

Asynchronous Discussion Board Facilitation And Rubric Use

In A Blended Learning Environment

by

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ABSTRACT

The purpose of this study was to investigate the effects of instructor response prompts and rubrics on students' performance in an asynchronous discussion-board assignment, their learning achievement on an objective-type posttest, and their reported satisfaction levels. Researchers who have studied asynchronous computer-mediated student discussion transcripts have found evidence of mostly mid-level critical thinking skills, with fewer examples limited to lower or higher order thinking skill demonstration. Some researchers suggest that instructors may facilitate increased demonstration of higher-order critical thinking skills within asynchronous discussion-board activities. However, there is little empirical evidence available to compare the use of different external supports to facilitate students' critical thinking skills performance and learning achievement in blended learning environments.

Results of the present study indicate that response prompts and rubrics can affect students' discussion performance, learning, and satisfaction ratings. The results, however, are complex, perhaps mirroring the complexity of instructor-led online learning environments. Regarding discussion board performance, presenting students with a rubric tended to yield higher scores on most aspects that is, on overall performance, as well as depth and breadth of performance, though these differences were not significant. In contrast, instructor prompts tended to yield lower scores on aspects of discussion board performance. On breadth, in fact, this main effect difference was significant. Interactions also indicated significant differences

on several aspects of discussion board performance, in most cases indicating that the combination of rubric and prompt was detrimental to scores. The learning performance on the quiz showed, again, the effectiveness of rubrics, with students who received the rubric earning significantly higher scores, and with no main effects or interactions for instructor prompts. Regarding student satisfaction, again, the picture is complicated. Results indicated that, in some instances, the integration of prompts resulted in lower satisfaction ratings, particularly in the areas of students' perceptions of the amount of work required, learning in the partially online format, and student-to-student interaction. Based on these results, design considerations to support rubric use and explicit feedback in asynchronous discussions to support student learning are proposed.

DEDICATION

This work is dedicated to my parents, Robert and Diane Giacomo. They taught me the value of education and hard work, as well as what it means to be persistent.

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Chapter 1

INTRODUCTION

Student access to online and hybrid or blended learning environments is growing within institutions of higher education throughout the U.S. (Allen, Seaman, & Garret, 2007). These courses are often supported by web-based learning management systems (LMSes) such as Blackboard, Moodle, or Web CT. These LMSes typically include one or more discussion tools for communication, sharing of information and experiences, and constructed group understanding of conceptual information. However, Gayton and McEwen (2007) found that students' demonstration of complex thinking skills within asynchronous course discussions is often inconsistent or absent.

In this study two different types of explicit instructor guidance were provided to students in a blended learning context; instructor response prompts and a rubric. Both types of guidance provided were intended to support students' critical thinking skills and performance in an asynchronous discussion-board. A review of the literature was conducted to consider how instructors influence asynchronous discussion-boards, evidence and the effects of rubric use in discussion-boards, and documented asynchronous-discussion facilitation protocols.

Critical Thinking Skills

The professional duties of teachers require the use of extensive critical-thinking skills. For example, creating learning opportunities, conducting evaluations, and responding to students with tremendous

pedagogical knowledge each require the ability to synthesize knowledge from many different sources. In addition, the expertise required to operate ethically amidst the complexity of modern media-literacy standards, copyright law, and fair-use exemptions for educators, which is increasingly required of teachers, also demands problem solving and other complex thinking skills. Beyond professional obligations, the integration of opportunities to practice critical thinking skills is also receiving significant attention by proponents of 21st century learning and innovation skills (Duncan & Barnett, 2009).

An asynchronous discussion-board environment can provide students with an opportunity to engage with complex material from different sources beyond the traditional classroom. The use of an asynchronous discussion-board to support required readings not only allows students to actively engage with course material, but can also provide instructors an opportunity to assess student understanding of the concepts presented. Lapadat (2002) suggested that, “the act of writing in online conferences may foster higher order thinking for reasons that have to do with the relationships between writing and cognition.” Further research is needed to determine how the design, implementation, and evaluation of asynchronous discussion-board assignments can help instructors, course facilitators, and designers create the structured learning environment needed for more consistent demonstration of students’ complex thinking skills (Smith, Savenye, & Giacumo, 2009).

Instructors' Influence on Student Discussion-board Performance

Instructors can influence learners' interactions and performance in an asynchronous discussion-board environment. Some researchers have suggested that adding information or asking follow-up questions can facilitate students' demonstration of higher levels of critical thinking in their responses (Schrire, 2002; Christopher, Thomas, & Tallent-Runnels, 2004). According to Dennen (2005) learners may look to the instructor to shape their discussion interactions. Gayton and McEwen (2007) went further to describe the potential importance of providing substantive and prompt feedback to enhance learning in an online environment.

However, several researchers describe situations in which students may not experience any instructor facilitation of their virtual classroom discussions, beyond one well-constructed discussion prompt (Kanuka, & Anderson, 1998; Daroszewski, Kinser, & Lloyd, 2004; Christopher, Thomas, & Tallent-Runnels, 2004). Thus, investigation into the effects of deliberate instructor guidance and feedback during asynchronous discussions on the students' demonstrated thinking-skills appears to be warranted. The present study considers the effect of deliberate instructor guidance and feedback in two different forms: a rubric and instructor facilitation as pre-planned response prompts.

Rubric Effects in Computer-Mediated Communication: Participation, Performance, and Student Satisfaction

In the existing body of published research literature a rubric is commonly defined as a tool used to articulate expectations of student work, via a set of evaluation criteria with a range of descriptive quality levels for each of the evaluation dimensions (Andrade, 2000; Goodwich, H., 1997; Roblyer, M. D., & Wienke, W. R., 2004). Several characteristics have been found in the growing body of literature specializing in rubric use during post-secondary online asynchronous discussion contexts. Common rubric characteristics include the quantity of an individual's contribution; the cognitive quality of an individual's contribution; meaningful connections made between course materials, abstract concepts, and real-world experiences; timeliness; collegiality; and expository writing mechanics (Ajayi, 2010; Gilbert & Dabbagh, 2005; Ho & Swan, 2007; Knowlton, 2003; Penny & Murphy, 2009; Topen & Ubuz, 2008; Vitale, 2010). Each of these characteristics was represented in the rubric designed for this study.

In learning environments, rubrics can function as a mechanism for formative assessment feedback, for summative evaluation information, and for learner participation. Several post-secondary researchers have suggested that rubrics can be effective in support of teaching and learning (Osana & Seymour, 2004; Reitmeier, Svendsen, and Vrchota, 2004; Schneider 2006). According to Rovai (2007), "rubrics support a common understanding of what is expected, set standards by defining quality, help students become

more thoughtful judges of the quality of their work, and establish necessary social supports for learning” (p. 80).

Reddy and Andrade (2009) conducted a comprehensive review of rubric use in higher educational contexts. They found some evidence rubrics have been useful formative evaluation and summative evaluation tools. For example, Arter and McTingle (2001) found that when rubrics were provided to students during project development for formative assessment, the rubrics seemed to help students better understand learning objectives and the desired quality of work to be submitted, and to make dependable judgments about revisions for improvements. Song (2006) indicated that the rubrics could help the instructor provide students with clear feedback in summative evaluation contexts. Reddy and Andrade (2009) further indicated a need for more rigorous research with a clear focus on learning.

Previous research conducted by Wang (2007) has shown evidence that more direct assessment of students’ discussion board entries is one factor in computer-mediated communication (CMC) environments, which correlates with an increase in sustained participation and interactions. Rubrics are frequently used as a guide to elicit better discussion performance (Ajayi, 2010; Ho & Swan, 2007; Knowlton, 2003). However, some of the rubrics used to evaluate students’ discussion contributions were developed for the researchers’ purposes only, and employed during transcript analysis after the study was complete (Gilbert & Dabbagh, 2005; Topen & Ubuz, 2008). Gilbert and Dabbagh (2005) were the only authors who considered

students' demonstration of cognitive thinking skills in terms of Bloom's taxonomy within discussion postings, but they did so after all data were gathered. In the current study, students in one treatment group were provided with the rubric based on Krathwhol's revised version of Bloom's Taxonomy before contributing to the discussion board (Bloom, 1997; Krathwohl, 2007).

Several researchers have found the use of grade rubrics to be associated with positive student attitudes. Andrade and Du (2005) reported on the results of interviews they conducted with pre-service teacher education students who indicated more confidence about assignments, experienced better results, and felt a rubric helped focus their efforts. Similarly, Powell (2001) found that when students were presented with rubrics they felt the grading process was more fair and transparent. However, in both studies, the attitudinal findings resulted from comparing student attitudes about different assignments. The assignments were presented such that each of the sample participants was given one assignment without a rubric and then a different assignment with the rubric. Therefore, the difference in the attitudinal outcomes as a result of the two assignments cannot be attributed solely to the presence or absence of a rubric.

Effects of Instructor Facilitation on Participation, Critical Thinking, and Student Satisfaction in Computer-Mediated Communication

Laurillard (2000) wrote that higher education must not only provide information access, but also support students in their gradual development of personal understanding and engagement with others. The idea of social interaction resulting in more advanced personal understanding originates from a social constructivist perspective, which is based on Vygotsky's theory of the Zone of Proximal Development (Vygotsky, 1978). According to this theory, social interactions with more advanced persons will benefit a learner. The benefits are observable when the learner is undertaking tasks which he or she cannot accomplish alone but can accomplish in collaboration with someone who has further expertise (Kern, 1995).

From this perspective on learning, one can suggest that guidance from a more knowledgeable person acting as a discussion facilitator may aid learners to demonstrate more complex critical thinking skills. Researchers have found evidence that complex thinking skills can be developed when post-secondary students participate in a well designed and facilitated asynchronous discussion (Garrison, Anderson & Archer, 2001). Gilbert and Dabbagh (2005) found that facilitation and structure of an asynchronous discussion may contribute to meaningful discourse for students. They found that when students were given more facilitation guidelines for participating in asynchronous online discussions, the discussions became more intricate and showed an increase in discourse.

Several researchers studied computer-mediated communication environments that included instructor facilitation and positive results on student attitude questionnaires (Shea, Pickett, & Pelz, 2003; Zhan & de Montes, 2007). Swan (2001) suggested that increased instructor involvement in asynchronous discussion leads to positive student satisfaction ratings. However, other evidence suggests instructor facilitation may not contribute significantly to student participation or satisfaction. For example, An, Shin, and Lim (2009), found that students interacted less as the level of instructor facilitation increased.

In a previous study, Giacumo, Savenye, and Smith (2012) examined relative levels of satisfaction among students in four treatment groups presented with a hybrid-learning module. In that study, the facilitators' level of participation did not seem to influence student's satisfaction with the overall instructional unit nor satisfaction on the use of the discussion board. The present study contributes to an understanding of the relationship between instructor facilitation and student satisfaction.

Instructor Facilitation Protocols Found in Post-secondary

Asynchronous Online Discussion

In many of the studies related to asynchronous instructor facilitation, the facilitation protocols were not specified (Ajayi, 2010; Arend, 2009; Beuchota & Bullen, 2005; Garrison, 2007; Hough, 2004; Jetton, 2004; Maher & Jacob, 2006). In other instances the researchers stated that the instructors did not participate in the discussion beyond assigning discussion groups and

topics (Dennen, 2005; Han & Hill, 2007; Lee, 2009). However, several authors have described a few specific response prompt facilitation actions (Curran, Kirby, Parsons, & Lockyer, 2003; Dennen, 2005; Garrison, 2007; Heejung, Sunghee, & Keol, 2009; Hemphill & Hemphill, 2007; Maher & Jacob, 2006; McKee, 2002).

For example, Dennen (2005) found that instructor prompts that gave clear guidelines and the opportunity for everyone to present a unique response seemed to generate the greatest student participation. Many researchers documented the use of instructor facilitation actions to provide feedback, but only when needed (Curran, Kirby, Parsons, & Lockyer, 2003; Garrison, 2007; Jetton, 2004; Maher & Jacob, 2006). Hemphill and Hemphill (2007) went further to suggest that the instructor remain purposely passive and contribute only if necessary. McKee (2002) uniquely concluded that instructor discussion facilitation prompts should demonstrate openness for the contributions made by individuals. These actions were explicitly used in this study's preplanned instructor facilitation response prompt protocol (Appendix A).

Purpose of the Current Study

The purpose of this study was to examine the effects of both pre-designed instructor facilitation prompts and rubrics on the higher-order thinking skill performance of students, as demonstrated in an undergraduate-level asynchronous discussion-board assignment. Several learning activities and four different versions of a discussion-board

assignment about integrating copyright-protected materials into the classroom were provided in Blackboard as a means for each participant to explore and apply the module's conceptual information. The asynchronous discussion-board environment was used to provide independent practice and instructor feedback, and to supplement complex discrete information introduced in a blended learning unit. The unit content was designed to provide teacher-education students with an opportunity to learn how to legally and ethically integrate copyright-protected material for educational purposes.

The first discussion treatment factor was a scoring rubric. The rubric was designed to guide students toward providing critical examination, logical thought, sustained participation, and professional writing within the discussion entries. The second treatment factor was pre-planned instructor facilitation response prompts. These prompts were designed to help students demonstrate their ability to analyze, apply, create new processes, or evaluate systems, based upon the discrete information provided in the course.

As in the Giacumo et al. (2012) study, in this study each student's discussion-board performance was coded according to Krathwohl's revised version of Bloom's Taxonomy, frequency of participation, and quality of writing (Bloom, 1977; Krathwohl, 2002). Bloom's Taxonomy articulates a scale of performances ranging from students' ability to recall or demonstrate comprehension, to being able to apply or analyze, or even evaluate or create new information (Bloom, 1977). Researchers have organized this taxonomy

into a rubric with three distinct levels of performance: low-level, mid-level, and complex cognitive processes, for use in evaluating students' discussion-board performance (Christopher, Thomas, & Tallent-Runnel, 2004).

Evaluating the frequency and quality of writing was also deemed necessary to adequately guide students' participation and evaluation of the discussion transcripts. Lapadat (2003) and Yates (1996) found that asynchronous discussion messages tend to be both content-laden and lexically dense. These attributes were also acknowledged by Bangert-Drowns (1997), who further suggested that participation in asynchronous discussions support discussants' literate thinking and ability to engage in conceptual meaning making. Other researchers also suggest that the demonstration of literate writing and meaningful contributions demand the diligent effort of discussion participants (Haythornwaite, Kazmer, Robins, & Shoemaker, 2000).

Scores from an objective-based learning quiz were also used to investigate student achievement. The perceptions of the undergraduate pre-service teacher-education participants were captured via an attitude survey. Together, these three instruments were used to ensure a triangulation of observations to inform the results of this study.

The Giacomo et al. (2012) quasi-experimental study was the first of its kind to compare results of the cognitive processes demonstrated in student performance as a result of the presence or absence of both instructor facilitation response prompts and a rubric. In that study, half of the

participants were provided with a rubric to guide performance. The other half of the study participants received response prompts from the instructor to guide performance.

The results of this prior work seemed to indicate that the presence of instructor response prompts or a rubric could have a statistically significant impact on students' demonstration of complex cognitive processes in an asynchronous discussion board context. When students were provided with a rubric, their performance was also positively impacted. Likewise, when students were provided with instructor response prompts, their performance was positively impacted. However, when both instructor facilitation and a rubric were provided, students' performance tended to be lower than if they had received just one form of guidance.

The current study clarifies the potential effects of these tools on student performance. There were two major revisions to the design materials. Each revision was based on lessons learned during the preliminary investigation.

In the previous study, each individual instructor provided response prompts to participants. This resulted in a varied intensity of instructor response prompts per assigned section. In this study, instructor-specific effects of this factor were controlled. The lead researcher provided the text of all facilitator posts for each of the course sections assigned to the discussion board response-prompt treatment.

The second design revision controlled for exposure to the rubric. In the previous study, the rubric was only posted in the discussion board for half of the study participants. In this study student exposure to this treatment was better controlled through an additional hard-copy distribution of the rubric in class. An electronic copy was also attached to a thread in the discussion board forums for students in the class sections assigned to this treatment. Students were verbally directed to use the rubric while completing the discussion-board assignment by the course instructor.

The attitude survey and Giacomo Discussion-board Rubric have also been revised. Items from the Online Learning Experiences (OLE) attitude survey, which were not found to contribute to identifying student satisfaction differences in a blended learning modality, have been omitted. Lastly students' demonstration of correct reasoning is now included within the criteria levels of the rubric, along with the assessment of critical thought.

Research Questions

This study addressed the following questions:

1. What are the effects of including a grading rubric on students' online asynchronous discussion-board performance and general quiz performance?
2. What are the effects of instructor facilitation response prompts in an asynchronous discussion on students' online asynchronous discussion-board performance and general quiz performance?

3. What are the effects of the combination of including a grading rubric and instructor response prompts on students' online asynchronous discussion-board performance and general quiz performance?

Student attitudes toward the blended learning module, as affected by the independent variables were also be investigated.

Chapter 2

METHOD

Participants and Design

The participants in this study included 317 undergraduate pre-service teacher education students who were recruited from a large public university located in the southwestern U.S. The students were recruited from those enrolled in a required junior-year course, which focuses on the integration of technology in the K-12 classroom. This course introduces pre-service teachers to thinking about how to plan for content-rich instruction, good pedagogy and purposeful, value-added integration of available technology tools for student and teacher use in a learning setting.

This study employed a quasi-experimental, pretest-treatment-posttest, two-by-two factorial design. Participants were presented with a pretest, instruction, one of four versions of an asynchronous discussion-board assignment, a posttest, and an attitude survey, as a unit of study. The two treatment factors, rubric and facilitation response prompts, were implemented as between-subject independent variables. The dependent measures in this study were participant discussion-board performance, quiz performance, and participant attitudes.

Materials

A blended module on copyright and fair-use of intellectual property for educators, as part of a three-week unit, was presented using the

Blackboard learning management system (LMS). The module objectives taught in the unit include: 1) classify the use of a creative work from a live performance, writing, or multimedia as either general legal use, defensible under fair-use exemptions for educators, or a copyright violation, and 2) identify appropriate ethical integration of intellectual property in the classroom.

A pretest, learning objectives, goals, rationale, digital story, guided research-learning activity, several reading assignments, a discussion board assignment, and posttest-learning quiz were employed as the critical instructional components of the hybrid module. The module contents described were provided to all participants and are designed to cover each of Gagne's nine events of instruction (Gagne, Briggs, & Wager, 1992). The unit components are described in more detail below.

Pretest. Demonstration of each individual participant's prior knowledge was assessed via an objective-type pretest-quiz given via the Blackboard LMS. The fifteen-item multiple-choice quiz was based upon the unit learning goals. Some of the items were adapted from a lecture given by Lewallen (2006). This instrument was adapted from a thirty-item measure used in a prior study (Giacumo et al., 2012). Participants were only able to choose one answer per item. An example of an assessment item included the following text: "A high school Drama teacher creates a PowerPoint presentation for her class. She incorporates a short clip of the movie "Shakespeare in Love" to show an example related to a specific instructional

objective.” The correct answer would be “definitely fair-use of copyright protected material”. The incorrect distracter options include: “definitely violation of copyright protected materials”, or “likely violation of copyright protected materials”, or “likely general legal use of copyright protected materials”. The complete pretest can be found in Appendix B.

Learning goals and rationale. The unit learning goals and rationale were presented in plain text within the Blackboard LMS. One example of a learning goal was for students to classify the use of a copyright-protected work as permissible due to general legal, public domain use, fair-use, or as a copyright violation. A complete version of this instructional material can be found in Appendix C.

Digital story. The digital story, “A Fair(y) Use Tail,” created by Faden (2006) was used as an anticipatory set. It introduced familiar copyright protected material, copyright terms and definitions, circumstances necessary for fair-use of copyright material exemptions, and the four-factor exemption guidelines outlined in U.S. copyright law. A summary of this material can be found in Appendix D.

Guided research-learning activity. This learning activity was designed to provide students with an opportunity to further explore copyright information pertaining to educators. Through guided practice, students were asked to apply these concepts within a simulated real-life teaching situation. This material can be found in Appendix E.

Reading assignments. The reading assignments, included articles on the differences between plagiarism and copyright violation, copyright myths, a decision-chart job-aid, and the state education standards applicable to ethical integration of media in the classroom. This material can be found in Appendix F.

Discussion-board assignment. For the social-interaction portion of this blended learning experience, students were asked to participate in an asynchronous discussion. The researcher acted as the facilitator for each of the asynchronous whole-class discussions. The discussion was designed to provide feedback based on students' conceptual understanding of the practice work conducted. Additionally, a discussion-board-grading rubric was also provided to half of all participants. The rubric can be found in Appendix A.

Students were directed to self-select one of five discussion-board question prompts and respond to it during the second week of class meetings. One example of a discussion-board question prompt asked students to describe how to use the four-factor test to evaluate the potential fair-use of a piece of copyright protected intellectual property that he/she would like to use in the classroom. Each of the five question prompts can be found in Appendix A.1.

Instructor facilitation response prompts were provided during the discussion-board assignment to half of the study participants. A prompt was given when a student demonstrated low or mid-level critical thinking skills.

The prompt provided feedback designed to facilitate students' demonstration of the next more advanced level of critical thought. Example response prompts can be found in Appendix A.2.

The Logic-Based Critical Thought Discussion (LBCTD) Grade Rubric (see Appendix H) used in this study was adapted from the Giacumo Discussion Board Rubric, which was first employed in the Giacumo et al. (2012) study. This rubric was originally designed to evaluate critical thinking skills as conceived by Krathwohl's revised version of Bloom's Taxonomy (Bloom, 1977; Krathwohl, 2002). It was adapted from a rubric previously used to investigate the presence of students' higher order thinking skills, as divided into low, mid, and high-level thinking skills (Christopher, Thomas, & Tallent-Runnels, 2004).

As in the Christopher, Thomas, & Tallent-Runnels (2004) study, the Giacumo Discussion Board Rubric was used in to assign point values to the depth of student contribution. This rubric extended the previous work done with additional consideration given to documenting both the breadth of the discussion contribution and quality of writing. The breadth was considered important to facilitate increased social interaction. The quality of writing was considered important to reinforce the professional-level writing required of teachers. The LBCTD Rubric has the extended capability to consider the evaluation of correct and logical thought. This addition was made so that students would not receive credit for the demonstration of illogic or misconceptions.

During the week in which students were asked to participate in the discussion-board activity, the lead researcher provided the discussion-board facilitation response prompts based on each individual student's performance to students in half of the participating course sections. The students in the other half of the participating course sections did not receive discussion-facilitation response prompts. Additionally, the LBCTD Rubric was given as a handout in class to students in half of the course sections. Students receiving the handout were directed to use the rubric to guide their work while completing the discussion-board assignment. The rubric was also posted for these students in the LMS discussion board forum, designated for this particular topic. Students in the other half of the course sections did not receive a rubric handout, nor was it posted in the corresponding discussion-board forum.

Posttest learning quiz. Demonstration of each individual student's understanding was assessed using an objective-type quiz administered during a follow-up class meeting via the Blackboard LMS. The fifteen-item multiple-choice learning quiz was based upon the unit learning goals. Some of the items were adapted from a lecture given by Lewallen (2006). This instrument was adapted from a thirty-item measure used in a prior study (Giacumo et al., 2012). Participants were only able to choose one answer per item. This material can be found in Appendix G.

Instructor training. All participating course-section instructors completed an individual training session conducted by the researcher.

During the training session each instructor was presented with the unit content, which was posted in each section course shell in the Blackboard LMS. The purpose of the training was to introduce instructors to the implicit and explicit curriculum design and unit activities, through which they later guided their students. During training, the researcher uploaded the materials into each instructor's Blackboard shell, made sure they were located in the correct area, and went over the goals, rationale, and instructional procedures designed for the unit's implementation in the course.

Procedures

In this quasi-experimental study, students were assigned to the treatments based upon their section enrollment in the required course. In each treatment, all students were exposed to both face-to-face and online learning experiences designed to provide a foundational understanding of copyright and fair-use guidelines for educators. The face-to-face instruction was conducted during the first week of the module. The online portion occurred during the next two weeks and culminated in a learning quiz at the module's conclusion.

Each section was randomly assigned to one of the four treatment conditions. The asynchronous discussion-board treatment groups featured four facilitation protocols: a) instructor response prompts and rubric, b) instructor response prompts and no rubric, c) no instructor response prompts and rubric, d) no instructor response prompts and no rubric.

Students completed the unit content across three weeks of class meetings and at home.

Week 1. To control for prior learning, students were given a computer-based pretest quiz to assess prior knowledge of copyright law and fair-use exemptions for educators. After the pretest, students watched a short digital story called “A Fair(y) Use Tale,” which can be found freely available on YouTube.com. The digital story helped students activate recall of familiar copyright protected work examples. It also gave a brief introduction to general copyright law, definitions, and corresponding fair-use exemption guidelines. Following the digital story students were assigned a guided research learning activity. The learning activity integrated informational web resources and problem-solving exercises designed to support guided practice of the discrete verbal information introduced by the digital story.

Week 2. Following completion of the guided research learning activity, an instructor facilitated an in-person whole-class discussion to ensure accurate understanding and application of the unit’s learning content. This discussion occurred before students participated in the asynchronous discussion board assignment. Toward the end of the class meeting, readings and a graded discussion-board activity were assigned. A hard copy of the discussion-board rubric was distributed in class to students in the rubric treatment. This concluded the face-to-face instructional portion of the module designed for this study.

Week 3. Over the next week, students were to read the assigned material and participate in the discussion-board assignment at home, via Blackboard. Students in half of the assigned course sections were instructed to use the LBCTD Rubric as they participate in the discussion. The other half of the course sections did not have the LBCTD Rubric to guide their discussion-board forum performance.

The course instructor for each section provided the research facilitator with access so she could contribute to and observe the students' work in the discussion board in Blackboard. Half of the course sections were assigned to a treatment in which instructor facilitation response prompts were provided to students by the researcher. The other half of the course sections was assigned to a treatment in which they did not receive any instructor facilitation response prompts. The lead researcher provided the treatment response prompts in a Socratic style to any participant who demonstrated low or mid-level cognitive processes. These prompts were designed to stimulate demonstration of thinking skills at one level above the student's original performance, in an attempt to guide demonstration of more complex thinking skills.

Measures

Resulting discussion board postings were qualitatively evaluated for demonstration of the level of thinking skills, according to the LBCTD Rubric presented in Appendix I. Additional quantitative measures included: a) students' scores on fifteen multiple-choice pretest items, and b) students'

scores on fifteen multiple-choice posttest items. Students' responses to an attitude questionnaire, adapted from Palmer and Hoyt (2009), were used to measure student interest, motivation, confidence, and enjoyment. These measures are described in more detail below.

Discussion rubric. The researcher conducted an analysis of the students' performance for students in each discussion condition. According to the LBCTD Rubric shown in Appendix I, points were awarded for students' depth of total contribution, breadth of total contribution, and quality of writing. Students could earn up to nine points for their overall discussion-board contribution. Students were awarded zero, one, two, or three points for the depth of contributions. Zero, one, two, or three points were awarded for the breadth of contributions. Zero, one, two, or three points were awarded for the quality of writing. These scores were then be used to investigate potential performance differences between the four treatment groups.

Pretest and posttest. The pretest and posttest quiz each included fifteen multiple-choice items based upon the module's learning objectives. Many of the items for each objective on the pretest and posttest had similar root structures, while other items employed slightly different root structures. The following are examples of pretest and posttest assessment quiz items developed to measure achievement of each of the learning objectives that will be included in this study.

Objective 1 (classify the use of a creative work from a live performance, writing, or multimedia as either general legal use, defensible under fair-use exemptions for educators, or a copyright violation)

Pretest: Mrs. Jerome, who teaches government, always goes to bed early. She normally videotapes "The Colbert Report" show and watches it the following day before school. This is probably:

(Answer depicted in **bold**.)

Definitely copyright violation

Definitely fair-use of copyrighted material

Likely general legal use

Likely copyright materials violation

Posttest: Mr. Chavez, who teaches criminal justice, loves to integrate relevant current local events into his classroom instruction. He normally videotapes the 11 o'clock news and watches it the following day before school to prepare current event discussion topics for class. This is probably:

(Answer depicted in **bold**.)

Definitely copyright violation

Definitely fair-use of copyrighted material

Likely general legal use

Likely copyright materials violation

Objective 2 (identify appropriate ethical integration of intellectual property)

Pretest: Which of the following demonstrates appropriate ethical integration of copyright protected materials into the classroom?

(Answer depicted in **bold**.)

A music teacher posts a song she/he bought on her/his password protected classroom website for academic critique.

A music teacher posts a song she/he bought on her/his open classroom blog for academic critique.

A math teacher posts a song she/he bought on her/his password protected classroom website for students to enjoy.

A math teacher posts a song she/he bought on her/his open classroom blog for students to enjoy.

Posttest: Which of the following demonstrates appropriate ethical integration of copyright protected materials into the classroom?

(Answer depicted in **bold**.)

A teacher rents a movie to show to her class that is intended to entertain students while a substitute is teaching her/his students.

A teacher borrows a movie from the school library to show to her class that is intended to entertain students while a substitute is teaching her/his students.

A teacher borrows a movie from the school library to show at a fundraising family movie-night.

A teacher rents a movie to show to her class that is intended to review recent classroom learning topics while a substitute is teaching her/his students.

Satisfaction Survey. Palmer and Hoyt (2009) designed the Experiences of Learning Online (ELO) instrument to measure student interest, motivation, confidence, and enjoyment in a wholly online learning environment. The ELO instrument was adapted and modified for use in a previous study conducted by Giacumo et al. (2012). In the study discussed here, eleven items were used that were found to measure satisfaction on a Likert-type scale for a range of elements, such as structure and organization, teaching staff, interaction, and technical aspects of online learning. A rating of one represented high satisfaction, while a rating of five represented high dissatisfaction. Responses to three open-ended questions were also examined. The survey was conducted via Google Forms and Spreadsheets directly after students received the results of the learning quiz. Two sample items from this survey include: a) I was ---- with being organized and responsible for my own learning. b) I was ---- with the amount of work that was required.

Data Analysis

Multivariate analysis, analysis of variance, and analysis of covariance, were used to analyze results from the discussion-board entries, pretest, posttest, and attitude survey. A random sample of ten percent of the students, were selected for further investigation into the responses to the

open-ended survey questions. These student responses were qualitatively analyzed for major themes.

A two-by-two analysis of covariance (ANCOVA) was used to analyze the pretest and posttest data to determine the effects of rubrics and facilitation response prompts on achievement as measured by quiz scores. A two-by-two multivariate analysis of variance (MANOVA) was conducted to analyze the effects of the rubric and instructor response prompts on demonstration of higher-order thinking skills as measured by the LBCTD Rubric. Follow-up ANOVAs were also utilized to pinpoint significant effects.

To ensure the validity and reliability of the researchers' evaluation of students' thinking skills as measured by their discussion-board entries, the researcher selected a random sample of the entries of ten percent of the participants. These entries were given to a second researcher to evaluate student work. This researcher was also a doctoral student who was been trained to evaluate the entries according to the Logic Based Discussion-board Critical Thinking Rubric. The inter-rater reliability was calculated between both of the sample scores. The correlation was used to document the accuracy of the tool.

The original Palmer and Hoyt (2009) satisfaction survey was adapted for use in the previous pilot study. In the previous study conducted by Giacumo et al. (2012), items relating to perceived importance were deleted from the analysis because they do not illustrate students' satisfaction levels. A factor analysis was conducted with the items relating to satisfaction in

order to identify logical groupings of the satisfaction Likert-type items. However, only one logical factor emerged from the prior analysis. In this study, a revised twenty-item version of the satisfaction survey was employed. A multivariate analysis of variance (MANOVA) followed by univariate analyses was performed to analyze key differences between treatments on attitude factors.

Qualitative techniques were used to analyze responses to open-ended questions on the attitude survey. Most-frequent responses were categorized to develop common themes by condition. Common themes were determined by the percentage of students who contribute similar comments.

Chapter 3

RESULTS

The results of the participants' performance and attitudes, based on the differences in treatment conditions, are described in the following sections. The data collected from the discussion-board transcripts and observed scores on the pretest-posttest objective-type assessment instruments are presented. In addition, student's aggregated satisfaction ratings from the survey instrument are also presented for each treatment.

Discussion-board performance

Students' overall scores on discussion-board performance ranged from zero to nine possible points and were used to calculate the total mean score of 5.24. A sample of ten percent of students and their complete entries were examined to confirm inter-rater reliability of the assessed scores. The resulting Pearson correlation scores representing the strong inter-rater reliability levels found in this study are represented in Table 1.

Table 1
Pearson Correlation Matrix among Inter Rater Reliability Scores

	Rater 2 DepthDB	Rater 2 BreadthDB	Rater 2 WritingDB
Rater 1 DepthDB	.882**		
Rater 1 BreadthDB		.856**	
Rater 1 WritingDB			.904**

N = 26

**p < 0.01

The overall discussion board scores were also further broken out by the three criteria represented in the rubric: the depth of participation, breadth of participation, and the quality of writing. Students' scores in each individual category ranged from zero to three points. The data in Table 2 depict the mean scores and standard deviations for the resulting discussion-board activity represented by each treatment.

The mean score for students' performance across the discussion-board assignment in the instructor prompt treatment was 4.86 (SD =2.853), as compared to the total mean score of 5.55 (SD =2.650) for students who received no instructor prompt. The total discussion-board mean score for students who received a rubric was 5.45 (SD =2.759), as compared to the mean score of 5.03 (SD =2.549) for students who did not receive a rubric. Students who received instructor prompts obtained a mean score of 4.26 (SD =3.282) in the rubric treatment compared to a mean score of 5.17 (SD =2.577) in the no rubric treatment. In contrast, students who did not receive instructor prompts achieved a mean score of 5.98 (SD =2.649) for students in the rubric treatment compared to a mean score of 4.83 (SD =2.517) for those in the no rubric treatment. Figures 1, 2, and 3 illustrate discussion-board performance mean scores by treatment and measure.

Table 2
*Mean scores and Standard Deviations for Discussion-board Performance by
 Rubric and Instructor Response Prompt Condition*

			Rubric	No rubric	Total
Depth 3 points possible	Prompt	Mean	1.31	1.81	1.64
		SD	1.128	1.101	1.130
		N	39	77	116
	No prompt	Mean	2.10	1.40	1.84
		SD	1.073	0.987	1.093
		N	88	53	141
	Total	Mean	1.86	1.64	1.75
		SD	1.146	1.071	1.112
		N	127	130	257
Breadth 3 points possible	Prompt	Mean	1.56	1.92	1.80
		SD	1.252	0.997	1.097
		N	39	77	116
	No prompt	Mean	2.26	1.92	2.13
		SD	1.023	0.958	1.009
		N	88	53	141
	Total	Mean	2.05	1.92	1.98
		SD	1.140	0.977	1.061
		N	127	130	257
Quality of Writing 3 points possible	Prompt	Mean	1.38	1.44	1.42
		SD	1.161	0.925	1.006
		N	39	77	116
	No prompt	Mean	1.61	1.51	1.57
		SD	0.999	1.012	1.002
		N	88	53	141
	Total	Mean	1.54	1.47	1.51
		SD	1.052	0.958	1.004
		N	127	130	257

Table 2 (continued)

			Rubric	No rubric	Total
Total Score 9 points possible	Prompt	Mean	4.26	5.17	4.86
		SD	3.282	2.577	2.853
		N	39	77	116
	No prompt	Mean	5.98	4.83	5.55
		SD	2.649	2.517	2.650
		N	88	53	141
	Total	Mean	5.45	5.03	5.24
		SD	2.954	2.549	2.759
		N	127	130	257

Note. The total maximum possible achievement score for the discussion-board assignment was 9. The maximum possible achievement score for the depth of discussion-board performance was 3. The maximum possible achievement score for breadth of discussion-board performance was 3. The maximum possible achievement score for quality of writing in discussion-board performance was 3.

Figure 1 Depth of discussion-board performance mean scores by treatment and measure

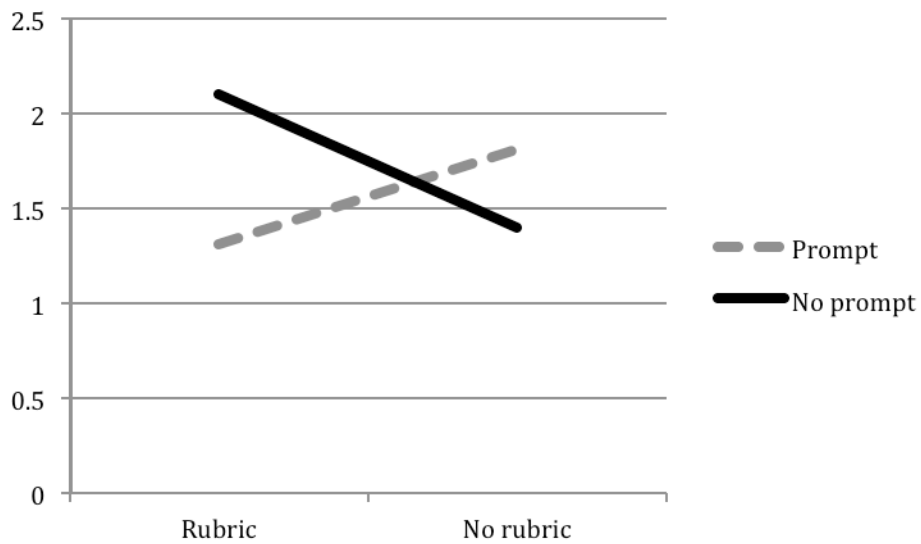


Figure 1. Direction of effects by treatment. The maximum possible achievement score for the depth of discussion-board performance was 3.

Figure 2 Breadth of discussion-board performance mean scores by treatment

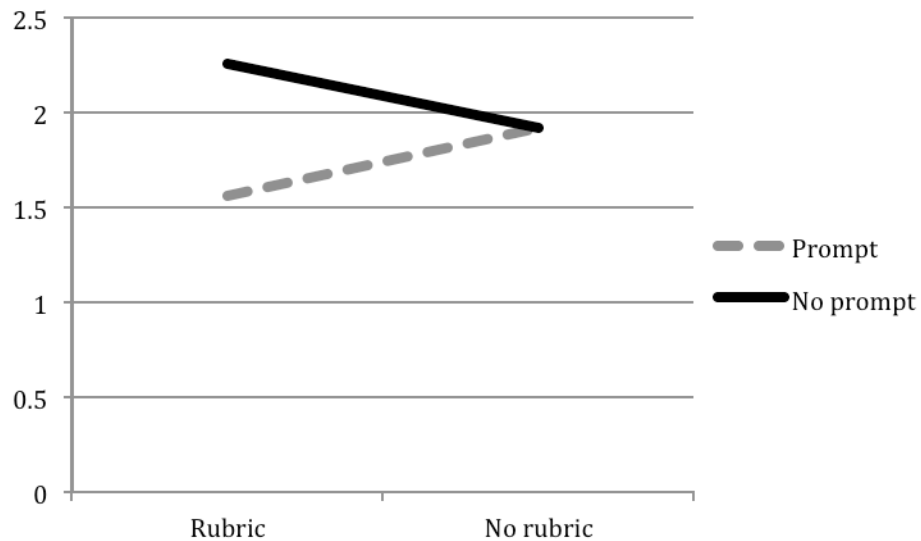


Figure 2. Direction of effects by treatment. The maximum possible achievement score for breadth of discussion-board performance was 3.

Figure 3 Writing quality of discussion-board performance mean scores by treatment and measure

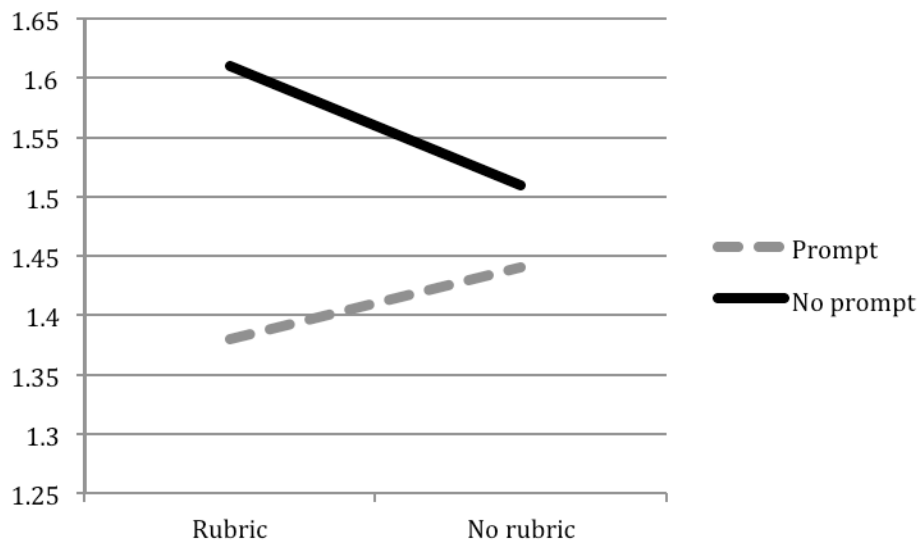


Figure 3. Direction of effects by treatment. The maximum possible achievement score for quality of writing in discussion-board performance was 3.

A two-way multivariate analysis of variance (MANOVA) was conducted to determine the effect of the discussion-board treatment instructor response prompts (presence or absence) and rubrics (presence or absence) on the three dependent variables: depth of contribution to the discussion, breadth of contribution to the discussion, and quality of writing. In the MANOVA, the prompt main effect was not found to be statistically significant among the dependent variables, Pillai's criterion = .027, $F(1, 251) = 2.345$, $p = .073$, partial $\eta^2 = .027$. The rubric main effect was also not found to be significant, Pillai's criterion = .005, $F(1, 251) = .459$, $p = .711$, partial $\eta^2 = .005$. The prompt and rubric interaction effect was found to be statistically

significant among the variables, Pillai's criterion = .089, $F(1, 251) = 2.345$, $p < .001$, partial $\eta^2 = .089$. The results are provided in Table 3.

Table 3

MANOVA Summary Table for Discussion-board Performance by Treatment

Source	<i>df</i>	<i>F</i>	Partial η^2	<i>P</i>
Prompt (P)	1	2.345	.027	.073
Rubric (R)	1	.459	.005	.771
P x R	1	2.345	.089	.000**
Error	251	(1.082)		

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

** $p < .10$

An analysis of variance (ANOVA) was conducted on each of the three dependent variables as follow-up tests to the MANOVA. The results are presented in Table 4.

Table 4

ANOVA Summary Table for Discussion-board Performance by Treatment

	Source	<i>df</i>	<i>F</i>	Partial η^2	<i>P</i>
Depth of Contribution	Prompt (P)	1	1.877	.007	.172
	Rubric (R)	1	.549	.002	.459
	P x R	1	18.280	.067	.000**
	Error	253			
Breadth of Contribution	Prompt (P)	1	6.570	.025	.011*
	Rubric (R)	1	.006	.000	.938
	P x R	1	6.478	.025	.012*
	Error	253			
Quality of Writing	Prompt (P)	1	1.263	.005	.262
	Rubric (R)	1	.032	.000	.858
	P x R	1	.372	.001	.542
	Error	253			

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

** $p < .01$

Depth of Contributions in the Discussion-Board

An ANOVA was conducted to assess the effect of prompts and rubrics on the independent variable, depth of students' contribution to the discussion-board. The prompt main effect was not found to be statistically significant, $F(1, 253) = 1.877, p = .172, \text{partial } \eta^2 = .007$. The rubric main effect was also not found to be statistically significant, $F(1, 253) = 0.549, p = .459, \text{partial } \eta^2 = .002$. The interaction was found to be statistically significant, $F(1, 253) = 18.280, p < .001, \text{partial } \eta^2 = .067$.

Follow up simple main effect analyses were conducted to evaluate the significant interaction. To control for Type 1 error across the two simple main effects, the Bonferoni method was used and alpha was set at .025 ($.05/2 = .025$). When prompts were presented, participants who did not receive a rubric performed significantly better than participants who did receive a rubric, $F(3, 256) = 5.57, p < .02, \text{partial } \eta^2 = .003$. Participants who did not receive any prompts did significantly better when they were provided with a rubric than those who were not provided with a rubric, $F(3, 256) = 14.33, p < .01, \text{partial } \eta^2 = .003$. When the rubric was presented, those who were provided with prompts scored significantly lower than those who did not receive prompts, $F(3, 256) = 14.83, p < .01, \text{partial } \eta^2 = .001$. All other simple main effect comparisons were not significant for this ANOVA.

Breadth of Contributions in the Discussion-Board

An ANOVA was also conducted to assess the effect of prompts and rubrics on the dependent variable, breadth of students' contribution to the

discussion-board. The prompt main effect was found to be statistically significant, $F(1, 253) = 6.570, p = .011, \text{partial } \eta^2 = .025$. The rubric main effect was not found to be statistically significant, $F(1, 253) = 0.006, p = .938, \text{partial } \eta^2 < .000$. The students who received a prompt tended to earn lower scores in this aspect of participation, with a mean score of 1.80 (SD = 1.097), than the group that did not receive prompts and a mean score of 2.13 (SD = 1.009). The interaction was also found to be statistically significant, $F(1, 253) = 6.478, p < .012, \text{partial } \eta^2 = .025$.

Follow up simple main effect analyses were conducted to evaluate the significant interaction. To control for Type 1 error across the two simple main effects, the Bonferoni method was used and alpha was set at .025 ($.05/2 = .025$). When a rubric was presented, those without a prompt performed significantly higher, $F(3, 256) = 12.14, p < .01, \text{partial } \eta^2 < .001$. All other simple main effect comparisons were not significant for this ANOVA.

Quality of Writing in the Discussion-Board

An ANOVA was finally conducted to assess the effect of prompts and rubrics on the dependent variable, quality of writing. The prompt main effect was also not found to be statistically significant, $F(1, 253) = 1.263, p = .262, \text{partial } \eta^2 = .005$. The rubric main effect was not found to be statistically significant, $F(1, 253) = 0.032, p = .858, \text{partial } \eta^2 < .000$. The interaction was also not found to be statistically significant, $F(1, 253) = 0.372, p = .542, \text{partial } \eta^2 = .001$.

Pretest and posttest achievement scores

The means and standard deviations for the pretest and posttest learning performance by instructor prompt (presence or absence) and rubric (presence or absence) are presented in Table 5. The overall mean score for students' performance across the four treatment groups on the pretest was 5.33 (SD =1.740), while the overall mean score for students' performance across the four treatment groups on the posttest was 8.42 (SD =2.144). The pretest mean score for students in the instructor prompt treatment was 5.42 (SD = 1.755) as compared with 5.26 (SD = 1.730) for students who received no instructor prompt. The pretest mean score for students who later received a rubric was 5.46 (SD = 1.64) as compared with 5.20 (SD = 1.827) for students who did not receive a rubric. Students who received instructor prompts obtained a mean score of 5.59 (SD = 1.534) in the rubric treatment compared to a mean score of 5.34 (SD = 1.861) in the no rubric treatment. In contrast, students who did not receive instructor prompts achieved a mean score of 5.41 (SD = 1.693) in the rubric treatment compared to a mean score of 5.00 (SD =1.776) in the no rubric treatment.

Table 5
Means and Standard Deviations for Pretest and Posttest Achievement Scores by Rubric and Instructor Response Prompt Condition

Instructor Response Prompt		With Rubric		Without Rubric		Total	
		Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
With Prompt	M	5.59	8.64	5.34	8.05	5.42	8.25
	SD	1.534	1.993	1.861	2.194	1.755	2.138
	n	39	39	77	77	116	116
Without Prompt	M	5.41	9.10	5.00	7.66	5.26	8.56
	SD	1.693	1.936	1.776	2.192	1.730	2.146
	n	88	88	53	53	141	141
Total	M	5.46	8.96	5.20	7.89	5.33	8.42
	SD	1.642	1.957	1.827	2.193	1.740	2.144
	n	127	127	130	130	257	257

Note. The maximum possible achievement score for the pretest was 12. The maximum possible achievement score for the posttest was 12.

The posttest mean score for students in the instructor prompt treatment was 8.25 (SD = 2.138) as compared with 8.56 (SD = 2.146) for students who received no instructor prompt. The posttest mean score for students who received a rubric was 8.96 (SD = 1.957) as compared with 7.89 (SD = 2.193) for students who did not receive a rubric. Students who received instructor prompts obtained a mean score of 8.64 (SD = 1.993) in the rubric treatment compared to a mean score of 8.05 (SD = 2.194) in the no rubric treatment. Students who did not receive instructor prompts achieved a mean score of 9.10 (SD = 1.936) in the rubric treatment compared to a mean score of 7.66 (SD = 2.192) in the no rubric treatment.

To verify that the assumptions of independence and normality underlying the ANCOVA, a test of homogeneity-of-regression (slopes) assumption was first conducted to evaluate any potential interaction between the covariate and the independent variable in the prediction of the dependent variable. No interaction was found $F(1, 253) = 1.111, p = .345, \eta^2 = .013$; meaning that the differences on the dependent variable pre test scores among groups did not vary as a function of the students' prior knowledge.

A two-way analysis of covariance (ANCOVA) was then conducted to assess differences among students' achievement scores after completing the instructional unit about copyright and fair use exemptions for educators, by treatment variation. Results are presented in Table 6. As previously stated, the independent variables included instructor response prompts (presence or absence) and a grade rubric (presence or absence). The dependent variable was scores on an objective-type posttest, administered following completion of the instructional unit. Students' scores on an objective-type pretest administered prior to the commencement of the instructional unit were used as a covariate. The prompt main effect was not found to be statistically significant, $F(1, 257) = 0.024, p = .878, \text{partial } \eta^2 < .000$. The rubric main effect was found to be statistically significant, $F(1, 257) = 13.462, p < .001, \text{partial } \eta^2 = .051$, with scores of students who received a rubric being significantly higher than scores of those students who did not receive a rubric. Students tended to achieve a higher mean score of 8.96 (SD

= 1.957) when they received the rubric treatment. In contrast, students who did not receive the rubric treatment tended to achieve a mean score of 7.89 (SD = 2.193). There was no significant interaction effect, $F(1, 257) = .024, p = .122, \text{partial } \eta^2 = .009$.

Table 6
ANCOVA Summary Table for Change in Pretest-Posttest Performance by Treatment

Source	<i>df</i>	<i>F</i>	Partial η^2	<i>P</i>
Prompt (P)	1	.024	.000	.878
Rubric (R)	1	13.462	.051	.000*
P x R	1	.024	.009	.122
Error	257	(4.334)		

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

Attitude survey responses

The attitude survey contained seventeen Likert-type items and four open-ended questions. A two-by-two MANOVA was conducted to test the effects of rubrics and instructor response prompts on student satisfaction levels. A random sample of ten percent of students was taken and their open-ended survey responses were also examined for further insight into their satisfaction ratings and achievement.

The scale on the attitude items ranged from 1 to 5, with 1 denoting not satisfied and 5 denoting very satisfied. The range of means for all the attitude items was from 2.71 to 3.96. The means and standard deviations for each item included in this study are presented in Table 7.

Table 7
Means and Standard Deviations for Satisfaction Survey Items

Item			With Rubric		Without Rubric		Overall	
			Mean	SD	Mean	SD	Mean	SD
1	Being able to access online/digital learning resources readily	With Prompt	3.79	.894	3.97	.827	3.96	.777
		Without Prompt	3.95	.741	4.06	.662		
2	Being able to partially learn with regular face-to-face contact	With Prompt	3.54	.996	3.81	.918	3.79	.872
		Without Prompt	3.88	.814	3.81	.756		
3	Being able to partially learn in an online format	With Prompt	3.38	1.161	3.71	.856	3.72	.947
		Without Prompt	3.77	.944	3.91	.861		
4	Being organized and responsible for my own learning	With Prompt	3.77	.742	3.87	.848	3.85	.822
		Without Prompt	3.81	.842	3.94	.818		
5	The amount of work that was required	With Prompt	2.31	1.195	2.71	1.037	2.71	1.084
		Without Prompt	2.90	1.125	2.70	.932		

Table 7 (continued)

Item			With Rubric		Without Rubric		Overall	
			Mean	SD	Mean	SD	Mean	SD
6	Being given and/or pointed to enough current material	With Prompt	3.62	.907	3.81	.889	3.81	.876
		Without Prompt	3.82	.904	3.92	.781		
7	My ability to relate what is learnt to issues in the wider world	With Prompt	3.77	.872	3.83	.894	3.81	.868
		Without Prompt	3.80	.886	3.85	.818		
8	My ability to make connections to existing knowledge/experience	With Prompt	3.82	.756	3.91	.798	3.89	.786
		Without Prompt	3.86	.790	3.98	.796		
9	The assessable work, and its alignment with the learning goals	With Prompt	3.18	1.023	3.58	.978	3.53	.935
		Without Prompt	3.59	.853	3.60	.906		

Table 7 (continued)

Item			With Rubric		Without Rubric		Overall	
			Mean	SD	Mean	SD	Mean	SD
10	The feedback given on my assessable work, helping me clarify things I hadn't fully understood	With Prompt	3.18	.914	3.39	.876	3.33	.925
		Without Prompt	3.31	1.010	3.40	.862		
11	The opportunity to develop/practice online technical skills	With Prompt	3.62	.907	3.75	.710	3.76	.777
		Without Prompt	3.78	.780	3.85	.770		
12	My ability to communicate knowledge and ideas effectively online	With Prompt	3.67	.838	3.84	.812	3.79	.796
		Without Prompt	3.78	.794	3.83	.753		
13	Being encouraged to think about ideas and solve problems	With Prompt	3.51	.854	3.77	.826	3.72	.847
		Without Prompt	3.70	.911	3.83	.753		
14	My ability to learn online	With Prompt	3.67	.955	3.92	.823	3.85	.898
		Without Prompt	3.82	.977	3.94	.818		

Table 7 (continued)

Item			With Rubric		Without Rubric		Overall	
			Mean	SD	Mean	SD	Mean	SD
15	The amount of teacher-student interaction in the discussion board	With Prompt	3.13	.864	3.27	.805	3.29	.859
		Without Prompt	3.35	.872	3.34	.919		
16	The amount of student-student interaction in the discussion board	With Prompt	3.26	.966	3.53	.836	3.59	.871
		Without Prompt	3.72	.830	3.72	.863		
17	The feedback about my discussion board participation	With Prompt	3.13	.894	3.27	.821	3.33	.841
		Without Prompt	3.45	.843	3.38	.814		

Note. The mean scores and standard deviations were derived from the Likert-type scale ranging from 1 (strong dissatisfied) to 5 (strongly satisfied).

The four items that received the three most positive responses each referenced the online learning environment, the ability to make connections between existing knowledge, and being responsible for own learning. Students' responses were the most positive on item number one, which inquired about the ability to access online/digital materials (M= 3.96, SD= 0.777). The item that received the second most positive response was item

number eight, which asked students how satisfied they were with their ability to make connections between existing knowledge ($M= 3.89$, $SD= 0.786$). The third item that received the most positive response was item number fourteen pertaining to the students' satisfaction level with being able to learn online ($M= 3.85$, $SD= 0.898$). The fourth item that received the most positive response was item number, which focused on students' satisfaction with being responsible for own learning ($M= 3.85$, $SD= 0.822$).

The four items that received the most negative responses each referenced assignment logistics and teacher-student interaction on the discussion-board. Students had the most negative attitude on item number five pertaining to the students' satisfaction level with the amount of work required ($M= 2.71$, $SD= 1.084$). The item that received the second most negative response was item number fifteen pertaining to the level of satisfaction with the amount of teacher-student interaction in the discussion-board ($M= 3.29$, $SD= 0.859$). The item that received the third most negative response was item number seventeen pertaining to the feedback students received about their discussion-board participation ($M= 3.33$, $SD= 0.814$). The fourth item that received the most negative response was item number ten, which focused on the feedback students received on assessable work to clarify concepts, ($M= 3.33$, $SD= 0.925$).

A two-way multivariate analysis of variance (MANOVA) was conducted to determine the effect of the discussion-board instructor response prompt treatment (presence or absence) and the rubric treatment

(presence or absence) on students' satisfaction. Table 8 presents the corresponding MANOVA summary results. The prompt main effect was not found to be statistically significant, Pillai's criterion = .082, $F(1, 253) = 1.245$, $p < .231$, partial $\eta^2 = .082$. The rubric main effect was also not found to be significant, Pillai's criterion = .028, $F(1, 253) = 0.408$, $p = .983$, partial $\eta^2 = .028$. The prompt and rubric interaction effect was also not found to be statistically significant, Pillai's criterion = .044, $F(1, 253) = 0.640$, $p = .858$, partial $\eta^2 = .044$. Results are presented in Table 8.

Table 8
MANOVA Summary Table for Attitude by Treatment

Source	<i>df</i>	<i>F</i>	Partial η^2	<i>P</i>
Prompt (P)	1	1.245	.082	.231
Rubric (R)	1	.408	.028	.983
P x R	1	.640	.044	.858
Error	253	(.759)		

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

** $p < .01$

An analysis of variance (ANOVA) was conducted on each of the individual survey items as a follow-up test to the MANOVA. Significant differences were found on items 3, 5, and 16. Results are presented in Table 9. The three significant items are described first, followed by the results on the remaining fourteen items.

Table 9
ANOVA Summary Table for Attitude Items by Treatment

Item	Source	<i>df</i>	<i>F</i>	Partial η^2	<i>P</i>
1 Being able to access online/digital learning resources readily	Prompt (P)	1	1.410	.006	.236
	Rubric (R)	1	1.900	.007	.169
	P x R	1	.143	.001	.706
2 Being able to partially learn with regular face-to-face contact	Prompt (P)	1	2.253	.009	.135
	Rubric (R)	1	.791	.003	.375
	P x R	1	2.095	.008	.149
3 Being able to partially learn in an online format	Prompt (P)	1	5.534	.021	.019*
	Rubric (R)	1	3.108	.014	.062
	P x R	1	.638	.003	.425
4 Being organized and responsible for my own learning	Prompt (P)	1	.262	.001	.609
	Rubric (R)	1	1.203	.005	.274
	P x R	1	.027	.000	.869
5 The amount of work that was required	Prompt (P)	1	4.154	.016	.043*
	Rubric (R)	1	.540	.002	.463
	P x R	1	4.636	.018	.032*
6 Being given and/or pointed to enough current material	Prompt (P)	1	1.964	.008	.162
	Rubric (R)	1	1.660	.007	.199
	P x R	1	.132	.001	.717
7 My ability to relate what is learnt to issues in the wider world	Prompt (P)	1	.037	.000	.847
	Rubric (R)	1	.254	.001	.614
	P x R	1	.001	.000	.971

Table 9 (continued)

Item	Source	<i>df</i>	<i>F</i>	Partial η^2	<i>P</i>	
8	My ability to make connections to existing knowledge/ experience	Prompt (P)	1	.309	.001	.578
		Rubric (R)	1	.991	.004	.320
		P x R	1	.020	.000	.889
9	The assessable work, and its alignment with the learning goals	Prompt (P)	1	3.122	.012	.078
		Rubric (R)	1	2.937	.011	.088
		P x R	1	2.586	.010	.109
10	The feedback given on my assessable work, helping me clarify things I hadn't fully understood	Prompt (P)	1	.303	.001	.582
		Rubric (R)	1	1.516	.006	.219
		P x R	1	.246	.001	.620
11	The opportunity to develop/ practice online technical skills	Prompt (P)	1	1.678	.007	.196
		Rubric (R)	1	.986	.004	.322
		P x R	1	.127	.001	.721
12	My ability to communicate knowledge and ideas effectively online	Prompt (P)	1	.244	.001	.622
		Rubric (R)	1	1.140	.004	.287
		P x R	1	.394	.002	.531

Table 9 (continued)

Item	Source	<i>df</i>	<i>F</i>	Partial η^2	<i>P</i>
13 Being encouraged to think about ideas and solve problems	Prompt (P)	1	1.325	.005	.251
	Rubric (R)	1	2.911	.011	.089
	P x R	1	.331	.001	.566
14 My ability to learn online	Prompt (P)	1	.538	.002	.464
	Rubric (R)	1	2.608	.010	.108
	P x R	1	.305	.001	.581
15 The amount of teacher-student interaction in the discussion board	Prompt (P)	1	1.658	.007	.199
	Rubric (R)	1	.341	.001	.560
	P x R	1	.484	.002	.487
16 The amount of student-student interaction in the discussion board	Prompt (P)	1	8.138	.031	.005**
	Rubric (R)	1	1.507	.006	.221
	P x R	1	1.484	.006	.224
17 The feedback about my discussion board participation	Prompt (P)	1	3.836	.015	.051
	Rubric (R)	1	.094	.000	.760
	P x R	1	1.015	.004	.315

Note. Values enclosed in parentheses represent mean square errors.

* $p < .05$

** $p < .01$

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item three, investigating satisfaction with being able to partially learn in an online format. The prompt main effect was found to be statistically significant, $F(1, 3) = 5.534$, $p = .019$, partial $\eta^2 = .021$. Students tended to rate this item with higher levels of satisfaction when they did not

receive instructor response prompts (Mean = 3.82, SD = .912) than when they did receive instructor response prompts (Mean = 3.60, SD = .977). The rubric main effect was not found to be statistically significant, $F(1, 3) = 3.108$, $p = .062$, partial $\eta^2 = .014$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.638$, $p = .425$, partial $\eta^2 = .003$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item five, investigating satisfaction with the amount of work that was required. The prompt main effect was found to be statistically significant, $F(1, 3) = 4.154$, $p = .043$, partial $\eta^2 = .016$. As with the results for the previous item, again students tended to rate this item with higher levels of satisfaction when they did not receive instructor response prompts (Mean = 2.82, SD = 1.057) than when they did receive instructor response prompts (Mean = 2.58, SD = 1.105). The rubric main effect was not found to be statistically significant, $F(1, 3) = 0.540$, $p = .463$, partial $\eta^2 = .002$. The interaction was also found to be statistically significant, $F(1, 3) = 4.636$, $p = .032$, partial $\eta^2 = .018$. Follow up simple main effect analyses were conducted to evaluate the significant interaction. To control for Type 1 error across the two simple main effects, the Bonferoni method was used and alpha was set at $.025$ ($.05/2 = .025$). When a rubric was presented, those without a prompt rated their satisfaction significantly higher, $F(3, 256) = 8.17$, $p < .01$, partial $\eta^2 = .031$. All other main effect comparisons were not significant for this ANOVA.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item sixteen, investigating satisfaction with the amount of student-student interaction in the discussion board. The prompt main effect was found to be statistically significant, $F(1, 3) = 8.138$, $p = .005$, partial $\eta^2 = .031$. Once again, students tended to rate this item with higher levels of satisfaction when they did not receive instructor response prompts (Mean = 3.72, SD = .839) than when they did receive instructor response prompts (Mean = 3.44, SD = .887). The rubric main effect was not found to be statistically significant, $F(1, 3) = 1.507$, $p = .221$, partial $\eta^2 = .006$. The interaction was also not found to be statistically significant, $F(1, 3) = 1.484$, $p = .224$, partial $\eta^2 = .006$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item one, investigating satisfaction with being able to access online/digital learning resources readily. The prompt main effect was not found to be statistically significant, $F(1, 3) = 1.141$, $p = .236$, partial $\eta^2 = .006$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 1.900$, $p = .169$, partial $\eta^2 = .007$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.143$, $p = .706$, partial $\eta^2 = .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item two, investigating satisfaction with being able to partially learn with regular face-to-face contact. The prompt main effect was not found to be statistically significant, $F(1, 3) = 2.253$, $p = .135$, partial $\eta^2 = .009$. The rubric main effect was not found to be statistically significant, $F(1, 3) =$

0.791, $p = .375$, partial $\eta^2 = .003$. The interaction was also not found to be statistically significant, $F(1, 3) = 2.095$, $p = .149$, partial $\eta^2 = .008$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item four, investigating satisfaction with being organized and responsible for my own learning. The prompt main effect was not found to be statistically significant, $F(1, 3) = 0.262$, $p = .609$, partial $\eta^2 = .001$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 1.203$, $p = .274$, partial $\eta^2 = .005$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.027$, $p = .869$, partial $\eta^2 < .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item six, investigating satisfaction with being given and/or pointed to enough current material. The prompt main effect was not found to be statistically significant, $F(1, 3) = 1.964$, $p = .162$, partial $\eta^2 = .008$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 1.660$, $p = .199$, partial $\eta^2 = .007$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.132$, $p = .717$, partial $\eta^2 = .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item seven, investigating satisfaction with students' ability to relate what is learnt to issues in the wider world. The prompt main effect was not found to be statistically significant, $F(1, 3) = 0.037$, $p = .847$, partial $\eta^2 < .000$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 0.254$, $p = .614$, partial $\eta^2 = .001$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.001$, $p = .971$, partial $\eta^2 < .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item eight, investigating satisfaction with students' ability to make connections to existing knowledge/experience. The prompt main effect was not found to be statistically significant, $F(1, 3) = 0.309$, $p = .578$, partial $\eta^2 = .001$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 0.991$, $p = .320$, partial $\eta^2 = .004$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.020$, $p = .889$, partial $\eta^2 < .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item nine, investigating satisfaction with the assessable work, and its alignment with the learning goals. The prompt main effect was not found to be statistically significant, $F(1, 3) = 3.122$, $p = .078$, partial $\eta^2 = .012$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 2.937$, $p = .088$, partial $\eta^2 = .011$. The interaction was also not found to be statistically significant, $F(1, 3) = 2.586$, $p = .109$, partial $\eta^2 = .011$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item ten, investigating satisfaction with the feedback given on my assessable work, helping me clarify things I hadn't fully understood. The prompt main effect was not found to be statistically significant, $F(1, 3) = 0.303$, $p = .582$, partial $\eta^2 = .001$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 1.516$, $p = .219$, partial $\eta^2 = .006$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.246$, $p = .620$, partial $\eta^2 = .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item eleven, investigating satisfaction with the opportunity to develop/practice online technical skills. The prompt main effect was not found to be statistically significant, $F(1, 3) = 1.678$, $p = .196$, partial $\eta^2 = .007$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 0.986$, $p = .322$, partial $\eta^2 = .004$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.127$, $p = .721$, partial $\eta^2 = .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item twelve, investigating satisfaction with students' ability to communicate knowledge and ideas effectively online. The prompt main effect was not found to be statistically significant, $F(1, 3) = 0.244$, $p = .622$, partial $\eta^2 = .001$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 1.140$, $p = .287$, partial $\eta^2 = .004$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.394$, $p = .531$, partial $\eta^2 = .002$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item thirteen, investigating satisfaction with being encouraged to think about ideas and solve problems. The prompt main effect was not found to be statistically significant, $F(1, 3) = 1.325$, $p = .251$, partial $\eta^2 = .005$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 2.911$, $p = .089$, partial $\eta^2 = .011$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.331$, $p = .566$, partial $\eta^2 = .001$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item fourteen, investigating satisfaction with students' ability to

learn online. The prompt main effect was not found to be statistically significant, $F(1, 3) = 0.538$, $p = .464$, partial $\eta^2 = .002$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 2.608$, $p = .108$, partial $\eta^2 = .010$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.305$, $p = .581$, partial $\eta^2 = .305$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item fifteen, investigating satisfaction with the amount of teacher-student interaction in the discussion board. The prompt main effect was not found to be statistically significant, $F(1, 3) = 1.658$, $p = .199$, partial $\eta^2 = .007$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 0.341$, $p = .560$, partial $\eta^2 = .001$. The interaction was also not found to be statistically significant, $F(1, 3) = 0.484$, $p = .487$, partial $\eta^2 = .002$.

An ANOVA was conducted to assess the effect of prompts and rubrics on survey item seventeen, investigating satisfaction with the feedback about my discussion board participation. The prompt main effect was not found to be statistically significant, $F(1, 3) = 3.836$, $p = .051$, partial $\eta^2 = .051$. The rubric main effect was not found to be statistically significant, $F(1, 3) = 0.094$, $p = .760$, partial $\eta^2 = .004$. The interaction was also not found to be statistically significant, $F(1, 3) = 1.015$, $p = .315$, partial $\eta^2 = .004$.

Open-ended Attitude Question Responses

Responses from participants ($N = 257$) were analyzed from the three open-ended questions, which asked students what they liked best (item eighteen) and least about the module (item nineteen), as well as suggestions

for future improvements (item twenty). All students responded to items eighteen and nineteen, but not all responded to item twenty and many described more than one aspect for each item answered. The participants' open-ended survey question responses were examined for recurring attitudinal themes. Tables 10, 11, and 12 show the recurring themes, which emerged in response to questions eighteen, nineteen, and twenty respectively. The percentage in the tables represents the frequency of responses to each thematic category out of the total number of students who responded from the sample.

Table 10
Percentage of Participant Responses to Q18 "What did you like most about this module?"

	Total	Percentage
Value of learning about the content presented	181	70%
Applicability to real world context	93	36%
Online learning component	40	16%
Instructional approach of the module	37	14%
Value of the practice assignments	30	12%
Level of interaction	16	6%
Module organization	10	4%
Negative attitude	15	6%

Note. Percentage represents the frequency of responses to each thematic category out of a total of 257 students.

Table 11

Percentage of Participant Responses to Q19 “What did you like least about this module?”

	Total	Percentage
Workload	146	57%
Guidance provided	50	19%
Ancillary content resources	24	9%
Limited in-class instructional time	18	7%
Germane content difficulty	17	7%
Multiple choice questions	17	7%
Slow pace	17	7%
Fast pace	5	2%
Positive attitude	17	7%

Note. Percentage represents the frequency of responses to each thematic category out of a total of 257 students.

Table 12

Percentage of Participant Responses to Q19 “What suggestions could you make to improve this module?”

	Total	Percentage
Revise pace	55	21%
More practice scenarios	24	9%
More in-class instructional time	22	9%
Streamline materials	22	9%
Clarify expectations	14	5%
No Change	16	6%

Note. Percentage represents the frequency of responses to each thematic category out of a total of 257 students.

Responses to What Students Liked Most

Five major themes emerged from the analysis of responses regarding the survey question about what the participants liked best. However, it must be noted there was a small percentage (n= 15, 6%) of participants who responded with an indication of dislike for the module, or certain aspects of the module.

The most common reaction to what was liked most (n = 181, 70%), referred to the value of learning about the content presented. The statements gathered from participants in regards to this theme included comments about learning the topics of copyright, fair use, and plagiarism guidelines, how to find copyright-free materials, and the information which was made available. For example, participants made statements such as: “I think this is an important topic and I’m glad I could learn about it in more depth,” “I learned a great deal about how intricate and extensive copyright is and got a number of great links...,” and “It was helpful to learn about copyright because it is rarely ever talking about or taught in school. It’s good to know because as a teacher I want to be honest and use materials legally and morally.”

The second most prevalent reaction to what was liked most (n = 93, 36%), referred to the applicability of the content to real world contexts. Statements related to this theme included comments about how the information would be useful for their future teaching positions and how to legally and ethically integrate intellectual property into a classroom setting.

For example, participants made statements such as: “I appreciated the relevance of this module to my future career,” and “I liked how I was able to relate it to problems that I could be facing as a teacher. It is good to know and learn about all of this before we all become teachers so we know what is right and wrong in the classroom,” and “I liked that it prepared us to legally use copyrighted material to teach.”

After the applicability to the real world contexts, students seemed to most like the online learning component (n = 40, 16%). Participants’ statements included comments about being able to learn online at home, being able to discuss learning online, and being able to access content online. For example, participants made statements such as: “Learning to access content online is always a plus,” and “The thing that I liked most about this module was that the homework involved was online. I like using the computer when I do homework, so having the homework online made it easy for me to complete,” and “I felt that the discussion board section was very beneficial in that there was quite a lot of intelligent discussion about the topic. Discussion that many students, particularly shy ones, did not want to get involved with in class.”

Many students also liked the instructional approach of the module (n = 37, 14%). Participants commented about the individual learning activities, assignments, and the discussions. For example, participants said: “I enjoyed the scheduled format in which the information was taught. It was clearly explained and thoroughly reviewed,” “I liked the fact that there was work for

us to do along with extra reading material and videos to watch that allowed for my knowledge to be broadened even more than just the assignment I did. I also liked that we went over our concerns and questions and reviewed the following class,” and “I thought the discussions were very informative and interactive, which I enjoyed.”

Students also noted their approval of the value of the practice assignments included in the module (n = 30, 12%). The statements gathered from participants in regards to this theme included comments about how the assignments helped them internalize the information presented. For example, participants made statements such as: “I liked the activity when we wrote to an imaginary superintendent about an imaginary case of copy right violation by co-teachers,” “I liked that we created resources for future use in the classroom,” and “I liked the information that was available to me, especially the APA tutorial, I found it very helpful and useful to my future in education as a student and as a teacher.”

Responses to What Students Liked Least

Two major themes emerged from the analysis of responses, regarding the survey question about what the participants liked least about the module. However, it must be noted there was a small percentage (n= 17, 7%) of participants who responded with a positive attitude about either the entire module, or certain characteristics of the module.

The most common reaction to what was liked least (n = 146, 57%), referred to the workload. The statements gathered from participants in

regards to this theme included comments about the number of hours required to complete assignments and the amount of work required to be completed at home. For example, participants made statements such as: “That first homework assignment took like an hour and a half,” “The first assignment, it was very time consuming. As a student in their first block of the teacher's program it was very annoying considering we have five other class assignments to worry about along with the technology class's homework,” and “The work was too much for outside of school!”

The second most prevalent reaction to what was liked least (n = 50, 19%), referred to the guidance provided. The statements gathered from participants in regards to this theme included comments about the assignment directions, lessons, and conceptual understanding. For example, participants made statements such as: “Could be more clear and directed lessons,” “There was not enough examples given about copyright, fair use, etc. I still feel I do not know enough,” and “For a person who is horrible with technology and computers especially I felt like I could not keep up with the activities online.”

Responses to What Students Would Like to See for Future Improvements

One major theme emerged from the analysis of responses, regarding the survey question about what the participants could suggest to improve the module. However, it must be noted there was a small percentage (n= 16, 6%) of participants who responded with a suggestion not to change the module.

Of the students who thought that there should be future revisions, many suggested that the pace of the module should be revised (n = 55, 21%). The statements gathered from participants in regards to this theme included comments about spreading the work more equally over the module and to slow down the pace. For example, participants made statements such as: "Spread the assignments out over a longer period of time," "It was homework heavy on the first night, then very light on the next class. It could be spread out more," and "I think the reading/viewing/composing homework assignments should be broken up over a bigger period of time to allow for students to really be able to get something from the assignment rather than rush because of a busy schedule and just wanting to have it completed."

Chapter 4

DISCUSSION

Discussion of the Main Purpose

In this chapter, the following is addressed: a) an examination of the effects of instructor response prompts and the presentation of a rubric on students' performance in asynchronous discussions, learning results, and satisfaction ratings; b) the inferences that can be drawn to support the design of asynchronous discussion-board learning environments; and c) implications for those who wish to conduct future research on facilitating students' critical thinking and learning via asynchronous discussion-board environments.

The purpose of this research was to investigate the effects of instructor response prompts and rubrics on students' performance on several aspects of their discussion-board assignments, their learning achievement on an objective-type posttest, and their reported satisfaction levels. The context for this investigation included a hybrid-learning environment consisting of mostly online instruction coupled with a small amount of face-to-face classroom instruction. The instructional module was designed to provide information and practice on the legal and ethical use of intellectual property integrated into the preK-12 classroom, for junior and senior-year undergraduate teacher preparation students at a large southwestern university.

Results of the present study indicate, indeed, that response prompts and rubrics can affect students' discussion performance, learning gains, and satisfaction ratings. The results, however, are complex, perhaps mirroring the complexity of instructor-led online learning environments. Regarding discussion board performance, presenting students with a rubric tended to yield higher scores on most aspects that is, on overall performance, as well as depth and breadth of performance, though these differences were not significant. In contrast, instructor prompts tended to yield lower scores on aspects of discussion board performance. On breadth, in fact, this main effect difference was significant. Interactions also indicated significant differences on several aspects of discussion board performance, in most cases indicating that the combination of rubric and prompt was detrimental to scores. The learning performance on the quiz showed, again, the effectiveness of rubrics, with students who received the rubric earning significantly higher scores, and with no main effects or interactions for instructor prompts. Regarding student satisfaction, again, the picture is complicated. Results indicated that, in some instances, the integration of prompts resulted in lower satisfaction ratings, particularly in the areas of students' perceptions of the amount of work required, learning in the partially online format, and student-to-student interaction.

Discussion-board performance

In a previous study, the present researcher documented the inherent complexity of facilitating students' performance within an asynchronous

discussion-board environment (Giacumo et al., 2012). The present study was designed to further investigate the effects instructors can have on improving student learning in discussions through the implementation of instructor response prompts and a rubric as treatment interventions. Follow-up analyses were conducted to assess the effects of the treatment interventions, as measured across each of the three elements of discussion-board performance, as measured by the rubric criteria, that is: students' depth of critical thought; the breadth, or amount, of students' participation, and the quality of students' writing. The purpose was to gain understanding of how each of the interventions affects different aspects of participants' performance. The effects of the interventions and resulting performance scores are discussed in the next sections.

Effects of Prompts and Rubrics on Overall Performance

There were no statistically significant differences found within the overall discussion-board scores of the main treatment effects in this study. In other words, it may seem that incorporating a grade rubric and instructor response prompts result in similar effects on students' performance. As such, there were only slight differences between the overall mean scores between each of the two main treatment groups.

The significant treatment interaction found in the overall discussion board assignment score results suggests that participant performance differed amongst treatment groups, depending on the level of the treatment factor. Of particular interest were the directional differences found between

the interactions for the levels within each of the two treatment variables. Based on the mean score from the rubric main effect it was found that those who received a grade rubric generally scored higher than those who did not receive a rubric. However, when the scores were further broken down to simple effects, it was found that those who received instructor response prompts, in addition to the rubric, actually scored lower than those who received no response prompts and no rubric. It appears that the combination of the rubric with the instructor response prompts does not optimally support students' performance in this instance. However after the effects of the instructor response prompts were isolated from the effects of the rubric, the instructor response prompts were found to positively affect students' overall performance.

The reasons for these results are complicated but may be explained through the theoretical lens of cognitive load. While most of the previous research concerning cognitive load has been completed on computer-based tutorials, the issue of information overload is likely to be relevant for this study as well. It is quite possible that both the presence of a rubric and instructor response prompts could have provided too much information for students who are already accustomed to participating in academic discourse within an asynchronous discussion-board context. For example, Deters (2008) studied effects of scaffolding in computer-based tutorials. In that study, Deters found that the effects of providing students with reflective prompt support did not necessarily result in better performance.

The negative performance trends found for the prompt condition contradict the findings of the researcher's earlier study (Giacumo, et al., 2012). In the previous study, the participants in the prompt treatment were found to perform significantly better than those who did not receive a prompt from their course instructors. While no significance difference was found within the prompt main effect in the present study, the comparison of the effects between the levels of this treatment variable showed that students' overall discussion-board performance was weaker in the prompt treatment condition. In contrast to the procedures in the previous study conducted by Giacumo et al. (2012), the participants in the present study received the discussion prompts from the primary researcher, not the regular course instructor. These results suggest that participants may respond better when receiving discussion prompts from their regular course instructors.

The positive performance trends found for the rubric condition support the previous findings reported by Giacumo et al. (2012). While no significant difference for overall discussion-board performance was found within the rubric treatment main effect, participants did perform better in the rubric-only treatment condition. These results suggest that the grade rubric is an effective form of explicit instructor guidance for similar learning environment designs.

Effects of Prompts and Rubrics on Depth of Discussion Contributions

There were no main effect significant differences between the two different levels of the rubric treatment and the prompt treatment with respect to participants' performance relating to the depth of critical thinking demonstrated. However, participants' performance trends in this study support the significant main effects of the rubric treatment found in earlier work conducted by Giacomo et al. (2012). Participants in both studies tended to demonstrate increased levels of critical thinking, as indicated by the depth of their discussion, when a rubric was presented. These results support the hypothesis suggested by Christopher, Thomas, & Tallent-Runnels, (2004), that explicit instructor guidance will positively impact student performance of critical thinking skills in asynchronous discussion boards.

The performance between the levels of the instructor prompt condition in this study mirror those found in the previous study conducted by Giacomo et al. (2012). In both studies, there was no significant difference for this effect, though in the present study participants who received instructor prompts tended to demonstrate lower levels of critical thinking than those who did not receive instructor prompts. This may seem to contradict the hypothesis previously discussed. Yet, when further consideration is given to the results of the significant interaction it was found that the instructor prompts actually did have a positive impact on the presence of students' higher order critical thinking skills demonstrated in specific contexts.

The mean differences found within the interaction between the treatment conditions for the depth of students' thinking skill performance resembled the direction of the differences found on the overall discussion-board scores. Students who received only either the instructor response prompts or the rubric performed better than did those who received both the rubric and instructor response prompts, as well as those students who received neither scaffold. These results may again be explained by the cognitive load theory, as described by Deters (2008), where learners may have needed fewer extraneous supports to achieve a higher performance. Deters (2008) also found that when students were presented with two different scaffold types, they did not achieve significantly higher scores in a computer supported learning environments.

Effects of Prompts and Rubrics on the Breadth of Participation

There was a significant difference found within the prompt treatment's main effect for the breadth, or amount, of students' contributions. Those who did not receive the prompt tended to perform better than those who did receive instructor response prompts. This may seem an unlikely finding under the presupposition that students who are not intrinsically self-motivated to participate in discussions may likely participate more frequently if they have an instructor asking them follow-up questions. Yet, this finding supports the empirical work of Mazzolini and Maddison (2005), who also found that instructor facilitation of asynchronous discussions could result in decreased student participation.

While there was no significant difference found between the levels of the rubric treatment factor, students who received a rubric did tend to contribute at a higher frequency level than did students who did not receive a rubric. This aligns with the work of Dennen (2005), who found that clear guidelines that gave the opportunity for everyone to participate with unique responses seemed to generate the greatest student participation. It also supports the findings of Heejung, Shin, and Lim, (2009), who found that students interacted more when instructors refrained from posting to discussions but required students to participate.

There was a statistically significant interaction found for the interaction between levels of the two factors, rubric and prompt on the breadth of students' contributions, which signaled the need for a closer look at the treatment group differences. Further investigation of these mean differences between treatment groups revealed results similar to those found for the interaction within the level of critical thinking skills demonstrated by students' contributions. Again, for breadth, students who received both the rubric and prompt earned the lowest mean score, while students in the rubric and no prompt treatment earned the highest mean score. This directional trend was also found, in the current study, on two of the three significant satisfaction survey items. These results also supports those of Xie, Durrington, and Yen (2011), who noted that students' attitude towards the class is related to participation levels in online discussions.

Students in the treatment group who received instructor response prompts but no rubric participated with a similar level of frequency as students in the group who received neither instructor response prompts nor a rubric. Surprisingly, this level of participation was at a higher frequency than the level of participation students demonstrated who were in the prompt and rubric treatment condition. This finding would also suggest that the rubric treatment is most effective when instructor prompts are not provided. Previous results from a similar study conducted by Giacumo et al. (2012), which also considered the breadth of students' contributions, suggested that the prompt and no rubric treatment condition yielded the same amount of student participation as the rubric and no prompt condition, which was higher than the condition without a rubric or a prompt. While there were a few differences between the results of both studies a pattern is beginning to emerge, which indicates the positive effects that a rubric can have on the frequency of students' asynchronous discussion participation.

Effects of Prompts and Rubrics on Writing Quality

There were no significant differences found for the prompt main effect, rubric main effect, or the interaction between those two factors on the quality of writing in the discussion board performance. While there were no significant differences, the scores of participants' who received a rubric tended to be higher, indicating that the presentation of a rubric seemed to support better writing quality. The scores of the participants who received instructor response prompts showed the opposite result, again with no

significant difference, which suggested that the presentation of prompts seemed to result in lower quality of writing scores.

No other published research was found in which researchers reported a negative effect related to instructor prompts and students' quality of writing scores. This trend contradicted the results of the previous study (Giacumo et al., 2012), in which participants in the instructor response prompt treatment demonstrated significantly different and better use of standard writing conventions. These somewhat contradictory results, combined with the lack of studies in this area, indicate that additional research is needed to better determine what scaffolds support quality of writing in discussion boards.

Module Learning Achievement

A statistically significant main effect difference was found for the rubric treatment. The results of the pretest and posttest achievement scores suggest that the inclusion of a rubric can positively impact learning, as represented by the direction of the statistically significant differences found in the pretest-posttest gain scores. These significant differences were not found in the previous research study conducted by Giacumo et al. (2012). The assessment tool modifications made for this study most likely refined the tool enough such that a clearer representation of the difference in quiz results influenced by the rubric effect was made possible. A decrease in the frequency of open-response comments made by students, referring to the relative fairness of the quiz items between this study and the previous study

conducted by Giacomo et al. (2012) would also suggest that the quiz modifications resulted in a more fair and accurate assessment tool.

No significant differences were found for the prompt main effect or the interaction effects within the quiz results. This finding is consistent with the non-significant difference found as a result of the analysis of the depth, or critical thinking, aspect of the discussion transcripts. Since the prompt condition made no significant difference within the level of critical thought demonstrated by discussion participants, it is understandable that no significant result was also found in learning achievement from the quiz results. Even though no statistical significance was found, the presentation of instructor response prompts did not result in lower quiz scores. It should also be noted that the addition of a rubric when instructor response prompts were presented did not negatively affect students' achievement in quiz scores either.

Attitude Results

The ratings students gave to describe their attitudes about the hybrid module showed that they tended to be satisfied with the instructional materials and experience, with one exception. The ratings for the amount of work that was required in the module represented the least liked aspect of the instruction; these ratings were found to register towards dissatisfied. It should be noted that students gave these ratings during the midterm period of the semester, which may indicate more than just their general feelings

about the study context, since the study was conducted as part of their regular eighteen-credit prescribed course load.

Students reported feeling most positive about being able to access online or digital learning resources readily, learning online, being able to make connections to existing knowledge, and being responsible for their own learning. These results from this blended learning environment do support the work done by other researchers conducting studies of online learning environments. For example, Palmer and Holt (2010) found that over 5,400 students responding to a survey about their experiences learning online placed a high importance on being able to access learning resources online. Even though that study examined a fully online learning environment, that online environment was similar to the blended context of this study in that it included an asynchronous discussion board and web-based learning materials.

However, students' satisfaction rating results for online learning environments have also been found to vary between populations and contexts. Trinidad, Aldridge, and Fraser (2005) conducted a study in which students were found to rate their satisfaction with online learning higher on student autonomy and the equity of the online learning environment. Clearly, students' satisfaction with online and blended learning environments is a complex relationship related to many factors, which are not yet entirely understood.

When the complete survey results were further investigated to uncover treatment-related phenomena, there were no significant main effect or interaction differences found. However, follow-up individual item analyses resulted in a few significant differences. These significant differences seem to corroborate and clarify the results found in the discussion board performance.

The significant differences were found as a main effect of the instructor prompt treatment in items 3, 5, and 16; there was also an interaction difference for item 5. For example, item three revealed that students who did not receive the prompt treatment reported higher ratings for their satisfaction with being able to partially learn in an online format. Those who did not receive a prompt were also significantly more engaged in the breadth of participation online discussion. The absence of instructor prompts in the discussion experience may very well have contributed to the significant difference in satisfaction ratings.

The results on item five also add insight to the complexity of effects that prompts can have on student satisfaction. Overall, students who did not receive the prompt treatment tended to be more satisfied with the amount of work that was required for this module. The instructor response prompts were provided as an attempt to elicit higher levels of critical thinking from participants. Responding to these explicit prompts would have required more effort and additional time spent on working, which could account for the decreased satisfaction levels with the workload.

The significant interaction found in item five also adds clarity to this story. Even though students tended to rate their satisfaction higher with the workload when they did not receive a prompt, it was even more pronounced when they were also presented with a rubric. This adds support for including the use of rubrics to support students' participation in asynchronous discussions.

On item sixteen, results indicated that students who did not receive the instructor response prompt treatment were significantly more satisfied with the amount of student-to-student interaction in the discussion board. Researchers have previously found that student satisfaction with online asynchronous discussions was in part related to the amount of interaction (Johnson, Hornik, & Salas, 2007; Sher, 2009; Swan, 2001). Johnson, Hornik, and Salas (2007), proposed the addition of social presence to an instructional model of e-learning effectiveness based on his survey findings that "course interaction was related to course performance and satisfaction" (p. 356). Sher (2009), found a strong positive correlation between online course participants' satisfaction ratings on student-to-student discussion interactions, the overall course, and perceived learning. Swan (2001) published results of survey data collected from different online course offerings that documented a strong correlation between the breadth of students' asynchronous discussion interactions, their course satisfaction ratings, and perceived learning. The research results of this study introduce new insight into the relationship between participants' satisfaction ratings

and levels of instructor discussion participation through evidence of a significant difference between satisfaction ratings with student-to-student interaction stemming from disparate instructor participation levels.

Limitations of study

The results of the current study contradicted some of the results found in the previous study conducted by Giacomo et al. (2012). Differences between the effects of the two treatments in the two studies were found in discussion board performances on the level of critical thinking skills demonstrated, frequency of participation, and quality of writing. In the previous study, there was not only a significant difference between the main effects of the treatment variables, but the direction of the mean scores between the levels of each factor was also different from those which were found in the present study.

It is likely that the slight treatment differences between this study and the previous study had an influence on the outcome scores. Previously, the instructor response prompts were provided by each of the regularly assigned course section facilitators, who had also assigned the discussion as homework. In the present study, the researcher served as the discussion facilitator and initiated the assigned homework requirement. Therefore, the students may not have perceived the doctoral student guest facilitator with the same level of importance as they did the regularly assigned course instructor. In most asynchronous discussions, students would not be responding to a guest researcher but to their regular course instructor.

Having the instructor again provide the prompts may result in more positive instructor prompt effects, such as those found in the previous study conducted by Giacumo et al. (2012). Prompt treatments in online studies are complicated to operationalize, and may represent an area of limitation in studies on online discussion board performance.

Implications and Future Research

The results of this study have several implications for the design of asynchronous discussion assignments in hybrid and online courses. Instructor guidance in asynchronous discussion boards assignments can be designed to support students' demonstration of critical thinking skills and result in learning achievement. However as these findings suggest, these different types of performance scaffolds should be used with caution because simultaneous use of several supports can at times negatively impact students' performance and satisfaction with their learning experience.

Instructors and designers would do well to critically examine the learning context when deciding upon which type of guidance to use. Care should be taken when planning to integrate these scaffolds in asynchronous discussion board assignments, lest students become overwhelmed or overconfident and decrease the amount of effort they are willing to invest in achieving levels of high performance. If regular course instructors are available to personally facilitate asynchronous discussion assignments, the integration of instructor prompts may maximize students' participation frequency and quality of writing.

However, rubrics should be selected when the goal is to facilitate higher levels of critical thinking skill performance and a desired number of contributions per student. Also, rubrics should be used in place of instructor prompts when the design goal is to foster student-to-student interaction, or when the regular course instructor is not able to provide timely, individualized prompt responses in an asynchronous discussion environment. Rubrics that prompt students to reflect on the level of critical thought in an assignment can also be used to support students' retention and transfer performance on subsequent multiple-choice type learning assessments.

The results of the current study also suggest that directing students' attention to demonstrating high level thinking skills can impact retention of content material. Designers and instructors may consider using a rubric to guide students' demonstration of higher -level thinking skills within asynchronous discussion boards to promote students' conceptual learning and performance on achievement tests. Future researchers should continue to explore the use of rubrics, which emphasize the demonstration of critical thinking skills on a variety of learning activities and the effects on learning achievement on more objective achievement measures, such as multiple-choice tests.

In addition, it would be fruitful to conduct further research on the types of, and intervention schedule for instructor prompts, in order to develop more explicit guidelines for their use. The variation found between

outcomes across the previous study conducted by Giacomo et al. (2012) and the present study suggests that firm conclusions concerning effective facilitation principles and techniques cannot yet be made. The prompt facilitation method and message content focus may have a differential effect on students' performance. More work needs to be done before a set of universal design principles underlying effective, explicit instructor guidance within the asynchronous discussion board environment can be confidently described.

Asynchronous discussion boards represent a complex, social environment, which can support students' demonstration of higher-level critical thinking skills when they are provided with the appropriate level of explicit guidance. As online and blended or hybrid course offerings and asynchronous discussion boards become more common, educational technology researchers should continue to examine the relationship between a variety of such factors and their effects on student learning and performance.

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APPENDIX A
DISCUSSION BOARD ASSIGNMENT

Directions: Choose one of the prompts above and create a thread in the discussion board with your response.

1. Use the four-factor test to evaluate the fair-use of a piece of copyright protected intellectual property, you'd like to use in the classroom. Describe your decision making process and evaluate your conclusion.
2. How would you encourage the ethical use of intellectual property with a teacher colleague or peer, who doesn't seem to acknowledge its value in teaching and/or learning?
3. Who should be held accountable for students' and teachers' ethical use of intellectual property? When? How? Why?
4. How should teachers convey the overlap between plagiarism, fair-use, and copyright, with students?
5. What can you predict about the future of intellectual property/copyright/plagiarism in the classroom?

Appendix A.1 Discussion-board directions and question prompts

Directions:

- Determine demonstration of critical thinking skills (low, mid or high level). Then, prompt students at a lower or mid-level to demonstrate mid or high-level critical thinking skills.
 - Try to prompt in such a way that you invite anyone to respond
 - Provide positive feedback first
 - Provide a guiding question/prompts as necessary to facilitate future entries directed towards demonstration of higher level thinking skills
1. Response prompt for student entry demonstrating lower-level thinking skills:
 - That's a great point you bring up about [insert discreet topic].
 - How could we apply this concept to a real classroom situation? Anyone?
 2. Response prompt for student entry demonstrating mid-level thinking skills:
 - That's a great point you bring up about [insert application or analysis].
 - How could we evaluate the implementation of this [describe process] in a real classroom situation? Anyone?

Appendix A.2 Discussion-board instructor facilitation response-prompt guide

APPENDIX B

PRETEST ITEMS AND SCREENSHOT EXAMPLE

The order of the items in the copyright law and fair-use exemptions for 21st century educators pretest will be randomized. The items are grouped below by learning goal.

Description This pretest will be used to gather information to plan for a) your individual learning needs this semester and b) future modifications to this course. It will NOT count toward your final course grade this semester. Please do your best so that ASU can appropriately plan to meet your needs. Thank you.

Instructions Choose the best answer for each of the next twelve items. Please submit your answers in full, when you are done.

Correct Answers: Are noted in **bold**.

OBJECTIVE 1a (Identify general legal or public domain use of intellectual property of copyright protected materials)

1. Mrs. Jerome, who teaches government always goes to bed early. She normally videotapes "The Colbert Report" show and watches it the following day before school. This is probably:

Answer

- Definitely copyright violation
- Definitely fair-use of copyrighted material
- Likely general legal use**
- Likely copyright materials violation

2. A high school biology student is assigned to watch an evening episode airing on the National Geographic Channel as homework. The student, who participates in evening competitive swim team practice videotapes the show and watches it the following day before school. This is probably:

Answer

- Definitely copyright violation
- Definitely fair-use of copyrighted material
- Likely copyright materials violation
- Likely general legal use**

3. Once a work is put on the Internet it means that it's in the Public Domain and free for anyone to use.

Answer

False, unless indicated as a government funded project or public domain

- False, unless the website is password protected
- True, as long as you don't claim it as your own work
- True, as long as you don't try to sell it

OBJECTIVE 1b (Identify permissible fair-use of intellectual property in the classroom)

4. A high school Drama teacher creates a PowerPoint presentation for her class. She incorporates a short clip of the movie "Shakespeare in Love" to show an example related to a specific instructional objective. This is probably:

Answer

- Definitely violation of copyright protected materials
- Definitely fair-use of copyright protected material**
- Likely violation of copyright protected materials
- Likely general legal use of copyright protected materials

5. A student creates a PowerPoint presentation as an assignment for class and uses the first 30 seconds of the theme of "Star Wars" as an introduction.

Answer

- Definitely violation of copyright protected materials
- Likely violation of copyright protected materials
- Likely general legal use of copyright protected materials
- Definitely fair-use of copyright protected material**

6. A 5th grade teacher has a family emergency that causes her to be gone for a week from school. She promises a reward party for her students if they behave for the substitute teacher. While the teacher is out, the students cooperate with the substitute very well. Upon the teacher's return, she rents "Anne Frank" from Blockbuster, which illustrates the current social studies topics discussed in class. This is a valid example of:

Answer

- Definitely violation of copyright protected materials
- Definitely fair-use of copyright protected material**
- Likely violation of copyright protected materials
- Likely general legal use of copyright protected materials

OBJECTIVE 1c (Identify copyright violation of intellectual property in the classroom)

7. A music teacher finds a web site with the latest top-40 music available for free. He downloads the music, puts it on CDs and distributes them to his students. This is probably:

Answer

Definitely violation of copyright protected materials

Definitely fair-use of copyright protected material

Likely fair-use of copyright protected materials

Likely general legal use of copyright protected materials

8. Using her home VCR, a sociology teacher records a particular episode of the "Andy Griffith Show" from the TVLand channel on cable TV. She uses the tape in her classes so students can watch it to critique the media portrayal of small town life in the 1960's. She has found no better examples so now, five years later, she continues to use the tape.

Answer

Likely fair-use of copyright protected materials

Definitely fair-use of copyright protected material

Definitely violation of copyright protected materials

Likely general legal use of copyright protected materials

9. A student uses a peer-to-peer file-sharing program like Kazaa to find and download the latest complete top-40 MP3 music files for free. She then incorporates all of the music files into her electronic portfolio and cites the sources. This is probably:

Answer

Likely fair-use of copyright protected materials

Likely general legal use of copyright protected materials

Definitely fair-use of copyright protected material

Definitely violation of copyright protected materials

OBJECTIVE II (Identify appropriate ethical integration of a copyright protected work in classroom instructional materials.)

10. Which of the following demonstrates appropriate ethical integration of copyright protected materials into the classroom?

Answer

A music teacher posts a song she/he bought on her/his password protected classroom website for academic critique.

A music teacher posts a song she/he bought on her/his open classroom blog for academic critique.

A math teacher posts a song she/he bought on her/his password protected classroom website for students to enjoy.

A math teacher posts a song she/he bought on her/his open classroom blog for students to enjoy.

11. Which of the following demonstrates appropriate ethical integration of copyright protected materials into the classroom?

Answer

A teacher rents a movie to show to her class that is intended to entertain students while a substitute is teaching her/his students.

A teacher borrows a movie from the school library to show to her class that is intended to entertain students while a substitute is teaching her/his students.

A teacher borrows a movie from the school library to show at a fundraising family movie-night.

A teacher rents a movie to show to her class that is intended to review recent classroom learning topics while a substitute is teaching her/his students.

12. Once a multimedia work is put on the Internet it means that it is in the public domain and freely available for any teacher to use as he/she sees fit.

Answer

True, if the teacher plans to use it without modification

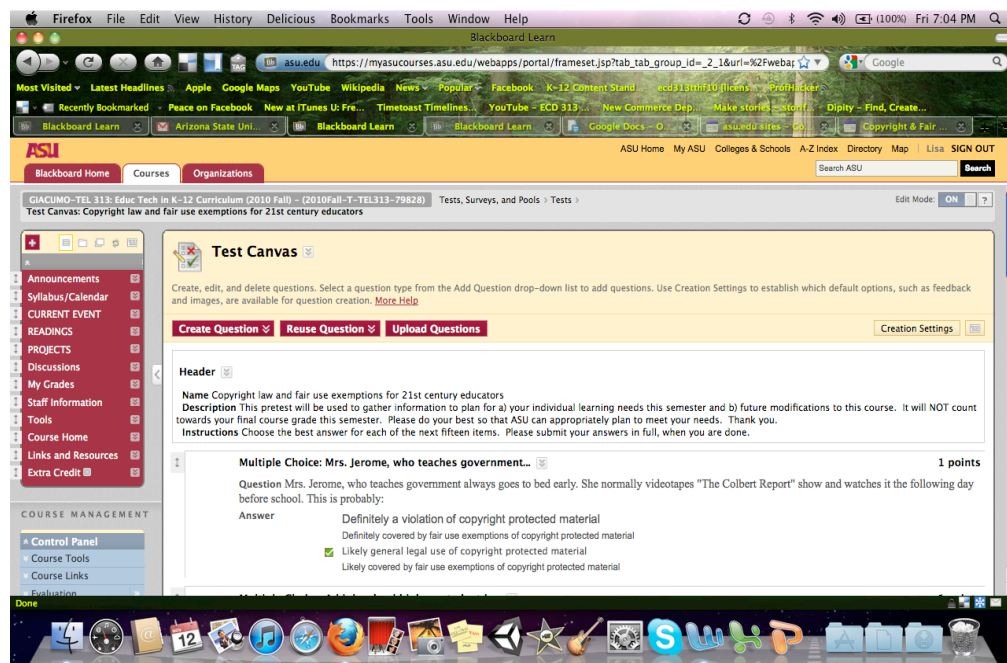
True, if the teacher is using the material for educational purposes

False, unless the author clearly gives permission for educational use

False, even if the teacher has permission from the copyright holder

Adapted from Lewallen, G. (2006) Fair Use Scenarios presentation document.

Appendix B.1 Pretest questions



The screenshot shows a Firefox browser window displaying the Blackboard LMS interface. The address bar shows the URL: https://myasucourses.asu.edu/webapps/portal/frameset.jsp?tab_group_id=2_1&uri=%2Fwebapp. The page title is "Blackboard Learn". The main content area displays a "Test Canvas" for the course "GIACUIMO-TEL 313: Educ Tech in K-12 Curriculum (2010 Fall) - (2010Fall-T-TEL313-79828)". The test title is "Test Canvas: Copyright law and fair use exemptions for 21st century educators". The question type is "Multiple Choice" and the question text is: "Mrs. Jerome, who teaches government...". The question description is: "This pretest will be used to gather information to plan for a) your individual learning needs this semester and b) future modifications to this course. It will NOT count towards your final course grade this semester. Please do your best so that ASU can appropriately plan to meet your needs. Thank you. Instructions Choose the best answer for each of the next fifteen items. Please submit your answers in full, when you are done." The question is worth 1 point. The answer choices are: "Definitely a violation of copyright protected material", "Definitely covered by fair use exemptions of copyright protected material", "Likely general legal use of copyright protected material", and "Likely covered by fair use exemptions of copyright protected material". The "Likely general legal use of copyright protected material" option is selected.

Appendix B.2 Screenshot Example of pretest in Blackboard

APPENDIX C:
LEARNING GOALS AND RATIONALE

Learning Goals

1. Classify the use of a copyright protected work as permissible due to general legal, public domain use, fair-use, or as a copyright violation.
2. Identify appropriate ethical integration of a copyright protected work in classroom instructional materials.

Rationale

1. Teachers are required to demonstrate legal and ethical use of intellectual property in the classroom, per the State Professional Teaching Standards.
2. Teachers must be able to provide instruction for students to meet the State Standards, which relate to the legal and ethical integration of intellectual property in the classroom.
3. Success in this course will result in part from the ethical use of intellectual property.

Appendix C.1 Learning goals and rationale

Appendix C.2 Screenshot of module organization in Blackboard

APPENDIX D:
DIGITAL STORY



This film created by Faden (2006.), “A Fair(y) Use Tale,” is licensed under a Creative Commons License; its use and distribution is freely available to anyone. It can be found on YouTube.com at <http://www.youtube.com/watch?v=wFaYp19T6E>. It covers familiar copyright protected material, introduces copyright terms and definitions, the circumstances necessary for fair-use exemptions of copyright protected material, and the four-factor exemption guidelines outlined in U.S. copyright law. The short film lasts 10 minutes and will be linked within the instructional module in Blackboard.

APPENDIX E:
GUIDED RESEARCH LEARNING ACTIVITY

Start Your Investigation Here

Ethical Integration of Intellectual Property in the Classroom

"East Valley Tribune" Headlines

Sunday, February 7, 2016

"Newly tenured teacher arrested for alleged copyright violations"

On Friday afternoon the police arrived at school to arrest a teacher for alleged copyright violations on a school website. *Could this be you?* No, not if you're practicing ethical use of intellectual property!

Essential Questions

When is intellectual property considered public domain and free to use in the classroom?

When is it O.K. to use copyright protected intellectual property for educational purposes?

Many educators believe they can use any published materials in their classroom as long as it is for educational purposes. The reality is that they may be violating copyright laws and could be punished. By the end of this learning activity, you will have a general understanding of copyright laws and fair-use policies for application in the classroom.

Problem & Task

Two of your favorite colleagues teach together in a 30 student, heterogeneous, multi-grade-level classroom. They have received the following letter from the Superintendent and the Board of Education and have asked you for help.

Dear Teachers,

We have recently received a notice of a copyright lawsuit naming your teaching team, your principal, the Central School District Superintendent and Board of Education as defendants. The lawsuit states that you have violated the Fair-use Act of the copyright law while teaching in your classroom.

On different occasions we have found the following potential copyright violations:

- Out-of-print literature with the copyright date of 1920 was used,
- A personally purchased video dealing with the current science topic was shown,
- Five photographs by the same artist were used in a power point presentation.

The Superintendent and the Board of Education are asking for the two of you to justify your use of the materials. A response is requested in writing by the close of business today.

Sincerely,

Dr. Smarte, Superintendent
Central School District Board of Education

Process Overview

First, you will research the copyright guidelines and issues educators face at various web sites to learn about the ethical use of intellectual property. You will record your findings and the acceptable interpretations.

Second, you will need to decide if your colleagues are guilty on all three charges or not. With your understanding of your research, you will form a defense and advise your colleagues on how they might create a persuasive letter that will justify your views and influence your principal, the superintendent, and the school board.

To accomplish this task you will:

- Research a variety of copyright law and “fair-use” exemption for education resource websites for definitions and guidelines.
- Develop a checklist for teachers to analyze classroom instructional materials aligned with the U.S. copyright law.
- Include the following items within your checklist: published documents or performances, audio, video, and images (photos or clipart).
- Generate your checklist in Inspiration, MS Word, or Excel.

To begin your research, work through the [Knowledge Gaining](#) section of this website.

Knowledge Gaining

Research public domain, copyright law, and fair-use exemption guidelines for educators. Answer the following questions in your own words. You can skim through the contents of the the web page links provided below (or complete your own search). Record your answers in your class notes/binder.

What kind of information is considered public domain?

<http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/kidantipiracy04.htm>

[http://fairuse.stanford.edu/Copyright and Fair Use Overview/chapter8/index.html](http://fairuse.stanford.edu/Copyright%20and%20Fair%20Use%20Overview/chapter8/index.html)

In your own words, define the following terms: 'copyright,' 'public domain', and 'fair-use'. What types of materials are protected by copyright?

http://www.cyberbee.com/cb_copyright.swf

What are some consequences for copyright violations?

[http://wiki.answers.com/Q/What are the consequences when you break the copyright law](http://wiki.answers.com/Q/What_are_the_consequences_when_you_break_the_copyright_law)

Why is practicing and teaching the ethical use of intellectual property important in K-12 and college classes?

http://www.educationworld.com/a_curr/curr280e.shtml

How do you use the Four Factors to determine “Fair-use” exemptions for educators?

http://www.educationworld.com/a_curr/curr280b.shtml

Once you have taken notes on your research, you can move on to [Knowledge Organizing](#).

Knowledge Organizing

Now that you have gathered some details about copyright and fair-use exemptions for educators, its time to organize your learning.

Design and develop a rough draft for an easy-to-use checklist, decision chart, or guide, to help you and your future students decide on whether or not it's O.K. to use printed or electronic documents, performances or lectures, audio, video, and images (photos or clipart), to complete school work. Be sure to include directions on how to make decisions about appropriate ethical uses of intellectual property in

the classroom. *Hint:* Concept maps, illustrations, or diagrams, used in conjunction with limited text, may help represent your ideas more efficiently.

You may use Inspiration, Kidspiration, Google Docs, MS Word, or Excel, to author your checklist/guide.

Attach your checklist/decision chart/guide below. Scroll down to the bottom of the page and click on **Browse** to add your work.

Then, move onto [Knowledge Sharing](#).

Knowledge Sharing

Remember your colleagues who got the letter from the Superintendent?

...On different occasions we have found the following copyright violations:

- Out-of-print literature with the copyright date of 1920 was used,
- A personally purchased video documentary dealing with the current science topic was shown,
- Five photographs by the same artist were used in a power point presentation...

Are the copyright violation accusations (listed above) founded? Print this [copyright chart for teachers](#) and use it to help you determine your answers. Remember to add the chart to your binder; you'll want to refer back to this chart for each of the signature assignments you'll complete for this course.

What should your colleagues do? Did they violate copyright law and fair-use guidelines? How might they justify their decisions?

Attach a document with your answers below and be prepared to talk about them in class. Scroll down to the bottom of the page and click on **Browse** to add your work.

Lastly, please see the [Conclusion](#).

Conclusion

Congratulations!

Look what you have accomplished with this learning activity:

1. The draft creation of a teaching artifact: The “Copyright Checklist” for display in your teaching portfolio and future classroom.
2. Worked toward addressing an Arizona state K-12 teaching standard:

- Standard 8: The teacher demonstrates current professional knowledge sufficient to effectively design and plan instruction, implement and manage instruction, create and maintain an appropriate learning environment, and assess student learning.
 - o Item 13: Laws and ethics related to student, parent, and teacher rights and responsibilities.

3. Worked toward addressing an International Society for Technology Education (ISTE) and national K-12 teaching standard:

- Standard 4: Promote and Model Digital Citizenship and Responsibility.
 - o Item A: Advocate, model, and teach safe, legal, and ethical use of digital technology, including respect for copyright, intellectual property, and the appropriate documentation of sources.

Resources

Arizona Department of Education. (2010). *Professional teaching standards*. Retrieved January 12, 2010, from <http://www.azed.gov/certification/downloads/Teacherstandards.pdf>

Foyle, H. (n.d.) *Copyright & Fair-use*. Retrieved January 12, 2010, from <http://questgarden.com/08/57/8/05110912243/index.htm>.

ISTE International Society for Technology in Education. (2008) *NETS for teachers 2008*. Retrieved January 12, 2010, from http://www.iste.org/Content/NavigationMenu/NETS/ForTeachers/2008Standards/NETS_for_Teachers_2008.htm.

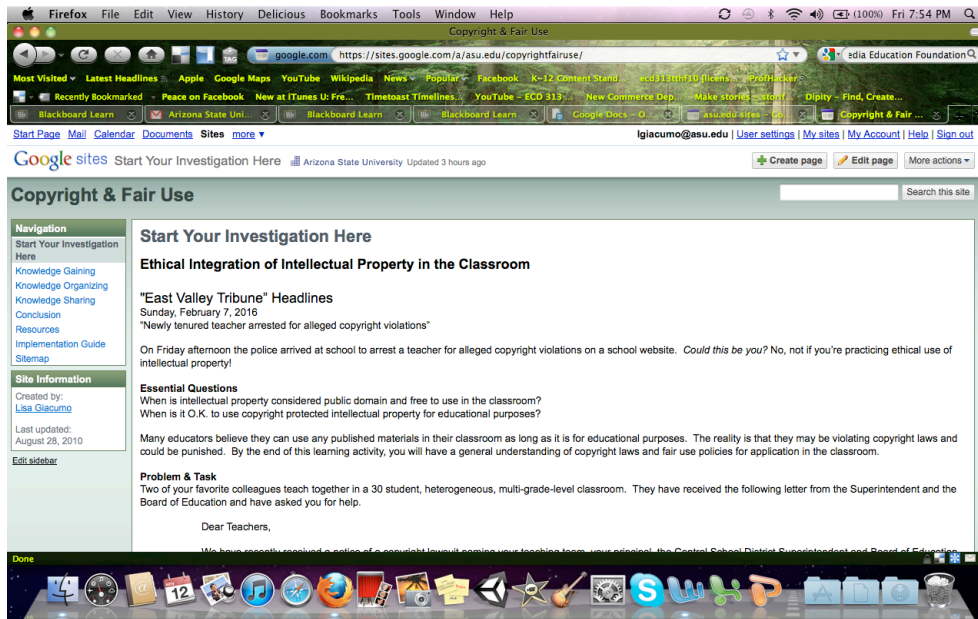
Kelly, C. (n.d.) *Copyright*. Retrieved January 12, 2010, from <http://questgarden.com/66/11/1/090204114715/index.htm>.

Wolfe, K. (n.d.), *Before the Law Notifies You! Know the Law!* Retrieved January 10, 2010, from <http://questgarden.com/15/46/5/060201211741/index.htm>.

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Appendix E.1 Instructional content



Appendix E.2 Screenshot of web-based instructional content organization

APPENDIX F:
READING ASSIGNMENTS

Is it Plagiarism or Copyright Violation?

This article briefly explains the difference between the two concepts of plagiarism and copyright. One is an ethical construct while the other is a legal construct. Both need to be considered when you produce work in the academic environment.

10 Myths about Copyright

This article outlines ten common misconceptions about copyright law. The author writes from the perspective of a novelist and publishing lawyer. He describes several common situations in which people often violate copyright law.

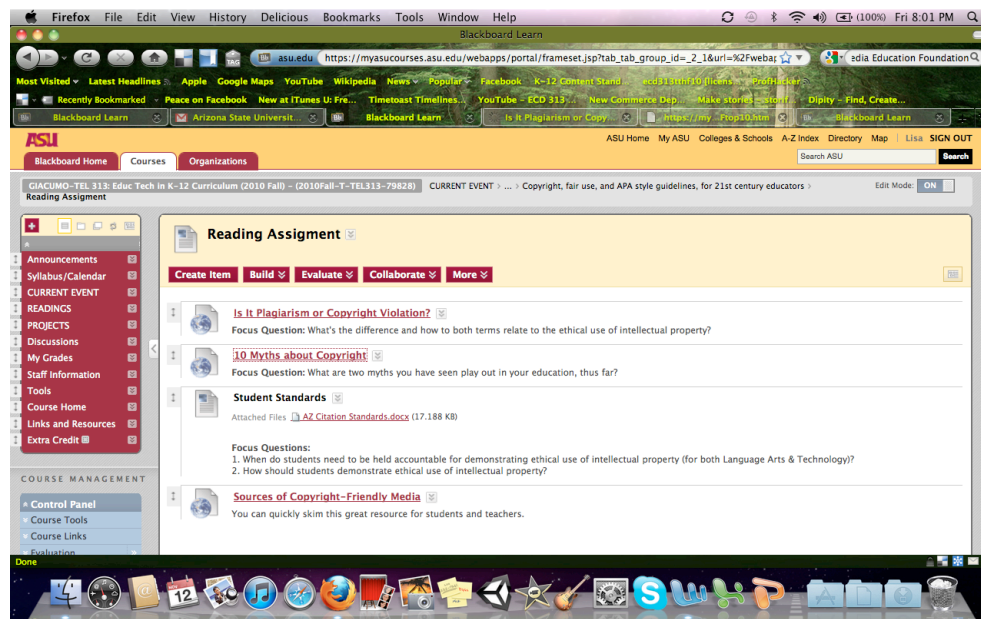
Student Citation Standards

This document describes the student behaviors required to demonstrate citation competencies throughout the K-12 curriculum. It includes excerpted material collected from the State Department of Education website.

Sources of Copyright Free Media

This webpage provides links to material, which is designated as freely available for teacher use in the classroom. Sources of the freely available media stem from several outlets including but not limited to Flickr Creative Commons, Wikimedia Commons, NASA, and the Smithsonian.

Appendix F.1 Abstract of reading assignments



Appendix F.1 Screenshot of module content organization

APPENDIX G:
POSTTEST LEARNING QUIZ

The order of the items in the copyright law and fair-use exemptions for 21st century educators posttest will be randomized. The items are grouped below by learning goal.

Description This posttest will be used to assess your knowledge of copyright law and fair-use exemptions for 21st century educators.

Instructions Choose the best answer for each of the next twelve items. Please submit your answers in full, when you are done.

Correct Answers: Are noted in **bold**.

OBJECTIVE 1a (Identify general legal or public domain use of intellectual property of copyright protected materials)

1. Mr. Chavez, who teaches criminal justice, loves to discuss relevant current local events into his classroom. He normally videotapes the 11 o'clock news and watches it the following day before school to prepare current event discussion topics for class. This is probably:

Answer

- Definitely copyright violation
- Definitely fair-use of copyrighted material
- Likely general legal use**
- Likely copyright materials violation

2. A high school physics student is assigned to watch a "Myth Busters" episode airing on the Discovery Channel over the weekend as homework. The student, who is going camping videotapes the show and watches it Sunday night, before school. This is probably:

Answer

- Definitely copyright violation
- Definitely fair-use of copyrighted material
- Likely copyright materials violation
- Likely general legal use**

3. A student records his own sound track and posts it on his personal webpage to share with others. This is probably:

Answer

- Definitely a copyright violation
- Likely general legal use**

Definitely fair-use of copyrighted material
Likely copyright materials violation

OBJECTIVE 1b (Identify permissible fair-use of intellectual property in the classroom)

4. A 3rd grade teacher has a family emergency that causes her to be gone for a week from school. She promises a reward party for her students if they behave for the substitute teacher. While the teacher is out, the students cooperate with the substitute very well. Upon the teacher's return, she rents a historical fiction movie from Blockbuster, which illustrates the current social studies topics discussed in class. This is a valid example of:

Answer

Definitely violation of copyright protected materials
Definitely fair-use of copyright protected material
Likely violation of copyright protected materials
Likely general legal use of copyright protected materials

5. A mentor teacher asks her CTEL intern to make copies of five questions from a student workbook. The student has just finished the ethical issues unit of her Technology in Education course and looks at the copyright statement in the front of the workbook. The publisher states that this workbook is intended for reproduction and classroom use. This an example of:

Answer

Definitely violation of copyright protected materials
Likely violation of copyright protected materials
Likely general legal use of copyright protected materials
Definitely fair-use of copyright protected material

6. A student creates a PowerPoint presentation as an assignment for her English drama class. She incorporates a short clip of the movie "Roots" to show an example related to her definition of a side story. This is probably:

Answer

Definitely violation of copyright protected materials
Definitely fair-use of copyright protected material
Likely violation of copyright protected materials
Likely general legal use of copyright protected materials

OBJECTIVE 1c (Identify copyright violation of intellectual property in the classroom)

7. Four high school students created a web site for their media literacy project and put downloadable copies of their favorite music on it so visitors to the web site can add the music to their personal collections. This is probably:

Answer

Definitely violation of copyright protected materials

Definitely fair-use of copyright protected material

Likely fair-use of copyright protected materials

Likely general legal use of copyright protected materials

8. An elementary school teacher copies a song from a children's CD she purchased and puts it on her personal website so students and parents can listen to it from home. This is probably:

Answer

Likely fair-use of copyright protected materials

Definitely fair-use of copyright protected material

Definitely violation of copyright protected materials

Likely general legal use of copyright protected materials

9. A teacher wants to use software she was introduced to by a friend called Inspiration. She believes it will help her students to be better writers because it will make brainstorming and organizing their thoughts easier. She purchases a copy at Fry's Electronics and keeps the receipt as proof. She then loads the software on 20 classroom computers. This is probably:

Answer

Likely fair-use of copyright protected materials

Likely general legal use of copyright protected materials

Definitely fair-use of copyright protected material

Definitely violation of copyright protected materials

OBJECTIVE II (Identify appropriate ethical integration of a copyright protected work in classroom instructional materials.)

10. Which of the following demonstrates appropriate ethical integration of copyright protected materials into the classroom?

Answer

A music teacher posts a song she/he bought on her/his password protected classroom website for academic critique.

A music teacher posts a song she/he bought on her/his open classroom blog for academic critique.

A math teacher posts a song she/he bought on her/his password protected classroom website for students to enjoy.

A math teacher posts a song she/he bought on her/his open classroom blog for students to enjoy.

- 11.** Which of the following demonstrates appropriate ethical integration of copyright protected materials into the classroom?

Answer

A teacher rents a movie to show to her class that is intended to entertain students while a substitute is teaching her/his students.

A teacher borrows a movie from the school library to show to her class that is intended to entertain students while a substitute is teaching her/his students.

A teacher borrows a movie from the school library to show at a fundraising family movie-night.

A teacher rents a movie to show to her class that is intended to review recent classroom learning topics while a substitute is teaching her/his students.

- 12.** A classroom teacher wishes to make a photocopy of an article from a friend's "Learning and Leading with Technology" journal because it has a few good ideas about how she might use technology in her upcoming Historical Fiction unit. She files the copy in her filing cabinet for when she's ready to prepare for teaching that unit next quarter. Is this an example of fair-use?

Answer

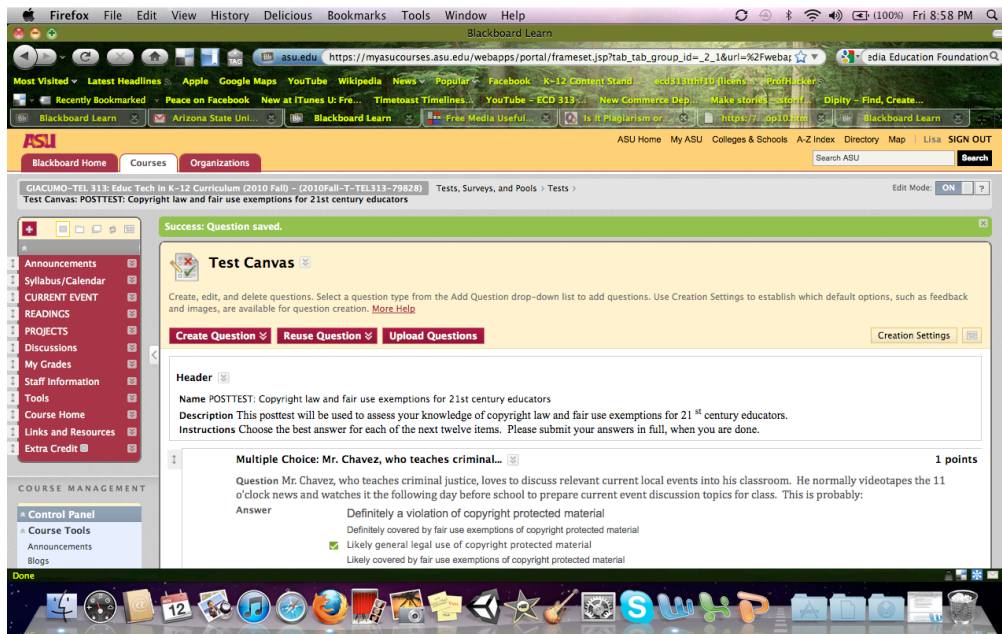
No, because the editor of the journal did not give her permission. Not if the teacher doesn't tell the students about the source of the ideas.

Yes, as long as the instructor uses the article for her own professional use only.

Yes, if the teacher only employs each technique with one group of students.

Adapted from Lewallen, G. (2006) Fair Use Scenarios presentation document.

Appendix G.1 Posttest learning quiz items



Appendix G.2 Posttest screenshot in Blackboard

APPENDIX H:

LOGIC-BASED CRITICAL THOUGHT DISCUSSION (LBTD) RUBRIC

	3 Points	2 Point	1 Point	0 Points
Depth of total contribution to collective understanding	Evaluate or Create; One or more entries assess the value of particular ideas or solutions, detect inconsistencies or fallacies within a process or product, critique, detect value, judge, extrapolate new opportunities extended from a complex relational understanding, hypothesize, plan, design procedure, construct a complex product (use complex relational understanding to design criteria to evaluate existing ideas or create new materials/environments).	Apply or Analyze; One or more entries execute, carry out, apply procedure to familiar task, implement, use, apply procedure to an unfamiliar task, differentiate, discriminate, distinguish, focus, select, organize, find coherence, integrate, outline, parse, structure, attribute, deconstruct, (group simple knowledge components to build new more complex relational systems understanding, and/or disassemble complex systems understanding into related but simple knowledge component parts, distinguish relevant from irrelevant, determine point of view, bias, values, or underlying intent).	Remember or Understand; One or more entries interpret, recognize, recall, identify, clarify, list, paraphrase, describe, define, represent, translate, exemplify, illustrate, instantiate, classify, categorize, subsume, summarize, abstract, generalize, infer, conclude, extrapolate, interpolate, predict, compare, contrast, map, match, explain, identify cause and effect model, show, restate, summarize, (emphasize recall and/or a literal understanding of knowledge components).	Student does NOT demonstrate correct logical thinking to address discussion prompt and/or course content
Breadth of total contribution to collective understanding	Apply or Analyze; One or more entries execute, carry out, apply procedure to familiar task, implement, use, apply procedure to an unfamiliar task, differentiate, discriminate, distinguish, focus, select, organize, find coherence, integrate, outline, parse, structure, attribute, deconstruct, (group simple knowledge components to build new more complex relational systems understanding, and/or disassemble complex systems understanding into related but simple knowledge component parts, distinguish relevant from irrelevant, determine point of view, bias, values, or underlying intent).	Student follows directions, posts two or three times; one response to discussion prompt, and at least one response to another student's thread.	Student posts once to discussion-board.	Student does NOT post to discussion-board.
Quality of writing	Student employs correct conventions of grammar and spelling, and is professional.	Two - three errors in conventions of grammar and/or spelling, and is professional.	Four or more errors in conventions of grammar and/or spelling, and/or is NOT professional.	Student does NOT post to discussion-board.

APPENDIX I:
SATISFACTION SURVEY

This survey is to assist the researcher in understanding student experiences in using new digital media and online technologies for learning. The results will be used to enhance the quality of blended units for future students. When you respond to your experiences of teaching and learning online in the survey items, please consider the full array of digital and online information and communications technologies used in the unit. These may include your use of the Blackboard learning management system, any accompanying classroom instructional time provided, private electronic mail, voice mail, standard fixed telephones, SMS cellular phones, the WWW and any other Internet uses. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Lisa Giacomo by email at lgiacumo@asu.edu. Thank you very much for your time and support.

Background

1. First Name
2. Last Name
3. Email address
4. Gender: Male or Female
5. Age: Under 25, 26-35, 36-49, Over 50
6. Please select your class meeting time and instructor from the list: Giacomo Tues 4:40pm, Legacy Tues 4:40pm, Kisicki Tues 4:40pm, etc.
7. Where does your class meet? [free text entry]

Please indicate how satisfied you were with what occurred in this module according to the following scale (Very dissatisfied, dissatisfied, neutral, satisfied, very satisfied)

Organization & Structure

1. I was ---- with being able to access online/digital learning resources readily.
2. I was ---- with being able to partially learn with regular face-to-face contact
3. I was ---- with being able to partially learn in an online format.
4. I was ---- with being organized and responsible for my own learning.
5. I was ---- with the amount of work that was required.

Teaching & Learning

6. I was ---- with being given and/or pointed to enough current material.
7. I was ---- with my ability to relate what is learnt to issues in the wider world.
8. I was ---- with my ability to make connections to existing knowledge/experience.

Assessment

9. I was ---- with the assessable work, and its alignment with the learning goals.
10. I was ---- with the feedback given on my assessable work, helping me clarify things I hadn't fully understood.

Attribute Development

11. I was ---- with the opportunity to develop/practice online technical skills.
12. I was ---- with my ability to communicate knowledge and ideas effectively online.
13. I was ---- with being encouraged to think about ideas and solve problems.
14. I was ---- with my ability to learn online.

Discussion Board Interaction

15. I was ---- with the amount of teacher-student interaction in the discussion board.
16. I was ---- with the amount of student-student interaction in the discussion board.
17. I was ---- with the feedback about my discussion board participation.

Finally

18. What did you like most about this module? [Free text entry]
19. What did you like least about this module? [Free text entry]
20. What suggestions could you make to improve this module? [Free text entry]

Adapted from previous research conducted by Giacumo and Savenye (2010).
Based on the work done by Palmer and Holt (2009).

21. _____
- Appendix I.1* Satisfaction survey items

SATISFACTION SURVEY: Copyright and Fair Use Exemptions for Educators

Please answer the questions below according to your experience with the module on Copyright and Fair Use for Educators.

This survey is to assist the researcher in understanding student experiences in using new digital media and online technologies for learning. The results will be used to enhance the quality of blended units for future students. When we refer to your experiences of teaching and learning online in the survey items, we want you to consider the full array of digital and online information and communications technologies used in the unit. These may include your use of the Blackboard learning management system, any accompanying classroom instructional time provided, private electronic mail, voice mail, standard fixed telephones, SMS cellular phones, the WWW and any other Internet uses. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Lisa Giacomo by email at lgiacumo@asu.edu. Thank you very much for your time and support.

Adapted from previous research conducted by Giacomo and Savenye (2010). Based on the work done by Palmer and Holt (2009).

Your username (lgiacumo@asu.edu) will be recorded when you submit this form. Not **lgiacumo?**

[Sign out](#)

* Required

Demographics

First Name *

Last Name *

Gender *

- Male
 Female

Age *

Under 25

26-35

36-49

Over 50

Section *

Please select your instructor and class meeting time from the list below.

Kisicki, T., MW, 10:30-11:45am

Kisicki, T., M, 4:40-7:30pm

Kisicki, T., W, 4:40-7:30pm

Kisicki, T., T/TH, 12:00-1:15pm

Legacy, J., T/TH, 3-4:15pm

Legacy, J., T/TH, 12:00-1:15pm

Legacy, J., T, 4:40-7:30pm

Hart, C., T, 4:40-7:30pm

Foulger, T., T/TH 1:30-2:45pm

Morse, R., T/TH, 1:30-2:45pm

Giacomo, L., T/TH, 3-4:15pm

Giacomo, L., Thurs, 4:40-7:30pm

What is your room location? *

Organization and Structure

1. I was --- with being able to access online/digital learning resources. *

Choose one

Very satisfied

Satisfied

Neutral

Dissatisfied

Very dissatisfied

2. I was ---- with being able to partially learn with regular face-to-face contact. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

3. I was ---- with being able to partially learn in an online format. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

4. I was ---- with being organized and responsible for my own learning *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

5. I was ---- with the amount of work that was required. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

Teaching and Learning

6. I was ---- with being given and/or pointed to enough current material. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

7. I was ---- with my ability to relate what is learnt to issues in the wider world. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

8. I was ---- with my ability to make connections to existing knowledge/experience. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

Assessment

9. I was ---- with the assessable work, and its alignment with the learning goals. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

10. I was ---- with the feedback given on my assessable work, helping me clarify things I hadn't

fully understood. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

Attribute Development

11. I was ---- with the opportunity to develop/practice online technical skills. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

12. I was ---- with my ability to communicate knowledge and ideas effectively online. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

13. I was ---- with being encouraged to think about ideas and solve problems. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

14. I was ---- with my ability to learn online. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

Discussion Board Interaction

15. I was ---- with the amount of teacher-student interaction in the discussion board. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

16. I was ---- with the amount of student-student interaction in the discussion board. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

17. I was ---- with the feedback about my discussion board participation. *

Choose one

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

Finally...

18. What did you like most about this module? *

19. What did you like least about this module? *

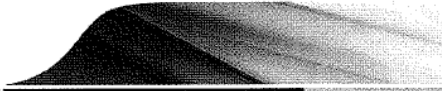
20. What suggestions could you make to improve this module?
Optional

Send me a copy of my responses.

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APPENDIX J:
IRB APPROVAL FORM



Office of Research Integrity and Assurance

To: Wilhelmina Savenye
EDB

for **From:** Mark Roosa, Chair *SM*
Soc Beh IRB

Date: 04/26/2011

Committee Action: Exemption Granted

IRB Action Date: 04/26/2011

IRB Protocol #: 1104006369

Study Title: Asynchronous Discussion Board Facilitation and Rubric Use in a Blended Learning Environment

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(1) (2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.