics to validate whether what instructors implement actually make any improvements in active learning in the classroom, nor are there metrics that would help instructors see what was actually happening in the course over time.

Another reason for a lack of faculty to student transfer of knowledge may be related to class size. A study by Reonieri [52] uncovered an optimum class size of 16 was recommended to promote knowledge transfer and construct new knowledge. In addition to recommending an optimum discussion board size, the study also found that real-life experiences shared student-to-student and faculty-to-student as well as thought-provoking faculty responses aided in constructing knowledge. In the for-profit university sector, many are feeling the pressure of decreased budgets due to falling or stagnating enrollment and are increasing the online class size as well as the increase in the use of adjunct faculty to facilitate classes. A report titled *The Work of the University: The Adjunct Phenomenon* [53] suggests that instructors at for-profit universities may be as high as 99% adjunct faculty. Increasing class sizes, low rates of pay, and increasing workload requirements may mean adjuncts do not have the time or motivation to engage in the necessary interactions that spawn knowledge transfer.

5. CONCLUSIONS

Discussion forums play an integral role in the overall online educational experience. They allow students to feel a sense of community within the online classroom, reflect on the topics presented, develop writing skills and share ideas with other students and faculty. Some institutions (especially for profit higher education institutions) weigh the discussions forum responses heavy in the course grade. The 21 class instances studied for this research placed a value of 37% of the overall grade of the course on discussion forum responses and participation. It is important that these discussion assignments, which are often linked to course outcomes, yield the expected results. Discussion assignments should provide students a mechanism for authentic knowledge transfer allowing students to apply and analyze the concepts presented. Although there is some evidence of knowledge transfer occurring between students in the online classroom, there is opportunity for significant improvement especially between faculty and student responses. Both the content of the discussion questions and the types of engagements that occur during the discussions can be improved upon.

Expression of existing knowledge, real world application, and knowledge stewardship should be actively encouraged. Additionally, discussion questions should be worded in a manner that encourages students to think of ways in which they have or may apply the information. Faculty should be encouraged to share their own professional and even personal experiences within the discussion forums. Students should be encouraged to draw on existing experiences and convert those experiences into future knowledge.

Lack of faculty training on how to develop and use prompts within the discussion forums to encourage knowledge sharing and transfer is ubiquitous. Faculty should be encouraged to understand the important role they play in the success of knowledge creation, sharing, and transfer within the online discussion forums. In order for faculty to be stewards for knowledge transfer in the discussion forums, several changes need to be implemented in the online classroom. First, instructional designers/content experts need to be trained on how to develop discussion questions that support authentic knowledge transfer. This includes providing the faculty facilitating the discussions with recommendations for prompting knowledge

transfer behaviors within the discussions. Next, appropriate training needs to be developed for faculty regarding how to identify and facilitate the needed behaviors to support active learning, knowledge creation, knowledge sharing, and knowledge transfer. Knowledge transfer is often utilized in business, specifically in human resources for succession planning, but is rarely presented in online teaching training [54]. Training often focuses on critical thinking but many faculty are not aware of how this concepts translates to knowledge transfer much less how to apply it to the online classroom.

Additional research might benefit faculty development specialists as they consider training programs to enhance skills in managing and promoting both critical thinking and knowledge transfer in the online discussion forums. This research might include an examination of how specific semantic responses influence student interaction within the discussion. An examination of instructor responses both before and after intervention could determine if the training was effective and to what extent, thus leading to possible additional recommendations for intervention.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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