

Critical Thinking Skills Evidenced in Graduate Students Blogs

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Summary

The objective of this research was to identify Facione's six critical thinking skills using graduate students blogs as a reflection tool in the context of leadership using structured and unstructured blogs. The skills researched were (a) Interpretation, (b) Analysis, (c) Evaluation, (d) Inference,(e) Explanation, and (f) Self-Regulation (Facione, 1990). It was evident that providing students with guidelines for the purpose of blogging in the classroom was more thought evoking over the duration of the course compared to students following an open reflection. Self-Regulation and explanation were the skills used most consistently among participants. With this knowledge, how do educators encourage students to use the other four skills just as often?

Introduction

Technology has made an impact on what educators can do and the resources available to enhance teaching methods in the classroom. Computer mediated communication (CMC) tools, such as discussion groups, forums, social media, blogging, and e-mail conferencing have been adopted by higher education (Simpson, 2002). Blogs (web-logs) are one example of a pedagogical tool appropriate for stimulating student reflection of course content and experiences (Cannon, Stedman, & Gifford, 2010). However, little research has been conducted identifying the specific benefits of blogs on student cognitive development (Halic, Lee, Pualus, & Spence, 2010; Wetmore, Boyd, Bowen, & Pattillo, 2010). Critical thinking is one area of cognitive development necessary for student success (Halpern, 1990). Rudd, Baker, and Hoover (2000) defined critical thinking as “a reasoned, purposive, and introspective approach to solving problems of addressing questions with incomplete evidence and information for which an incontrovertible solution is unlikely” (p. 5). Students often learn from reflecting on their past leadership experiences, thus warranting educators to find a creative tool appropriate for reflection. Reflection using a social media tool like blogging was used to look at the impacts of critical thinking, therefore assessing the effectiveness of blogging. Furthermore, the objective of this research study was to identify Facione’s (1990) six critical thinking skills using graduate students blogs as a reflection tool in the context of leadership.

According to Hatton and Smith (1995), “Reflective thinking generally addresses practical problems, allowing for doubt and perplexity before possible solutions are reached” (p. 34). Reflection allows students to address course content in a deeper and meaningful context. Educators use reflection as a tool to engage students in critical thinking skills by means of reflecting on higher levels of thinking. Some research suggests that one must have the disposition to think critically and productively about issues (Norris, 1985). The disposition students have concerning critical thinking skills has not been measured but it needs to be taken into consideration when researching critical thinking skills used by students. Facione, Sánchez, Facione, and Gainen (1995) suggested that it is quite different to have the ability of critical thinking than having the disposition. Educators need to use methods that build on the capacities students have to enhance critical thinking skills regardless of the presence or absence of disposition.

Literature Review

Learning specialists Fernette and Brock Eide’s research as cited by Richardson (2009) have proposed that blogs can promote not only critical and analytical thinking, but also can promote creative, intuitive, and associational thinking,

although empirical data has not validated this speculation. Abrami et al. (2008) conducted a meta-analysis of critical thinking development and instruction, finding that in order to improve student critical thinking skills, instructors must purposefully include critical thinking into learning objectives. This finding revealed that instructors expect critical thinking will happen organically, but if students are not challenged persistently, how will they use critical thinking outside of the classroom?

Halic, Lee, Paulus, and Spence (2010) recognized the various uses blogging has as an educational tool in higher education. For example, blogging can be used for deeper learning, reflection, and to provide a sense of community to students. The authors suggest that there is more research needed on the impact blogging has on students' learning, attitudes and satisfaction (Halic, Lee, Paulus, & Spence, 2010). In addition, Fero, Witsberger, Wesmiller, Zullo, and Hoffman (2009) suggested that there is also a need for more research to identify the gaps in critical thinking research in regards to learning and strategies. A consistency in the critical thinking literature is the inclusion of a self-regulatory component in the reflection process (Abrami, et al., 2008; Helsdingen, Gog & Merrie'nboer, 2011).

Caspi and Blau (2008) found that the more time a student spent on a course discussion web site, the higher perceived learning the student gained. In addition, the student consequently was more invested into the group discussion because the sense of community he/she felt. Yang (2009) found that student teachers used a higher level of critical thinking skills when professors used feedback and challenging questions to prompt a sense of community between the student teachers during the course. Also, by the professors participating in the blogging and discussions, students were more invested into the process (Yang, 2009). Educators' being purposeful and explicit about expectations of learning critical thinking in the classroom has led to a consistent finding of increased critical thinking skills.

Yang, Newby, and Bill (2008) discovered that students using structured web-based bulletin (WBBB) board instructions as opposed to unstructured WBBB's developed higher critical thinking skills during discussion and learning. With more guiding discussion questions and a deeper level of challenge, students with structure viewed WBBB's had more positive attitudes towards this learning tool. Web-based bulletin boards are similar to blogs because blogs have a reflective journaling aspect and WBBB's are usually prompted with a topic or discussion question.

Wetmore, Boyd, Bowen, and Pattillo (2010) examined the critical thinking skills of dental hygiene students using reflective blogs. In their study, Wetmore, Boyd, Bowen and Pattillo found that there was no significant difference in the level of

critical thinking in students between those who used reflective blogging and those who did not use blogs. Thus researchers must consider these inconsistencies in research findings and contribute to the need to continue research in this area.

There have been many conceptualizations of critical thinking, the most prominent being the American Philosophical Association Delphi committee's interpretation, the reason being that it was developed by critical thinking scholars (Abrami et al., 2008). The Delphi Report (1990) by Peter A. Facione on critical thinking skills was used as a framework for this research. Facione defined critical thinking as, "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations" (p. 2). The Delphi panel of experts consensually agreed on descriptions of the following critical thinking cognitive skills: (a) Interpretation, (b) Analysis, (c) Evaluation, (d) Inference, (e) Explanation, and (f) Self-Regulation.

Facione's (1990) six critical thinking cognitive skills have sub-skills for clarification purposes. Facione defined interpretation as "to comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures or criteria" (p. 6). Interpretation sub-skills are categorization, decoding significance, and clarifying meaning.

Facione (1990) defined analysis as "to identify the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representation intended to express beliefs, judgments, experiences, reasons, information, or opinions" (p. 7). Analysis sub-skills are examining ideas and identifying arguments.

Facione (1990) defined evaluation as "to assess the credibility of statements or other representations which are accounts or descriptions of a person's perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions or other forms of representation" (p. 8). Evaluation sub-skills are assessing claims and assessing arguments.

Facione (1990) defined inference as "to identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to reduce the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation" (p. 9). Inference sub-skills are querying evidence, conjecturing alternatives, and drawing conclusions.

Facione (1990) defined explanation as “to state the results of one’s reasoning; to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological and contextual considerations upon which one’s results were based; and to present one’s reasoning in the form of cogent arguments” (p. 10). Explanation sub-skills are stating results, justifying procedures, and presenting arguments.

Facione (1990) defined self-regulation as “self-consciously to monitor one’s cognitive activities, the elements used in those activities, and the results educed, particularly by applying skills in analysis and evaluation to one’s own inferential judgments with a view toward questioning, confirming, validating, or correcting either one’s reasoning or one’s results” (p. 10). Self-regulation sub-skills are self-examination and self-correction.

Gifford (2010) found that when using the “What? So What? Now What?” model students were more consistent in the quality of reflection in a blog. This study was conducted with undergraduates in a service-learning based course. The goal of the experience was to enhance critical thinking of leadership students through blogs. Gifford recommended that leadership educators continue to integrate technology into the learning experience of students.

Purpose

The purpose of this research was to identify the frequency and depth of skill used among leadership students in a personal blog. As reported by Halpern (1990), instructors are challenged to make students value “good” thinking and the amount of work necessary to make it happen. For the purpose of this research, structure and unstructured reflections were used interchangeably with guided reflection and open reflection, respectively.

Methods

This qualitative study was descriptive in nature utilizing content analysis to capture the demonstration of critical thinking skills in graduate students’ blogs. According to Lincoln and Guba (1985), this analysis provides researchers an in-depth understanding of the phenomenon of interest. As part of a graduate leadership theory course at a southern land grant institution students were assigned to blog for part of their course grade. The grades were determined by the content of the reflections; yet were not impacted by their specific reflection guidelines. Students were assigned one of two different options for writing their blog by the course instructor. The first was directed using guidelines associated with Bloom’s (1956) Taxonomy of Learning where students had to address the following areas (a) Cognitive Growth, (b) Affective Response, and (c) Behavioral

Application. The second group was given only the requirement to reflect on different topics throughout the semester.

Students in the course represented both master and doctoral students from five different specializations within a college of agriculture and life sciences. These were teacher education, leadership education, agricultural communications, extension, and wildlife conservation. A total of 17 students were included in these groups with nine being in the guided reflection group and eight in the open reflection group. Blogs were downloaded from Wordpress.com where students were required to host their blogs. All descriptive information was removed from the blogs prior to being reviewed by two researchers. The two researchers were required to code each blog entry for each student evaluating the content for evidence of each of the six critical thinking skills identified by Facione (1990) – (a) Interpretation, (b) Analysis, (c) Evaluation, (d) Inference, (e) Explanation, and (f) Self-Regulation. Statements within each blog entry were evaluated for the demonstration of any six critical thinking skills. Evaluation of blogs was initially conducted independently followed by a cross-comparison; any researcher differences in coding were resolved through discussion. After the researchers came to a consensus of the frequency and depth of skills used in each blog, the data was organized in a computer program for the purpose of running a comparison between the structured and unstructured blogs. In order to establish trustworthiness of the study, an audit trail and acknowledgement of the researchers' biases were disclosed. Upon completion of the content analysis, researchers shared their results to determine consistency in evidence.

Findings

Half of the students were given the three learning modes, the other half was not. The students that had the structure, the more conceptual and thorough the blogs were. The top three critical thinking skills used by students following the guided structure were self-regulation, explanation, and analysis as depicted in Figure 1 below.

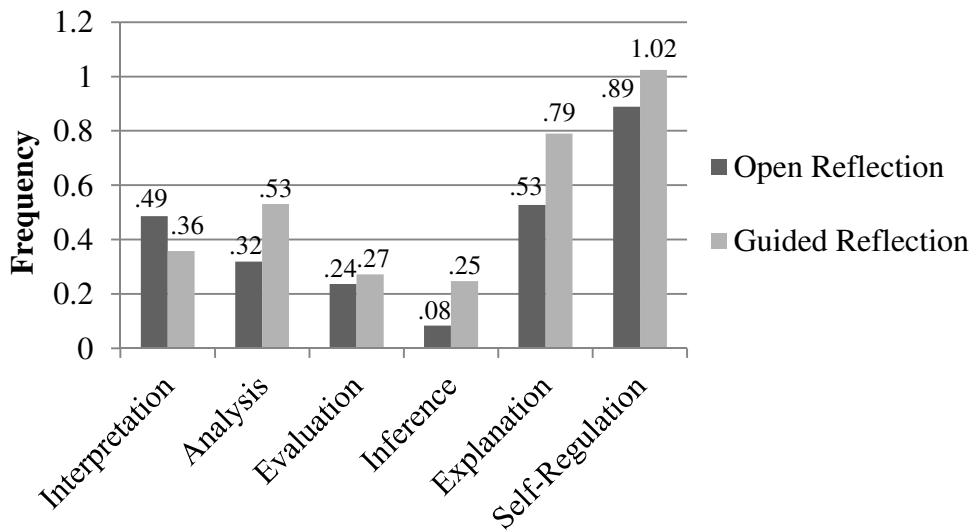


Figure 1. Average Frequency of Each Skill Over The Semester

Figure 1. Bar graph comparing the average amount of times each skill was evident throughout the course of the semester by students following guided reflections and open reflections. Bar graph accounts for every blog written, nine weeks total. Numbers inside the graph represent the actual frequency.

The top three critical thinking skills used by students following the unstructured reflections were self-regulation, explanation, and interpretation, also shown in Figure 1. All blogs were self-regulatory although they were accompanied with other critical thinking skills. Second to self-regulation, explanation was a common theme among most blogs. This was to no surprise of the researchers as blogs are by nature a means of individual critique and perception. In the findings, interpretation and explanation overlapped, as well as analysis and evaluation. These pairs were difficult to decipher in the context of the blogs. When analyzing the data, often it was clear if critical thinking skills were used in the reflection. The unstructured reflections were short in length, inconsistent and lacked clear focus. The structured reflections showed multiple critical thinking skills in one paragraph and elicited deep analogies.

Figure 2 shows that over the course of the semester, the structured reflections consistently showed more skills per blog than the unstructured reflections. Although both the structured and unstructured reflections in Figure 2 have nonlinear relationships, the results indicate that on average when students are provided with structure such as Bloom's (1956) Taxonomy of Learning, the frequency and depth of critical thinking skills are greater compared to unstructured guidelines. Made evident in research, when a student is given

specific guidelines, thinking capacity is expounded. The researchers have included samples below.

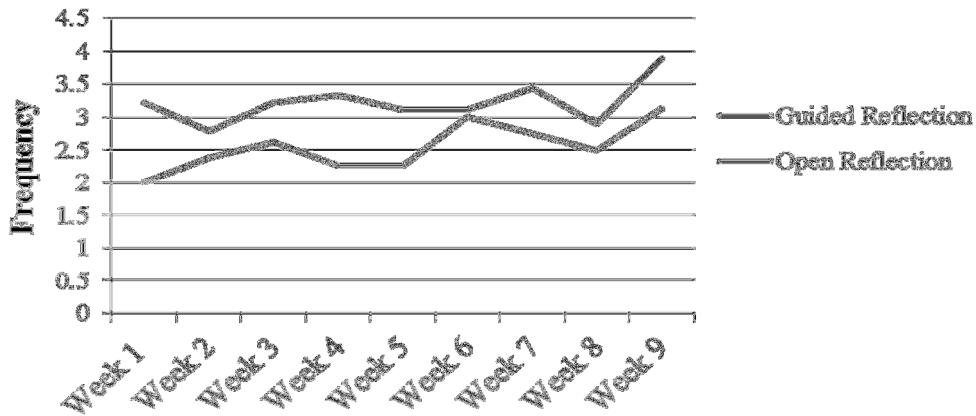


Figure 2. Average Frequency of All Skills Used Over The Semester

Figure 2. Line graph comparing the average number of skills used by students per blog following the guided reflections and reflecting openly over the course of the semester.

The following are examples of self-regulation:

“Sometimes our perception of what we think we need to answer can skew our results. I believe that because I have become more aware of my issues that I need to work on, I am self-consciously harder on myself than I would have been had I approached this test with no pre-conceived notions.” – Student 3

“I chose to exclusively focus on tolerance of uncertainty after taking the LBDQ in August. My thought was that so much of this subscale is dependent on one’s own self-concept. I knew I needed to make a change in the way I perceive myself.” – Student 5

“I usually have the mindset to be able to predict outcomes and make adjustments before the fact to avoid conflict, failure or grief. Therefore I cannot determine (ironically) why my scores went down in these areas.” – Student 2

The following are examples of interpretation:

“The value of this growth process is that I have learned that strengths without weaknesses can be perceived in different ways, which is why a leader should withhold judgment on others.” – Student 11

“It is one of those topics that can be seen as a managerial issue more than a leadership issue, but in small organizations where leadership and management overlap and resources are scarce, the allocation of resources can be an act of leadership as well as management.” –Student 4

“As you think about taking on a new leadership role, organizing an event, taking a class, starting a new job or simply experience a change in your day to day routine, it is important to realize and comprehend the necessity of uncertainty.” – Student 5

The following are examples of evaluation:

“Putting someone in the “in” or “out” group could be more damaging than you anticipate. Being in the “in” can be just as bad as being on the “out”. If you have a fake relationship and pretend to be someone you are not to appease your boss, that could be potentially damaging psychologically. You could begin to think that the fake you is better than the real you.” – Student 3

“The areas in which I chose to focus for my leadership development plan tended to improve more significantly than the other categories with the exception of production emphasis. This is not surprising since I was actively making behavioral changes which would affect the scoring in these categories.” – Student 4

“If we all want to be leaders, how many of us are actually relating to each other through these leadership blogs...All it would take for me to establish a relationship with someone is a comment in response, so I know someone read it.” – Student 13

The following are examples of analysis:

“Diversity is something most organizations view apprehensively – not because they don’t like diversity, but because they don’t like being sued. And that is the public’s response to diversity.” – Student 13

“I believe it is important as a leader to be able to differentiate between both listening and hearing because a good leader is able to list and allow other people to trust them. Individuals will follow a person that they can trust, shows compassion and competence.” – Student 17

“Team composition refers to the knowledge and skills of team members. On the one hand, high diversity on teams might seem to hinder its ability to be cohesive and or establish norms but on the other hand high diversity can enhance group learning, the sharing of resources, information, and creativity.” – Student 10

The following are examples of inference:

“However, I feel that the best way to be in business situations is to find an individual who possesses both leadership qualities and managerial qualities. Although much of what we have learned in class says that you cannot be both, I believe it is possible.” – Student 3

“The more people reach levels of acceptance and adaptation, the less likely they will say or do offensive things. Conversely, someone operating at these levels would probably be less offended by someone not understanding of their culture. In my opinion, it boils down to accepting others. We will always have differences no matter how hard we try, remember variety is the spice of life.” – Student 6

“Communication with others takes place when they understand what you’re trying to get across to them...People only understand things in terms of their experience, which means that you must get within their experience.” – Student 16

The following are examples of explanation:

“One of the hardest tasks for me through my college career has been my inability to focus on the goal itself not the process that I have to complete. Much of the culprit of the problem has been because I become enamored by the process of the project that must be completed that I forget the real reason on why I am completing the task.” – Student 17

“I have come to realize that there is no ‘normal’ family and we have to accept what we are given – even if we don’t necessary like it or agree with some things. This concept has brought many family members close, and some have pushed back but in the end, I know who is there during both the good and bad as well as who will not be there.” – Student 2

“It’s been a slow process and feedback, although solicited, has been slow in coming from members. I was worried that we would see the same low volunteerism when it came for elections again this semester. Surprisingly, we had more people go up for elections than we have positions to hold them. I have been absolutely stunned by how well the membership has responded to our minimal efforts.” – Student 4

Conclusions

The objective of this study was to examine the critical thinking skills used in graduate student blogs in the context of leadership using structured and unstructured blogs. In this study, the findings revealed that two critical thinking skills were consistent among most students, self-regulation, and explanation. It was evident that providing students with guidelines such as those associated with Bloom’s (1956) Taxonomy of Learning, for the purpose of blogging in the classroom was more thought evoking over the duration of the course compared to students following an open reflection. The value of the study is to provide students with an environment that encourages the use and development of critical thinking skills. It was evident to the researchers when analyzing blogs that students have the capacity to exercise critical thinking skills however, self-regulation and explanation were by far more profound than any other skill, with respect to blogging. Blogging in the context of this study cultivates self-regulation and explanation more often and thoroughly.

Recommendations and Implications

Blogging is used in the classroom as an experiential learning technique providing students with the abilities to think intuitively and reflect on the content. Reflection allows students to draw from past experiences and create relationships that increase critical thinking capacity. Leadership education is relying more on social media to provide an avenue for reflection and provides students the opportunity to share their reflections in an open and safe environment. As Gifford (2010) suggested, there needs to be the continued inclusion of these technologies in the classroom. This will enhance student critical thinking especially when students are given specific guidance as to *how* to reflect. This study has indicated that

when students use blogging as a reflection tool and are given specific guidelines, the frequency and depth of skills used are more evident and profound compared to unstructured guidelines. This finding is consistent with similar studies within the research area of critical thinking and blogging concerning structure (Fero, Witsberger, Wesmiller, Zullo, & Hoffman, 2009; Yang, Newby, & Bill, 2008). As shown in the previous figures, regardless of whether the blog was structured or unstructured, self-regulation and explanation were the most frequently used skills among all students. This could indicate that blogging in nature is more provoking of these two skills. Additional research could help explain if this is a reoccurring phenomenon. In addition, the occurrence of these two skills could be reflective of the teaching methods used by educators or of the predispositions students have to these specific critical thinking skills. Future research could explore if students are predisposed to self-regulation and explanation or if educators are triggering students by means of a particular teaching method. Simpson (2002) recommended educators should be using computer mediated communication in the classroom because it is applicable to providing learner autonomy. Furthermore, would other teaching methods utilizing technology in the classroom trigger the use of other skills in a more thorough thought process? Furthermore, there is a need for future research to explain the relationship among teaching methods and the triggering of specific critical thinking skills.

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