Critical Review of Research 1

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1. Identify the clarity with which this article states a specific problem to be explored.

Ertmer, et. al. (2007) clearly described the specific problems to be explored through their research. They began their article by discussing the role feedback plays in motivating and teaching students and how the lack of effective feedback, especially in online learning environments, can cause students frustration. They continued to describe the idea that feedback must be continuous, but that instructors cannot possibly keep up with the workload to effectively provide students with what they need. Finally, the authors pointed out that there is limited research pertaining to peer feedback in online learning environments.

After the authors established the research behind their study, they included a section of the paper titled, “Purpose of the Study.” Within this section, they described their purpose as a way to evaluate perceptions of giving and receiving peer feedback in an online environment. Three groups of questions are listed below this point and are clearly labeled as RQ1, RQ2, and RQ3. By providing this format, readers do not have a need to hunt through the article to find the purpose or the research questions. They are easily spotted even if the reader were skimming through the article. The three questions that drive this study relate to the usage of peer feedback in lieu of instructor generated feedback. The purpose for this study is to find out if peer feedback is impactful on student postings, how students perceive the value of peer feedback, and how students perceive giving peer feedback.

1. Comment on the need for this study and its educational significance as it relates to this problem.

With the number of classes instructors teach and the number of students in each class, providing feedback in a timely manner can be quite the challenge for an instructor. This study digs into whether or not the use of peer feedback can positively impact student work and what the student perceptions are about receiving and giving this type of feedback for an online course they are taking. The significance of this research lies in the idea that the use of peer feedback can be structured so it is effective in allowing the instructor to focus on the more crucial pieces for feedback, students to demonstrate their understandings through dialogue through peer feedback practices, building student confidence in their understanding of the material and their abilities to judge the work of others, and use peer feedback as a way to help students grow in their understanding of content and writing skills.

1. Comment on whether the problem is “researchable”? That is, can it be investigated through the collection and analysis of data?

This study focuses on two main ideas. The first looks at the impact peer feedback has on learner growth. This is researchable through the use of a well-designed framework, consistent grading practices, and an appropriate amount of time for data to be collected. The framework piece is important for students to fully engage in the peer feedback process. Without a clear framework or set of procedures, students may be confused as to what or how they are supposed to provide feedback to their peers. This confusion could lead to ineffective rationales as to why a specific grade was provided by the classmate, leaving the receiver of the feedback to feel frustrated which, as cited from Ko and Rossen (2001) in the literature review, can result in students disengaging from the online learning environment. If the peer feedback is not set up to be effective, the validity of the study could be questionable.

Consistent grading practices are also an important aspect for researching the impact of peer feedback on student growth. To accomplish this a consistent scoring method, such as a rubric, would allow for items graded throughout the course or duration of the research study to effectively demonstrate growth. In addition to this, a consistent grader would need to be put into place to ensure growth was documented accurately. Using grades provided by multiple people could be inconsistent as grading is not always objective when reading discussion answers.

The second idea this research focuses on is student perceptions of both giving and receiving peer feedback. Student perceptions are often hard to measure because they require students to be reflective about their feelings in only one area of the course. The perceptions or feelings about an activity in a course can be impacted by other elements of the course. As pointed out by Berliner (2002), educational sciences can be harder for researchers to find direct cause and effect relationships because each of the people and environments in which the research happens are always different due to participant experiences. While it can be hard to quantify student perceptions, it is not impossible. Research can be done quantitatively through appropriately created surveys and rigorous interview methods.

1. Critique the author’s conceptual framework.

The authors chose to use a case study for their studies framework. They began by describing the importance of feedback in online learning environments. With online learning, students need informative, consistent, and continual feedback to keep them motivated and prevent frustration and disengagement in the course. The need for such frequent and in depth feedback can be a large task for online instructors. As a way to support student needs while not placing too much work on the instructor, with supporting research, the authors suggest for instructors to use peer feedback. Students usually value instructor feedback over that of peers and students may feel uncomfortable providing feedback to classmates, so the authors have utilized modeling and the use of a rubric based on Bloom’s Taxonomy as methods for ensuring students have a clear understanding as to what good feedback looks like. Once students were provided enough time receiving models of appropriate feedback, they were asked to start providing feedback to their peers.

The authors tie all of these elements together well. They demonstrate the need for constant and consistent feedback, explain the obstacles instructors have to overcome to try to provide this feedback, and how student can grow as learners through the process of giving and receiving feedback. They continue to explain the roadblocks students face when starting to give and receive feedback to classmates, how the instructor modeled what was expected to help students avoid those roadblocks, and allowed student to work as a community of learners through the peer feedback process. The framework for this case study was set up to determine if this would be an effective practice in an online classroom environment, which means having this study take place in that classroom environment was the best way to test the hypotheses.

1. How effectively does the author tie the study to relevant theory and prior research? Are all cited references relevant to the problem under investigation?

To begin the review of prior research, the authors start by introducing the reasons for including peer feedback methods in an online environment. They share research about Vygotsky’s (1978) Zone of Proximal Development which describes the need for students to construct meaning through personal interactions with others, and from Cunningham (1992) about the importance of student interactions in online learning. With this they intended to show a need for students to discuss course materials and interact with each other. This idea is also supported with a citation from Lang through an article written by Black (2005). Lang’s research showed that when participants were engaged in deep discussions they emerged from the course with a better understanding of the issues discussed. To create the most thorough understanding students should have content specific discussions that provide opportunities for reflection and critical thinking. The introduction is wrapped up with research from Black (2005) which explored the use of peer feedback to encourage higher level thinking in students participating in an online learning environment. This introductory section is necessary because it introduces research that supports collaborative learning environments for students.

The second section in the literature review describes the role feedback plays in instruction. While this section cites a few separate articles, the bulk of it comes from Nicol and Macfarlane-Dick (2006) who describe the seven functions that good feedback performs. This section provides a definition of instructional feedback and information about the types of things good feedback can provide for students in any environment.

The third section in this review of literature talks specifically about feedback in online environments. The authors begin by citing Ko and Rossen (2001) who explained that, “...due to a lack of feedback, students in online courses are more likely to disconnect from the material or environment than students attending face-to-face courses.” (Ertmer et. Al., 2007, 414). This point links directly back to the first section as it describes the loss of that social interaction which was discussed as being so important for higher level learning to take place.

With the establishment of how important good feedback is to an online learning environment, the researchers begin to discuss recommendations that have been presented through different studies about online feedback. The recommendations discussed explain that effective feedback must be timely, thorough, consistent, and continuous. With this established by Schwartz and White (as cited in Mory, 2004), and Ertmer and Stepich (2004) the authors begin to point out how these recommendations can be difficult for instructors to manage. The solution they give for alleviating the time constraints that good online feedback requires is to use peer feedback.

The fourth section of this literature review describes the advantages of using peer feedback. The first citation comes from Corgan, Hammer, Margolies, & Crossley (2004) where they point out that peer feedback can build a sense of community. This relates back to the introduction where the researchers described the importance of social interactions for learning growth. The authors then point out that this sense of community can also promote satisfaction with the course, with research from Richardson and Swan (2003), and the instructor, with research from Fulford and Zhang (1998). This section continues with the benefits of giving feedback to classmates. Citing from Liu, Lin, Chiu, and Yuan (2001) and McConnell (2002), the authors point out that giving feedback requires students to go further than they do when writing responses of their own and allow students to become for independent learners.

The final section describes the challenges in using peer feedback. The authors explain that many students may have anxiety when they are asked to provide feedback to classmates. As they point out through a quote from Palloff and Pratt (1999), “the ability to give meaningful feedback which helps other think about the work they have produced, is not a naturally acquired skill” (p. 415). To alleviate this issue, the authors include research from Topping (1998) that suggests student provide positive feedback before they consider providing critical feedback. The section closes with a short discussion about how providing feedback in an online environment is more challenging than in a face to face environment. The authors explain that they see this as a possible issue that might be alleviated as students become more comfortable with one another.

This review of the literature is well organized. The authors have created a description of their research where it is easy to follow their line of thinking. In addition to that, they continue to come back around to the original ideas described in the introduction about the need for social interactions to create better understanding and learner growth. These sections and the research described within them all feed into different aspects of the research study that the authors conduct.

1. Does the literature review conclude with a brief summary of the literature and its implications for the problem investigated?

The literature review does not conclude with a summary of the literature. It concludes with a section that describes the purpose of the study. While the purpose of the study can be linked to the research found in the literature review, a summary after the literature review could have offered a better transition between the literature review and the beginning of the study and offered a clearer picture of how the research and the purpose of the study tied together. One way to do this might have been to offer hypotheses of the study. This method, which is demonstrated in a research study by Yeh, Yeh, and Chen (2012), would allow the authors to summarize their research and discuss their expectations for what will happen in their own study as it relates to the research they have cited.

1. Evaluate the clarity and appropriateness of the research questions or hypotheses.

The purpose of the study is described in its own section consisting of one paragraph which describes the purpose and three research questions that clearly state what the authors are aiming to answer in this study. Ertmer, et. al. (2007) explains that the authors want to examine, “students’ perceptions of the value of giving and receiving feedback regarding the quality of discussion postings in an online course” (416).

Research question one states, “What is the impact of peer feedback on the quality of students’ postings in an online environment? Can the quality of discourse/learning be maintained and/or increased through the use of peer feedback?” (416). While the first question posed here could be considered vague, the follow up question provides better description of what the researchers intend to measure.

Research question two asks, “What are students’ perceptions of the value of receiving peer feedback? How do these perceptions compare to the perceived value of receiving instructor feedback?” (416). These questions clearly define the idea that the researchers want to better understand how students perceive feedback. The second question goes even further in asking how those perceptions compare to the student’s perceptions of instructor feedback.

Research question three says, “ What are students’ perceptions of the value of giving peer feedback?” This statement clearly describes the final aspect of this research study and what the researchers are looking to discover about how students feel about giving peer feedback to their classmates.

1. Critique the appropriateness and adequacy of the study’s design in relation to the research questions or hypotheses.

Research question 1 focuses on the quality of student postings. The authors worked to determine if the quality of the post responses would get better through the peer feedback model employed in this course. To answer this question, a rubric based on Bloom’s taxonomy was created and used to grade the posts. Grades were evaluated for growth over the weeks in which the peer feedback model was deployed. The ensure students were not giving grades that were influenced by other factors, two researchers graded all posts independently throughout the course. The use of rubric grades is an appropriate measure for this research question. The use of Bloom’s taxonomy to grade these posts is also a good measure if the researchers are looking for growth in the ability students have reach those higher-level learning objectives. As the researchers pointed out, some of the questions may not have been created in a way that would allow students to get to those higher levels. A more appropriate approach for determining growth in the students’ posts would have been to either ensure the questions would allow for students to reach those highest levels of Bloom’s or use a different rubric for measurement. A more appropriate measure for posts of this nature might be one built from John Brigg’s (1989) SOLO taxonomy. This measure allows for students to be graded on a range that starts at the prestructural level, which describes the student as missing the point, to the extended abstract level, which describes the student as hypothesizing, theorizing, or creating. The SOLO taxonomy seems to allow for a better grading scale than Bloom’s taxonomy.

Research questions 2 and 3 focus on the perceptions students had about giving and receiving peer feedback. Perceptions are only really able to be analyzed and quantified through the use of surveys or interviews. For this study, the researchers chose to employ both methods. This allowed them to gather perceptions before starting the peer feedback model, after implementing the peer feedback model, to check for consistency of participant answers. The interviews only took place after the model was implemented and was done over the phone, recorded and transcribed. The phone conversations allowed the researchers to ask follow up questions for clarity.

1. Critique the adequacy of the study’s sampling methods and their implications for generalizability.

This study was completed using 15 students from a graduate level course. The majority of these students had teaching experience with only three exceptions. One student had only student taught, while two others were not associated with teaching in a k-12 environment in any way. Because the study focuses on graduate students, the findings may not be generalizable across all levels. It can be assumed that since these students all held the credentials needed to enroll in a graduate level course, they were capable writers in the first place.

While the study focuses on the post content and not necessarily grammatical and writing structures, the experience level of these participants could be a reason for the lack of growth in student writings. With the majority of individuals having experience as a teacher, their ability to respond to a question that rates high on the scale of Bloom’s taxonomy should be easier for them than individuals who may come from other fields, especially students who are undergraduates or in k-12.

1. Critique the adequacy of the study’s procedures and materials.

The research questions posed for this study were focused on the growth of students as student growth was measured through the grades they received on their discussion post assignments throughout the course, and their perceptions of giving and receiving peer feedback. To answer the question on how much students grew as writers, the researchers had two individuals who graded all the posts throughout the course. While these scores were not used in the actual class grades, these individuals were there to ensure that numerical grades assigned to the postings were consistent from week to week. This method ensures that the growth or lack of growth measured throughout the weeks is a reliable result.

To measure student perceptions, two methods were used. The first was a survey. This survey was presented to students at the end of week five of the class, then again at the end of the class. It is hard to determine the adequacy of the survey itself as it is not included in the article. The authors do state that they used a Likert-style questions, which were rated from 1- strongly disagree to 5-strongly agree, and 5 open ended questions. The examples provided in the article are questions that would accurately measure the students’ perceptions of giving and receiving feedback.

The second method was an interview. These lasted anywhere from 20-30 minutes and were phone conversations which were recorded for transcription. Again, the article only provides a couple examples of these questions. The questions that are provided would assess student perceptions of using Bloom’s taxonomy as a scoring mechanism, feeling about having peers evaluating their postings, and their perceptions of the process as a whole. It is assumed that other relevant questions were also asked, but their validity for the study cannot be measured since they are not listed.

1. Critique the appropriateness and quality of the measures used.

A survey is an appropriate method for measuring perception. The survey is described as using 13 questions that use a scale score and 5 open ended questions to gather data. The use of the 5-point scale provides balance between providing the participant a detailed scale to answer and making the analysis of the survey usable by the researcher, but the authors could have been more accurate had they used a digital sliding scale as recommended by Bebell, et. al. (2010). The use of the digital scale allows for a more accurate representation while still providing similar guiding prompts that would be used to guide the participant’s answer choices (Bebell, et. al., 2010). In this study, the digital scale would allow the responses by the participants to more accurately describe their perceptions of the use of peer feedback in their course. It is hard to determine the reliability and the validity of the entire survey because the article does not provide the survey for the reader. Only example questions are listed. Looking at the questions that are provided, we can see that the questions do provide the type of data that would answer the research questions.

Participants also took part in a phone survey. Ertmer, et. al. (2007) explained that they standardized the interview protocol and used multiple interviewers to accomplish this. They believe that by standardizing the interview protocol the reliability of the interview data collection was ensured. This is hard to validate as a reader since the interview questions and standardization protocols are not listed in the article.

According to Ertmer, et. al. (2007), the validity of the data within this study that demonstrated the perceptions of the students toward giving and receiving peer feedback was ensured by triangulating the data points found in the pre-survey, post-survey, and interview data points. The authors also discussed that the use of multiple interviewers and evaluators eliminated any bias that those conducting the research could possibly impose on the study itself.

The grading of student posts had interrater reliability (Drost, 2011). Two individuals scored the postings separately, then compared and discussed the results of the ones in which they disagreed to determine the appropriate score.  The two graders remained the same through the entirety of the study to maintain this stability in grading practices. This method would allow for the best possible standard measurement for long form written answers. The use of a rubric based on Bloom’s taxonomy also provides face validity (Ertmer, et. al. 2007).

1. N/A
2. Critiques the author’s discussion of the methodological and or conceptual limitations of the results.

The researchers point out three methodological limitations with their research study. The first was the fact that students were required to post two responses to class posts, but they knew only one of these responses would be scored. Since there was no way to know which of the two was intended for grading, all posts were scored and analyzed by the research team. Students could have only put forth effort in one of the two posts, which would result in lower or stagnated scores. This was addressed by the authors, who explain that this could be avoided by only using the graded posts for such a study.

The second problem points to the rubric itself. The authors talked about how the rubric may have only allowed for a small window of growth. They explained that with only two meaningful levels listed in the rubric, there was nowhere for students to go once they hit those levels in their responses. The authors explain that using a rubric that allows for more room for students to grow in their writing could produce more accurate results when it came to calculating growth from peer feedback.

Finally, the authors explained that the questions the students were answering may not have lent themselves to high-level responses as described using the Bloom’s rubric. The article goes on to explain that because the questions were only set up to allow students to get to the application level, they were potentially unable to rise above that level in their writing. The suggestion offered is that instructors focus on creating questions that allow students to demonstrate higher order thinking skills in their writing.

1. How consistent and comprehensive are the author’s conclusions with the reported results?

The authors were consistent and comprehensive when discussing their conclusions for this research study. In their discussion about the growth students had in their writing from the peer feedback model, the authors point out and maintain the flaws in their system. They discuss how the rubric, items chosen to score, and the format of the questions all could have played a role in the stagnation of growth that was observed.

They were also consistent in their conclusions about student perceptions when giving and receiving peer feedback. The authors did not seem to maintain that they would find anything specific. Instead, they labeled this portion of the study as an exploration. From their findings, they concluded that students prefer instructor feedback, trust instructor feedback more than peer feedback, and felt uncomfortable giving peer feedback. The authors were consistent in these things and they discussed that these conclusions came from both surveys and the interviews consistently completed throughout the study.

1. How well did the author relate the results to the study’s theoretical base?

As a part of the study’s theoretical base, the researchers discussed the idea that peer feedback would allow for students to get feedback quicker and the instructor would be less burdened with reading through all the posts made by students. The authors point out that the peer feedback model employed through this study required the instructor to review all feedback before it was released back out to students.

The authors also theorized that the use of peer feedback in this way would allow for student growth. In their discussion of this portion of the study, they explain how the questions posed, questions analyzed for the study, and the rubric all played a role in the theory not playing out the way they had thought it would. The authors explain that ensuring questions allow for higher order thinking, choosing which questions will be scored and analyzed ahead of time, and using a rubric that allows students room to grow as writers should produce more reliable results.

In this study, the authors did not seem to have a theory as to what they would see with student perceptions of giving and receiving feedback. The approach to this aspect of the study was consistently referred to as an exploration.

1. In your view, what is the significance of the study, and what are its primary implications for theory, future research, and practice?

The implications of this study on the theory of peer feedback may point individuals to theorize that peer feedback only has a limited about of potential when it comes to helping students grow or that peer feedback has little to no growth implications for students because the results of the study showed that once students grew into a specific score, they no longer grew from the peer feedback experience. Those who want to do future research should consider the findings and the limitations this study has. If this were to be replicated, it should be replicated with a rubric that allows for growth to show where growth might truly be happening. It should also look at peer feedback in a different course type or age range. This study was completed with participants who provide feedback to students or other teachers on a daily basis. If this were replicated in an arena that was outside of education or in a k-12 setting, the findings may be very different. For example, high school students may find more growth in a study such as this because they would still be developing an understanding of what makes an appropriate or thorough answer and what higher order answers look like. Since this was a group of educators, it is a safe assumption to make that they came with more prior knowledge about answering with higher levels of Bloom’s taxonomy and how to provide feedback effectively.

In instructional practice, this study implies that students need to have good feedback methods modeled for them prior to employing such a strategy in a course. It also demonstrates the importance of good instructor feedback as students tend to take it more seriously and are more likely to apply it to their future assignments. Finally, it implies that instructors need to be careful in the way they structure questions and rubrics as they use them to demonstrate students’ higher order thinking skills.

References

Bebell, D., O’Dwyer, L., M., Russell, M., & Hoffmann, T. (2010). Concerns, considerations, and new ideas for data collection and research in educational technology studies. *Journal of Research on Technology in Education, 43*(1), 29-52.

Berliner, D.C. (2002). Educational research: The hardest science of all. *Educational Researcher*, *31*(8), 18-20.

Biggs, John. (1989). Towards a model of school-based curriculum development and assessment using the SOLO taxonomy. *Australian Journal of Education,* *33*(2), 151-63.

Drost, E. (2011). Validity and Reliability in Social Science Research. *Education Research and Perspectives, 38*(1), 105 – 123.

Ertmer, P. A., Richardson, J. C., Belland, B., Camin, D., Connolly, P., Coulthard, G., … Mong, C. (2007). Using Peer Feedback to Enhance the quality of Student Online Postings: An Exploratory Study. Journal Computer-Mediated Communication, 12 (2), 412-433

Yeh, Y., Yeh, Y., & Chen, Y. (2012). From knowledge sharing to knowledge creation: A blended  
knowledge-management model for improving university students' creativity. *Thinking Skills and Creativity, 7*(3), 245-257.