PERFORMANCE CRITERIA AND RATINGS IN RUBRICS FOR EVALUATING LEARNING IN ONLINE ASYNCHRONOUS DISCUSSIONS

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PERFORMANCE CRITERIA AND RATINGS IN RUBRICS FOR EVALUATING LEARNING IN ONLINE ASYNCHRONOUS DISCUSSIONS

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Abstract

The purpose of this study was to identify performance criteria and ratings in rubrics designed for the evaluation of learning in online asynchronous discussions (OADs) in post-secondary contexts and compare them to behaviors that researchers have focused on in context of transcript analyses of OADs. We analyzed rubrics collected from internet sources. Using purposive sampling, we reached saturation by the selection of 50 rubrics. Using keyword analysis and subsequent grouping of keywords into categories, we identified categories of performance criteria and ratings and compared these with the behaviors highlighted in the literature on transcript analysis of OADs.

The analysis led to the identification of 153 performance criteria in 19 categories and 831 ratings in 40 categories. We subsequently identified four core categories: (i) Cognitive (44.0% of total performance criteria and ratings); (ii) Mechanical (19.0%); (iii) Procedural/Managerial (18.29%); and (iv) Interactive (17.17%). Criteria and ratings assess: (a) thinking skills (cognitive core category); (b) learners' participation in the forum (procedural/managerial core category); (c) learners' interactions with others (Interactive core category); and (d) mechanical aspects of writing (mechanical core category). We found congruence between the literature and the rubrics' emphasis on thinking skills and no congruence with the rubrics' emphasis on mechanics. We found little evidence that the rubrics assess social presence.

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CHAPTER ONE

INTRODUCTION

1.0. Introduction

Online asynchronous discussions (OADs) are a form of Computer Mediated Communication (CMC) increasingly common in post-secondary distance learning (Campus Computing International, 2000, p. 5). Some of the potential benefits of OADs include their time and place independence (Bullen, 1998) and their support for knowledge construction (Gunawardena, Lowe, & Anderson, 1997), reflective thinking (Garrison, Anderson, & Archer, 2003), and collaboration. (Murphy, 2004).

Although online OADs offer the potential for realization of many benefits, as Murphy (2004) argues, they do not guarantee that these benefits will automatically be realized. Researchers have used transcript analysis techniques as a means of determining if participants did actually achieve benefits. Transcript analysis provided them with tools to assess whether or not students engaged in, for example, critical thinking, knowledge construction, or problem solving (see Bullen, 1998; Gunawardena et al., 1997; Cho & Jonassen, 2002).

In spite of the interest in transcript analysis for this purpose, Rourke, Anderson, Garrison, & Archer, (2001), describe it as "difficult, frustrating, and time-consuming" (p. 2). They provide a fictional account of a faculty member attempting to use transcript analysis techniques to measure her students' achievements. She is beset by problems including technique, time constraints, reliability, and ethical considerations. Their account illustrates that transcript

analysis is a technique more suited for researchers than for instructors. However, as the use of OADs increases, instructors also need a method to evaluate their students' engagement in processes such as critical thinking, problem-solving, or knowledge construction.

One method that has received attention is the use of evaluation rubrics. Edelstein and Edwards (2002) found that rubrics can "provide useful feedback regarding the effectiveness of a student's participation in a threaded discussion and offer benchmarks against which to measure and document progress" (¶ 13, 14). Rubrics are evaluation tools that clarify what is important to evaluate (Moskal, 2000). They are tools that "contain qualitative descriptions of performance criteria that work well within the process of formative evaluation" (Tierney & Simon, 2004, p.1).

Two of the essential components of a rubric are the performance criteria and definitions (or ratings) (Popham, 1997). Performance (Arter, 2000) or evaluative (Popham, 1997) criteria identify the specific elements, or dimensions, of the task taught and assessed by the rubric (Jonassen, Howland, Moore, & Marra, 2003; Popham, 1997; Tierney & Simon, 2004). These criteria differentiate between acceptable and unacceptable responses (Moskal, 2000; Popham, 1997). They identify all important aspects of the performance being evaluated (Jonassen et al., 2003) on a progressive scale that "provides a continuum of performance levels, defined in terms of selected criteria, towards to (*sic*) full attainment or development of the targeted skills" (Simon & Forgette-Giroux, 2001,

p. 1). They offer "guidelines, rules, or principles by which student responses, products, or performances are judged" (Arter & McTighe, 2001, p. 180).

What performance criteria and ratings are instructors using in these rubrics to evaluate learning in online discussions? How do these compare with the foci of researchers who are engaged in transcript analyses of online discussions? The transcript analysis literature largely references the importance of higher-level thinking skills such as critical thinking (Bullen, 1998), knowledge construction (Gunawardena et al., 1997), collaboration (Murphy, 2004), problem solving (Cho & Jonassen, 2002), and argumentation (Campos, 2004). Do the rubrics' performance criteria and ratings focus on assessing these same skills? We uncovered no studies in our review of the literature that systematically identified skills assessed by rubrics in online discussions. The comparison of the criteria and ratings in the rubrics with those focused on in the research literature on transcript analysis would provide a starting point for determining the value of rubrics designed for use in the evaluation of learning in OADs.

The purpose of this study was to identify the performance criteria and ratings used in rubrics designed for the evaluation of learning in OADs in post-secondary contexts. A secondary goal of the study was to compare these criteria and ratings to the behaviors that researchers have focused on in contexts of transcript analyses of online discussions. To achieve the purpose, we gathered a range of rubrics from online sources. Using purposive sampling, we reached saturation by the selection of 50 rubrics, meaning that we were seeing the same criteria and ratings repeated. Using keyword analysis and subsequent grouping

of keywords into categories, we identified categories of performance criteria and ratings and compared these with the behaviors highlighted in the literature on transcript analysis of OADs.

The next sections of this chapter include a statement of the problem, a description of the significance of this study and its limitations, an overview of the method, and an overview of the thesis.

1.1. Statement of the problem

Online asynchronous discussions (OADs) are a form of Computer Mediated Communication (CMC) increasingly used in post-secondary distance learning (Campus Computing International, 2000, p. 5). OADs are used for social interaction, for discussion of assignments, for collaboration, for tutorial purposes, or as a "central part of the learning strategy" (Mazzolini & Maddison, 2003, p. 238). Asynchronous conferencing is "the second most commonly used capability for online education", after email (Kearsley, 2000, p. 30) and has been referred to as "a powerful tool for group communication and cooperative learning that promotes a level of reflective interaction that is often lacking in a face-to-face, teacher-centered classroom" (Rovai & Jordan, 2004, p. 2).

Benson (2003) remarked that, in face-to-face settings, often only one student has the opportunity to answer a question posed by the instructor. In asynchronous discussions, "every student is allowed to respond to every question and to put forth his or her thoughts", allowing for social interaction "comparable to classroom discussion in which students can build their thoughts

on the thoughts of others" (p. 71). Bullen (1998) described asynchronous conferencing as a method to create a more interactive form of distance education that could help spark critical dialogue between instructors and students.

Perhaps one of the most valuable of the potential benefits associated with the use of OADs is their time and place independence (Bullen, 1998; Funaro & Montell, 1999; Harasim, 1990; Kanuka & Anderson, 1998; Rourke et al., 2001). Students and faculty can interact from various locations and time zones to share reflections, assignments, and other information. Messages, or posts, are often retained within the conferencing system, allowing participants to return to posts that interest them, and giving the instructor the ability to review and analyze messages for content and relevance to the topics being discussed (Bullen, 1998; Hara et al., 2000; Harasim, 1990; Meyer, 2004; Morgan, 2000; Rourke et al., 2001). Some research has uncovered evidence that participation in OADs can promote higher levels of knowledge construction, reflective thinking, and collaboration (see also Garrison et al., 2003; Kanuka, 2005; Lee-Baldwin, 2005; Schellens & Valcke, 2005).

Markel (2001) notes that students "construct knowledge through the shared experiences that each participant brings to the collaborative discussions", and that "participation demands that students become actively engaged with the course content and through the interaction with their peers" (p. 2). Sherry (2000) adds that computer-supported collaborative learning uses asynchronous communication "to develop shared knowledge bases and to promote common understandings" (p. 3). Kanuka (2005) found that text-based communication can

lead to effective collaborative and cooperative learning and can potentially lead to higher levels of thinking.

Although OADs offer the potential for realization of many benefits, they do not guarantee that these benefits will automatically be realized (Murphy, 2004). Participants in text-based discussions may experience difficulty processing and interpreting information (Henri, 1992; Gunawardena et al., 1997). They may remain at a comparing and sharing stage of knowledge rather than embarking on a more interactive and collaborative discussion that could promote higher levels of learning and critical thinking skills (Kanuka, 2005; Kanuka & Anderson, 1998; Pawan, Paulus, Yalcin, & Chang, 2003). Bullen (1998) found "limited empirical support...for the claims made about the potential of computer conferencing to facilitate higher level thinking" (p. 2).

One method of verifying what, if any, benefits are realized in an OAD is transcript analysis. Researchers have analyzed the transcripts of OADs to look for evidence that students have engaged in higher levels of thinking, including evidence of problem solving (Cho & Jonassen, 2002), critical thinking (Bullen, 1998), and collaboration (Murphy, 2004). Transcript analysis involves the unitizing and categorizing of conference messages and the analysis of the resultant patterns of communication (Kanuka & Anderson, 1998).

Researchers count the number of student postings, word counts per message, and examine structural characteristics of the messages to evaluate student participation and learning. Bullen, for example, notes that the quantitative data collected for his 1998 study "consisted of the number of messages posted

by each student, the frequency of participation, the number of intermessage references, and an assessment of the degree to which students appeared to be thinking critically while participating" (p. 4).

Kanuka and Anderson (1998) used the interaction analysis model first proposed by Gunawardena et al. (1997) to analyze knowledge construction in an online forum. Garrison et al. (2003) used the practical inquiry model to look for evidence of critical thinking and cognitive presence in online discussions, while Murphy (2004b) used her collaboration model to measure and identify collaboration in an OAD. Fahy et al. (2001) used the Transcript Analysis Tool (TAT) to assess the patterns of interactions in a conferencing transcript. They determined that "the sentences and paragraphs, their placement, and the interrelation of these and other elements of the resulting transcript [were] potentially important indicators of and contributors to the meaning of the exchange" (p. 5).

Transcript analysis of OADs, while a popular technique, is not without its problems. Rourke and Anderson (2004) found reliability to be an issue in transcript analysis research. The authors concluded that, while transcript analysis "is characterized as a systematic and objective procedure for describing communication, readers find insufficient evidence of either criteria in published reports" (p. 5). Campos (2004) found that "reliability is an issue", because "most theoretical and methodological qualitative research proceeds by drawing meaning from context" (p. 3). He found that replication is an issue because "research goals, theoretical perspectives, and methods vary across studies" (p.4).

He also found that "many of those studies considered *qualitative* rely on the *quantitative measurement* of qualitative categories" (p.4).

Rourke et al. (2001) summarized some of the problems with transcript analysis as follows: "Despite the potential of this technique, researchers who have used it have described it as difficult, frustrating, and time-consuming. Very few have published results derived from a second content analysis" (p. 2). They provide a fictional account of a faculty member attempting to use transcript analysis techniques to measure her students' achievements. She is beset by problems including technique, time constraints, reliability, and ethical considerations. Their account illustrates that transcript analysis is a technique more suited for researchers than for instructors. However, as the use of OADs increases, instructors also need a method to evaluate their students' engagement in processes such as critical thinking, problem-solving, or knowledge construction.

One method that has received attention by instructors is the use of rubrics. Edelstein and Edwards (2002) found that rubrics can "provide useful feedback regarding the effectiveness of a student's participation in a threaded discussion and offer benchmarks against which to measure and document progress" (¶ 13, 14). Gilbert and Dabbagh (2005) found that rubrics "positively influenced meaningful discourse in asynchronous online discussions" (p. 16). They defined meaningful discourse as "the ability of learners to demonstrate critical thinking skills by (a) relating course content to prior knowledge and experience, (b)

interpreting content through the analysis, synthesis, and evaluation of others' understanding, and (c) making inferences" (p. 6).

Moskal and Leydens (2000) suggest that a rubric can evaluate students' knowledge within a specific content area (content evidence), measure reasoning or problem-solving skills (construct evidence), or determine how a student will perform in a different situation, such as a workplace (criterion evidence). A specific rubric can look for evidence of any one or any combination of the three types of evidence. In a general context of testing, rubrics provide descriptions at each level as to what is expected of the student, thereby assisting the student in understanding both the score they receive, and how they can improve in future assignments (Moskal, 2000). Rubrics are evaluation tools that clarify what is important to evaluate (Moskal, 2000); and useful tools that "contain qualitative descriptions of performance criteria that work well within the process of formative evaluation" (Tierney & Simon, 2004, p. 1).

Performance (Arter, 2000) or evaluative (Popham, 1997) criteria identify the specific elements, or dimensions, of the task taught and assessed by the rubric (Jonassen et al., 2003; Popham, 1997; Tierney & Simon, 2004). They differentiate between acceptable and unacceptable responses (Moskal, 2000; Popham, 1997). These criteria identify all important aspects of the performance being evaluated (Jonassen et al., 2003) on a progressive scale that "provides a continuum of performance levels, defined in terms of selected criteria, towards to (*sic*) full attainment or development of the targeted skills" (Simon & Forgette-Giroux, 2001, p. 1). Performance criteria provide "guidelines, rules, or principles

by which student responses, products, or performances are judged" (Arter & McTighe, 2001, p. 180). They are described in brief, descriptive terms or phrases that describe one aspect of the task or performance under evaluation and can be specific to a particular task or more general in scope.

Performance criteria should be clear, distinct, and irreducible, appropriate to the assignment or course, and written in such a way that students can understand the elements of a complex performance (Arter, 2000; Jonassen et al., 2003; Moskal & Leydens, 2000; Mullinix, 2003; Popham, 1997; Tierney & Simon, 2004). Ratings "describe the way that qualitative differences in students' responses are to be judged" (Popham, 1997, p. 1), highlighting the difference between a performance that is assessed as fair or poor with a performance assessed as good or excellent. For example, a performance criterion might be described as *number of posts*.

Ratings associated with that criterion may include: *posted more than 5 times; posted 4 - 5 times; posted 3 – 4 times;* and *posted less than 3 times*. The student receives a rating that most closely matches observed performance. Andrade (2005) cited the "gradations of quality" (p. 27) found in the rubric as the feature that separates the rubric from a simple checklist. Students can compare the rating they received with the other ratings on the scale to assess their own learning. Ratings must be "distinct, comprehensive, and descriptive" (Jonassen et al., 2003) action or behavior oriented terms that clearly describe the observed performance (Jonassen et al., 2003; Tierney & Simon, 2004). Evaluators choose the rating that most closely matches their assessment of student achievement.

Not all rubrics contain appropriate or adequately described performance criteria with clear or consistent ratings and well differentiated performance levels (Moskal, 2000; Simon & Forgette-Giroux, 2001; Tierney & Simon, 2004). Popham (1997) warns us "many rubrics now being billed as instructionally useful provide teachers and students with absolutely no cues about what is genuinely significant in a student's response" (p. 4).

What performance criteria and ratings are instructors using in these rubrics to evaluate learning in online discussions? How do these compare with the foci of researchers who are engaged in transcript analyses of online discussions? The transcript analysis literature largely references the importance of higher-level thinking skills such as critical thinking (Bullen, 1998), knowledge construction (Gunawardena et al., 1997), collaboration (Murphy), problem solving (Cho & Jonassen, 2002), and argumentation (Campos, 2004). Do the rubrics' performance criteria and ratings focus on assessing these same skills? We uncovered no studies in our review of the literature that systematically identified skills assessed by rubrics. The comparison of the criteria and ratings in the rubrics with those focused on in the research literature on transcript analysis would provide a starting point for determining the value of rubrics designed for use in the evaluation of learning in OADs. The similarities and differences between these two will provide a perspective from which to appreciate some of the approaches taken to the evaluation of learning in OADs by instructors. The specific objectives of the study were to:

1. Identify the range, type, and percentage of performance criteria used in the rubrics. For example: what behaviors and performances do instructors focus on e.g. problem solving, critical thinking?
2. Identify the range, type, and percentage of ratings used in the rubrics.
3. Categorize the range and type.
4. Compare the categories of criteria and ratings used in the rubrics with those emphasized in the literature on transcript analysis of online discussions. How are the behaviors identified in the transcript analysis literature similar to and different from those identified in the rubrics?

1.2. Significance of this study

The findings of this study will be of value to instructors interested in using rubrics to evaluate students' learning and participation in OADs. The findings could also be used in education and training contexts to support individuals interested in identifying best practices associated with the design and evaluation of learning in online discussions. The study's findings and conclusions will add to the literature on OADs. They will provide empirical evidence about the types of behaviors and performance that instructors value as important in relation to students' learning and participation in OADs. The findings and conclusions will complement the literature on transcript analysis and will be of interest to researchers in terms of highlighting behaviors that instructors believe should be assessed in contexts of analysis of online discussions.

1.3. Limitations of this study

This study focused on identifying the performance criteria and ratings in rubrics used for evaluation of students' learning in OADs in post-secondary contexts. The analysis did not take into consideration the weights and scales, scoring schemes, or the attributes used in the rubrics as this type of analysis would have been beyond the scope and intent of the study.

We made no distinction between ratings observed in analytical rubrics and ratings observed in holistic rubrics because the focus of this study was on the criteria and ratings found in the rubrics, not their function to assess in a formative or a summative fashion. This study considered only what Popham (1997) and others considered two of the three essential components of rubric design: performance criteria and ratings.

The study focused only on the design of the rubrics and not on their actual use in post-secondary contexts. No observations of or interviews about their use were conducted. The study was limited to the post-secondary level and therefore did not consider rubrics that might be appropriate in secondary or elementary contexts. The study did not consider other approaches to the evaluation of learning in online asynchronous discussions. The study did not aim to assess the overall effectiveness or value of rubrics or to propose a more effective design for rubrics. Both of these types of aims, while of merit and interesting, would have been beyond the scope of this study.

1.4. Overview of the method

We conducted the study by analyzing rubrics available online. These were located by searching Google™ and Google Scholar™ using variations of the following search terms: rubric, asynchronous discussions, and post-secondary. The study used a purposive sampling (Cohen, Manion, & Morrison, 2001) technique to select rubrics for analysis, which were then considered in relation to the study's research questions.

We identified and organized performance criteria in the rubrics into categories based on the attribute, task, or performance they aimed to evaluate. In the first stage of coding, we assigned criteria found in the rubrics to categories based on patterns or recurring keywords, a process Miles and Huberman (1994) referred to as descriptive coding. In the second stage, we assigned ratings found in the rubrics to categories using the same method.

The third stage of analysis consisted of (a) grouping performance criteria categories that described similar types of performances or tasks, and (b) grouping ratings' categories that assessed similar performances or tasks. This process was more inductive and interpretive than the first two stages. This process of interpretively (Miles & Huberman, 1994) amalgamating descriptive criteria and ratings' categories continued throughout this stage of coding.

In the final stage of coding, we again examined criteria and ratings' categories to determine if any of the categories could be associated with any other. In this analysis, an examination of the categories led to the assignment of the categories into a smaller number of core categories, each representing a single theme. This stage of coding, which Miles and Huberman (1994) refer to as

inferential and explanatory, "pull together a lot of material, thus permitting analysis" (p. 58). Coding resulted in the generation of core categories. We then compared these core categories with the behaviors highlighted in the literature on content analysis of the transcripts of online discussions.

1.5. Definition of terms

Jonassen (1996) described Computer Mediated Communication (CMC) as any computer-supported synchronous or asynchronous environment that supports the social negotiation of meaning. OADs are a form of CMC that use text-based message exchange between participants who may be geographically and spatially diverse, while synchronous environments support message exchange in real time. If either type of message exchange is used in a network specifically set up to deliver and support learning then that network is often referred to as an Asynchronous Learning Network (ALN), which is also referred to as an anytime/anyplace learning network (Bourne, McMaster, Rieger, & Campbell, 1997).

Rubrics are scoring guides used to evaluate student work (Popham, 1997), which consist of "a set of elements that describe a performance, together with a scale (e. g., 1–5 points) based on levels of performance for each element" (Roblyer & Wiencke, 2004, p. 27). Performance criteria identify the elements or dimensions of the task being evaluated, while ratings describe the different levels of performance expected and observed. Rubrics used in scoring academic skills are "essentially qualitative and descriptive" and used to assess "academic

competencies such as the ability to critique, to produce scholarly work, to synthesize, and to apply newly acquired principles and concepts" (Simon & Forgette-Giroux, 2001, p. 1).

1.6. Overview of the thesis

Chapter two provides background information on rubrics to clarify and outline the role of performance criteria and ratings. The chapter includes a discussion of what Popham (1997) and others refer to as two of the three essential components of rubric design: performance criteria and definitions (ratings). The chapter also briefly introduces the concept of using metarubrics. Chapter three provides a review of the literature related to transcript analysis of online discussions to identify the behaviors or types of performances which researchers have focused on in their analyses. This review relates to the fourth objective of this study, which was to compare the criteria and ratings used in the rubrics with those emphasized in the literature on transcript analysis of the transcripts of online discussions. In chapter four, we describe methods including data collection and analysis techniques. In chapter five, we present the findings of the study. We discuss these findings in chapter six along with conclusions and implications.

1.7. Summary

Researchers have used transcript analysis techniques as a means to determine if participants in OADs engage in higher-level thinking processes.

However, transcript analysis is difficult and time consuming, in addition to being a method primarily used by *researchers* to evaluate OADs. One method that has received attention by instructors is the use of rubrics.

Rubrics are scoring guides used to evaluate student work (Popham, 1997). Two of the essential components of a rubric are the performance criteria and definitions (or ratings) (Popham, 1997). Performance (Arter, 2000) or evaluative (Popham, 1997) criteria identify the specific elements, or dimensions, of the task taught and assessed by the rubric (Jonassen et al., 2003; Popham, 1997; Tierney & Simon, 2004). They differentiate between acceptable and unacceptable responses (Moskal, 2000; Popham, 1997). Ratings "describe the way that qualitative differences in students' responses are to be judged" (Popham, 1997, p. 1), highlighting, for example, the difference between a performance assessed as fair or poor with a performance assessed as good or excellent.

What performances or behaviors do rubrics evaluate and rate in relation to online discussions? How do these behaviors or performances compare with the foci of researchers who are engaged in analysis of online discussions? The purpose of this study is to investigate these two questions. In general, the study aimed to identify the performance criteria and ratings used in rubrics designed for the evaluation of learning in OADs in post-secondary contexts. A secondary goal of the study was to compare these criteria and ratings to the behaviors that researchers have focused on in their analyses of online discussions. The similarities and differences between these two provide a perspective from which

to appreciate the value of some of the approaches taken to the evaluation of learning in OADs by instructors.

We gathered a range of rubrics from online sources. Using purposive sampling, saturation was reached by the selection of 50 rubrics. Using keyword analysis and subsequent grouping of keywords into categories, we identified core categories in the performance criteria and ratings that we then compared with the literature on transcript analysis of OADs.

The findings of this study will be of value to instructors interested in using rubrics to evaluate students' learning and participation in OADs. The study will provide empirical evidence about the types of behaviors and performance that instructors value as important in relation to students' learning and participation in OADs. The study did not aim to assess the overall effectiveness or value of rubrics or to propose a more effective design for rubrics. Both of these aims, while of merit and interesting, would have been beyond the scope of this study.

CHAPTER TWO

BACKGROUND ON RUBRICS

2.0. Introduction

The purpose of this chapter is to present background information on rubrics and to clarify the role of performance criteria and ratings. The chapter includes a discussion of what Popham (1997) and others refer to as two of the three essential components of rubric design: performance criteria and ratings. The chapter also briefly introduces the concept of using metarubrics (Arter, 2000) to ensure that a given rubric contains performance criteria that provide rich, clear, and appropriate descriptions of performances, and ratings that identify clear progressions between levels of achievement (see also Arter, 2000; Jonassen et al., 2003; Mullinix, 2003).

2.1.0. Definitions

Scoring rubrics are descriptive rating scales that are particularly useful when a judgment about the quality of student work is required (Brookhart, 1999). Rubrics have been described as a type of scoring guide, "a code, or a set of codes, designed to govern action" (Jonassen et al., 2003, p. 229), and as "a set of scales used to assess a complex performance and to provide rich information used to improve performance" (p. 230). Montgomery (2002) described rubrics as assessment tools that use "clearly defined evaluation criteria and proficiency levels to gauge student achievement of those criteria" (p. 325). Perlman (2002) defined a rubric as a performance assessment consisting of a task and a set of

scoring criteria, and as a "powerful communications tool" (p.8). Jonassen, Peck, and Wilson (1998) described rubrics as tools used to both assess and improve performance. Arter (2000) referred to rubrics as teaching and assessment tools that are used to help plan instruction, track student progress, and "enhance the quality of student performance, not simply evaluate it" (p. 15).

Rubrics have been described as tools that can "allow more meaningful examination of the role of interaction in enhancing both student achievement and student satisfaction (Roblyer & Wiencke, 2004, p. 95). They are evaluation tools that clarify what is important to evaluate (Moskal, 2000); and useful tools that "contain qualitative descriptions of performance criteria that work well within the process of formative evaluation" (Tierney & Simon, 2004, p.1). They can "help to measure the application of products and process to the real world where problem-solving and critical thinking abilities are often used" (Montgomery, 2002, p. 2).

Popham (1997, p. 5) referred to rubrics as "instructional illuminators" because of their ability to highlight both progress and deficiencies in student effort. Rubrics provide performance criteria mapped to levels of competency that offer the student feedback on why they received the grade they did and information on how they can improve their performance in the future (Moskal, 2000). Andrade (2005) commented on the rubric's ability to "describe desirable qualities as well as common pitfalls in student work" (p.27) and cited the rubric's "gradations of quality" (p. 27) as the feature that separates the rubric from a simple checklist. An effective rubric, therefore, "helps learners focus on the

important elements of a performance and provides information on which they can reflect and base strategies for growth" (Jonassen et al., 2003, p. 234).

2.1.1. Role of rubrics

Rubrics are typically used in performance-based assessment to provide "qualitative, meaningful, and stable appraisals" (Simon & Forgette-Giroux, 2001, p. 1) of student work. They provide performance criteria mapped to levels of competency that offer the student feedback on why they received the grade they did and information on how they can improve their future performances (Arter, 2000, Moskal, 2000). One role of the rubric is "to gather information on students in order to plan instruction, track student progress toward important learning targets, and report progress to others" (Arter, 2000, p. 14). Another is to help learners identify the important aspects of a product or performance while providing a basis for reflection and growth (Jonassen et al., 2003). A third is to "provide criteria that can be used to enhance the quality of student performance, not simply evaluate it" (Arter, 2000, p. 15).

2.1.2. Types of rubrics

Two types of scoring rubrics have been defined in the literature: analytical and holistic. Analytical rubrics are suitable where formative feedback is the goal, whereas holistic rubrics are best employed in circumstances requiring summative feedback (Mertler, 2001). Analytical rubrics allow for the evaluation of different criteria on their own descriptive scales, each rated separately, then averaged or

summed for a total score (Brookhart, 1999; Mertler, 2001; Perlman, 2002). Holistic rubrics score all criteria together on one descriptive rating scale, with one score applying to the entire product or process (Brookhart, 1999; Mertler, 2001; Moskal, 2000; Perlman, 2002). Perlman (2002) defined an analytical rubric as one with two or more separate scales, commenting that analytical rubrics "generally provide more detailed information that may be useful in planning and improving instruction and communicating with students" (p.8). Arter and McTighe (2001) add that analytical rubrics can also aid students by focusing attention on those areas that are giving them difficulty.

Arter (2000) adds that holistic rubrics, though lacking the precision of analytical rubrics, can offer increased efficiency and are commonly used in large-scale assessments. Holistic rubrics are often used to evaluate assignments such as oral presentations, "where the grade may be more reflective of an overall accomplishment of goals" (Truemper, 2004, p.2). Both types of rubrics may have a general or task-specific focus, or may be a combination of the two (Moskal, 2000; Perlman, 2002).

For rubrics with a general focus (i.e. the scoring of post-secondary academic skills) descriptors should be based on criteria "that are relatively independent of the course contents" (Simon & Forgette-Giroux, 2001, p. 3), and accompanied by student exemplars or task indicators (Wiggins, 1998). Task-specific rubrics may be less enduring, as they must be adapted to the demands of each task they seek to evaluate (Perlman, 2002).

The types of rubrics considered in this study include both analytical and holistic rubrics. Some instructors chose to evaluate the student's participation in the discussion in a summative fashion, providing ratings that encompass a number of variables. Others chose to evaluate the student's participation on a number of distinct performance criteria; each rated separately on its own scale. For the purposes of this study, we made no distinction between the two types of evaluation, as our focus was the performance criteria and ratings, rather than the scope of the evaluation. We also made no distinctions between rubrics with a task-specific focus and those that were more general in scope, specifying only that the rubric evaluate some aspect of post-secondary work in OADs.

2.2. Performance criteria and ratings

Two of the essential components of a rubric are the performance criteria and definitions (or ratings) (Popham, 1997). Rubrics are often constructed as tables, with the performance criteria in the left-most column, the scale extending over the next 3 – 7 columns, and the ratings associated with each scale item in the row directly beneath, as in Table 1.

Table 1. Components of a Rubric

	Scale				
Performance criteria	Level 1	Level 2	Level 3	Level 4	Level 5

Performance criteria clearly identify the elements or dimensions of the task being evaluated.	Ratings concisely describe the different levels of performance expected and observed.

Performance criteria are described in brief, descriptive terms, or phrases that describe one aspect of the task or performance under evaluation and can be specific to a particular task or more general in scope. Each scale level includes descriptive ratings. Evaluators select ratings that most closely match observed performances, often using task indicators (see also Tierney & Simon, 2004) and exemplars of student work (see also Moskal & Leydens, 2000) to guide their choices. They identify the specific elements, or dimensions, of the task taught and assessed by the rubric (Jonassen et al., 2003; Popham, 1997; Tierney & Simon, 2004).

They are used to differentiate between acceptable and unacceptable responses (Moskal, 2000; Popham, 1997). They identify all important aspects of the performance being evaluated (Jonassen et al., 2003) on a progressive scale that "provides a continuum of performance levels, defined in terms of selected criteria, towards to (*sic*) full attainment or development of the targeted skills" (Simon & Forgette-Giroux, 2001, p. 1). Performance criteria provide "guidelines, rules, or principles by which student responses, products, or performances are judged" (Arter & McTighe, 2001, p. 180).

Universal and pertinent criteria are used where the rubric is designed to be applied in a number of different settings or courses (Simon & Forgette-Giroux, 2001). However, each element must be unidimensional; if the rubric attempts to measure more than one element, component, or criterion at a time, assigning ratings and delivering specific feedback will be negatively effected (Jonassen et al., 2003). Performance criteria may be weighted equally or differently (Jonassen et al., 2003; Popham, 1997), and can be adjusted as necessary to fit changing circumstances (Simon & Forgette-Giroux, 2001). Usually, designers recommend having three to seven performance criteria (Jonassen et al., 2003; Popham, 1997).

Popham (1997) argues that quality definitions were an essential component of good rubric design. Quality definitions "describe the way that qualitative differences in students' responses are to be judged" (Popham, 1997, p. 1). These definitions (Popham, 1997), ratings (Jonassen et al., 2003), or descriptors (Tierney & Simon, 2004) must represent clearly different categories without ambiguity or overlap, cover the full range of performances, and clearly communicate their meaning.

The rating scale is constructed with a number of different elements reflecting varied levels of student performance. Evaluators choose the rating that most closely matches their assessment of student achievement. Ratings must be "distinct, comprehensive, and descriptive" (Jonassen et al., 2003) action or behavior oriented terms that clearly describe the observed performance (Jonassen et al., 2003; Tierney & Simon, 2004). Each performance criteria

should reference the same element across all levels of achievement. If, for example, the performance criteria is evaluating the clarity of a piece of student work, each of the ratings should reflect a measure of clarity, from slightly clear through moderately clear, mainly clear, to extremely clear (Tierney & Simon, 2004).

Some rubrics use attributes (Tierney & Simon, 2004) to highlight an important characteristic of the performance criterion that the descriptive statements (elements) modify to describe each level of the performance's attribute. To ensure that raters and students share a definition of a specific element, a list of "product-specific indicators" (Tierney & Simon, 2004, p. 3) should be included with, but not a part of, the rubric.

2.3. Performance criteria and rubric effectiveness

Effective rubrics must address issues of content, clarity, and scoring (Arter, 2000; Jonassen et al., 2003; Popham, 1997). Arter (2000) developed a *metarubric* to evaluate the quality and effectiveness of a given rubric. Two of the traits (or performance criteria) assessed by the metarubric are identified as content/coverage and clarity. Some of Arter's (2000) recommendations include ensuring that: (a) justified and reliable quality indicators (ratings) are used, (b) text, terms, and descriptions are clear and illustrative; (c) rich descriptions are used; and (d) performance criteria are clear.

Mullinix (2003) developed a rubric to evaluate rubrics with performance criteria that included (a) clarity of criteria and (b) distinction between levels. Two

of Mullinix's criteria for an exemplary rubric specified that the rubric included: (a) distinct, clear criteria that was appropriate to the assignment or course; and (b) a distinct and logical progression between levels of achievement, Jonassen et al. (2003) also developed a rubric to evaluate rubrics. One criterion, *elements*, uses two descriptors; comprehensiveness and unidimensionality, to determine if the important elements in the rubric are both identified and irreducible. Another criterion, *ratings*, uses the descriptors of distinctiveness, comprehensiveness, and descriptiveness to determine if there is overlap between the elements, if ratings cover the range of expected performances, and if all ratings have clear and useful labels.

Metarubrics seek to evaluate the quality and effectiveness of rubrics using performance criteria that look for evidence of rich and clear descriptions of performances; criteria that are appropriate to the assessment; and clear progressions between levels of achievement (see also Arter, 2000; Jonassen et al., 2003; Mullinix, 2003). An effective rubric must include performance criteria that are clear, distinct, and irreducible, appropriate to the assignment or course, and written in such a way that all stakeholders can understand the elements of a complex performance (Arter, 2000; Jonassen et al., 2003; Moskal & Leydens, 2000; Mullinix, 2003; Popham, 1997; Tierney & Simon, 2004).

Ratings must be justifiable and reliable with no overlap between levels, cover the full range of performances, and show a distinct and logical progression between levels of performances (Arter, 2000; Jonassen et al., 2003; Moskal & Leydens, 2000; Mullinix, 2003; Simon & Forgette-Giroux, 2001; Tierney & Simon,

2004). More weight should be applied to more important performance criteria, and counts, if used, should be based on quality, not quantity (Arter, 2000; Jonassen et al., 2003; Moskal & Leydens, 2000; Mullinix, 2003; Simon & Forgette-Giroux, 2001).

An effective rubric "helps learners focus on the important elements of a performance and provides information on which they can reflect and base strategies for growth" (Jonassen et al., 2003, p. 234).

2.4. Summary

Rubrics are descriptive rating scales used in post-secondary assessment to make a judgment about the quality of student work (Brookhart, 1999), especially where the intent is to evaluate the extent to which specific criteria have been met (Montgomery, 2002). Rubrics use rich descriptions to communicate information to the student about their performance (Jonassen et al., 2003), and attempt to illuminate both progress and deficiencies in student effort (Popham, 1997).

Analytical rubrics are usually used as formative assessment tools to provide feedback to students and other stakeholders about the quality of a performance or product at a point in time, while holistic rubrics are often used in summative assessments to provide an overall impression of the quality of work on a single scale. This study made no distinction between the two types of evaluation, as we focused on the performance criteria and ratings used, not on the scope of the evaluation. We also made no distinctions between rubrics with a

task-specific focus and those that were more general in scope, specifying only that the rubric evaluate some aspect of post-secondary work in OADs.

An effective rubric design must address questions of content and composition (Arter, 2000; Jonassen et al., 2003; Popham, 1997). An effective rubric will contain clear, distinct, and appropriate performance criteria (Arter, 2000; Jonassen et al., 2003; Mullinix, 2003; Popham, 1997; Tierney & Simon, 2004) and distinct and logical descriptions of quality (Arter, 2000; Jonassen et al., 2003; Mullinix, 2003; Simon & Forgette-Giroux, 2001; Tierney & Simon, 2004).

An effective rubric must include performance criteria that are clear, distinct, and irreducible, appropriate to the assignment or course, and written in such a way that all stakeholders can understand the elements of a complex performance (Arter, 2000; Jonassen et al., 2003; Moskal & Leydens, 2000; Mullinix, 2003; Popham, 1997; Tierney & Simon, 2004). Ratings must be justifiable and reliable with no overlap between levels, cover the full range of performances, and show a distinct and logical progression between levels of performances (Arter, 2000; Jonassen et al., 2003; Moskal & Leydens, 2000; Mullinix, 2003; Simon & Forgette-Giroux, 2001; Tierney & Simon, 2004).

CHAPTER 3

REVIEW OF THE LITERATURE

3.0. Introduction

The purpose of this chapter is to review the literature related to transcript analysis of online discussions to identify the behaviors or types of performances that researchers have focused on in their analyses. This review relates to the fourth objective of this study, which was to compare the criteria and ratings used in the rubrics with those emphasized in the literature on transcript analysis of the transcripts of online discussions. We do not report on any findings or conclusions of these studies, rather, we seek only to identify the foci of research into asynchronous discussions. In chapter six, we will compare the behaviors identified in this chapter to performance criteria and ratings identified in the rubrics.

We organized the chapter into seven sections according to these behaviors as follows: interaction and participation; collaboration; knowledge construction; critical thinking; problem solving; argumentation; and social presence. These behaviors were chosen for inclusion in this chapter because they are the behaviors most often discussed in the literature relating to the potential benefits offered by the use of OADs (see also Garrison et al., 2003; Kanuka, 2005; Lee-Baldwin, 2005; Schellens & Valcke, 2005).

3.1. Interaction and participation

Fahy et al., (2001) used measures of density, intensity, and participation to analyze interaction in a computer conference. Density or connectedness can indicate the level of interaction between participants, while intensity is a measure of the depth and persistence of those interactions. Intensity is indicated by the number of messages students sent over the number of messages required by the instructor, and by the ratio of messages sent to messages received. A high send/receive ratio could indicate that while a particular participant makes an effort to communicate with others in the network, their efforts are not reciprocated to the same degree.

Participation levels can indicate persistence. If the students pursue a conversation through multiple levels, even if they diverge from the initial topic, their persistence may show that they are engaged in the topic, discussion, or forum. Fahy et al. (2001) also found that students who made fewer contributions to the conference overall tended to make their contributions early and did not persist with their contributions or show higher levels of interaction. Sing and Khine (2006) also used a measure of density to indicate the level of participation between participants in an online community.

Interaction can be categorized as active, reactive, or interactive (Beuchot & Bullen, 2005). A message is active when it does not refer to other messages and reactive when it is posted in response to another message. Interactivity, however, takes place when messages flow back and forth in a collaborative manner. The Beuchot and Bullen study used six categories to define interaction:

active, explicit reactive, implicit reactive, engaging interactive, and interactive. Using transcript analysis, a sentence was coded as active if it did not refer to previous messages or ideas or if it introduced a new topic. Explicit reactive sentences explicitly referenced another sentence, message, person, or group, while implicit reactive sentences implicitly referenced another sentence, message, person, or group. Engaging interactive sentences asked for comments, suggestions, or help, directly or indirectly inviting participation. True interactive sentences directly or indirectly referenced the manner in which a previous sentence related to earlier sentences by referencing how or if it was, for example, humorous, supportive, argumentative, or informative.

Quantitative studies of participation typically use the criteria of total number of messages posted, the number of student and instructor participations, and the total average word length of posts (see for example Fahy et al., 2001; Hara et al., 2000; Mazzolini & Maddison, 2003, McKenzie & Murphy, 2000; Sing & Khine, 2006). Ngwenda, Annand, and Wang (2004) used a number of formulae to rate attendance, participation, articulation, and relevance in an online forum. Attendance marks were awarded based on the number of topics students addressed in the forum.

Participation marks were awarded based on the number of responses given by the student as compared to the total number of responses offered by the class as a whole. Good attendance was based on two indicators, student participation in all, most, or few of the topics and the amount of total

contributions. Articulation marks were awarded based on how well the student response was written. The relevance of each submission was rated and compared to the class total. Two indicators were used. The first was the presentation of relevant indicators, graded as well or poorly, and the second was the presentation of less-relevant responses, graded as well or poorly.

Sing and Khine (2006) used the number of notes created and read, the number of words used and the average number of words per note as indicators of participation in their study of interaction and participation in an online community. Dennen (2005) used a case study methodology to document participant interactions in an online forum. She examined the quality, quantity, nature, and timing of posts, and analyzed the number of messages and threads, thread depth, and time between responses. Indications that students were interacting included evidence that they responded to the post of another with a direct reference to the previous author's name or message, or by indicating agreement to the previous author's message.

3.2. Collaboration

Johnson and Johnson (1996) identified a number of different indicators and behaviors to assess collaborative learning in face-to-face environments. Behaviors included the exchange of assistance, knowledge, resources, and feedback; negotiation and resolution of conflict; and peer support. Curtis and Lawson (2001) later applied the Johnson and Johnson framework to assess

collaborative behaviors in online discussions. They examined email messages, discussion board postings, and file uploads to look for evidence of collaboration.

The behaviors studied included planning, contributing, seeking input, reflection/monitoring, and social interaction. Planning indicators included evidence of planning, organizing, and initiating activities. Contributing behaviors were indicated by participants providing feedback; exchanging resources, knowledge and information; challenging and debating; and explaining and elaborating. Seeking input behaviors included seeking assistance and feedback and soliciting involvement. Comments about the group's progress and feedback and comments about the effectiveness of the medium indicated reflection and monitoring behaviors. Comments unrelated to the group task indicated social interaction.

Murphy (2004) created an instrument with six specific processes and 22 indicators to identify and measure collaboration in OADs. The processes included social presence, articulation of individual perspectives, accommodation of or reflection of the perspectives of others, co-construction of shared perspectives and meanings, construction of shared goals and purposes, and the production of shared artifacts. Social presence indicators examined interpersonal interactions between the group members including the sharing of personal information, acknowledging the group and complimenting and/or expressing appreciation toward the other group members, expressing feelings and emotions, and stating motivation, goals, and purposes of the group and/or project.

Individual perspectives examined statements articulating personal beliefs and/or summarizing content without reference to the perspectives of other group members. Accommodating and reflecting the perspectives of others was indicated by statements challenging or coordinating the statements of others and by introducing and sharing perspectives. Co-construction of shared perspectives and meanings were indicated by the posing of rhetorical questions; soliciting feedback and responding to others; provoking thought and discussion; asking for clarification and sharing advice were indicators of the co-construction of shared perspectives and meanings. Proposing and/or working together toward shared goals indicated the building of shared goals and purposes. The production of shared artifacts used as its indicator the production of a group document or artifact.

Schellens and Valcke (2005) used a model based on the work of Veerman and Veldhuis-Diermanse (2001) and of Gunawardena et al. (1997) to look for evidence of task and non-task oriented collaborative knowledge construction in an OAD. Messages that contained irrelevant, technical, social, or planning behaviors were characteristics of non-task behaviors. Task oriented communications were categorized as Phase I: (fact), Phase II: new ideas (experience), Phase III: new idea (theory), Phase IV: Explicitation, or Phase V: evaluation.

Messages that indicated observation, agreement, corroboration, clarification, or definition were coded as Phase I. Messages that highlighted

dissonance or inconsistency, by asking or clarifying, identifying and stating, or restating and supporting were coded as Phase II. Phase III messages showed negotiation and co-construction of knowledge, while Phase IV messages were those that demonstrated testing and matching of co-constructed statements to personal knowledge and other resources. Phase V messages showed evidence of final revisions and sharing of the co-constructed knowledge.

3.3. Knowledge Construction

Zhu (1996) developed a framework to study knowledge construction in online discussions that used eight categories of notes (or messages), each with a number of indicators. The first category, Type I question, looked for evidence that a participant was asking for information or requesting an answer. The second category, Type II question, looks for evidence that the participant is trying to add to their existing knowledge store; that he or she is seeking opinions from peers or experts; that the questioner is attempting to start a dialog rather than simply ask for answers; and that the questioner understands that there is no one correct answer to the question posed. The third note category, answer, looks for evidence that a participant answers a question.

The fourth category, information sharing, is looking for evidence that the questioner does not know the answer to the question but believes that an answer exists and wants to know it. The fifth category, discussion, looks for evidence that the participant does know part of the answer to a question but is soliciting

opinions from peers or experts, and would prefer to enter into a dialogue to discuss the problem rather than simply ask for answers. The sixth category, comment, looks for evidence that a participant makes non-interrogatory comments about readings, indicating agreement or disagreement, or voicing opinions or judgments. The seventh category, reflection, looks for evidence that a participant expresses reflective thoughts such as evaluations of the class or the learning, self-appraisal of learning and understanding, and evidence of a student adjusting their learning goals and objectives. The eight category, scaffolding, looks for evidence that the participant provides guidance or suggestions to the other participants to assist in their learning.

Gunawardena et al. (1997) constructed a model to assess knowledge construction. The model consisted of five phases to assess the behaviors of (I) sharing and comparing of information, (II) discovery and exploration of dissonance or inconsistency, (III) negotiation of meaning and/or co-construction of knowledge, (IV) testing and modification of proposed synthesis or co-construction, and (V) phrasing of agreement, statement(s), and applications of the newly constructed meanings. Phase I indicators included observations or opinions, statements of agreement or corroboration from other participants, asking for and providing clarification of a statement, and statements that define, describe, or identify a problem.

Phase II indicators include statements that identify disagreement, asking or answering questions to clarify disagreement, and restating and/or offering

arguments in support of another's position with reference to ancillary material. Phase III indicators include statements that negotiate or clarify meanings, negotiation of the relative weight to be assigned to types of arguments, identification of areas of agreement among conflicting concepts, proposal and negotiation of new statements that illustrate compromise and co-construction of knowledge, and proposals that integrate or accommodate metaphors or analogies. Phase IV indicators include statements that test the proposed synthesis against the participant's shared meanings, cognitive schemas, personal experiences, and data collected. Phase V indicators included statements that summarize agreements or apply new knowledge, and metacognitive statements that signify that the students' knowledge or cognitive schema have changed because of the interaction.

Turcotte and Laferrière (2004) used a modification of the Gunawardena et al. (1997) interaction analysis model to look for evidence of knowledge construction in an online forum. In Phase I, they added three indicators: the statement of a hypothesis or speculation, a statement of a prediction to verify the hypothesis, and a statement comparing the results to the hypothesis. In Phase II, they looked for statements that proposed an alternative hypothesis, that predicted verification of an alternative hypothesis, and that compared results to the alternative hypothesis.

Pena-Shaff and Nicholls (2004) created an instrument with 11 categories and numerous indicators to look for evidence of knowledge construction in an

online discussion. The questions' category looked for evidence of questioning through information seeking, discussion, and reflection. The reply category looked for direct responses to information seeking questions and more elaborate responses that included information sharing, elaboration, clarification, and interpretation. The third category, clarification, used 15 indicators to look for evidence of the identification and elaboration of ideas and thoughts.

Indicators included evidence of the identification and linking of problems, ideas, and facts; explanation of ideas using personal experiences and examples; the making of judgments and arguments; defining terms; discussion of similarities and differences, advantages and disadvantages, and identifying cause and consequences; and the use of analogies. The fourth category, interpretation, looked for evidence that the students used deductive and inductive reasoning; made predictions and hypotheses; summarized material; and proposed solutions. Conflict, the fifth category, looked for indicators of debating, disagreements, and friction.

The sixth category, assertion, looked for evidence that a student was defending and maintaining his or her ideas when challenged by others. Consensus building, the seventh category, looked for evidence that the students attempted to clarify misunderstandings and negotiate consensus. The eighth category, judgment, looked for evidence that the students were judging and evaluating topics and solutions, text orientation, and authors' positions. The reflection category looked for evidence that the student appraised and

acknowledged new learning. The tenth category, support, looked for indicators of empathy, support, and feedback. The final category was a catchall category for messages of a social or emotional context or messages that did not fit any of the other categories.

3.4. Critical thinking

Garrison, Anderson, and Archer (2004) used the community of inquiry model to look for evidence of cognitive presence in asynchronous discussion forums. Cognitive presence is "a vital element in critical thinking, a process and outcome that is frequently presented as the ostensible goal of all higher education" (p. 89). The practical inquiry model presents four categories of cognitive presence; a triggering event, indicated by a sense of puzzlement; exploration, indicated by information exchange; integration, indicated by connecting ideas; and resolution, indicated by the application of new ideas.

Fahy (2005) used the transcript analysis tool (TAT) (Fahy et al., 2001) and the practical inquiry model (PI) (Garrison et al., 2004) to examine computer transcripts for evidence of critical thinking. The PI model consists of four phases. Phase I is indicated by a triggering event that sets the stage for the following three phases of exploration, integration, and resolution. Triggers are indicated by evocative comments that identify and focus on a specific problem or dilemma. Exploration is signified by activities such as brainstorming, questioning, and information exchange and is followed by the integration phase, identified by

activities such as the construction and evaluation of shared meanings. The final phase, resolution, is indicated by the application of a solution to the problem.

The TAT uses the sentence as the unit of meaning to look for evidence of critical thinking in OADs by coding each sentence of the transcript into one of five categories: questions, statements, reflections, scaffolding/engaging, and quotations/citations. Questions are coded as vertical or horizontal. Vertical questions are indicated by sentences that assume a right answer exists, and that can be answered if the correct source is accessed. Sentences that do not assume a single correct answer exists indicate horizontal questions. Another indicator of horizontal questions is sentences that invite input from others in a bid to solve a problem. Statements can be coded as referential or non-referential.

Sentences that merely impart information indicate non-referential statements, while referential statements are indicated by sentences that refer to or answer the statements of others. Sentences that reveal one's personal values and beliefs and/or sentences that invite similar reflections from the other participants are indicative of reflections. Scaffolding and/or engaging comments are indicated by sentences that connect with, agree with, or thank other participants for their contributions, and which indicate an attempt to initiate, continue, or acknowledge interaction. Sentences that quote or paraphrase the work or comments of others are indicative of quotations, while sentences that do so in a more formal manner are coded as citations.

Bullen and O'Brien (1997) looked for evidence of four critical thinking skills in an OAD. Clarification is described as the attempt to appraise and understand a problem, issue, or dilemma including attempts to understand different viewpoints. Positive indicators included focusing on a question, analyzing arguments, asking for and responding to questions of clarification, and defining terms and judging definitions. Negative indicators include focusing on questions unrelated to the problem, analyzing arguments inappropriately, asking inappropriate or irrelevant questions and/or answering questions of clarification incorrectly, and defining terms inappropriately and/or judging definitions incorrectly. The second skill, assessing evidence, is defined as assessing evidence to support inferences in a sound manner. Positive indicators included behaviors such as judging the credibility of a source, including the making and judging of observations. Negative indicators included judging the credibility of a source and/or making and judging observations using inappropriate criteria.

The third skill, the making and judgment of inferences, is defined as the ability to both make and judge the quality of inferences. Positive indicators include the making and judging of deductions and inductions through generalizations, explaining and hypothesizing, investigating, and making and judging value judgments. Negative indicators include using faulty logic, incorrectly interpreting statements, making and judging inductions incorrectly, and making and judging value judgments inappropriately. The last critical thinking skill examined was the use of appropriate strategies and tactics. Positive

indicators included the making of pro/con lists, the use of mathematical algorithms, taking second looks at situations for clarification, discussing confusing issues with another person, re-checking responses prior to task completion, using models, metaphors, or symbols to simplify problems, and asking others how they might act or feel in a similar situation. Negative indicators include the inappropriate use of strategies and tactics, such as pro/con lists, mathematical algorithms, models, metaphors, or symbols.

Murphy (2004) constructed an instrument with five processes (recognize, understand, analyze, evaluate, and create) to "identify, measure or promote critical thinking (CT) in online asynchronous discussions (OADs)" (p.295). The recognize process is identified by a single indicator which focuses on the acknowledgement and recognition of a problem that requires further investigation. The four remaining processes each have six indicators. The understand process is indicated by behaviors that indicate exploration, identification, and acquisition of information; location of alternate perspectives and evidence; making observations; problem clarification; and questioning and exchange of information.

The analyze process has as its indicators engagement in new ways of thinking and behaving, classification of information, evidence of the ability to differentiate between similarities and differences in alternate perspectives or evidence, interpretation and explanation of the problem, the ability to break the problem into its constituent parts, and the identification of and remediation of

knowledge gaps. The indicators for the evaluate process include judgments of the validity and relevance of information, evidence of critiquing behaviors, the ability to recognize inconsistencies and fallacies, the making and judging of definitions, the use of evidence to support arguments, and the making of decisions to retain or reject evidence. The create process is indicated by behaviors that represent an implementation or execution of strategy, the application of actual or hypothetical solutions, the construction of new knowledge or perspectives, the generation of alternative hypotheses and perspectives, implementing decisions, and executing or implementing change.

Newman, Webb, and Cochrane (1995) developed a system of 46 indicators to assess critical thinking in both face-to-face and computer conferencing transcripts. Researchers looked for indicators of the relevance, importance, and novelty of ideas, statements, and solutions, and assessed the learner's ability to welcome the ideas, opinions, and direction offered by others. They looked for evidence that learners drew upon their own personal experiences and from external sources, and they examined the clarity of learners' statements, their ability to discuss differences, their ability to interpret and generate new ideas; and their ability to justify solutions or judgments. Other indicators were learners' ability to critically assess their own and other's contributions, their ability to apply solutions, and their width of understanding.

Henri (1992) constructed a framework to identify five dimensions of asynchronous discussions: participation rate; interaction type; social cues;

cognitive skills; and metacognitive skills and knowledge. Indicators of participation rate included number of messages, number and length of message units. Indicators of interaction type included direct or indirect response or commentary. Indicators of cognitive skills included critical thinking skills (clarification, strategizing, and making judgments); and information processing skills (surface or in-depth processing). Indicators of metacognitive knowledge included awareness of others, task-awareness, and strategizing; and indicators of metacognitive skills included evidence of evaluation, planning, regulation, and self-awareness.

Hara et al. (2000) modified and adapted Henri's (1992) framework to map cognitive skills in an online forum. Multiple indicators are provided for five reasoning skills. The first skill, elementary clarification, is indicated by (a) the identification of relevant elements, (b) reformulation of the problem, (c) the posing of relevant questions, (d) identification of previously identified hypotheses, and (e) describing the subject matter. In-depth clarification is indicated by (a) a definition of terms, (b) identification of assumptions, (c) the establishment of referential criteria, (d) seeking specialized information, and (e) summarizing information. The third skill, inferencing, is indicated by (a) drawing conclusions, (b) making generalizations, and (c) formulating propositions based on previous statements. Judgment is indicated by (a) judging relevancy, (b) making value judgments, and (c) judging inferences. The final skill, application of strategies, is

indicated by (a) the making of decisions, statements, appreciations, evaluations, and criticisms, and (b) considering options.

3.5. Problem solving

Jonassen and Kwon (2001) used Poole and Holmes' (1995) classification scheme to study the effects of computer conferencing on small group problem-solving. The instrument used six categories to evaluate problem definition, orientation, solution development, non-task communication, simple agreement, and simple disagreement. Statements that analyze the problem and critique or evaluate the analysis statements indicated problem development. Statements that attempted to guide or orientate the group's process, and evaluated or reflected upon the group's process or progress indicated orientation. Solution development had five indicators: (a) statements related to decision making criteria or that provide solution parameters, (b) statements that suggest possible solutions or alternative solutions, (c) statements that detail or elaborate on previously stated alternatives, (d) statements that evaluate and give reasons for alternative evaluations, and (e) statements that reiterate the final decision or that ask for final group confirmation of the decision. Statements that did not relate to the problem at hand indicated non-task statements. Statements that signified either simple agreement or disagreement indicated the final two categories.

Murphy (2004) developed an instrument that evaluated both problem formulation and problem resolution in an OAD. Problem formulation had two

processes, defining problem space and building knowledge. Statements indicating a definition of the problem space included: (a) agreement with the problem as presented, (b) specifying ways that the problem manifested, (c) redefining the problem within the problem space, (d) minimizing or denying the problem, and (e) identifying the causes of the problem. Statements that (a) identified knowledge gaps, (b) located and shared information, and (c) reflected on one's own thoughts indicated knowledge building. Problem resolution had three processes, identification, evaluation, and acting on solutions. Statements that proposed solutions or hypothesized about solutions indicated identification. Evaluation was indicated by statements that expressed agreement with solutions provided by others, that weighed and compared alternative solutions, that critiqued solutions, and that rejected or eliminated solutions found to be unworkable. Statements that indicated planning to act, that reached a conclusion, or that indicated an understanding of the problem indicated acting on solutions.

Cheung and Hew (2004) adapted Jonassen's (1997) instrument to examine ill-structured problem-solving processes in an OAD. The seven categories included (1) articulation of problem space and contextual constraints, (2) identification and clarification of alternative opinions, positions, and perspectives, (3) generation of possible solutions, (4) assessment of the viability of alternative solutions by construction of arguments and articulation of personal beliefs, (5) monitoring of the problem space and optional solutions, (6) implementation and monitoring of a solution, and (7) adaptations of the solution.

Indicators of the articulation of problem space and contextual constraints included (a) statements that decide if a problem really exists, and (b) statements that determine the nature and contextual constraints of the problem. Indicators of the identification and clarification of alternative opinions, positions, and perspectives included (a) statements that described various perspectives, views and opinions, and (b) statements that sought to understand the various views, perspectives, and opinions.

Statements that described a solution to a problem indicated the generation of possible solutions, while statements that evaluated alternative solutions and offered reasons for accepting or rejecting them indicated an assessment of the viability of alternative solutions. Statements that implicitly or explicitly demonstrated the student's metacognitive process of deciding if a problem is solvable, if strategies exist to solve it, or that define the limits of a strategy to solve the problem were indicators of monitoring of the problem space and optional solutions. Attempts to implement and monitor a solution were indicated by statements that (a) describe how a solution is implemented, (b) that describe whether the solution is able to solve a problem, or (c) that describe if the solution is acceptable to all parties. Statements that described how the solution was attempted in actual settings and how it was adjusted by user feedback indicate adaptations of the solution.

3.6. Argumentation

Cho and Jonassen (2002) used an instrument based on the argumentation model of Toulmin, Rieke, and Janik, (1984) to assess the quality of argumentation among students working cooperatively in an online bulletin board system to solve well-structured or ill-structured problem solving tasks. The instrument looked for evidence of five criteria: claims, grounds, warrants, backings, and rebuttals. Claims were indicated by statements that contained generalizations related to the proposition indicated, and were awarded quality points based on their clearness and completeness. Grounds were indicated by statements that offered data that were relevant to the claim indicated, and were awarded quality points based on their completeness, accuracy, and relevance to the claim.

Warrants were indicated by statements that explain how the data supports the claim. Quality points were awarded based on the linkages between the data offered and their support for the claim. Additional indicators included explanation of the data, linkage of the explanation to the claim, elaboration of the data, and the validity and relevancy of the rules and principles. Backings were indicated by statements that provide the sources of warrants. Quality points were granted based on the correctness, relevancy, and specificity of the sources offered. Rebuttals were indicated by statements that provided identifications of constraints and solutions. Quality points were awarded based on the completeness of the identification offered.

Campos (2004) developed a method to determine "if networked argumentation process reveals collaborative conceptual change, learning, and knowledge building" (p. 8). He hypothesized that "groups engaged in electronic conferencing advance (or not) hypothesizing and inferencing through a collaborative process whose roots lie both in the background knowledge of each interlocutor as well as the knowledge created in their written action" (p. 7). His research indicates that negations and conditionals "create friction and promote further thinking upon the subject of conversation" (p. 11), whereas conjunctions and affirmations do not. Sentences with negative meanings are negations, whereas affirmations are sentences with positive meanings. Sentences that use an if-then clause are classed as conditional sentences, and sentences with either-or or neither-nor clauses are classed as disjunctions.

He identified three main components of argumentation: claims, data, and hypothesizing. Claims are, essentially, affirmations of one's beliefs, and can contain affirmation, negations, or disjunctions. Data consists of evidence to support a claim, and can contain affirmations, negations, or disjunctions. Hypothesizing is the act of explaining or questioning a claim based on the data provided, and can be implicit or explicit. Negations and disjunctions would be more beneficial to the process of knowledge construction in an online discussion because they would indicate cognitive conflict, which would in turn lead to more hypothesizing (Campos, 2004).

Campos, Laferrière, and LaPointe (2005) described argumentation as a process which requires "that people respond and actively engage in responding to the messages that are posted in an electronic conferencing system, forming the "online discourse"" (p. 60). They used meaning implication discourse analysis to look for evidence of knowledge building and conceptual change in two asynchronous discussions among pre-service teachers. Using a three-step method, they examined (a) "the basic, logical operations underlying discourse" (p. 61); (b) the main functions of arguments; and (c) the themes discussed and the links among inferences across messages. Indicators of logical operations included affirmations, negations, conditionals, conjunctions, and disjunctions. Indicators of the main functions of arguments included claiming, presenting data, and hypothesizing. In the third step, they examined implications of meaning related to motivation and student engagement. Campos (2004) states that hypothesizing "is an indicator that higher order thinking processes are under way" (p. 23). Both of the above studies show that analysis of the argumentation processes found in asynchronous discussions can provide evidence of activities related to higher-order thinking and collaboration.

3.7. Social presence

Garrison et al. (2000) identified social presence as an important "support for cognitive presence, indirectly facilitating the process of critical thinking carried on by the community of learners" (p. 89). The authors described three categories

of indicators of social presence: emotional expression, open communication, and group cohesion. The expression of feelings including the use of humor and self-disclosure indicates emotional expression. Evidence of humor include the use of emoticons, joking, and the exchange of personal information. Indicators of open communication include expressions of mutual awareness and recognition of the contributions of others.

Evidence of mutual awareness can include behaviors such as using the reply feature to respond to posts; quoting from the posts of others; directing comments to individuals; and referring to the posts of others. Expression of appreciation and agreement and exchanging compliments and encouragement are evidence of recognition. Examining transcripts for evidence that the participants are communicating with each other may uncover evidence of group cohesion. Students who feel part of a group will post messages aimed at the group, rather than monologues focused only on fulfilling a course requirement.

Fahy (2005) used the transcript analysis tool (TAT) (Fahy et al., 2001) to look for evidence of critical thinking in asynchronous discussions. He identified evidence of scaffolding/engaging comments as an element of critical thinking. Sentences that connect with, agree with, or thank other participants for their contributions; and which indicate an attempt to initiate, continue, or acknowledge interactions indicate scaffolding and/or engaging comments.

Murphy (2004) identified social presence as one of six processes she used to identify and measure collaboration in asynchronous discussions. Social

presence indicators examined interpersonal interactions between the group members such as the sharing of personal information, acknowledging the group and complimenting and/or expressing appreciation toward the other group members, expressing feelings and emotions, and stating motivation, goals, and purposes of the group and/or project.

Beuchot and Bullen (2005) examined interactivity in asynchronous discussions, finding that interaction can be categorized as active, reactive, or interactive. A message is active when it does not refer to other messages and reactive when it is posted in response to another message. Interactivity, however, takes place when messages flow back and forth in a collaborative manner. This collaborative interaction is another indicator of social presence.

3.8. Summary

A number of categories and indicators have been used to evaluate learners' interaction in OADs, including measures of density, intensity, participation and interaction. Qualitative studies of interaction and participation in OADs often use the criteria of total number of messages posted; the number of student and instructor participations; the timing of posts; number of messages and threads; and the total average word length of posts. Collaborative behaviors in online discussions have been assessed using indicators linked to the processes of social presence; sharing, accommodating, and reflecting the

perspectives of others; and co-construction of shared perspectives; goals, purposes and products.

Knowledge construction in OADs has been assessed by indicators including asking and answering questions; soliciting opinions from peers or experts; indicating agreement or disagreement; voicing opinions or judgments; expressing reflective thoughts; making adjustments to one's learning goals and objectives; and providing guidance or suggestions to the other participants to assist in their learning.

Indicators of cognitive presence include recognition and exploration of a problem or dilemma; integration of information; and problem resolution. Indicators of critical thinking may include evidence of questioning; the sharing of reflections; and the contribution of scaffolding or engaging comments. Learners providing appropriate evidence, making and judging inferences, and using appropriate strategies and tactics may indicate critical thinking. Indicators include evidence of the relevancy, importance, clarity, and novelty of ideas and suggestions.

Problem solving is indicated by learners participating in problem definition, orientation, solution development, social communication, and debate; articulation of problem space and contextual constraints; identification and clarification of alternative opinions, positions, and perspectives; generation of possible solutions; assessment of the viability of alternative solutions; monitoring of the

problem space and optional solutions; implementation and monitoring of a solution; and adaptations of the solution.

Researchers looking for evidence of argumentation look for evidence of the learner's ability to provide claims, grounds, warrants, backings, and rebuttals. Indicators of the logical operations underlying discourse include negations, affirmations, conditionals, and disjunctions. Indicators of the main functions of arguments include claiming, presenting data, and hypothesizing.

Garrison et al. (2000) identified social presence as an important "support for cognitive presence, indirectly facilitating the process of critical thinking carried on by the community of learners" (p. 89). Indicators of social presence include emotional expression, open communication, and group cohesion.

CHAPTER 4

METHODS

4.0. Introduction

The increasing use of OADs in post-secondary education brings with it the necessity of evaluating student learning in these discussions. Student learning can be evaluated using transcript analysis. However, this approach may not always meet the needs of instructors interested in evaluation in contexts of use of OADs. The use of rubrics represents an additional or alternative approach to evaluating individual student learning in OADs. The current study aims to identify the performances or behaviors that rubrics assess and rate in relation to online discussions and to compare them with the foci of researchers who are engaged in analyses of online discussions.

This chapter outlines the approach taken to meeting these objectives. The chapter focuses on data collection and analysis, beginning with a description of how we selected the rubrics. We then describe how we analyzed the performance criteria and ratings. Finally, the chapter outlines the approach taken to comparison of the rubric performance criteria and ratings with the behaviors highlighted in transcript analysis and reported in chapter three.

4.1. Data Collection

This study relied on rubrics openly available on the internet, from post-secondary institutions and instructors' web sites. We used four sets of search

terms in Google™ and Google Scholar™ to locate rubrics. The first search term was simply “rubrics”. The second set of search terms used the following key words or phrases: (a) asynchronous discussions, (b) "asynchronous discussions", (c) online discussions, (d) "online discussions", (e) discussion boards, (f) "discussion boards", (g) CMC, (h) computer mediated communication, (i) “computer mediated communication”, (j) “discussion forums”, (k) discussion forums, (l) discussion fora or (m) “discussion fora”.

The third set of search terms pairs a key word, or combination of words, with either (a) rubrics, (b) scoring guides, (c) evaluate, (d) assess, (e) evaluation guide or (f) post-secondary with the key words used in the second search. The fourth set of search terms is as follows: (a) discussion rubrics, (b) "discussion rubrics", (c) "discussion board" rubrics, (d) asynchronous discussion rubrics, (e) "asynchronous discussion" rubrics, (f) "online discussion" rubrics, (g) online discussion rubrics.

Placing the key phrases in quotes both lessened the number of results and provided links that were more applicable to the search. The advanced search feature in Google™ and Google Scholar™ also allowed for some fine-tuning of results by allowing us to specify the exact phrase searched for or words to exclude, such as *K12*. We searched the online sites of various universities, including Memorial University, University of British Columbia, Concordia University, University of Calgary, and Dalhousie University, using the same search terms as above.

In all searches, the method was to investigate links on a page-by-page basis until we found no more applicable results within that search term. In most cases, that meant investigating the first 30 to 40 pages of results, or approximately 300 to 400 individual links. Because some search terms did not include the word post-secondary, a first step was to discard any links that point to K12 sources. We followed the remaining links to their source. Many links contained no rubrics at all, merely mentioning one of the search terms in the text.

We used a purposive sampling technique (Cohen et al., 2001) to select rubrics for analysis. We selected rubrics based on an initial examination to ensure that (a) they evaluate learners participating in OADs, and (b) that they evaluate post-secondary students. These selections meet two of Patton's (1990) suggestions that data accumulated for purposive sampling is homogenous and criterion-based. The rubrics we gathered are homogenous in that they evaluate post-secondary student work in OADs, and criterion-based in that they meet the study's criterion for inclusion; (i) that they evaluate learning in OADs and (ii) that they evaluate post-secondary students.

As such, the rubrics included in the study are not randomly selected, but considered for inclusion only if they meet these two requirements. We excluded rubrics designed to evaluate online learning in general, as well as rubrics designed to evaluate participants in face-to-face classrooms or rubrics designed to evaluate K12 classrooms.

Saturation was reached when no additional rubrics could be located that either (a) meet the criterion for inclusion, or (b) that add new information to the study. Further analysis resulted in the deletion of rubrics that did not meet the criteria for selection. We removed those rubrics because (a) they do not evaluate learning in OADs; (b) they do not evaluate post-secondary work in OADs; or (c) because they contain criteria and/or ratings very similar to those found in another rubric.

4.2. Data analysis

We initially selected rubrics for the study by downloading or copying them from internet sources into a local folder, where we combined them into a single document. Rubrics that were determined not to meet the requirements of the study were subsequently removed from this listing. We itemized information from the remaining rubrics in a spreadsheet (see Appendix A). Information included the rubric name (if provided), the URL at which the rubric was located, and an identification number. We analyzed the rubrics in four stages. In the first and second stages, we categorized performance criteria and ratings' identified in each rubric based on a process of grouping like keywords together.

In the third stage, we grouped performance criteria categories that described similar types of performances or tasks together and grouped ratings' categories that rated similar types of performances or tasks together. In the fourth stage of analysis, we again examined the categories to determine if any of

the categories could be associated with any other. In this analysis, an examination of the categories led to the assignment of the categories into a smaller number of core categories, each representing a single theme. We discuss the four stages of analysis in detail in the remainder of this section.

We initially examined the rubrics to determine which statements were performance criteria and which were ratings. Statements were accepted as performance criteria if they provided "guidelines, rules, or principles by which student responses, products, or performances are judged" (Arter & McTighe, 2001, p. 180), or identified the specific elements or dimensions of the behavior or performance assessed by the rubric.

In some rubrics, row or column labels such as *category* or *criteria* explicitly identify performance criteria. However, not all rubrics use descriptive labels. In some cases, we identified performance criteria in the rubrics by reading the statements to determine if the statement was a performance criterion or a rating. For example, the statement "Number of posts" qualifies as a performance criterion because it describes a specific dimension of student work assessed by the ratings. We coded statements that described a performance or activity as performance criteria, and coded statements that assessed a performance or activity as ratings.

We formed initial categories based on the identification of keywords or key phrases in the rubrics; or what Miles and Huberman (1994) categorize as descriptive codes. The codes or keywords represent the attribution of "a class of

phenomena to a segment of text" (p. 57). We analyzed performance criteria based on patterns in recurring keywords. If one of the criterion contained the keyword (or a variant of the keyword) of *writing*, for example, a *W* was placed in the cell adjacent to the criterion, indicating that this criterion was to be included in the initial criteria grouping of *writing*. In cases where criteria contained multiple keywords, each relating to different concepts, we coded the criterion into a category based on what was determined to be the dominant concept.

For example, if a rubric contained a criterion such as the following: *Quality of writing in posts* - the criterion was marked for inclusion into one category (e.g. *writing*) and cross-referenced to a second category (e.g. *quality*). Criteria were included in a specific category based on a determination of the intent of the assessment. In the above example, the intent of the criterion was clearly to evaluate the quality of *writing* in posts, not quality in general. At the end of this stage of analysis, categories were generated, each represented by a keyword or series of keywords or key phrases, and cross-referenced, where applicable, to another category or categories. Performance criteria that did not adequately describe a performance or behavior were excluded from further study (see Appendix B). The complete list of performance criteria keywords, ordered by frequency, is located in Appendix C.

In the second stage of analysis, we again reviewed each rubric, this time to identify ratings. In each rubric, a number of ratings rate learners on the performance criteria. Ratings provide levels of competency associated with each

performance criterion. They often include terms such as *regularly, rarely, or never; or poor, good, very good,* and *excellent* to describe variations in performances or behaviors. For example, five levels of ratings might accompany the performance criterion of *interaction with other students*. The first rating states that *posts engage with other students' comments often*; the second, that *posts respond to other students' comments regularly*; the third that *posts respond to other students' comments occasionally*; the fourth that *posts respond to other students' comments rarely, or are simply "I agree" statements* and the fifth is that *posts make no response to other comments*.

In cases where a rating contained two or more distinct statements, we divided the rating into multiple statements. For example, if a rating contained two distinct statements such as *does not respond to most postings; rarely participates freely* those statements were treated as two distinct ratings and coded separately. We analyzed ratings using the same procedure as the performance criteria. Categories were generated, each represented by a keyword or series of keywords or key phrases, and cross-referenced, where applicable, to other categories. As with the performance criteria categories, we formed these initial categories of ratings by grouping ratings with identical keywords or phrases. The complete list of ratings' keywords, ordered by frequency, is located in Appendix D.

We designed the first two stages of analysis to result in the following: (i) grouping of the performance criteria found in the rubrics into distinct categories

based on keywords or phrases; and (ii) grouping of the ratings found in the rubrics into distinct categories based on keywords or phrases. The third stage of analysis consisted of (i) grouping performance criteria categories that described similar types of performances or tasks and (ii) grouping ratings' categories that rated similar types of performances or tasks.

We amalgamated sets of keywords or phrases that referred to similar concepts into groups, with the process continuing until we could not create any more groups of criteria or ratings. This stage of coding was more inductive and interpretive than the first two stages. Analysis of the data led to the formation of groups of related categories. We combined categories if they referenced similar behaviors or performances. For example, we combined criteria that describe acceptable grammar, spelling, or punctuation into a single category.

We combined categories that assess the timeliness, frequency, or regularity of posts into one more inclusive category. This process of interpretively (Miles & Huberman, 1994) amalgamating descriptive criteria categories continued throughout this stage of coding. If a criterion contained a cross-reference to another category, we updated the cross-reference to reflect the name of the newly formed category. Performance criteria arranged by category and keywords are listed in Appendix E. Ratings arranged by category and keyword are listed in Appendix F.

In the final stage of coding, we again examined the categories to determine if any of the categories could be associated with any other. In this

analysis, an examination of the categories led to the assignment of the categories into a smaller number of core categories. This stage of coding, which Miles and Huberman (1994) refer to as inferential and explanatory, "pull[s] a lot of material together, permitting analysis" (p. 57). At the conclusion of this stage of coding, the core categories were generated which were compared with the behaviors and performances outlined in chapter three of this study. We analyzed each core category to identify commonalities between the criteria and ratings present in the rubrics to the indicators of performances and behaviors identified through transcript analysis of OADs.

4.3. Summary

The current study aimed to identify the performances or behaviors that rubrics assess in relation to online discussions and to compare them with the foci of researchers who are engaged in analyses of online discussions. This chapter outlines the approach taken to meeting the four objectives of the study. This study relied on rubrics freely available on the internet, using the search features of Google ™ and Google Scholar™. Search terms included variations of the words rubrics, asynchronous, discussions, online, CMC, assessment, evaluation, and post-secondary. We used a purposive sampling technique (Cohen et al., 2001) to select rubrics for analysis.

We selected rubrics for the study based on an initial examination to ensure that they met our criteria, and met Patton's (1990) suggestions that data

accumulated for purposive sampling are homogenous and criterion-based. Saturation was reached when no additional rubrics could be located that either met the criterion for inclusion, or that added new information to the study. We removed from the study rubrics that did not meet the requirements.

We analyzed selected rubrics in four stages. In the first and second stages, we categorized performance criteria and ratings identified in each rubric based on a process of grouping like keywords together. In the third stage, we grouped performance criteria categories that described similar types of performances or tasks together and grouped ratings' categories that rated similar types of performances or tasks together. In the fourth stage of analysis, we again examined the categories to determine if any of the categories could be associated with any other. In this analysis, an examination of the categories led to the assignment of the categories into a smaller number of core categories. We reviewed each core category to look for commonalities between the criteria and ratings present in the rubrics to the indicators of performances and behaviors identified in chapter three.

CHAPTER 5

PRESENTATION OF THE FINDINGS

5.0. Introduction

The presentation of the findings relates to objectives one and two, which were to identify from the rubrics the range, type, and percentage of performance criteria and ratings. The chapter consists of two sections; the first of these describes the performance criteria. Performance criteria are listed in categories, largest to smallest, with the exception of the *Other* and *Vague* categories, which were placed at the end of the section. The criteria are described and shown for each category as a percent of total criteria, with examples of criteria present in each category. For each category, we made a note as to the purpose of the description – to describe content or to describe elements of form, mechanics, or delivery. The second section describes the ratings' categories in a similar manner.

5.1.0. Performance criteria

From the 50 rubrics reviewed for this study, we identified 189 performance criteria. An initial examination of these criteria revealed that 36 of the 189 describe a level of attainment or a scoring level such as very good (rubric 47), adequate (rubric 51), superior (rubric 19), or A-level participation (rubric 20). We do not present those criteria in detail in this chapter. They are available in Appendix B.

We organized the remaining 153 performance criteria into categories based on keyword analysis and entered them into an excel spreadsheet. This first stage of analysis resulted in a grouping of the performance criteria found in the rubrics into distinct categories based on keywords or phrases (including variants of keywords), generating 39 initial criteria categories, each represented by a keyword or series of keywords or key phrases. Performance criteria keywords and variants shown by frequency are located in Appendix C.

The next stage of analysis consisted of grouping performance criteria categories that describe similar types of performances or tasks. We amalgamated sets of keywords or phrases that refer to similar concepts into groups, with the process continuing until we could not create any more groups of criteria. This process was more inductive and interpretive than the first stage, as analysis of the data and the literature led to the formation of groups of related categories. This process of interpretively amalgamating descriptive criteria categories (Miles & Huberman, 1994) continued throughout this stage of coding.

This stage of analysis resulted in 18 performance criteria categories, each describing similar types of performances or tasks. For example, we combined the initial criteria categories of *writing* and *style* into the category of *writing and style* because they describe elements of writing skill and style of writing evidenced in the posts. We combined the categories of *thinking* and *reflection* into the category of *thinking and reflection* because they both address thinking skills. We formed the category of *best practices, etiquette, and protocols* by joining the

three categories of *protocols*, *etiquette*, and *best practices* because all three describe activities and behaviors related to students' conduct in the discussion forums. The remaining third stage categories were formed in similar ways, using an inductive and interpretative process to from categories of related criteria. Because of this process, a nineteenth category was created; *Vague*, to contain criteria that were deemed too vague to continue as part of the analysis. The 19 third-stage performance criteria categories and the keyword categories associated with each are available in Appendix E.

We present the 19 performance criteria categories in this chapter arranged in order of size, with the categories with the most performance criteria presented first. The exceptions to this are the *Other* and *Vague* categories, which are presented last. The performance criteria categories are available ordered by percentage in Table 1. For a full description of the performance criteria assigned to each category, see Appendix G.

Table 1. Performance criteria categories by percentage of total

Performance criteria category	*% of total performance criteria*
Writing and style	*9.80*
Thinking and reflection	*7.84*
Response and reply	*7.19*
Timing, frequency, and initiative	*7.19*
Expression, delivery, mechanics, and organization	*6.54*
Quality and relevance	*5.88*
References and support	*5.88*
Analysis, evaluation, interpretation, application, and synthesis	*4.58*

Ideas, insights, connections, and links	*3.92*
Participation	*3.92*
Arguments	*3.27*
Content	*3.27*
Language and grammar	*3.27*
Best practices, etiquette, and protocols	*2.61*
Feedback, incorporation, interweave, and integration	*2.61*
Interaction	*1.31*
Length	*0.65*
Other	*12.42*
Vague	*7.84*

5.1.1. Performance criteria category: Writing and style.

Fifteen performance criteria in the category of *writing and style* (9.80% of total performance criteria) describe performances related to the *writing* skills (5.23%) and *style* (4.57%) of contributors to the discussion. Criteria describe elements of quality and style assessed by the ratings. These descriptions, generally quite short, include criteria such as *Writing skill* (rubric 12); *Quality of writing* (rubric 36); *Stylistics* (rubric 56) or a more detailed description such as these criteria found in rubric 52: *(i) acceptable; (ii) below-standard; (iii) good; (iv) professional; (v) sub-standard written work.* The criteria in this category concentrate on the form of the post (i.e. writing style or writing skill) rather than the content.

5.1.2. Performance criteria category: Thinking and reflection

The 12 performance criteria in the category of *thinking* and *reflection* (7.84%) describe performances that demonstrate the students' ability to *think* critically (5.88%) or critically and *reflectively (1.96%).* The criteria in this category describe outcomes (i.e. evidence of critical *thinking* or *reflection*) that inferred through a reading of the content of the post. Although many of the criteria take a form similar to this example from rubric 62: *critical thinking; or this one, from rubric 29: critical thinking evidenced by posting;* or this example from rubric 33: *reflection & critical thinking;* the brevity of the description(s) is not at issue. The ratings (described in a later section) will provide clues as to what specific attributes or behaviors is evidence of *thinking* and/or *reflection.*

5.1.3. Performance criteria category: Response and reply

The performance criteria in the category of *response and reply* describe performances related to *responsiveness* and *replies*; primarily in relation to *responsiveness* to peers and others; the discussion; and the community. The criteria in this category together represent 7.19% of total performance criteria.

Criteria in this category focus on behavior, specifically, the learner's ability and/or initiative in responding to other members of the discussion. This criterion, from rubric 66: *contribution is responsive to another contribution* is typical of the criteria in this category. It describes a post in which the learner *responds* to other members of the group. This criterion, in rubric 15, described simply as *Responsiveness to peers*, is similar in intent to this criterion in rubric 38:

discussion includes response to other students; or this one in rubric 43: *responses to other student postings*. The ratings will assess levels of response.

5.1.4. Performance criteria category: Timing, frequency, and initiative

The eleven performance criteria in the category of *Timing, frequency, and initiative* (7.19%) describe the students' efforts to contribute to the online discussions in a *timely* manner (3.92%); *initiative* shown (1.96%); and the *frequency* of their reading (1.31%). All of the criteria in this category concentrate on delivery of the post rather than the content of the post. This criterion, in rubric 49: *timely discussion contributions*, or this one, in rubric 8: *frequency of reading of the discussion* do not define the parameters of *timely* or *frequency,* but the ratings and/or task exemplars would almost certainly provide additional information that would guide us in making our assessment. Two criteria, in rubrics 2 and 16, describe *promptness and initiative, and Initiative and contribution*, which would also require the evaluator to make inferences about the meaning of the term *initiative*.

5.1.5. Performance criteria category: Expression, delivery, mechanics, and organization

Performance criteria in the category of *expression, delivery, mechanics, and organization* describe performances related to *expression* and *delivery* of the post (3.27%); and the *mechanics,* and *organization* of the post (3.27%). Together these ratings represent 6.54% of total performance criteria. The criterion of

expression focuses on the content of the post, such as this example from rubric 2: *expression within the post.* The criteria of *delivery, mechanics,* and *organization* focus on the manner in which the post is organized and delivered. Examples include *mechanics of posting (rubric 29)*; *delivery of post* (rubric 2); or *organization (rubric 62).*

5.1.6. Performance criteria category: Quality and relevance

Nine criteria in this category (5.88%) describe performances related to the *quality* or *relevance* of postings or information offered. 3.27% describe elements of quality, such as this criterion in rubric 8: *quality of postings.* Two criteria described as *evaluation of quality*, both in rubric 59 evaluate *quality*. Additional performance criteria (2.61%) describe the performance of the students in relation to the *relevance* of the post. Once again, the evaluation clearly is aimed at the content of the post, with the aim of determining if the content is relevant. One criterion is described as *relevance* (rubric 7), while the remainder are described as *relevance of post* (rubric 2); *relevance of post (response),* (rubric 16); and *relevance of posts* (rubric 16).

5.1.7. Performance criteria category: Reference(s) and support

The nine performance criteria in the category of *Reference(s) and support (*5.88%) describe performances related to the type and attribution of *references* (3.92%) and *support* (1.96%) found in student contributions to the discussion. In

this category, the majority of the criteria are describing functional aspects of the references or citations, such as correct form or placement: *attribution of references* (rubric 8); and *text is supported by references: (i) bibliographic information; (ii) citation style; (iii) relevant references; and (iv) sources indicated.* (rubric 66). Two additional criteria describe expected content, as in rubric 60: *Makes at least one reference to another student's posting.*

5.1.8. Performance criteria category: Analysis, evaluation, interpretation, application, and synthesis.

The seven performance criteria in the category of *Analysis, evaluation, interpretation, application, and synthesis* (4.58%) describe performances related to the students' use of *analysis*, *evaluation, interpretation*, *application,* and *synthesis.* In this category, a thorough reading of the post and of the ratings associated with each criterion is necessary to determine the expected outcomes. However, criteria in this category clearly evaluate the content of the post rather than its form or function, such as this criterion in rubric 54: *interrelates and synthesizes multiple concepts and sources of information.* This criterion, in rubric 12 describes both analysis and interpretation: *Analysis/Interpretation;* while this criterion in rubric 18 describes three expected outcomes and makes a reference to Bloom's (1956) taxonomy: *Superior [Bloom 4-6: Analysis, Synthesis, Evaluation.*

5.1.9. Performance criteria category: Ideas, insights, connections, and links

Six performance criteria in the category of *ideas, insights, connections, and links* (3.92%) describe the communication and organization of *ideas* and/or *insights* (2.61%); and connections made between concepts and practices (1.31%). In this category, the majority of the criteria focus on communication. Rubric 34, for example, contains a criterion described as *communicates ideas*. Another criterion in rubric 36 describes *connections to professional practice*; while a criterion in rubric 56 describes *connections*. A thorough reading of the post and the ratings will be necessary to determine if the post meets the expectations of the criteria. The ratings will provide a list of attributes expected to be found in the post and the evaluator must decide if the post meets any of those expectations.

5.1.10. Performance criteria category: Participation

The six performance criteria in the category of *participation* (3.92%) describe performances related to the students' efforts to *participate* with members of the discussion. These criteria concentrate on delivery of the post rather than the content of the post, such as this example from rubric 31: *level of participation during one week*; or this criterion in rubric 29: *participation in discussion*. The majority of criteria in this category simply describe *participation* (rubrics 12, 35, 50, 69). In most cases, ratings that provide a quantitative measurement of involvement in the discussion should accompany these criteria.

5.1.1. Performance criteria category: Arguments

Five performance criteria in the category of *arguments* (3.27%) describe performances related to the development of concepts and *arguments*. In this category, criteria are clearly directing an evaluation of the content of the post. These criteria, in rubric 66, describe four attributes that are considered necessary to the development of concepts and *arguments*: *concepts and arguments are well developed: (i) accuracy; (ii) independence; (iii) relevance; (iv) significance. A* final criterion, also in rubric 66, describes clarity as a fifth attribute necessary to the development of concepts and *arguments*: *concepts and arguments are well developed: clarity.* The intent of all of these criteria would be to evaluate the *content* of the post, rather than its delivery or some other attribute.

5.1.12. Performance criteria category: Content

Five performance criteria in the category of *Content* (3.27%) describe performances related to the *content* of posts made to the discussion board. Many of these criteria are vaguely worded, as in this criterion in rubric 29: *content of posting*; or in rubric 50: *content of post* are nevertheless effective when paired with descriptive ratings. The intent of all of these criteria would be to evaluate the *content* of the post, rather than its delivery or some other attribute.

5.1.13. Performance criteria category: Language and grammar

Five performance criteria in the category of *Language and grammar* (3.27%) describe performances related to the *language* usage; (2.61%) and *grammar (0.66%).* The criteria in this category are oriented toward the evaluation of skills connected to the correct use of language and grammar, rather than an analysis of the content of the post. This criterion, in rubric 33, describes the evaluation of language and grammar: *language usage, grammar, presentation.* This criterion, in rubric 50, describes *use of language;* while this criterion in rubric 60 focuses on grammar: *sentences are grammatically readable.*

5.1.14. Performance criteria category: Feedback, incorporation, interweave, and integration

The criteria category of *Feedback, incorporation, interweave, and integration* contains four criteria (2.61%) that describe performances related to student *feedback*, including efforts to *incorporate*, *integrate* and *interweave* content and comments, each representing 0.65% of total performance criteria. Criteria include *knowledge and incorporation of course content* (rubric 15); *ability to interweave other postings into their own postings* (rubric 32); *discussion postings include thought-provoking input and feedback designed to enhance communication from/with other participants* (rubric 36); and *integration of subject content/readings/links etc.* (rubric 70).

5.1.15. Performance criteria category: Best practices, etiquette, and protocols.

The criteria category of *best practices, etiquette, and protocols* contains

four criteria (2.61%) that describe performances related to the learner's adherence to *best practices and protocols (1.96%); and etiquette (0.65%)*. These criteria are examining behaviors such as *use of online etiquette* (rubric 15); *complies with established class best practices for learning* (rubric 36); *adherence to on-line protocols* (rubric 49); and *online protocols (set by the teacher or negotiated by the group),* (rubric 70).

5.1.16. Performance criteria category: Interaction

The two performance criteria in the category of *Interaction* (1.31%) describe performances related to the students' efforts to *interact* with members of the discussion. These criteria concentrate on delivery of the post rather than the content of the post, such as this criterion in rubric 1: *interaction with other students;* and this criterion in rubric 23: *interactivity*. In most cases, ratings that provide a quantitative measurement of involvement in the discussion accompany these criteria.

5.1.17. Performance criteria category: Length

The single criterion in this category (0.65%) describes performances related to the length of posts (*length of posts*, rubric 1). Length of posts is a criterion often accompanied by ratings that encourage reflection and in-depth analysis.

5.1.18. Performance criteria category: Other

The criteria category of *other* contains 19 criteria (12.42%) not assigned to any of the other categories. These criteria describe performances related to a number of different behaviors or tasks. We grouped them together because there were too few of any particular criteria to warrant the creation of a category.

Criteria describe the use of *Resources to Extend the Discussion* (rubric 53); or as *Shares relevant resources and experiences* (rubric 54). Together these two criteria equal 1.31% of total criteria. Two criteria *(1.31%)* describe *original postings* (rubric 42, 48), and one criterion describes *uniqueness (rubric 56)*. One criterion (0.65%) is described as *problem solving* (rubric 70) while one *(0.65%)* is described as *applicable questions (rubric 23)*. *One* criterion (0.65%) describes *quantity of postings* (rubric 33). Three criteria (1.96%). describe the learner's ability to *understand* readings (*Understanding* of *reading, rubric 32)*; activities (*Understanding of the Activity*, rubric 34); or content (*Understanding of content*, rubric 69). The remaining criteria describe performances ranging from collaboration to dialogue.

5.1.19. Performance criteria category: Vague

This category contains criteria that, while initially included in the analysis, were removed from further analysis because they are simply too vague or open-ended to provide a clear description of the behavior being assessed. Criteria in this category include *global picture, quality*, and *contribution* (rubric 7);

moderator, content (rubric 23); *content* (rubric 27); *replies* (rubric 33); *peer review* (rubric 34); *support* (rubric 50); *context* (rubric 53); and *content, organization* (rubric 62).

5.2.0. Ratings

From the 50 rubrics reviewed for this study, we identified 831 ratings. The ratings were first organized into categories based on keyword analysis and entered into an excel spreadsheet. This first stage of analysis resulted in a grouping of the ratings found in the rubrics into distinct categories based on keywords or phrases (including variants of keywords), generating 94 initial ratings' categories, each represented by a keyword or series of keywords or key phrases. Ratings' categories keywords and variants, by frequency, are located in Appendix D.

The next stage of analysis consisted of grouping ratings' categories that assessed similar types of performances or tasks and entering them into an Excel™ spreadsheet. We amalgamated sets of keywords or phrases that referred to similar concepts into groups until we could not create any more groups of ratings. This process was more inductive and interpretive than the first stage, as analysis led to the formation of groups of related categories. This process of interpretively amalgamating descriptive ratings' categories continued throughout this stage of coding.

This stage of analysis resulted in 39 ratings' categories, each describing similar types of performances or tasks. For example, we grouped the ratings'

categories of *citations* and *references* into the category of *citations and references* because they assessed students on the formation and presentation of citations and references. The categories of *grammar*, *punctuation*, and *spelling* were combined to form the category of *grammar, punctuation and spelling* because they assessed students on mechanical aspects of writing; and the category of *connections* was combined with the category of *links* to form the third stage category of *connections and links* because they both described students' abilities to make linkages between concepts.

We used similar procedures to assign the remaining ratings' groupings to final categories. A subsequent review of the 39 categories resulted in the creation of a fortieth category: Vague. We moved three ratings deemed too vague to remain in their original categories to this category. The 40 ratings' categories and the keyword categories associated with each are located in Appendix F. We present the 40 ratings' categories in this chapter arranged in order of number of items. We display the ratings' categories in Table 2, ordered by percentage of total ratings.

Table 2. Ratings' categories by percentage of total.

Ratings' Category	% of total Ratings
Thinking, reflection, reasoning, and critique	6.62
Grammar, spelling, and punctuation	5.78
Response, reply, and answer (discussion)	5.29
Understand, comprehend, and grasp	4.21
Response, reply, and answer (others)	4.21

Analysis, evaluation, summarization, and synthesis	4.21
Citations and references	3.85
Questions, problems, and solutions	3.61
Content and information	3.61
Support	3.37
Participation	3.25
Connections and links	3.13
Time, initiative, and prompting	2.89
Opinions and insights	2.77
Original, creative, novel, and new	2.65
Hour, day. minute, date, deadline, and late	2.53
Interaction	2.53
Relevance and relationship	2.53
Application, explanation, and interpretation	2.41
Mechanics, organization, structure, and expression	2.17
Language, sentence, paragraph, word, and vocabulary	2.05
Number	2.05
Evidence and argument	1.93
Frequently, regularly, occasionally, rarely, and sporadically	1.93
Ideas	1.93
Examples and sources	1.68
Etiquette and protocols	1.56
Writing, composition, and style	1.44
Weave, integrate, and incorporate	1.32
Quality, value, valid, and good	1.20
Feedback	1.08
Read and reading	1.08
Clarification, clarify, and clear	0.96
Contribute and post	0.96
Respect, offensive, and abusive	0.96
Concepts	0.84
Resources	0.84
Collaboration, community, and team-building	0.72
Miscellaneous	3.49
Vague	0.36

5.2.1. Ratings' category: Thinking, reflection, and reasoning

The category of *Thinking, reflection, and reasoning* includes 55 ratings (6.62%) that assess the students' abilities to *reason*, *reflect*, and *think* about the problems and issues addressed in the class. Ratings in this category assess the use of *reflection and critical or creative thought (*3.25%*)*; the elaboration of *thoughts* or *reflections* (1.81%); and evidence of *reasoning* and problem-solving skills *(*1.56%*)*. Evidence of *reflection* and creative or critical thought are the behaviors rated most frequently in this category. We identified ratings that assess the learner's ability to include *reflections*, as found in this rating in rubric 33: *Obvious reflection on life, education and other learning*. We also identified a number of ratings that assess the learner's ability to use critical or reflective thinking, as in this example in rubric 38: *Some critical/reflective thinking is evident;* and in this rating from rubric 70: *Consistently presents creative reflections on topic*. Ratings that assess reasoning and problem-solving skills include this example from rubric 17: *Is unable to or infrequently uses deductive and inductive reasoning and problem-solving skills.*

Behaviors are inferred through a reading of the post(s) and a comparison to the ratings. For example, this rating, in rubric 2; *occasionally makes meaningful reflection on group's efforts* forces the evaluator to look for indicators of reflection within the post. This rating, in rubric 24; *four point comments stimulate additional thought about the issue under discussion* implies that the evaluator is examining the content of the post for indicators of *thought*.

5.2.2. Ratings' category: Grammar, spelling, and punctuation

The category of *grammar, spelling, and punctuation* includes 48 ratings (5.78%) that assess levels of performance in the use of *grammar, spelling,* and *punctuation.* All of the ratings in this category rate learners on errors in *spelling* and *grammar, as in these criteria: consistently uses grammatically correct posts with rare misspellings* (rubric 2); *occasional spelling/grammatical errors* (rubric 16); and *grammatically correct and free of spelling errors.* (rubric 29). One rating assesses learners on the clarity of their writing (rubric 62): *writing is often unclear, and/or grammatically incorrect. (More than 3 errors).*

Ratings in this category focus on the assessment of skills associated with the mechanics of writing, such as correct *spelling*, rather than the content of the posts. As such, these ratings rely on a quantitative measure of assessment. *Misspellings*, for example, are relatively easier to spot and assess than a behavior such as *thinking.*

5.2.3. Ratings' category: Response, reply, and answer (discussion)

The ratings' category of *Response, reply, and answer (discussion)* includes 44 ratings that assess (i) students' *response* to questions, topics, or discussions (3.49%); (ii) the quality of students' *responses* to the discussion (1.20%); and (iii) the relationship of *responses* to the topic or discussion (0.60%). This criterion, in rubric 29: *revealed a solid understanding of the topic as evidenced by thoughtful responses and questions,* describes the relationship of

the response to the topic. A rating in rubric 63 rates the learner's response to questions, topics, or discussions: *the posting makes a thoughtful contribution to the discussion that responds to the reflection question.* Some of these ratings assess the nature of the students' *response* in terms of organization, thoroughness, length, and quantity. Examples of each of those responses are found in three ratings in rubric 16: *(i) frequently posts responses that are related to discussion content; (ii) posts responses which do not relate to the discussion content; makes short or irrelevant remarks; (iii) most responses are short in length and offer no further insight into the topic.*

Overall, 5.29% rate learners on their *response* to the discussion. Ratings in this category primarily assess behaviors, specifically the learner's *response* to the discussion as a whole. Although *response* can be thought of as a behavior it can often be indicated quantitatively by counting number of responses. It can be measured in terms of indicators of responses, such as responses that contribute to the discussion (i.e. *messages contribute to ongoing conversations, as replies to questions or comments, or as new questions or comments)*, (rubric 12). We can also evaluate responses that offer insight into the topic: *most responses are short in length and offer no further insight into the topic (*rubric 16). *We can measure* response behavior quantitatively, by counting number of responses, or qualitatively, such as this rating does: *responds to implications of ideas (*rubric 69). Task exemplars or rating guides might aid the evaluator in choosing what indicators would be useful in assessing concepts such as this one, in rubric 67:

messages tend to provide good general answers but may not always directly address discussion topics.

5.2.4. Ratings' category: Understand, comprehend, and grasp

The ratings' category of *Understand, comprehend, and grasp* contains 35 ratings (4.21%) that assess the learner's ability to *understand, comprehend,* or *grasp* materials or to present his or her work in such as way that it can be *understood* by others. We found that 3.01% rated the learners on their *understanding* of problems or issues; including this rating in rubric 18: *minimal, needs much work: Seemingly no understanding of nor engagement with the issues.* 0.72% rated the learners on their *understanding* of materials; including this rating in rubric 15: *provides evidence that lecture material was clearly understood.* Another 0.48% rated learners on presenting material that could be *understood* by others, such as this rating in rubric 66: *the contribution is completely self-contained so the reader does not have to read other contributions or published materials to understand what was written about.* Ratings in this category focus on assessing the learner's ability to *understand* materials, problems, and issues, which must be inferred from a reading of the post. This rating, in rubric 50: *reveals a lack of understanding of the topic* is an example of a rating that places the onus on the rater to read the post and make conclusions about the level of *understanding* demonstrated by the learner.

5.2.5. Ratings' category: Response, reply, and answer (others)

The ratings' category of *Response, reply, and answer (others)* includes 35 ratings (4.21%) that assess (i) the quality of *responses* to others (2.65%); (ii) number of responses (0.96%); and (iii) responses from others (0.60%). In terms of *responses* to others, this rating in rubric 15 assesses the learner as not responding with thoughtful ideas and opinions: *does not respond to other students with thoughtful ideas and opinions.* Some rubrics assess *responses* that evoke or encourage *responses* from others by ratings such as this one in rubric 34: *the learner's response encourages other group members to share ideas.* Ratings that assess the number of *responses* to others include this rating in rubric 36: *posts at least three times per module to the WebBoard in response to communication from other participants.* Overall, 4.21% assess learners' *response* to others. Ratings in this category primarily assess behaviors, specifically the learners' *response* to others.

5.2.6. Ratings' category: Analysis, evaluation, summarization, and synthesis

The ratings' category of *Analysis, evaluation, summarization, and synthesis* contains 35 ratings (4.21%) that assess the learner's ability to *analyze (2.40%), evaluate (1.57%), summarize* (0.12), or *synthesize* (0.12%) information competently, critically, or creatively. Ratings in this category require the evaluator to read the post and make conclusions about the learner's contributions. Some behaviors may indicate that, for example, *analysis* has or has not taken place;

those behaviors may not be explicitly listed in the ratings. However, a reading of the post might reveal a preponderance of opinion and feelings and impressions rather than, for example, analysis, as assessed by this rating in rubric 12: *messages generally show little evidence of historical analysis, consisting instead of opinion and feelings and impressions.*

Ratings such as this one in rubric 19: *more informational, than analytical or evaluative,* similarly require that the evaluator have an understanding of what is meant by the term *evaluate*. Some ratings examine the learner's ability to evaluate the work of others (0.60%), as does this rating in rubric 67: *willingness to critically evaluate the work of others with constructive comments.* Only one rating examines the learner's ability to *synthesize* information: *appropriate generalisation; theorising; synthesis* (rubric 63).

5.2.7. Ratings' category: Citations and references

The ratings' category of *Citations and references* includes 32 ratings (3.85%) that assess students' attempts to *reference* and *cite* materials correctly. Some of the 32 ratings assess the learner on the format of the *references* or *citations*, which might properly belong in the *Mechanics* category (i.e. *Citations all correct* (rubric 33). Almost two-thirds of the ratings in this category (2.52%) rate the learner on the inclusion, accuracy, and appropriateness of *citations*. Ratings of this type include *offers accurate and appropriate citations (rubric 54); and more than one reference is cited to support key points, which adds strength and*

authority to the argument (rubric 66). Both types of ratings, however, rate the learner on the form of the post rather than the content.

5.2.8. Ratings' category: Questions, problems, and solutions

This ratings' category includes 30 ratings (3.61%) that assess the learner's ability to ask and answer *questions*; to identify and solve *problems*; and to offer *solutions*. 2.53% rate the learner on posing *questions* or stimulating the discussion with *questions*. 0.48% assess the learner on the use of reflective *questions*; including this rating in rubric 33: *asks reflective questions of others.* Another 0.36% rate the learner on suggesting *solutions*, as does this rating in rubric 70: *frequently offers options and solutions to the group for discussion.* Another 0.24% rated the learner's ability to use problem-solving strategies. Although some of the ratings in this category assess in a quantitative manner (i.e. *poses additional questions or discussion* (rubric 15), the majority of ratings in this category are assessing content of the post for evidence of behaviors related to *questioning*. Indicators of those behaviors might include encouraging others to respond; posing and responding to *questions*; and offering *solutions*.

5.2.9. Ratings' category: Content and information

This ratings' category contains 30 ratings (3.61%) that rate the learner on providing *information* that relates to the discussion. 3.01% rate the learners on the completeness and accuracy of the *information* included in their posts. An

example from rubric 40: *discussion postings are generally competent, but the actual information they deliver seems thin and commonplace.* We found another example in rubric 51*: insufficient or irrelevant information.* 0.60% assesses the learners for providing *information* to the group; as does this rating in rubric 55: *have posted outstanding information.* The ratings in this category focus on the *content* of the post, requiring that the evaluator read the post, the criteria, and each related rating to assess each contribution. Ratings assess a range of behaviors and proficiencies, including completeness and accuracy of information provided; the impact and/or relevance of the information offered; and connections made to and integration with other information.

5.2.10. Ratings' category: Support

The ratings' category of *Support* contains 28 ratings (3.37%) that assess the nature and quality of the *support* given to ideas, comments, arguments, and opinions. While all of the ratings assess learners on the nature and quality of the *support* given, 3.13% rate the learner on providing *support* for evidence or examples provided; 0.12% rate the learner on *supporting* and/or challenging the ideas of others; and 0.12% rated the learner for providing conclusions.

These ratings focus on an examination of the content of the post, requiring that the evaluator review the criteria and ratings before determining a rating level for the current assessment. Two ratings assess the learner as providing *ample evidence of support* (rubric 69); or *little or no supporting evidence* (rubric 51).

Other ratings, such as those found in rubric 62, clearly identify the amount of support required for each rating: *at least (i) one piece of evidence; (ii) two types of evidence; (iii) more than 2 types of evidence; (iv) no evidence is/are used to support ideas.*

5.2.11. Ratings' category: Participation

The ratings' category of *participation* includes 27 ratings (3.25%) that assess the learner's efforts to *participate* in or be *involved* with the online community. *Participation* is rated in terms of frequency, initiative, and involvement. Although a number of ratings in this category rely on quantitative measures (0.96%) the majority of the ratings in this category (2.29%) require that the evaluator read the learner's post, the ratings, and the criterion prior to making an assessment. For example, this rating, in rubric 55: *have participated 3 or more times during the week*, simply counts the number of posts, while this rating, in rubric 2: *rarely participates freely,* requires the evaluator to read the posts of the learner and the facilitator to make a determination of the nature of the learner's participation. A task exemplar or rating guide would also assist in defining terms such as *marginal effort; rarely,* and *reluctant.*

5.2.12. Ratings' category: Connections and links

The ratings' category of *Connections and links* includes 26 ratings (3.13%) that assess qualities of the *connections* and *links* looked for in student work.

Some rubrics rate learners on their ability to make *connections* that strengthen the groups' efforts to resolve a problem; to make *connections* that help to build the argument; to make *connections* to others; and to make *connections* that can *connect* the post to the topic, text, concept, or real-life situations. 1.32% assesses the quality of the *connections* or *links* made by the learners, such as this rating in rubric 55: *connections are made, not really clear or too obvious.* 1.09% assess the learner on making *links* or *connections* to the posts of others, to content, and to class materials, including this rating in rubric 7: *clearly connects the posting to text or reference points from previous readings, activities, and discussions*; or this one in rubric 8: *some evidence of links to contributions of others.*

Another 0.72% rates the learner for making *connections* to personal experiences, including this rating in rubric 54: *does not make connections among educational problems, personal experience or beliefs, and research concepts or practice*; or this one in rubric 55: *discussion postings make connections to previous or current content or to real-life situations.* The majority of ratings in this category demand an evaluation of the content of the post prior to making an assessment. For example, some rubrics define connections or links as logical, clear, vague, or limited. These terms depend on a more subjective interpretation of the post.

5.2.13. Ratings' category: Time, initiative, and prompting

The ratings' category of *Time, initiative, and prompting* includes 24 ratings (2.89%) that assess the *timing, promptness*, and *initiative* of learners' responses. 1.08% rates the timeliness of contributions, such as this rating in rubric 40: *are usually, but not always, made in a timely fashion. Another* 1.81% assesses learners on the initiative they show in participating in the discussion, such as this rating in rubric 2: *demonstrates good self-initiative.* Some ratings assess the learner as needing prompting to contribute, such as this rating in rubric 2: *requires occasional prompting to post.* Contributions are rated for their regularity; timeliness; and frequency; their self-initiative; and the degree of prompting required. While the ratings do not define terms (i.e. regular or timely), evaluators might make inferences based on their knowledge of the course timetable, deadlines, and due dates.

5.2.14. Ratings' category: Opinions and insights

The ratings' category of *Opinions and insights* contains 23 ratings (2.77%) that assess qualities of the *opinions and insights* found in student work. 1.57% assess the learner on qualities of the opinions or insights identified in the post, while 1.20% assess the learner's ability to identify *opinions* and/or ideas. All of these ratings require that the evaluator make careful note of the content of the post and make inferences about the learner's behavior based on the assessment levels found in the ratings. Ratings look for indicators of connection to topic, such as this rating in rubric 2: *unclear connection to topic evidenced in minimal*

expression of opinions or ideas. Other ratings assess clarity and conciseness, as in this rating from rubric 16: *expresses opinions and ideas in a clear and concise manner with obvious connection to topic; well-planned.* This rating, in rubric 45, rates the depth of the contribution: *no depth of presentation, no research base, opinion only*, as does this rating in rubric 67: *depth of insight into theoretical issues*. Definitions of these attributes, though not provided with the rubric, may be available to assist the evaluator in making rating decisions.

5.2.15. Ratings' category: Original, creative, novel, and new

All of the ratings in the category of *Original, creative, novel, and new* (2.65%) rate the learner on contributing *new* ideas, approaches, or insights. These ratings assess the post for evidence of originality, creativity, or novelty, making assessments about the clarity, support for, or depth of offerings. Most ratings do not define the requirements for an assessment of *creative* or *original*, assuming that one will be able to make inferences based on a reading of the post. This rating in rubric 69: *presents creative approaches to topic* and this rating in rubric 27: *postings are characterized by originality and relevance to the topic* requires that the evaluator make judgments about the content of the post. One rating (0.12%) alludes to the importance of social presence: *the comment presents little or no new information. However, one point comments may provide important social presence and contribute to a collegial atmosphere.*

5.2.16. Ratings' category: Hour, day, minute, date, deadline, and late

The ratings' category of *Hour, day, minute, date, deadline, and late* includes 21 ratings (2.53%) that assess the students' initiative in conforming to *deadlines* and due *dates*. 13 ratings (1.56%) assess the learner's adherence to *deadlines*, while 0.97% assesses the learners on the regularity or frequency of their postings. Most of the ratings in this category assess the timing and/or delivery of posts rather than the content, as in this example from rubric 2: *consistently responds to postings in less than 24 hours*, or this rating in rubric 19: *did not submit the assignment or submitted it late*. This rating, in rubric 56, makes the point that the timing of posts is important: *all required postings, most at the last minute without allowing for response time.*

5.2.17. Ratings' category: Interaction

The ratings' category of *Interaction* includes 21 ratings (2.53%) that assess students' *interactions* with others in the online discussions. Some rubrics assess learners on their initiative in *interactions* (1.09%); the frequency of their *interactions* (1.08%); and their attempts to encourage or facilitate *interaction* (0.36%). Initiative is assessed by ratings such as this one, in rubric 2: *interacts* freely; while this rating, in rubric 35, assesses the learner's attempt to facilitate interaction: *encourages and facilitates interaction among members of the online community.* Other rubrics assess frequency of interaction by ratings such as this one: *interacts* twice per week (rubric 38). Assessment of references to the

comments of others are accomplished by ratings such as this one: *interaction is best described as "good idea ..." and of little substance to continue discussion* (rubric 27). Most of the ratings in this category rate in a quantitative fashion, such as this example from rubric 38: *interacts once a week.* However, this rating, in rubric 35: *encourages and facilitates interaction among members of the online community* clearly requires an examination of the content of the post to determine if the post meets the requirements of the rating.

5.2.18. Ratings' category: Relevance and relationship

The ratings' category of *Relevance and relationship* contains 21 ratings (2.53%) that assess the *relevance* or *relationship* of posts to the discussion. Rubrics rate students' contributions as consistently, frequently, or somewhat *related* to or *relevant* to the discussion topic, content, or chapter discussed.

Ratings in this category clearly assess the content of the post, as in this rating in rubric 2: *consistently posts topics related to discussion topic.* This rating, in rubric 54, provides much the same assessment, but provides a more comprehensive assessment: *although the text is relevant, this is not clearly indicated, so the reader must guess how the text relates to the main topic.* This rating, in rubric 16, provides an assessment and a brief explanation for the assessment: *posts topics which do not relate to the assigned chapter; makes short or irrelevant remarks.*

5.2.19. Ratings' subcategory: Application, explanation, and interpretation

The ratings' category of *Application, explanation and interpretation* includes 20 ratings (2.41%) that assess the students' ability to *apply, explain,* and *interpret* information or evidence. Rubrics rate learners on their ability to provide new *applications* of the topic (0.96%); their ability to describe and *explain* (0.96%); and their ability to *interpret* material (0.49%). These ratings require the evaluator to read the content of the post to determine if the post meets the requirements of the rating. This rating, in rubric 34, reviews the content for evidence of the learner's ability to *apply* information: *the learner is able to provide additional resources or applications of the discussion topic.* This rating, in rubric 66, reviews the content for evidence of the learner's ability to *explain*: *the main points and new technical terms are clearly described and/or explained so the reader is left with no ambiguity about what was written.* Other ratings, including this one in rubric 66, assess the learner's ability to *interpret* information: *although the gist of the information is correct, there are problems with the interpretation of it. A reader can be misled by the text.*

5.2.20. Ratings' category: Mechanics, organization, structure, and expression

The category of *Mechanics, organization, structure, and expression* includes 18 ratings that assess different levels of performance associated with the *structure* and/or *organization (0.96%); organization* and/or *expression (0.96%);* and *mechanics (0.25%)* of posts. Together these ratings represent

2.17%. Ratings in this category examine the posts for adherence to mechanical aspects of writing such as organization and structure. One rating in rubric 29 assesses the post as having *poor sentence structure inadequate organization.* Another rating, in rubric 53, assesses the post as containing *severe errors in organization, correctness and/or expression.* This rating, in rubric 1, assesses the post as having mechanical errors: *posts are not badly written, but may include a number of mechanical errors.* No ratings in this category examine the content of the post in terms of the discussion topic.

5.2.21. Ratings' category: Language, sentence, paragraph, word, and vocabulary

The category of *Language, sentence, paragraph, word, and vocabulary* focuses on assessing performances associated with the use of *language* and *vocabulary,* including *word* usage and the use of *sentences* and *paragraphs* (1.32%). Another 0.61% assess sentences on clearness, ambiguity, effectiveness, or coherence, including this rating in rubric 50: *complete sentences, but argument isn't coherent. 0.*12% rate the learner as using *language* that impedes the message or meaning, including this rating in rubric 70: *the learner usually expressed themselves clearly. At times the language impeded the meaning of their message.* This rating, in rubric 12, examines the post for evidence of correct sentence and language use: *sentences are clear and wording is unam*biguous. Together, these ratings represent 2.05% of total ratings. Ratings in this category include those that examine the posts for

mechanical aspects of writing, such as use of sentences and paragraphs and those that examine language use. None of the ratings examine the content of the post in relation to the discussion topic.

5.2.22. Ratings' category: Number

The ratings' category of *Number* includes 17 ratings (2.05%) that assess the *number* of posts. Rubrics assess learners on the *number* of posts (1.45%); for meeting the required *number* of postings (0.48%); and on the word-count of posts (0.12%). Assessments of learners' posts are quantitative, perhaps assessed against a pre-set standard number of posts or to the number of messages posted by other learners. Most ratings in this category follow a format similar to this one from rubric 1: *4-5 posts spaced throughout the discussion period.* Other ratings take a slightly different format, such as this one in rubric 7: *participates with the required number of postings*; or this more complex rating in rubric 15: *2 or more postings per unit made on at least two different days, including: 1 student initiated topic AND 1 response to peer.*

5.2.23. Ratings' category: Evidence and argument

The ratings' category of *evidence* and *argument* includes 16 ratings (1.93%) that assess the quality, relevance, and organization of evidence and arguments presented. 0.96% examine the quality of *evidence* and *arguments* in terms of persuasiveness, coherence, and accuracy, including this rating in rubric

12: *ordinary, good writing. Lapses are regular and patterned, but do not undermine the communication or the persuasiveness of the argument.* 0.61% assesses the organization of the post, *evidence*, and *arguments*, as in this rating in rubric 50: *complete sentences, but argument isn't coherent.* A further 0.36% assess the relevance of the evidence and arguments presented, as in this rating in rubric 18: *argues using relevant evidence.*

5.2.24. Ratings' category: Frequently, regularly, occasionally, rarely, and sporadically

The ratings' category of *Frequently, regularly, occasionally, rarely, and sporadically* includes 16 ratings (1.93%) that assess the *regularity* (1.21%) and *frequency* (0.72%) of contributions to the discussion. Rubrics rate the learners' work as *regularly* or *frequently* posted; evenly distributed; or infrequent and sporadic. The posts in this category primarily assess the learners' contributions in a quantitative manner, such as these three ratings in rubric 50: *provides comments (i) in a regular manner; (ii) regularly; (iii) sporadically.* These ratings enable the evaluator to compare the frequency or regularity of the learner's contributions to a set standard or to the posts of the other contributors. These ratings do not evaluate content; rather, the assessment seeks to determine posting behavior.

5.2.25. Ratings' category: Ideas

The ratings' category of *Ideas* includes 16 ratings (1.93%) that assess qualities of the *ideas* found in student work. Ratings assess learners' contributions on evidence that they contain, initiate, add, introduce, offer, or combine *ideas*, such as this rating in rubric 33: *initiates ideas;* or this more substantial assessment, in rubric 33: *adds ideas; is specific and detailed. Relates to own personal experiences and to others'.* All of the ratings in this category examine the post for evidence that the learner provides substantive information that applies to the discussion topic. Some, such as this rating in rubric 62: *ideas add significantly to the groups thinking about the topic* require the evaluator to study the post in relation to the posts of others to determine if the requirements of the rating have been met.

5.2.26. Ratings' category: Examples and sources

Fourteen ratings in the sub-category of *Examples and sources* (1.68%) rate the learner on the relevance (0.84%); inclusion (0.48%), and clarity (0.36%), of *examples* and *sources* provided. One rating in rubric 66 assesses the relevance of the source: *information comes from Web sites or other sources that have no recognized authority, so the validity or strength of the source is unknown*. This rating, in rubric 8, rates the learner on the inclusion of sources: *sources generally referenced*; while this one, in rubric 8, assesses the learner on the clarity of the references: *clear referencing of well-chosen and highly relevant sources.*

5.2.27. Ratings' category: Etiquette and protocols

The ratings' category of *Etiquette* and *protocols* includes 13 ratings (1.56%) that assess learners on their adherence to *protocols* and rules of *etiquette*. Ratings assess learners on their awareness of and attention to rules of *etiquette* (0.72%); and their awareness and conformity to *protocols* (0.84%). These ratings assess learners on their behaviors rather than on the content or format of the post. A number of ratings assessed behaviors in a quantitative manner, such as these three ratings in rubric 49: *(i) 1; (ii) 2-3; (iii) 4 or more online protocol(s) not adhered to*. Other ratings, including one in rubric 27, assessed the post in a qualitative manner: *response was not applicable to the discussion or did not follow Netiquette*.

5.2.28. Ratings' category: Writing, composition, and style

The category of *Writing, composition, and style* includes 12 ratings (1.44%) that assess different levels of performance associated with *writing, composition,* and *style*. Ratings assess learners on the consistent application of *writing* standards (1.08%) and their *style* of *writing (0.36%)*. These ratings do not evaluate the content of the post in relation to the discussion, but in terms of best practices in *writing* and adherence to standards or *style* of *writing*. For example, this rating in rubric 54 assesses adherence to composition standards: *consistently applies appropriate composition standards*. Other ratings assess *writing style*, including this one in rubric 53: *several stylistic errors*.

5.2.29. Ratings' category: Weave, integrate, and incorporate

The ratings' category of *Weave, integrate, and incorporate* includes 11 ratings (1.32%) that assess the students' efforts to *weave* (0.60%), *or integrate* and *incorporate (0.*72%) materials into their postings. Most of these ratings require the evaluator to read the post and make inferences about the learner's ability to weave, such as this example from rubric 8: *skill shown in weaving contributions into general discussion, following up on contributions of others*. This rating, in rubric 70, assesses the learner's ability to incorporate new information: *issues and knowledge gained incorporated well into responses*. This rating, in rubric 23, assesses the learner on integration: *explicitly respond to your group members' postings and integrate them into your responses*.

5.2.30. Ratings' category: Quality, value, valid, and good

The ratings' category of *Quality, value, valid, and good* includes 10 ratings (1.20%) that assess the *quality* or *value* of students' contributions. Assessments of *Quality* include ratings of outstanding, above average, high, or poor. 0.48% assesses the learner's ability to make good contributions while *0.*72% relates to the identification of relevant elements and description of the subject matter, rated in terms of *quality*. One might deduce these assessments of quality through a reading of the text, or by comparing the text to a list of task exemplars. Two ratings in rubric 8 assess quality: *made a few (i) good; (ii) valid contributions;* and

another in rubric 24 rates the post in relation to a list of qualities: *the comment lacks at least one of the above qualities, but is above average in quality.*

5.2.31. Ratings' category: Feedback

Nine ratings in the category of *Feedback* assess the students' attempts to provide *feedback* to other members of the discussion. 0.96% of ratings assess learners on their ability to provide *feedback* that is specific, detailed, meaningful, relevant, or encouraging, as does this rating in rubric 33: *Is specific and detailed in feedback given.* Others, including this rating in rubric 45, assess the learner's ability to provide *feedback: provided relevant responses and constructive feedback to the student posting.* One rating (0.12%) assessed the learner's ability to give and receive *feedback: graciously offers and receives feedback (*rubric 54*).* Together these ratings represent 1.08%. While many of these ratings consider the giving and receiving of feedback a behavior that can be assessed from a reading of the text, most require the making of inferences, such as in this example from rubric 54: *graciously offers and receives feedback.*

5.2.32. Ratings' category: Read and reading

The category of *Read and reading* includes nine ratings (1.08%) that assess the students' *reading* habits. Ratings assess students on the frequency of their *reading* of the discussion (0.48%) and on the completion of required *readings* (0.36%). Another 0.24% rates student work in terms of its being

interesting or easy to *read*. Almost one half of the ratings in this category assess *read* and *reading* in a qualitative manner, i.e. the number of times the learner has read the discussion. We found two examples of this type of assessment in rubric 8: *read (i) 2-3; (ii) 3 times / week or more.* This criterion, in rubric 25, assesses the learner's completion of reading assignments: *posts and replies show evidence of student's having read and thought carefully about all parts of the assignment.*

5.2.33. Ratings' category: Clarification, clarify, and clear

The category of C*larification, clarify,* and *clear* includes seven ratings that assess learners on the *clearness* and *clarity* of the discussion (0.84%) and one rating that looks for evidence of learners asking for *clarification* (0.12%). Together these ratings represent 0.96% of total ratings. All of the ratings in this category look for evidence that others can easily read and understand the message. This rating, in rubric 54, assesses the clarity of the post: *message lacks clarity and relevance*; and this rating, in rubric 7, assesses how well the post reflects the assignment: *posting is attached to the right discussion board, but does not clearly reflect the assignment.* This rating, also in rubric 54, assesses the learner on the behavior of asking for *clarification*: *seeks clarification.*

5.2.34. Ratings' category: Contribute and post

The ratings' category of *Contribute and post* includes eight ratings (0.96%) that assess the students' *posts*, or *contributions*, to the discussion. Ratings assess the students on evidence of their *posting* the minimum requirement or making an initial *post* (0.72%) and for the quality of their *contributions* and/or efforts to summarize (0.24%). While most of the ratings in this category count contributions to the discussion in some manner, such as these two ratings in rubric 16: (i) *does not post;* (ii) *posts minimum requirement*; one rating assesses the learner for attempts to summarize the posts of others: *rehash or summarize other postings* (rubric 56).

5.2.35. Ratings' category: Respect, offensive, and abusive

The ratings' category of *Respect, offensive, and abusive* includes eight ratings (0.96%) that assess students' behavior towards others. Ratings assess learners on their ability to respond *respectfully* to other students' postings or to be *respectful* of other's ideas, opinions, and feelings; and to adhere to standards of *respect*, confidentiality, and professionalism. All of the ratings in this category require that the evaluator read the post and make inferences about the behavior of the learner, including this rating in rubric 20: *the participant was rude or abusive to other course participants*. These two ratings in rubric 36 assess the degree of respect offered by the learner: (i) *Participates in the class in accordance with best practices for learning. Postings generally are respectful of others' ideas, opinions and feelings*; and (ii) *Does not comply with established*

group best practices for learning. Postings do not adhere to the ground rules of respect, confidentiality, and professionalism.

5.2.36. Ratings' category: Concepts

The ratings' category of *Concepts* includes seven ratings (0.84%) that assess the students' understanding of *concepts*. Ratings assess learners as having a general, adequate, excellent, or poor grasp of *concepts* or an understanding of most *concepts*. Ratings examine the content of the post to look for evidence that the learners understand concepts, as in this rating in rubric 69: *demonstrates excellent grasp of key concepts;* this one, in rubric 62: *content reveals a general grasp of the theoretical concepts*; or this one, in rubric 69: *shows understanding of only minority of concepts*.

5.2.37. Ratings' category: Resources

The ratings' category of *resources* includes seven ratings (0.84%) that assess the students' use of *resources*. Learners are rated on evidence of sharing of *resources* (*shares resources and experiences*, rubric 54); on providing examples of *resources (consistently offers clear, elaborate descriptions of relevant resources and experiences appropriate for the reader and the context, rubric 54);* and on providing relevant *resources* (*shares relevant resources and experiences*, rubric 54), Together, the ratings in this category represent just

0.84%. Ratings in this category assess learners for engaging in behaviors or activities that contribute to the learning environment.

5.2.38. Ratings' category: Collaboration, community, and team-building

The six ratings (0.72%) included in the category of *Collaboration, community, and team-building* includes ratings that assess learners on their ability to *collaborate*; to use *team-building* strategies; and on their awareness of the needs of the *community*. These ratings assess learners on their behaviors rather than on the knowledge of the topic or rules of procedure. This rating, in rubric 54, is more descriptive than any of the other ratings in this category, giving the learner both an assessment and an example of what is expected: *effectively employs stress-reducing (e.g., humor) and team-building strategies.* This rating, in rubric 2, is relatively non-descriptive: *aware of needs of community;* as is this rating in rubric 67: *shows little evidence of collaborative learning.*

5.2.39. Ratings' category: Miscellaneous

The ratings in the category of *Miscellaneous* include 29 ratings (3.49%) that cover a range of activities and behaviors. These ratings are included here because there are too few to warrant individual categories. Five ratings (0.60%) reference CMC use, including this rating in rubric 54: *Does not develop facility with the medium nor attend to acceptable standards of communication.* 0.60% of ratings rate learners on their ability to present alternative viewpoints or

perspectives. Two examples are found in rubric 69: *offers an occasional divergent viewpoint;* and in rubric 70: *able to set goals and develop strategies to achieve their learning goals.* Another 0.24% of ratings assess learners on elements of social presence, such as this rating in rubric 67: *evidence of support and encouragement is exchanged between students.* The remainder of the ratings in this category assesses elements related to grading and presentation, such as these ratings in rubrics 19 and 51: *major lapses in many rubric areas*; and *the document can be easily followed.* Ratings in this category assess learners qualitatively or quantitatively, some rating on behaviors, and others on content or form.

5.2.40. Ratings' category: Vague

The three ratings (0.36) assigned to this category were removed from other categories because they did not provide enough description to allow us to interpret the intent of the rating. The ratings are, in rubric 38: *developing*; in rubric 64: *a poor response does not meet any of the above criteria*; and in rubric 68: *well developed.*

5.3. Summary

We organized the 153 performance criteria identified in the rubrics into categories based on keyword analysis, then amalgamated them into 18 criteria categories, each describing similar types of performances or tasks. Over 12% of

total criteria were assigned to *Other* because their numbers were too few to warrant the creation of separate categories. Another 7.84% were subsequently removed from their categories and placed in a nineteenth category, *Vague*, because they were too vague or did not provide sufficient information. Of the remaining categories, one accounts for almost 10% of total criteria; six categories represent between 5% and 7%; six categories represent 3% to 5%; and four categories represent less than 3% of criteria. Assessments of the majority of criteria, those that describe behaviors or attributes (53.59%), must be accomplished by reading the content of the posts and inferring their meaning. The remaining categories primarily describe aspects of form, mechanics, or delivery.

The 831 ratings identified in the rubrics were organized into categories based on keyword analysis, then amalgamated into 39 ratings' categories, each rating similar types of performances or tasks, with the exception of the *Miscellaneous* category, which contained ratings that were too few in number to warrant additional categories. Another 0.36% were subsequently removed from their categories and placed in a fortieth category, *Vague*, because they were too vague or did not provide sufficient information.

Six ratings' categories each account for more than 4% of total ratings; six represent between 3.0% and 4.0% of ratings; 10 represent between 2.0% and 3.0% of ratings; 10 represent 1.0% to 2.0%; six represent less than 1.0%; and the categories of miscellaneous and vague contain 3.49% and 0.36%

respectively. The majority of the ratings' categories (69.90%) rate behaviors or attributes that must be assessed by reading the content of the posts and making inferences about meaning. The remaining categories primarily assess aspects of form, mechanics, or delivery.

CHAPTER 6

DISCUSSION OF THE FINDINGS

6.0. Introduction

The discussion of the findings relates to objectives three and four, which were to categorize the range and type of criteria and ratings and compare the categories used in the rubrics with those emphasized in the literature on transcript analysis of online discussions. The previous chapter presented the 153 performance criteria and 831 ratings grouped into categories based on keywords. The grouping generated a total of 19 performance categories and 40 ratings' categories. We subsequently analysed these categories for patterns to identify themes or core categories (Miles & Huberman, 1994; Strauss & Corbin, 1990). Core categories "*pull a lot of material together*, permitting analysis" (p. 57) and are built by relating categories to uncover themes present in the data (Strauss and Corbin, 1990). As a result of this analysis, we derived four core categories as follows (i) Cognitive (44.0%); (ii) Mechanical (19.0%); (iii) Procedural/Managerial (18.29%); and (iv) Interactive (17.17%). Another 1.52% of ratings and performance criteria were coded as vague and not assigned to any core category.

This chapter presents each of these core categories beginning with the cognitive, because it includes the largest number of performance and ratings' categories. For each of the four categories, we provide an overview of the foci or preoccupations evidenced within each category. We then compared these foci

with the literature on online discussions. A series of tables listing the categories of performance criteria and ratings assigned to each core category, ordered by percent of category, are located in Appendices K through N. The concluding section discusses the implications and limitations of the study and directions for future research.

6.1.0. Cognitive

We assigned over 40% of the performance criteria and ratings in the rubrics to the cognitive core category. This core category reflects a preoccupation with learners' thinking, with an emphasis on (i) critical thinking, (ii) problem solving and argumentation, (iii) knowledge construction; (iv) creative thinking, and (v) course content and readings. It is concerned with ensuring that learners are not only providing information, but are engaging in higher-level thinking skills such as analyzing, interpreting or critically reflecting on the information presented in the forum. Criteria in this core category also emphasize the learner's ability to show evidence of deep understanding and thinking as opposed to superficial understanding.

Some of the performance criteria and ratings' categories included in this core category include those that assess the learners on their ability to analyze, apply, evaluate, and explain. Others include those that assess the learner's ability to use thinking, reflection, and reasoning skills; to make links or connections; or to offer and defend ideas, opinions, and insights. Others assess

the learners on their ability to give and receive feedback; and to weave, integrate, and incorporate the work of others. A listing of the ratings and performance criteria categories included in this core category are located in Appendix I.

6.1.1. *Critical thinking*

McPeck (1981) found that critical thinking, "is a necessary condition for education" (p. 34). One of the challenges facing designers and instructors of OADs "is the creation of a critical community of inquiry—the hallmark of higher education" (Garrison et al., 2004, p. 1). One of the outcomes of critical thinking is "the acquisition of deep and meaningful understanding as well as content-specific critical inquiry abilities, skills, and dispositions" (Garrison et al., 2004, p. 2).

Garrison et al. (2000) refer to CMC as a way to create and maintain cognitive presence and to engage participants in critical thinking, while Oliver (2001) theorizes that critical thinking skills are necessary to the ability to use electronic information meaningfully. If critical thinking is a necessary condition for education, and necessary to our ability to use electronic information then it is not surprising that rubrics might include performance criteria related to it.

The ratings that focus on critical thinking skills include analysis, critical thinking, interpretation, evaluation, application (e.g. to real life, to teaching, or to personal experiences), generalization, theorizing and synthesis. Some ratings stress the importance of considered thought and evaluation rather than the expression of unsupported opinions and feelings, while others stress the value of providing analysis and interpretation rather than simply reciting information.

Some ratings assess the learner's ability to use inductive and deductive reasoning while other ratings highlight the value of questioning in critical inquiry or critical thinking. Still others look for evidence of depth, consistency, accuracy, and thoroughness. There are not always indicators given as to what might constitute evidence of critical thinking. However, it is possible that the requirements for this type of thinking were made available to learners through other means and not through the rubric.

The most common behaviors and skills assessed by the rubrics in this core category are those that assess the learner's ability to think critically or reflectively about the problem or issue; to engage in questioning, analysis, and evaluation; to understand materials; to present information in such as way that it can be understood by others; and to contribute information, ideas, and insights to the group. We found ample evidence of ratings that assess the learner's ability to explore topics or concerns, share insights and opinions, and contribute relevant information. These ratings assess learners' understanding of the problem or dilemma and their ability to explore, reflect, and discuss relevant information (see also Garrison et al., 2004).

We found ratings that assess learners' attempts to integrate or synthesize concepts, ideas, and information, to build upon the ideas of others; and to share resources and reflections. Methods of assisting learners in their movement to more advanced stages of cognitive development might be to use ratings that

assess learners on these indicators of integration and to encourage both reflection and discussion.

We found few performance criteria or ratings that assessed learners' ability to suggest new applications of an idea or to apply solutions, and none that assessed learners' ability to apply or test hypotheses. However, more active teaching strategies, such as requiring and crediting group work and problem-solving; promoting interactive discussion; and fostering critique and divergence may well lead to the group collaboratively testing and applying solutions and hypotheses. Ratings are used to assess indicators of resolution (i.e. participation in problem-solving activities; offering ideas, opinions, and reflections to the group; the application of solutions; and the use of critical and creative thinking skills (i.e. original, reflective, and critical thought).

We found few ratings that assess learners on presenting triggering events (i.e. offering problems, issues, or dilemmas to be solved). However, Garrison et al. (2004) found that triggering events are likely framed by the teacher in an educational setting while Murphy (2004) found that problems can be triggered by any member of the group, intentionally or not.

6.1.2. *Problem solving and argumentation*

Argumentation is essential to the intellectual ability involved in problem solving (Kuhn, 1991), and requires one to develop and support solutions (Voss, Wolfe, Lawrence, & Engle, 1991). Hong, Jonassen and McGee (2003) found that

the ability to argue affects one's ability to solve problems, while Cho and Jonassen (2002, p. 20) found that "argumentation can be supported effectively by online argumentation scaffolds and that the production of better arguments directly affects the problem-solving activities that students use". Thus, we see the importance of rating and supporting argumentation and problem-solving skills in the rubrics.

The learners' abilities to problem-solve may be aided by ratings that assess them on their ability to reflect upon or judge their own contributions. Campos (2004) found that negations and disjunctions are more beneficial to the process of knowledge construction in an online discussion because they indicate cognitive conflict, which may lead to hypothesizing. Encouraging debate and challenges to the ideas of others might also aid in this process.

Some of the ratings identified thinking skills related to problem-solving, such as the ability to competently analyze problems, a necessary step toward resolution. Ratings that reference earlier contributions reflect the importance of working together to solve problems, as do ratings that look for connections between the problem and personal experiences or beliefs and research concepts or practices. We found ratings that assess learners on their ability to share reflections about the problem under discussion; ratings that also emphasize the collaborative nature of problem-solving. Other ratings assess learners' ability to generalize, theorize, and synthesize information, which can lead to increased collaboration and sharing of ideas, information, and hypotheses.

In relation to criteria and ratings that describe and assess the learner's ability to problem-solve, we were guided by Jonassen and Kwon's (2001) research into the effects of computer conferencing on small group problem-solving. We identified a number of ratings in this core category that assess learners' ability to analyze and critique the problem and to reflect upon and evaluate group processes related to problem-solving. The notion of justification, explanation, and supporting claims with evidence is also emphasized in the rubrics.

We found criteria in the rubrics that focus learners' attention on the need to go beyond simply presenting opinion, feeling, or impressions. These criteria move into a realm of argumentation and encourage learners to add strength and authority to their arguments by rating the relevancy, persuasiveness, and coherence of the evidence or arguments presented. Argumentation is encouraged by ratings that assess the learners' abilities to offer examples that support or challenge the ideas of others or that support one's own ideas, insights, or positions.

Few ratings specifically rated the learner on evidence of debate, agreement, or friction. However, we located a number of ratings that rate learners on their ability to present viewpoints, perspectives, and possibilities; and to strategize, compare, or contrast. According to Brookfield (1987), it is the consideration of different perspectives that leads to a resolution of a triggering event. Therefore, the rating of learners' ability to present viewpoints or

perspectives may provide an early indication that learners are working toward resolution. The ability to identify alternative perspectives is, according to Hong et al. (2003) one of the elements that comprise argumentation, and thus one of the variables that predict learners' performance in problem-solving.

Assertion or "maintaining and defending ideas" (Pena-Shaff & Nichols, 2004, p. 254) was poorly represented in the rubrics. One method of rating this behavior is to rate learners on replying to messages that challenge their ideas. While several ratings assessed learners on referring to the comments of others, we found no ratings that specifically evaluated the learners' responses to challenges of their ideas. If cognitive development "requires that individuals encounter others who contradict their own intuitively derived ideas and notions and thereby create cognitive conflicts" (Anderson et al., 2001, p. 7) and part of the instructor's role is to facilitate discourse, then ratings like these may indicate to the learners that debate and conflict are integral to the problem-solving process.

We located ratings that assess the learner's ability to offer applications, options, or solutions to the group. These ratings may help guide the learners toward solution development; as may those ratings that look for evidence of the sharing of perspectives or the proposal of alternative solutions. Other ratings were located that assess the learner's ability to summarize and make connections between information offered to the group. These types of ratings point to the importance of the instructor's role as a facilitator. Learners should be

encouraged to move from a sharing and comparing mode to a more integrative role where they synthesize information and offer solutions and hypotheses to the group.

6.1.3. *Knowledge construction*

Pea (1993) allows that knowledge construction takes place through a process of discussion and social exchanges where participants can offer and entertain different perspectives. Koschmann, Kelson, Feltovich, and Barrows (1996) maintain that this process can be more powerful where the discussion depends on the written word, as it does in an OAD. Kanuka and Anderson (1998) theorized that "we construct knowledge in online learning environments through social interchange and a discord discussion" (p. 11).

Ratings encourage the construction of new knowledge by looking for evidence that the learners help identify, clarify, interpret, or synthesize other group members' ideas; reflect on the group's efforts; and relate material to their own and others' experiences. Some ratings encourage learners to comment on each other's work, which may lead to meaningful discussions about the relevancy or appropriateness of ideas, problems, and solutions, and lead to the construction of new knowledge. Other ratings encourage learners to introduce new or divergent interpretations of existing ideas or concepts, which may also lead to increased discussion and the construction of new knowledge. Still other

ratings encourage learners to offer opinions, insights, and ideas that may prompt further discussion, or to question and debate comments made by their peers.

We also located a number of ratings that assessed the learner's ability to apply, explain, and interpret information; to use inferences; provide conclusions; and suggest solutions. These ratings may assist the learner in discovering and exploring "dissonance or inconsistency among the ideas, concepts, or statements" presented in the forum (Gunawardena et al., 1997, p. 142). Ratings that encourage discussion and exchange of ideas, observations, and insights may aid in creating more effective learning and assist in building a community of inquiry.

We uncovered little evidence from an examination of the ratings that they evaluate learners on the co-construction of new knowledge, or "the assignment of meaning to phenomena for which the group does not yet have a common understanding" (Gunawardena et al., 1997, p. 143). We found few examples of ratings that looked for evidence of conflict or negotiation. However, conflict and negotiation are important elements in the construction of new knowledge through group negotiation because it is through these activities that learners "engage in a meaning making or knowledge construction process" (Pena-Shaff & Nichols, 2004, p. 245).

6.1.4. *Creative thinking*

The development of creative (or innovative) thinking skills may encourage learners to produce useful, novel, and high-quality work (Muirhead, 2007). Promoting creativity may lead to the development of a strong work ethic, self-motivation, persistence, imagination, and "a receptive mental outlook for considering novel concepts or ideas" (Muirhead, 2007, p. 2). Newman et al. (1995) found that face-to-face learning facilitated thinking that is more creative while OADs facilitated thinking that is more critical. Csikszentmihalyi (1996) suggested that creativity could be stimulated in an online environment by introducing more playful, interactive activities. Creative or innovative thinking "is the kind of thinking that leads to new insights, novel approaches, fresh perspectives, whole new ways of understanding and conceiving of things" (Facione, 2006, p. 11).

Ratings encourage learners to develop their creative thinking skills by prompting them to express their ideas and perspectives; to be imaginative, reflective, and self-directed; and by questioning and clarifying their statements. Other ratings assess work in terms of novelty or originality; encourage students to formulate and propose new ideas, opinions, insights, perspectives, and possibilities; and assess the learner's ability to provide new applications of a topic. Ratings that assess the learner's ability to generate new ideas and accept change, welcome novelty, and entertain new ideas and approaches are looking for indications of creative thinking.

6.1.5. *Course content and readings*

We also include in this core category criteria that focus on content. These types of criteria suggest that instructors are using ratings to assess the learner's ability and progress with specific course materials and topics. OADs may encourage reflection on course materials (Collins & Berge, 1996), and may assist learners in sharing their perspectives on the course materials and content (Sengupta, 2001). Assessment of the learner's contributions encourage them to relate their contributions to the topic under discussion; to make connections between content and personal experiences, prior learning, and related texts; and to provide sufficient information to validate their contributions.

Ratings that attempt to focus the learner's attention on specific issues; that include details on how performances can be improved; that regulate the amount of content covered; and that model behaviors such as summarizing and weaving may assist learners in progressing "beyond information sharing to knowledge construction and especially application and integration" (Anderson et al., 2001).

6.2. Mechanical

Anderson (2004) discusses the necessity of checking language, typing, and spelling in OADs and notes that: "the imposition of a requirement to adhere to particular protocols or standards is a hotly contested question among elearning teachers" (p. 284). Nonetheless, Anderson observes that "requiring [a] high standard of written communication helps students learn to communicate

effectively in the online learning academic context" (p. 284). He comments that he himself is "much more tolerant of language informalities in postings" (p. 285). Rohfeld and Heimstra (1995) claimed that their policy of overlooking mistakes in composition, spelling, and grammar would encourage timely and less self-conscious responses and give "a stronger voice to the reflective student who found face-to-face communication too fast and who now had time to compose a thoughtful contribution" (p. 11). Given the dearth of studies that assess these mechanical functions of writing, it is interesting to note that as much as 19% of total performance criteria and ratings were assigned to this category.

The core category of Mechanical focuses on the assessment of language use; grammar and spelling; organization; writing style; and the use of citations and references. Most of the performance criteria and ratings' categories included in this core category include those that assess learners on vocabulary and word usage; the organization of sentences, paragraphs, and messages; and correct spelling and grammar. The remaining ratings and performance criteria (less than 25% of the category) assess learners on the quality, clarity, appropriateness, and quantity of citations and references. A complete listing of the ratings and performance criteria categories included in this core category are located in Appendix J.

The ratings that focus on mechanical aspects of writing and the use of language may serve to stress the importance of clarity through the use of correct spelling, grammar, language, and structure. Those ratings that assess the

learner on the use of language that is clear, creative, interesting, and appropriate may also aid in clarification; as might those ratings that assess the accuracy, ambiguity, effectiveness, or coherence of sentences and paragraphs.

Ratings that stress the importance of clarity when offering information, concepts, ideas, opinions or insights may make it easier for other learners to understand the learner's position. Ratings that stress the value of a writing style that is clear, unambiguous, and accurate may help to avoid confusion and misinterpretation. Ratings that stress clarity may also benefit other learners by allowing them to concentrate on the message rather than spend their time trying to decipher unclear messages.

A second, smaller group of ratings in this category checks for the inclusion, accuracy, and format of citations and references, which indicate a preoccupation with ensuring that learners clearly present their information. Those ratings that assess the appropriateness of citations and examples may help to ensure that learners find and reference sources appropriate to post-secondary study. A number of ratings emphasize the importance of providing citations and references that clearly relate to the topic discussed. Ratings that stress the importance of providing a bibliography in the correct format attempt to ensure that other participants will be able to access referenced works.

6.3.0. Procedural/Managerial

Criteria and ratings in this core category account for over 18% of the total, and are concerned with (i) management of the discussion; (ii) conduct; and (iii) quantitative measures of the discussion. The majority of the ratings are concerned with managing participation, followed by ratings that assess participation in terms of number or length of posts. The remainder of the ratings rate aspects of the learner's conduct.

Some of the performance criteria and ratings' categories in this core category include those that assess the number, timing, and frequency of posts; adherence to deadlines and time-lines; posting patterns; and conduct and behavior. Additional ratings and performance criteria categories included in this core category are listed in Appendix K.

6.3.1. *Management*

Ratings that look for evidence that learners contribute to the discussion regularly; show initiative in starting and responding to threads; and adhere to attendance, evaluation, posting, and reading guidelines assist in the management of the discussion. The majority of ratings in this category try to encourage regular contributions to the discussion by assessing the frequency and distribution of posts. While the time-independent nature of asynchronous discussion may facilitate participation and critical thinking (Bullen, 1998), these ratings help learners realize that posts and replies must be made in time for others to read and respond. Participation levels can indicate persistence. If the

students pursue a conversation through multiple levels, even if they diverge from the initial topic, their persistence may show that they are engaged in the topic, discussion, or forum.

Some ratings may encourage discussion by assessing learners' initiative in starting and responding to threads; the regularity of their contributions to the discussion; and their reading of the posts of others. Other ratings help keep learners on track and involved in the discussion by assessing their adherence to posted guidelines that specify attendance requirements, evaluation standards, and posting requirements (i.e. length, number, frequency, and distribution of posts). Ratings that assess learners' adherence to deadlines and periods for posting may counter some learners' tendencies to post only enough to satisfy requirements, and may aid in the establishment of an interactive dialogue. Assessing adherence to deadlines may also have an effect on the timing of posts, which may support the formation of dialogue.

Requiring participation does not always result in increased participation, with some learners posting solely to get participation marks or to satisfy course requirements (Bullen, 1998; Hara et al., 2000; Murphy & Coleman, 2004). Hara et al. (2000) found that "there clearly is a pressing need to develop pedagogy that motivates students to electronically participate in class discussions beyond standard course requirements" (p. 141).

A number of ratings in our study assessed the frequency of learners' postings and/or their adherence to deadlines. Dennen (2005) found that

"deadlines had a clear effect on when students participated in discussion and, in turn, to what degree the discussion developed into an actual dialogue" (p. 139). However, some learners in the Bullen (1998) study felt that the discussion was "stunted by the combination of the deadlines and the limited time frames for the discussions because learners waited until the deadline to contribute, which then left no time for follow-up comments or responses" (p. 9).

Another study concluded that messages posted at the beginning of a discussion received more replies than those posted near the end (Pena–Shaff & Nicholls, 2004). These three studies point to the importance of using ratings that encourage learners to post regularly and in a timely fashion. Unfortunately, to many participants, specific deadlines may indirectly encourage them to post just prior to it.

6.3.2. *Quantitative*

While participation is not a direct measure of learning (Dennen, 2005), it is necessary for learners to participate in order to have a successful discussion that may lead to knowledge building. Sing and Khine (2006) theorize that "successful co-construction of knowledge requires active and broad participation. This implies that the messages posted should be substantial in terms of quantity." (p. 254).

Many rubrics assess participation in a quantitative manner by counting number or length of posts; number of posts contributed over the minimum; and

counts of reading the posts of others. Ratings that encourage a higher quantity of participation may encourage a higher quality of participation. Likewise, ratings that encourage participation by rating quantitatively may motivate learners to post and respond.

Ratings that assess the length of posts may encourage learners to reflect more deeply about the content of their posts and may promote a more in-depth analysis. Ratings that assess learners on contributing more than the required number of posts may indicate learners' engagement with the discussion (Fahy et al., 2001; Hara et al., 2000). Ratings that assess learners on their reading of the posts of others may encourage discussion of the ideas and arguments they contain.

Learners cannot realize the potential benefits of OADs if they do not participate in the conferences. Rubrics that rate quantitatively may encourage participation, which may in turn lead to a higher quality of participation. Ways of countering learners' propensities to post just enough to satisfy minimum posting requirements might include using ratings that assess learners on length of posts. We found few ratings that assessed learners on length of posts, number of sentences, or on meeting a minimum number of posts, which might indicate that the majority of instructors agree with the notion that these restrictions or requirements may inhibit discourse.

Another rationale for rating participation quantitatively may be to measure density. The more dense a network, the greater the probability that participants

are well connected with each other and that the community is well established (Fahy et al., 2001; Sing & Khine, 2006). Participation levels can indicate persistence. If the students pursue a conversation through multiple levels, even if they diverge from the initial topic, their persistence may show that they are engaged in the topic, discussion, or forum. Fahy et al. (2001) also found that learners who made fewer contributions to the conference overall tended to make their contributions early and did not persist with their contributions or show higher levels of interaction. We did locate ratings that assessed learners on the number of interactions with others, ratings that may be used to calculate density.

6.3.3. *Conduct*

Ratings in this category assess the learners on aspects on conduct, including adherence to protocols and etiquette; use of the forum; and the nature of their participation in the forum. Ratings that assess learners on their conduct toward others may be beneficial in promoting an atmosphere of trust and sharing. We identified ratings that look for evidence of respect toward others; adherence to rules of conduct; and use of the medium. Ratings that assess conduct may also serve to emphasize the collaborative nature of the online forum and the importance of respectful interactions with one's peers. Ratings that stress the behaviors expected and desired provide a behavioral blueprint for learners to follow.

A rationale for rating learners on their adherence to those rules may relate to the notion that social relationships take longer to establish in CMC settings (Hara et al., 2000). However, Beaudin (1999) found that experienced online instructors ranked *present rules of conduct* eighth out of thirteen items. Fahy (2002) concluded from his study of an instructor moderated graduate course that an "expository interaction style was used by both genders with moderation, respect, and civility" (p. 12). We found few criteria or ratings in this study that rated learners on their adherence to rules of conduct, which may be because we are examining rubrics used to evaluate moderated discussions between post-secondary learners (Fahy, 2002; Green, 1998).

6.4.0. Interaction

We assigned just over 17% of the performance criteria and ratings in the rubrics to the interactive core category. This core category reflects a preoccupation with learners' communications with others, with an emphasis on (i) interaction; and (ii) collaboration and community. The focus of the performance criteria and ratings in this core category is the promotion of interaction through group discussion, and the sharing of information, reflections, and resources. Performance criteria and ratings included in this category include those that examine responses to others and the discussion; the giving and receiving of feedback; the frequency of posts and replies; and evidence of collaboration

and/or community building. A complete listing of performance criteria and ratings' categories included in this core category are located in Appendix L.

6.4.1. *Interaction*

Dennen (2005) reminds us "while student participation is not a direct measure of learning, it is necessary in order for a discussion activity to be successful and result in learning" (p. 128). Gunawardena et al. (1997) referred to online interaction as "the process through which negotiation of meaning and co-creation of knowledge occurs in a constructivist learning environment" (p. 141). Beuchot and Bullen (2005) used six categories to define interaction: active, explicit reactive, implicit reactive, engaging interactive, and interactive. Using transcript analysis, a sentence was coded as active if it did not refer to previous messages or ideas or if it introduced a new topic. True interactive sentences directly or indirectly referenced the manner in which a previous sentence related to earlier sentences by referencing how or if it was, for example, humorous, supportive, argumentative, or informative.

Ratings promote interaction by encouraging the exchange of information and ideas. Some rubrics keep the discussion focused and interactive by using ratings that encourage learners to share their reflections, resources, and thoughts about the discussion. Other rubrics encourage interaction by using ratings that look for statements that elicit or encourage responses from others; that contribute to the discussion; and that respond to others. Interactive activities

such as finding, describing, and sharing resources with the group are encouraged through ratings. Some ratings assess the learner's ability to question others or to offer options and solutions to the group for further discussion, which can lead to a furthering or enhancement of the discussion.

Ratings that assess responses to others, acknowledgements of responses, and responses to questions or statements of others reflect the value of interacting with other members of the discussion. Johnson, Johnson and Stanne (1995) found that "group processing may increase group productivity and individual achievement" (p. 514). Rubrics promote group processing by using ratings that encourage learners to interact with each other through the sharing of ideas and opinions, questioning, and reflection.

Positive interdependence and promotive interaction (Johnson & Johnson, 1996) are indicated by participants giving and receiving input, feedback, and encouragement; by questioning, and challenging; by exchanging resources and information; and by reflecting on the group's progress. We see a number of ratings in the rubrics that look for evidence of these indicators, which may indicate that instructors are using ratings to attempt to bind the participants together into an interactive group.

Discussion questions may engender "elaborate responses from other participants" and prompt "the question posers to engage in a process of clarifying, elaborating and providing their own interpretation of the questions they had raised" (Pena-Shaff & Nichols, 2004, p. 258). We found a number of ratings

that assess the learner on posing questions or on furthering or stimulating the discussion with questions. These ratings stimulate interactive behaviors by encouraging learners to share and challenge points of view, which leads to conflict. This conflict may lead learners to work collaboratively to create new meanings (O'Malley, 1995).

Increased interaction with one's peers may indicate depth and interactivity (Hara et al., 2000, p. 140) and help to clear up confusion (LaPointe & Gunawardena, 2004). We found ratings that indicated that rubrics were assessing both depth and interactivity. Anderson et al. (2001, p. 9) commented that "a widely documented problem in computer conferencing is the difficulty of focusing and refining discussions so that conversation progresses beyond information sharing to knowledge construction". Ratings such as these aid in the knowledge construction process.

Some ratings that assess weaving look for evidence that the learner is reading and incorporating quotes from other learners or outside resources. Ratings that look for evidence of weaving and the sharing of feedback may guide learners in the collaborative development of ideas and knowledge building through interactive discussion. Ratings that look for evidence of references to external resources and sources of information may also promote interactivity by promoting the sharing of resources and information.

6.4.2. *Collaboration and community*

We collaborate to solve, create, discover, and ultimately to produce something (Schrage, 1995). Collaborative learning "prompts students to reconsider their understanding of concepts so that they can clearly explain information to others" (Biesenbach-Lucas, 2004, p. 12). Through a process of debate and sharing, learners may consider the topic or issue more deeply, thus increasing their understanding. Bruner (1984) theorizes that this collaborative interaction can lead to improved problem-solving, analytical, and evaluative skills as learners' question and debate each other's views and perspectives in the forum.

Garrison et al. (2000) identified social presence as an important "support for cognitive presence, indirectly facilitating the process of critical thinking carried on by the community of learners" (p. 89). They add that "high levels of social presence with accompanying high degrees of commitment and participation are necessary for the development of higher-order thinking skills and collaborative work" (p. 94). Interaction can become collaborative when participants develop social bonds, or what Garrison et al. (2000) refer to as "the ability of participants in a community of inquiry to project themselves socially and emotionally, as "real" people" (p. 94). They continue with the hypothesis that high levels of social presence, commitment, and participation are "necessary for the development of higher-order thinking skills and collaborative work" (p. 94).

One method of promoting collaboration is to use ratings that assess learners on the exchange of support and encouragement, their level of

involvement in the discussion, and behaviors that encourage others to respond. Ratings that assess participation in the discussion help learners to understand that the online forum is a place for discussion, not a repository for unconnected monologues. Ratings that assess learners on their ability to provide posts that encourage others to reply may prompt them to include more reflections, questions, and acknowledgement of others in their submissions.

Once we determined that the rubrics primarily focus on the assessment of skills and behaviors emphasized in the literature, we compared the criteria and ratings in the rubrics to the indicators emphasized in the literature to determine if they assessed similar qualities. In each of the categories of cognitive, interactive, and procedural/managerial, we found minor discrepancies between the indicators in the rubrics and the indicators emphasized in the literature. One discrepancy is the small numbers of criteria and ratings to assess social presence and conduct toward others. Garrison et al. (2000) refer to social presence as an important support for cognitive presence, and Garrison et al. (2004) found that assessing learners on their conduct toward others might be beneficial in promoting an atmosphere of trust and sharing. Building trust and establishing cordial relationships among participants might lead to higher levels of social presence and thus provide more support for cognitive presence. Certainly, assessing on these indicators would comply with Arter's (2000) recommendation that ratings be justifiable and with the recommendation of Jonassen et al. (2003) that rubrics focus on the important elements of a performance.

Perhaps one of the most valuable of the potential benefits associated with the use of OADs is their time and place independence (Bullen, 1998; Funaro & Montell, 1999; Harasim, 1990; Rourke et al., 2001). If this is indeed the case, is it necessary to quantitatively rate learners on participation and interaction? We believe that rating participation quantitatively and in terms of number, frequency, and length of posts benefits learners by motivating them to post and reply; to reflect on the content of their posts; and to provide more in-depth analysis in their posts. Rating quantitatively also provides information to instructors that can be used for further analysis, such as measures of density and intensity. Finally, assessment of learners' reading the posts of others may encourage discussion of the ideas and arguments they contain. None of these assessments require learners to login to the course at specific times but they do encourage them to login to the course and to participate more fully in the discussions.

We identified 19% of criteria and ratings that assessed learners on mechanical aspects of the discussion (e.g. the use of correct spelling and grammar). The research literature on online discussions suggests that the reliance in the rubrics on mechanical aspects of writing points to a need for effective rubrics to rate on the right types of criteria. Rohfeld and Heimstra (1995) write that their tolerance for mechanical errors (e.g. spelling, grammar, and composition) in learners' posts may lead to more timely, unselfconscious, and reflective posts. Arter (2000) recommended that performance criteria be clear and descriptive and ratings be justifiable. To that we must add that criteria and

ratings be used that are appropriate to the assessment. The rating of mechanical elements of the discussion may result in learners allocating more time to grammar and composition and less to deep and reflective thought.

6.5.0. Conclusions

The purpose of this study was to identify the performance criteria and ratings used in rubrics designed for the evaluation of learning in OADs in teaching and learning in post-secondary contexts and to compare these criteria and ratings to the behaviors that researchers have focused on in context of transcript analyses of online discussions. We collected and analyzed rubrics from post-secondary institutions and instructors' web sites via the internet. This process resulted in the identification of 153 performance criteria in 19 categories and 831 ratings in another 40 categories. We subsequently analysed these categories for patterns to identify four core categories as follows: (i) Cognitive (44.0%); (ii) Mechanical (19.0%); (iii) Procedural/Managerial (18.29%); and (iv) Interactive (17.17%).

From these four core categories, we provided an overview of the preoccupations or foci evidenced within each category. These foci were then discussed in relation to the literature on online discussions. This discussion uncovered a number of similarities and differences in the performances and behaviors assessed by the rubrics as compared to the foci of researchers engaged in analysis of online discussions.

We found a congruence between the literature's and the rubrics' emphasis on thinking skills. The literature largely references the importance of higher-level thinking skills such as critical thinking (Bullen, 1998), knowledge construction (Gunawardena et al., 1997), problem solving (Jonassen & Kwon, 2001), and argumentation (Campos, 2004). Over 40% of the criteria and ratings we identified in the rubrics were assigned to the cognitive core category.

One of the responsibilities of the instructor in an OAD is to guide the discussants "toward higher levels of learning through reflective participation as well as by challenging assumptions and diagnosing misconceptions" (Anderson et al., 2001, p.3). The rubrics in the cognitive core category (44.0%) show evidence of this guidance by assessing and directing learners to engage in activities that support the development of higher-level thinking skills.

One potential shortcoming we noted in the rubrics was the lack of description of skills or performances being assessed. For example, a rating such as "*Some critical/reflective thinking is evident*" (rubric 38), unless accompanied by text describing the characteristics of the critical thinking skills required, does not aid in learners' development of specific critical thinking skills, nor does it provide a roadmap for learners to follow to develop those skills.

Cognitive skills under-represented in the rubrics include the ability to apply new applications of an idea, apply solutions, or apply or test hypotheses; the ability to debate, maintain and defend ideas; and ratings that look for evidence of conflict or negotiation. Campos (2004) and Anderson et al., (2001) suggest that

debate and conflict may result in the formation of higher-level thinking skills including hypothesizing. Garrison et al. (2004) postulate that the development of higher-level cognitive activities in OADs might be a limitation of the instructional design or facilitation.

In many cases, the criteria and ratings we identified in the rubrics were not designed to assess on evidence of these higher-level cognitive abilities. This could be because the discussion was not appropriate to the development of higher-level thinking skills; because the facilitation was not designed to lead the learners toward the development of these skills; or that the skills were present in the forum and simply not assessed by the rubrics.

Research focusing on the attainment of higher-level thinking skills in OADs has highlighted skills and behaviors that will most likely lead to the development of those skills. We therefore conclude that many of the performance criteria and ratings in the rubrics are also focused on the development of higher-level thinking skills. Our findings have shown that many of the rubrics use indicators derived from or parallel to indicators focused on by researchers engaged in transcript analysis of online discussions.

However, transcript analysis usually generates a picture of cognitive development after the fact. Researchers analyze transcripts of performances and perform analyses after the instructional period has ended, often looking for patterns of group accomplishment rather than assessing the accomplishments of individuals. Rubrics are used to assess learners individually and in a formative

fashion. Therefore, rubrics may provide both immediate assessments of higher-level learning at the level of the individual and provide encouragement and direction to learners as they progress.

Mechanical skills emphasized by the rubrics include vocabulary and word usage; the organization of sentences, paragraphs, and messages; correct spelling and grammar; and the quality, clarity, appropriateness, and quantity of citations and references. 19.0% of the rubrics focus on these mechanical aspects of the discussion. Emphasizing these mechanical aspects of writing may serve to increase the clarity of writing in the forums. However, this emphasis on the mechanical may distract learners from contributing in-depth analyses or reflections as they struggle to present mechanically correct writing.

Criteria and ratings in this core category examine aspects of the discussion that researchers have not focused on in context of online discussions. Indeed, "the imposition of a requirement to adhere to particular protocols or standards is a hotly contested question among elearning teachers" (Anderson, 2004). Rohfeld and Heimstra (1995) claimed that their policy of overlooking mistakes in composition, spelling, and grammar would encourage timely and less self-conscious responses. One might also consider that excess formality in the forum might inhibit the social bonding that is one of the prerequisites in the development of higher-order thinking skills.

Emphasizing the mechanical aspects of writing may help learners to contribute posts that are well-written in terms of language use and grammar.

However, we believe that the purpose of an OAD is to provide a forum for the discussion and exchange of ideas. As such, the forum might be likened to a classroom, where learners and facilitators, often informally, discuss and reflect on course content. We believe that learners should be encouraged to post freely and informally in the forum without the instructor placing a great deal of emphasis on form and style. This may help to create a social atmosphere where learners become more comfortable with each other, which may lead to collaboration and the co-creation of knowledge.

Procedural and managerial elements of the discussion (18.29%) are managed by criteria and ratings that focus on learners' presence, contributions, and conduct in the forum. Assessing these types of activities may assist in guiding participants toward higher levels of learning by underscoring the importance of interacting and collaborating with other discussants. Requiring participants to post regularly and in a timely fashion may assist in ensuring their presence in the forum, if not their active participation.

Requiring adherence to certain standards of conduct may assist in the development of a collegial atmosphere. In order for the collaborative construction of knowledge to take place there must first be participation. Most of the criteria and ratings in this core category appear to be aimed at ensuring that participation does take place, and that participation will eventually lead to more in-depth and collaborative discussions, which may in turn lead to the development of higher-level thinking.

We did find some discrepancies between indicators of participation and conduct described in the transcript analysis literature and those described in the rubrics. Those elements of the discussion not emphasized in the rubrics include length of posts; number of sentences; minimum number of posts; and conduct. Requiring longer posts, a minimum number of posts and adherence to rules of conduct may assist in the development of a more collaborative forum where learners begin to interact with each other. As Dennen (2005) reminds us "while student participation is not a direct measure of learning, it is necessary in order for a discussion activity to be successful and result in learning" (p. 128). Ratings that assess length of posts, number of posts, and conduct may encourage interaction, which may in turn lead to increased social presence.

Criteria and ratings in the Interactive core category (17.17%) assess learners' interactions with others, particularly their ability to share reflections, insights, information, and resources with other members of the group. Interaction may become collaborative when participants begin to view each other as distinct personalities. Garrison et al. (2000) identified social presence as an important "support for cognitive presence, indirectly facilitating the process of critical thinking carried on by the community of learners" (p. 89). Therefore, criteria and ratings that emphasize these types of interactions may aid in social bonding and lead to increased cognitive activity.

We found that criteria and ratings that look for indicators of social presence were not well represented in the rubrics. This finding contrasts with a

review of the transcript analysis literature, which emphasizes the important link between social presence and the development of higher-level thinking skills. Garrison et al. (2000) hypothesize that high levels of social presence, commitment, and participation are "necessary for the development of higher-order thinking skills and collaborative work" (p. 94). That the rubrics place less emphasis on social presence than the promotion of mechanical skills is puzzling, but perhaps reflects the misconception that online learning, like the correspondence-based learning from which it grew, is primarily a static and solitary endeavor.

6.5.1. *Limitations and implications*

This study makes a number of assumptions related to the use of rubrics for evaluating learners in OADs. The first is the assumption that transcript analysis and rubrics are used for the same purpose. Rourke et al. (2001) provide a fictional account of a faculty member attempting to use transcript analysis techniques to measure her students' achievements, pointing out that transcript analysis is a technique more suited for researchers than for instructors. However, both transcript analysis and rubrics are used to evaluate learning in OADs and that is why we compare these two approaches.

A second assumption is that rubrics are tools that can be used to evaluate OADs in different academic program levels or disciplines or that have different learning objectives. The purpose of this study was to identify the performance

criteria and ratings used in rubrics designed for the evaluation of learning in OADs in post-secondary contexts. As such, we did not differentiate between rubrics used in different disciplines or program levels. Rather, we examined each to identify the performance criteria and objectives so we could compare them with the potential benefits of OADs as identified in the transcript analysis literature. The study focused only on the design of the rubrics and not on their actual use in post-secondary contexts.

A final assumption we made was that the rubrics we collected were used to evaluate learning in OADs in online learning programs only. Collected rubrics that were identified as being designed to evaluate participants in face-to-face classrooms were excluded from the study.

One of the limitations of this study is that we did not observe the rubrics in use or determine how the performance criteria and ratings were used to deliver information and assessments to learners in specific OADs. Further inquiry might determine if learners do achieve higher-level thinking skills when rubrics are used. For example, learners could be given rubrics and task exemplars at the beginning of the period of instruction. Formative assessments could be completed at specified intervals using the rubrics, and a summative assessment could be performed after the period of instruction using transcript analysis. Additional research might examine how learners use the information in the rubrics to determine if they read the assessments and attempt to follow the suggestions.

Our focus was on gaining insight into the performance criteria and ratings used for evaluation of students' participation in OADs in teaching and learning in post-secondary contexts only. Therefore, findings may not be relevant to rubrics used to evaluate other groups or in other contexts. We do not know if our findings might have been similar at the secondary level or if we would have even been able to locate rubrics at this level.

Our analysis did not take into consideration the weights and scales, scoring schemes, or the attributes used in the rubrics because we collected the rubrics to describe and compare the performance criteria and ratings to indicators developed from a review of the relevant literature. A consideration of the weights and scales and scoring schemes may have given us more insight into the importance the rubric designers attached to each criterion and its associated ratings. For example, we may have found that some designers weighted the assessment of cognitive behaviors more heavily than, for example, adherence to rules and procedures. Further research might examine the weights and scales and scoring schemes to determine if some factors are weighted more heavily than others.

We also made no distinctions between holistic and analytical rubrics because our focus was the behaviors or performances described and rated by the rubrics, not their function to assess in a formative or a summative fashion. Studies might compare the two types of rubrics in use to determine if either or both are effective in promoting and assessing skill development in OADs.

We did not interview the rubric designers as to why specific criteria and ratings were included in the rubrics. The study focused on what designers deemed important to describe and assess and did not take into consideration the rubrics' efficacy or completeness. It would be of interest to determine why the designers of the rubrics chose the criteria and ratings they did and what factors influenced their decisions. For example, why did some designers include a mix of cognitive, interactive, and procedural criteria and ratings in their rubrics? It is possible that some instructors use rubrics to attempt to guide learners from participation to interaction and then to cognitive skill development. They may rate participation more heavily at the start of the instructional period, then encourage interaction, then look for evidence of collaboration and critical thought.

Based on our findings, we suggest some implications for the design of rubrics. We found that most rubrics did assess learners on evidence of higher-level thinking skills. We found, however, that the design of rubrics might be improved by finding ways to ensure that skill descriptions are comprehensive and provide a roadmap for learners to follow to develop their skills. We found that most rubrics adequately covered the assessment of higher-level thinking skills. However, many could benefit from more thorough descriptions, examples of desired behaviors and skills, and definitions of key terms. Our findings also suggest that assessing learners' ability to apply new applications of an idea, apply solutions, or apply or test hypotheses would benefit the development of

higher-level thinking skills, as would more ratings that assess learners' ability to debate, maintain, and defend ideas.

Designing assessments to rate mechanical aspects of writing may serve to increase the clarity of writing in the forums. However, our findings suggest that more research is needed to determine if this emphasis on the mechanical contributes to or detracts from the learner's ability to contribute in-depth analyses and reflections. Ratings that assess learners on mistakes in composition, spelling, and grammar may indeed discourage timely and unselfconscious responses.

Performance criteria and ratings designed to describe and assess procedural and managerial elements of the discussion might be augmented by the inclusion of assessments of the length of posts, number of sentences, or a minimum number of posts or words. These types of assessments may assist in the development of a more collaborative forum by encouraging learners to contribute more comprehensive posts and replies, which may lead to increased interaction. Designers might also consider rating adherence to specific rules of conduct as a way of ensuring a collegial atmosphere where learners feel comfortable exchanging information with each other.

The transcript analysis literature emphasizes the important link between social presence and the development of higher-level thinking skills. Our findings suggest that many of the rubrics we examined do not assess on indicators of social presence. The inclusion of performance criteria and ratings that emphasize

interactions with others, particularly the ability to share reflections, insights, information, and resources with other members of the group may aid in social bonding and lead to increased cognitive activity.

The approach to data collection also presented a limitation. We collected only those rubrics that were available over the World Wide Web during the period of April to June 2006. We used only the internet for collection of rubrics and did not consider rubrics from other sources. We examined only rubrics written in the English language, which may also have affected our findings. Additional studies might be undertaken which collect rubrics from other sources or directly from instructors.

We found that the majority of the rubrics we examined assess learners on participation, interaction, collaborative and social behaviors, and cognitive development, the same behaviors and performances that are a focus of current research into OADs. We determined that the rubrics do look for evidence of these behaviors, but we do not know if learners assessed by those rubrics did experience an increase in, for example, cognitive development. Researchers might wish to create and use a rubric to track progress in one or more OADs, then analyze the transcripts of the discussions to try to determine if learners did achieve benefits. If benefits are found, additional research might help us to determine how to exploit the potential of the rubrics to achieve maximum benefit.

Another limitation to the approach used in this study was that we examined the criteria and ratings in isolation. Future studies might examine the

proportion of criteria and ratings found in each rubric. It may be found that some rubrics concentrate on, for example, mechanical aspects of writing in the forum, while others assess a broad spectrum of behaviors from simple participation to cognitive skill development. Other studies might look at design elements to determine the optimal mix of criteria and ratings and how they might be integrated into rubrics designed to assess post-secondary skills in OADs. Another study might try to determine if rubrics can be effective in promoting and assessing social presence, and if increased social presence, as assessed by the rubrics, leads to increased collaboration and knowledge construction.

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Appendix A
Rubric names, identification numbers, and URLs
Rubrics retrieved online April 1 – June 30, 2006

Rubric ID	URL	Rubric name
1	http://web.infoave.net/~lrashley/437discussionrubric.doc	discussion board evaluation rubric
2	http://learn.sfccnm.edu/training/discussionrubric.htm	discussion board grading rubric
7	http://www.apreso.mcg.edu/Hub/NEWHUB/PeerReview/discussionboardrubric1.htm	online discussion rubric
8	http://www.isi.salford.ac.uk/staff/fb/Workshops/UKAIS1202/slidesetc/Assignment%20and%20Discussion%20Rubric%20Example.doc	two week online discussion
12	http://history.boisestate.edu/westciv/admin/rubricdiscussion.shtml	grading rubric: discussion participation
13	http://uhaweb.hartford.edu/fcld/FCLD%20Handouts/Bb6DiscussionRubric.doc	Discussion grading rubric
15	http://www.lasalle.edu/webct/docs/DisRubric.doc	example discussion board rubric
16	http://www.clas.ufl.edu/users/glord/SLA/DB_grading.htm	LIN 4721: Discussion Board Grading Rubric
17	http://www.rio.maricopa.edu/distance_learning/critical_think_rubric.shtml	critical thinking rubric
18	http://social.chass.ncsu.edu/slatta/hi216/DiscussionRubric.htm	Online Discussion Rubric
19	http://social.chass.ncsu.edu/slatta/hi216/replyrubric.htm	Online Reply and Evaluation Rubric
20	http://www.edtech.neu.edu/blackboard/resources/managing/discussion_grading.htm	Grading Online Discussion Participation: A Sample Rubric

23	http://fllc.cas.sc.edu/TIFLE/wordpress/wp-content/peer.virtual.discussion.rubric.doc	Discussion Board Rubric
24	http://www.unt.edu/cdl/training_events/Brown_Bag/discussion_board_rubric.htm	Discussion Board Rubric
25	http://www.mcneese.edu/dl/deigrant/Documents/Rubric%20for%20Discussion%20Board%20Posts%20(30).htm	Rubric for Discussion Board Posts
27	http://www.harpercollege.edu/doit/res/docs/sample_rubric.rtf	DQ participation rubric
29	http://www.distance.uaf.edu/dls/resources/present/cc-aug-04/doc/discussion-rubric.cfm	Online Discussion Evaluation Rubric
31	http://www.adelaide.edu.au/clpd/online/assessonline/assess_tools/	rubric to assess online discussion board participation and levels of thinking
32	http://lpc1.clpccd.cc.ca.us/lpc/blackboard/discussions/discuss_rubrics.htm	no name
33	http://otel.uis.edu/techday2005/Herring.doc	Online Discussion Rubric
34	http://ois.unomaha.edu/amfarm/Courseinfo/discuss.htm	Discussion Rubric/Criteria
35	http://www.uwsp.edu/natres/rwilke/eetap/DiscussRubric_AEEPE.htm	discussion board participation rubric
36	http://www.uwstout.edu/soe/profdev/pdp/discussionrubric.html	discussion rubric
38	http://webcms.unk.edu/acad/continuing_ed/faculty/index.php?id=8933	Discussion Board Rubric Example
40	http://www.wpi.edu/Academics/ATC/Collaboratory/Idea/gradingdiscussions.html	Discussion Rubric
42	http://www.wpi.edu/Academics/ATC/Collaboratory/Idea/gradingdiscussions.html	sample rubric 1

45	http://www.jise.appstate.edu/15/V15N4P345-Abs.pdf	rubric for assessing online discussions
46	http://72.14.203.104/search?q=cache:JpzodashJaYJ:www.fdi.vt.edu/summer/2004/Content/TrackC/DBrubric.pdf+discussion+board+rubrics&hl=en&gl=ca&ct=clnk&cd=88	no name
47	http://www.cos.edu/view_page.asp?nodeid=3885&parentid=3872&moduleid=1	Online Discussion Rubric
48	http://www.albany.edu/faculty/rd1872/epsy440/db_rubric.html	Discussion Board Rubric
49	http://mason.gmu.edu/%7Endabbagh/wblg/online-protocol.html	Weekly Online Discussions Rubric
50	http://distanceeducation.dal.ca/faculty/2_discussrubric.html	Discussion Rubric
51	http://pact.gse.uci.edu/ed173online/173bbinstructions.lasso	Peer Response Rubric
52	http://pact.gse.uci.edu/ed173online/173bbinstructions.lasso	Rubric for 1st Weekly Bulletin Board Response
53	http://shulman.ucsur.pitt.edu/doc/Rubrics/DiscussionRubric.pdf	Blackboard Discussion Rubric Fall 2004 Film & Politics
54	http://arose.iweb.bsu.edu/BSUCourses/ITEDU_694/Discussion_Rubric.doc	Assessment Rubric for Asynchronous Discussions
55	http://www.tulsa.cc.ok.us/dl/faculty/bb_tips/discussion_rubric2.doc	Discussion Rubric
56	http://www.tulsa.cc.ok.us/dl/faculty/bb_tips/discussion_rubric1.doc	Discussion Board Rubric
57	http://www.tc-library.org/BestPractices.asp#discussion	Discussion Rubric
59	http://edu.georgianc.on.ca/teaching/teaching/teachbb/discusseval.htm	Evaluation rubric 1
60	http://edu.georgianc.on.ca/teaching/teaching/teachbb/discusseval.htm	Evaluation rubric 2
62	http://edu.georgianc.on.ca/teaching/teaching/teachbb/discusseval.htm	Evaluation rubric 3

63	http://members.shaw.ca/dbrear/evaluationWebCT.html	no title
64	http://www.tn.regentsdegrees.org/msn/syllabi/5203CurriculumDesign.htm	no title
66	http://www.unisa.edu.au/evaluations/Full-papers/BaronFull.doc	Rubric for Assessment of Contributions to the Online Discussion
67	http://www.regent.edu/admin/ctl/newsletter/2005/08-01-05.htm	no title
68	http://commons.ucalgary.ca/documents/ITBL_Rubrics.pdf	no title
69	http://www.gu.edu.au/ins/learningatgriffith/newsletter/pdf/issue_13.pdf	no title
70	http://designing.flexiblelearning.net.au/assessing/downloads/assessing_discussions.doc	no title
71	http://www.wku.edu/~marge.maxwell/Course%20Info/545/2.LME545%20Syllabus%20Spring%202006.doc	Scoring Rubric for Discussion Forums:

Note. Rubrics 3, 4, 5, 6, 9, 10, 11, 14, 21, 22, 26, 28, 30, 37, 39, 41, 43, 44, 58, 61, and 65 were removed from the study because (a) they did not evaluate OADs; (b) they did not evaluate post-secondary work in OADs; or (c) because they contained criteria and/or ratings very similar to those found in another rubric.

Appendix B
Excluded criteria

Rubric ID	Evaluative criteria
18	Average [Bloom 1: Shows Knowledge of readings
18, 19	Below average (2)
18, 19	Failing (2)
19	0 (zero)
19	Average to Good
19	Superior
20	A-LEVEL PARTICIPATION
20	B-LEVEL PARTICIPATION
20	C-LEVEL PARTICIPATION
20	D-LEVEL PARTICIPATION
20	F-LEVEL PARTICIPATION
24	Excellent subject
24	Minimal subject
40	A-level postings
40	B-level postings
40	C-level postings
40	D & F-level postings
47	Needs Work
47	Satisfactory
47	Unsatisfactory
47	Very Good
51	Adequate
51	Exceeds Expectations
51	Meets Expectations
51	Needs Improvement
55	Basic
55	Below Expectations
55	Distinguished/Outstanding
55	Proficient
58	Above Average (B)
58	Average (C)
58	Excellent (A)
58	Minimal (D)
58	Unacceptable (F)

Appendix C
Performance criteria keywords by frequency

Keyword(s)	Keyword variants	frequency
- response	- responsiveness, responsive	10
- content		
- thinking		7
- ideas		6
- quality		
- time	- timing, timely, timeliness	5
- writing	-writing, written	
- expression		
- language		
- relevance		
- delivery		
- Initiative		4
- mechanics		
- participation		
- references		
- synthesis	- synthesizes	
- understand		
- analysis	- analyze	
- community		
- concepts		
- connections		
- contribution		
- evaluation	- evaluation, evaluative,	2
- grammar	evaluate	
- interaction	- grammatical	
- interpretation	- interactivity	
- protocols		
- reflection		
- reply	- reflective, reflectively	
- resources	- replies	
- style		
	- stylistics	

- application - apply
- best practices
- collaboration/facilitation
- context
- etiquette 1
- feedback
- frequency
- global picture
- incorporation
- Insight
- integration
- interweave
- moderator
- number
- organization
- original
- peer review
- posting(s); problem(s)
- quantity
- questions
- readings
- scholarly dialog
- support
- theoretical background
- unique
- weekly discussion posting

Appendix D
Ratings' keywords by frequency

Keywords	variants	frequency
response	- respond(s), responded, responsive	78
grammar	- grammatically	48
spelling	- misspelling	37
understand	- understanding, understood	34
miscellaneous		32
support	- supported, supporting	29
- participation	- participate(s)	26
- questions		
- references	- referenced	
- analysis	- analyze	25
- thinking	- thought(s)	
reflect	- reflection(s), reflective	23
interaction	- interact(s)	22
information		21
connections	- connect(s), connected	20
sources		18
- citations	- cites, cited, citing	17
- ideas		
- number		
- new		16
- relationship	- related, relate(s), unrelated	
- opinions		13
- writing	- written	
- evaluation	- evaluative, evaluate	12
- organization	- organized	
- content		11
- insights	- insightful	
- links	- linkage	
- evidence		10
- feedback		
- relevance	- relevance, relevant, irrelevant	
-time	- timely	
initiative	- initiate(s), initiated	9
- application	- apply	8
- explanation	- explain(s), explained	
- reason	- reasoning	
- structure	- structured	
- concepts		7

- hour		
- protocols		
- read	- reading	
- reply	- replies, replied	
- resources		
- sentence		
- etiquette	- netiquette	6
- frequently	- infrequently	
- punctuation		
- quality		
- regularly		
- respect	- respectful, respectfully, respectfulness	
- style	- stylistics	
-weave	- weaving, interweaves	
- clear	- unclear	5
- expression		
- interpretation	- interpret, misinterpret	
- post	- posting(s)	
- prompting	- prompted	
- incorporate(d)		4
- involved		
- word		
- answer(d)		3
- community		
- date		
- good		
- language		
- late		
- novel		
- problem(s)		
- solution(s)		
- sporadic	- sporadically	
- vocabulary		
- clarify		2
- collaborate		
- contribute(s)	- contribution(s)	
- creative		
- examples		
- mechanics	- mechanical	
- offensive	- offense	
- paragraph		

- abusive
- clarification
- composition
- comprehend
- day
- grasp
- integrate
- minute
- occasionally
- original
- rarely
- synthesis
- team building
- valid
- value

- originality

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Appendix E
Performance criteria categories and keywords

Performance criteria categories	Keywords
Writing and style	Writing, written, style, stylistics
Response and reply	Response, response(s), responsiveness, responsive, reply replies
Thinking and reflection	Thinking, reflection, reflective, reflectively
Expression, delivery, manner, mechanics, and organization	Expression, delivery, manner, mechanics, organization
Ideas, insights, connections, and links	Ideas, insights, connections, links
Timing, frequency, and initiative	Timing, timely, timeliness, frequency, initiative
Interaction and participation	Interaction, interactivity, participation
Content	Content
References and support	Reference(s), support
Analysis, evaluation, interpretation, application, and synthesis	Analyze, analysis, evaluate, evaluation, evaluative, apply, application, interpretation, synthesis, synthesizes,
Quality	Quality
Language and grammar	Language, grammar, grammatical
Relevance	Relevance
Feedback, incorporation, interweave, and integration	Feedback, interweave, incorporation, integration
Concepts	Concepts
Best practices, etiquette, and protocols	Best practices, etiquette, protocols
Other	Various

Appendix F
Ratings' criteria categories and keywords

Ratings' categories	Keywords
Writing, composition, and style	Writing, written, style, stylistics, composition
Response, reply, and answer (discussion)	Response(s), respond(s), responded, responsive, reply, replies, replied, answer, answered.
Response, reply, and answer (others)	Response(s), respond(s), responded, responsive, reply, replies, replied, answer, answered.
Thinking, reflection, and reasoning	Thinking, thought(s), reflection, reflective, reflections, reflect(s), reasoning, reason.
Mechanics, organization, structure, and expression	Mechanics, mechanical, organization, organized, structure, structured, expression
Connections and links	Connect(s), connected, connections, links, linkage
Opinions and insights	Opinion(s), insight(s), insightful
Ideas	Ideas
Time, initiative, and prompting	Time, timely, initiative, initiate(s), initiated, prompting, prompted.
Hour, day, minute, date, deadline, and late	Hour, day, minute, date, deadline, late
Frequently, regularly, occasionally, rarely, and sporadically	Frequently, infrequently, regularly, occasionally, rarely, sporadic, sporadically
Participation	Participation, participate(s), participation, involved
Interaction	Interaction, interact(s)
Content and information	Content, information
Citations and references	Citations, cites, cited, citing, references, referenced.
Support	Support, supported, supporting
Evidence and argument	Evidence, argument
Examples and sources	Example(s), source(s)
Analysis, evaluation, and synthesis	Analysis, analyze, evaluation, evaluative, evaluate, synthesis
Application, explanation, and interpretation	Application, apply, explanation, explain(s), explained, interpretation, interpret, misinterpret

Quality, value, valid, and good	Quality, qualities, value, valid, good
Grammar, spelling, and punctuation	Grammar, grammatically, spelling, misspelling, punctuation
Language, sentence, paragraph, word, and vocabulary	Language, sentence, paragraph, word, vocabulary
Relevance and relationship	Relationship, related, relate(s), relation, unrelated, relevance, relevant, relative, irrelevant.
Feedback and commentary	Feedback, commentary
Weave, integrate, and incorporate	Weave, weaves, weaving, interweaves integrate, incorporate(d)
Concepts	Concepts
Etiquette and protocols	Etiquette, netiquette, protocol(s)
Respect, offensive, and abusive	Respect, respectful, respectfully, respectfulness, offense, offensive, abusive
Understand, comprehend, and grasp	Understand(ing), understood, comprehend, grasp
Questions, problems, and solutions	Question(s), problem(s), solution(s)
Original, creative, novel, and new	Original, originality, creative, novel, new
Number	Number
Clarification, clarity, and clear	Clarification, clarity, clarify, clear(ly), unclear
Read and reading	Read, reading(s)
Contribute and post	Contribute(s), contribution(s), post(s), posting(s
Resources	Resource(s)
Collaboration, community, and team-building	Collaboration, cooperation, community, team-building
Miscellaneous	Various
Vague	Various

Appendix G
Performance criteria

ID	Performance Criteria category	Criteria	CR
1	Writing and Style	Quality of *writing* in posts	Quality and relevance
12	Writing and Style	*Writing* Skill	
36	Writing and Style	Quality of *Writing*	Quality and relevance
52	Writing and Style	(i) Acceptable; (ii) below-standard; (iii) good; (iv) professional; (v) sub-standard *written* work	
56	Writing and Style	*Stylistics*	
66	Writing and Style	*Writing style* and presentation are clear: (i) conclusion; (ii) grammar, punctuation and spelling; (iii) introduction; (iv) main body; (v) title; (vi) *written* expression	Other; Language and grammar; Expression, delivery, mechanics, and organization
17	Thinking and reflection	(i) Demonstrable, competent, expected; (ii) high level; (iii) minimally acceptable; (iv) poor, unacceptable evidence of critical *thinking* ability and performance at the college level	
29	Thinking and reflection	Critical *thinking* evidenced by posting	
33	Thinking and reflection	*Reflection* & Critical *Thinking*	
38	Thinking and reflection	Evidence of critical/*reflective thinking*	
54	Thinking and reflection	Critically and *reflectively* examines learning issues	

62	Thinking and reflection	Critical *thinking*	
68	Thinking and reflection	Evidence of critical *thinking* (application, analysis, synthesis and evaluation)	Analysis, evaluation; interpretation, application, and synthesis
27, 56	Thinking and Reflection	Critical *Thinking*	
15	Response and Reply	*Responsiveness* to peers	
27	Response and Reply	Involvement and *Responsiveness*	
38	Response and Reply	Discussion includes *response* to other students	
42	Response and Reply	*Responses* to Other Student Postings	Other
48	Response and Reply	*Reply* to Others' Postings	Other
49	Response and Reply	*Responsiveness* to discussion and demonstration of knowledge and understanding gained from assigned reading	Other
53	Response and Reply	Community *Responses*	Other
57	Response and Reply	*Responsiveness*	
66	Response and Reply	Contribution is *responsive* to another contribution	Other
68	Response and Reply	Discussion *responses* to instructor and other students	Other
70	Response and Reply	*Responsiveness* to the discussion/ building of a learning community	Other
1	Timing, frequency, and initiative	*Number* and timing of posts	Other
2	Timing, Frequency, and Initiative	Promptness and *initiative*	
8	Timing, Frequency, and Initiative	*Frequency* of reading of the discussion	Other

15	Timing, Frequency, and Initiative	*Timely* contributions and responsiveness	
16	Timing, Frequency, and Initiative	*Initiative* and contribution	Other
16	Timing, Frequency, and Initiative	*Initiative* and Promptness	
27	Timing, Frequency, and Initiative	*Timeliness*	
49	Timing, Frequency, and Initiative	*Timely* discussion contributions	Other
50	Timing, Frequency, and Initiative	*Timeliness*	
56	Timing, Frequency, and Initiative	*Timeliness*	
70	Timing, Frequency, and Initiative	Number, regularity and *frequency* of responses	Response and reply; Other
2	Expression, Delivery, Mechanics, and Organization	*Delivery* of Post	Other
2	Expression, Delivery, Mechanics, and Organization	*Expression* within the post	Other
16	Expression, Delivery, Mechanics, and Organization	*Delivery* and *Expression* of Post	Other
16	Expression, Delivery, Mechanics, and Organization	*Expression* and *delivery* of post	Other
29	Expression, Delivery, Mechanics, and Organization	*Mechanics* of posting	Other
34	Expression, Delivery, Mechanics, and Organization	*Mechanics* of Messages	
54	Expression, Delivery, Mechanics, and Organization	*Mechanics* of discussion	
70	Expression, Delivery, Mechanics, and Organization	*Expression*/language	Language and grammar

60	Expression, delivery, mechanics, manner, and organization,	Ideas are (i) separated by white space; (ii) *organized* (ie introduction, body, conclusion)	Ideas, insights, connections, and links
2	Quality and relevance	*Relevance* of Post	Other
7	Quality and relevance	*Relevance*	
16	Quality and relevance	*Relevance* of post (response)	Response and reply; Other
16	Quality and relevance	*Relevance* of Posts	Other
35	Quality and relevance	*Quality* of information	
8, 32	Quality and relevance	*Quality* of postings	Other
59	Quality and relevance	Evaluation of *quality* (2)	Analysis, evaluation, interpretation, application, and synthesis
8	References and Support	Attribution of *references*	
60	References and support	Presents a thoughtful point with *supporting* reasons (either *supporting* or challenging points made in the article or by other students)	Thinking and reflection
60	References and support	Introduces *references* to new knowledge or information sources	
60	References and Support	Makes at least one *reference* to (i) another student's posting (except for the first person to post each week); (ii) the weekly reading	Other

66	References and Support	Text is *supported* by *references*: (i) bibliographic information; (ii) citation style; (iii) relevant *references;* (iv) sources indicated	Quality and relevance
54	Analysis, evaluation, explanation, interpretation, application, and synthesis	Offers and *explains* propositions, ideas, and insights	Ideas, Insights, connections, and Links
12	Analysis, Evaluation, interpretation, Application, and Synthesis	*Analysis/ Interpretation*	
18	Analysis, Evaluation, interpretation, Application, and Synthesis	Good [Bloom 2-3: Comprehension, *Application*	
18	Analysis, Evaluation, interpretation, Application, and Synthesis	Superior [Bloom 4-6: *Analysis*, *Synthesis*, *Evaluation*]	
24	Analysis, Evaluation, interpretation, Application, and Synthesis	*Interpretation*	
54	Analysis, Evaluation, interpretation, Application, and Synthesis	Interrelates and *synthesizes* multiple concepts and sources of information	
70	Analysis, Evaluation, Interpretation, Application, and Synthesis	*Synthesis* and *evaluation* of own learning	
34	Ideas, Insights, connections, and Links	Communicates *Ideas*	
36	Ideas, Insights, connections, and Links	*Connections* to professional practice	
38	Ideas, Insights, connections, and Links	*Ideas*	
56	Ideas, Insights, connections, and Links	*Connections*	
57	Ideas, Insights, connections, and Links	Communication of *Ideas*	

60	Ideas, Insights, connections, and Links	Content of post contains information and *ideas* that add to the knowledge of the group using at least one of the following methods 1 Presents a thoughtful point with supporting reasons (either supporting or challenging points made in the article or by other students)	Content; References and support; Thinking and reflection
29	Participation	*Participation* in discussion	
31	Participation	Level of *Participation* During One Week	
35, 12, 50, 69	Participation	*Participation*	
66	Arguments	Concepts and *arguments* are well developed: (i) Accuracy; (ii) independence; (iii) relevance; (iv) significance	Quality and relevance
66	Arguments	Concepts and *arguments* are well developed: Clarity	
1	Content	*Content* & responsiveness to course readings	Response and reply; Other
29	Content	*Content* of posting	Other
50	Content	*Content* of Post	Other
60	Content	*Content*-criteria below (/1): *Content* of post contains information and ideas that add to the knowledge of the group	
60	Content	*Content*-criteria below (/1): 1 Post meets the minimum word criteria of 100 words	Other

33	Language and grammar	*Language* Usage, *Grammar*, Presentation	
35	Language and grammar	Professional *Language*	
50	Language and grammar	Use of *Language*	
60	Language and grammar	Sentences are *grammatically* readable	
62	Language and grammar	*Language* conventions	
15	Best Practices, Etiquette, and Protocols	Use of online *etiquette*	
36	Best Practices, Etiquette, and Protocols	Complies with established class *best practices* for learning	
49	Best Practices, Etiquette, and Protocols	Adherence to on-line *protocols*	
70	Best Practices, Etiquette, and Protocols	Online *protocols* (set by the teacher or negotiated by the group)	
15	Feedback, Incorporation, Interweave, and Integration	Knowledge and *incorporation* of course content	Content
32	Feedback, Incorporation, Interweave, and Integration	Ability to *interweave* other postings into their own postings	Other
36	Feedback, Incorporation, Interweave, and Integration	Discussion postings include thought-provoking input and *feedback* designed to enhance communication from/with other participants	Thinking and reflection; Participation; Other

70	Feedback, Incorporation, Interweave, and Integration	*Integration* of subject content/readings/links etc	Content; Other; Ideas, insights, connections, and links
1	Interaction	*Interaction* with other students	
23	Interaction	*Interactivity*	
1	Length	*Length* of posts	
8	Other	Evidence of *collaboration/ facilitation* skills	
12	Other	*Scholarly dialogue*	
18	Other	Average [Bloom 1: Shows Knowledge of *readings*]	
2, 16	Other	*Contribution* to the Learning *Community*	
23	Other	Applicable *questions*	
23	Other	*Theoretical or Background Knowledge*	
32	Other	*Understanding* of *reading*	
32	Other	*Quantity* of *postings*	
34	Other	*Understanding* of the Activity	
53	Other	*Resources* to Extend the Discussion	
54	Other	Builds positive relationships and *community*	
54	Other	Shares relevant *resources* and experiences	Quality and Relevance
56	Other	*Uniqueness*	
68	Other	Weekly discussion *posting*	
69	Other	*Understanding* of *content*	
70	Other	*Problem* solving	

42, 48	Other	*Original Posting*(s)
7	vague	*Global picture*
7	vague	*Quality*
7	vague	*Contribution*
23	vague	*Moderator*
33	vague	*Replies*
34	vague	*Peer Review*
50	vague	*Support*
53	vague	*Context*
27, 33	vague	*Content*
62	vague	*Content*
62	vague	*Organization*

Appendix H
Ratings

ID	Ratings category	Rating	CR
2	Thinking, reflection, reasoning and critique	Occasionally makes meaningful *reflection* on group's efforts.	Frequently, regularly, occasionally, rarely, and sporadically
15	Thinking, reflection, reasoning and critique	Posts suggest critical *thinking* and/or synthesis of information.	Analysis, evaluation, summarization, and synthesis; Content and information; Contribute and post
17	Thinking, reflection, reasoning and critique	Is unable to or infrequently uses deductive and inductive *reasoning* and problem-solving skills.	Questions, problems, and solutions; Frequently, regularly, occasionally, rarely, and sporadically
17	Thinking, reflection, reasoning and critique	Is unable to or infrequently uses inference to *reason* from clearly stated premises or recognize implications and consequences.	Frequently, regularly, occasionally, rarely, and sporadically; Clarification, clarity, and clear
17	Thinking, reflection, reasoning and critique	Uses deductive and inductive *reasoning* and problem-solving skills (i) competently; (ii) consistently and with ease; (iii) inconsistently and weakly.	Questions, problems, and solutions
17	Thinking, reflection, reasoning and critique	Uses inference to (i) *reason* carefully; (ii) *reason* competently; (iii) *reason* inconsistently from clearly stated premises to important implications and consequences.	Clarification, clarity, and clear
18	Thinking, reflection, reasoning and critique	Shows critical and/or creative *thinking* and knowledge of all required readings: For example, poses a provocative interpretation that extends	Application, explanation, and interpretation; Original, creative, novel, and new; Read and reading

discussion.

24	Thinking, reflection, reasoning and critique	Four point comments stimulate additional *thought* about the issue under discussion.	Number
27	Thinking, reflection, reasoning and critique	Clear evidence of critical *thinking* (application, analysis, synthesis *and* evaluation).	Analysis, evaluation, summarization, and synthesis; Application, explanation, and interpretation; Clarification, clarity, and clear; Evidence and argument
27	Thinking, reflection, reasoning and critique	Lacking critical *thinking*. (i) Postings tend to address peripheral issues. Generally accurate, but with omissions or clear recitation; (ii) postings tend to be inaccurate or unclear.	Contribute and post; Clarification, clarity, and clear
27	Thinking, reflection, reasoning and critique	Some critical *thinking* evident, but posting may not directly address the issue.	Contribute and post
33	Thinking, reflection, reasoning and critique	Obvious *reflection* on life, education and other learning.	
33	Thinking, reflection, reasoning and critique	*Reflects* for professional/personal life.	
33	Thinking, reflection, reasoning and critique	*Reflects* regularly on the effect on education and personal/ professional life.	
33	Thinking, reflection, reasoning and critique	*Thought* processes incomplete.	

36	Thinking, reflection, reasoning and critique	Evidence of (i) strong; (ii) some; (iii) little *reflective thought* pertaining to personal perspectives and professional development.	Evidence and argument; Miscellaneous
36	Thinking, reflection, reasoning and critique	Few, if any, *reflective* statements go beyond what takes place in a specific classroom.	
36	Thinking, reflection, reasoning and critique	*Reflective* statements (i) contain some of the theoretical rationale; (ii) go beyond what takes place in a classroom to include a theoretical rationale underlying the use of specific strategies or materials.	Miscellaneous
38	Thinking, reflection, reasoning and critique	(i) Some critical/*reflective thinking* is evident; (ii) clear evidence of critical *thinking* (application, analysis, synthesis, and evaluation); (iii)beginnings of critical/*reflective thinking*; (iv) no evidence of critical *thinking*, just rephrases or summarizes ideas in reading.	Analysis, evaluation, summarization, and synthesis; Application, explanation, and interpretation; Clarification, clarity, and clear; Ideas; Read and reading
46	Thinking, reflection, reasoning and critique	Essay requires more critical *thought* and analysis.	Analysis, evaluation, summarization, and synthesis
52	Thinking, reflection, reasoning and critique	(i) Includes higher level *thinking* and problem solving; (ii) makes an effort to include higher level *thinking* and problem solving; (iii) makes an effort to include higher level *thinking* and problem solving in some, but not all areas of the text; (iv)minimally fulfills the	Questions, problems, and solutions; Evidence and argument

		assignment with little or no evidence of higher level *thinking*.	
54	Thinking, reflection, reasoning and critique	Consistently employs critical and *reflective* learning strategies while attending to issues of validity, replicability, ethics, reliability, and objectivity/subjectivity.	Miscellaneous
54	Thinking, reflection, reasoning and critique	Does not critically or *reflectively* examine learning issues.	
54	Thinking, reflection, reasoning and critique	Rarely exemplifies the behaviors of a *critical*, *reflective* learner.	Frequently, regularly, occasionally, rarely, and sporadically
54	Thinking, reflection, reasoning and critique	Rephrases problems, defers or makes judgment as appropriate, monitors own *thinking*, and suggests/uses learning strategies.	Questions, problems, and solutions; Miscellaneous
54	Thinking, reflection, reasoning and critique	Stimulates *critical* and *reflective thinking* and behaviors in others.	
59	Thinking, reflection, reasoning and critique	Contains (i) some elaboration of; (ii) well supported; (iii) a few unsupported *thoughts*.	Support
68	Thinking, reflection, reasoning and critique	(i) Beginnings of; (ii)some; (iii)poorly developed critical *thinking*.	

68	Thinking, reflection, reasoning and critique	Clear evidence of critical/*reflective thinking* (application, analysis, synthesis and evaluation).	Analysis, evaluation, summarization, and synthesis; Application, explanation, and interpretation
69	Thinking, reflection, reasoning and critique	Shows *reflection*.	
69	Thinking, reflection, reasoning and critique	*Critiques* the world of others.	
70	Thinking, reflection, reasoning and critique	Consistently presents creative *reflections* on topic.	Original, creative, novel, and new
70	Thinking, reflection, reasoning and critique	Occasionally makes meaningful *reflection* on group's efforts.	Frequently, regularly, occasionally, rarely, and sporadically
70	Thinking, reflection, reasoning and critique	Some evidence of *reflection* on own learning.	
70	Thinking, reflection, reasoning and critique	The learner shows excellent *reflection* on the course content and into their own learning.	Content and information
70	Thinking, reflection, reasoning and critique	The learner seems unable to identify the critical issues.	
70	Thinking, reflection, reasoning and critique	Often presents *reflections* that become central to the group's discussion.	
2	Grammar, spelling and punctuation	Errors in *spelling* and *grammar* evidenced in several posts.	Contribute and post
2	Grammar, spelling and punctuation	Few *grammatical* or *spelling* errors are noted in posts.	Contribute and post

2	Grammar, spelling and punctuation	Utilizes poor *spelling* and *grammar* in most posts; posts appear "hasty".	Contribute and post
12	Grammar, spelling, and punctuation	Correct *spelling*, correct *grammar*.	
12	Grammar, spelling, and punctuation	*Grammar*, *spelling*, and/or word choice errors are frequent enough that the sense of the message is lost or muddled.	Language, sentence, paragraph, word, and vocabulary; Frequently, regularly, occasionally, rarely, and sporadically
16	Grammar, spelling, and punctuation	Errors in *spelling* and *grammar* evidenced in several posts.	Contribute and post
16	Grammar, spelling, and punctuation	Evidences *grammatical/spelling* mistakes.	
16	Grammar, spelling, and punctuation	Few *grammatical* or *spelling* errors are noted in posts.	Contribute and post
16	Grammar, spelling, and punctuation	Occasional *spelling/grammatical* errors.	Frequently, regularly, occasionally, rarely, and sporadically
16	Grammar, spelling, and punctuation	Utilizes poor *spelling* and *grammar* in most posts; posts appear "hasty".	Contribute and post
2, 16	Grammar, spelling, and punctuation	Consistently uses *grammatically* correct posts with rare *misspellings*.	Contribute and post
29	Grammar, spelling, and punctuation	(i) Some (2 or less per paragraph); (ii) several *grammar* and/or *spelling* errors.	Number
29	Grammar, spelling, and punctuation	*Grammatically* correct and free of *spelling* errors.	
29	Grammar, spelling, and punctuation	Has three or more *grammar* and/or *spelling* errors per paragraph.	Language, sentence, paragraph, word, and vocabulary; Number
33	Grammar, spelling, and punctuation	Mistakes in *spelling* are 1-2 typos. *Grammar* correct.	Number

33	Grammar, spelling, and punctuation	Mistakes in *spelling* are typos and/or word usage. *Grammar* correct.	Language, sentence, paragraph, word, and vocabulary
33	Grammar, spelling, and punctuation	No mistakes in *spelling*, *grammar*, word usage. No typos.	Language, sentence, paragraph, word and vocabulary
33	Grammar, spelling, and punctuation	Numerous mistakes in *spelling*, and *grammar*.	
33	Grammar, spelling, and punctuation	Numerous mistakes in *spelling*. *Grammar* correct.	
34	Grammar, spelling, and punctuation	The message has been edited for *grammar* and *spelling*. (2)	
36	Grammar, spelling, and punctuation	Written responses are (i) free of; (ii) usually free of *grammatical*, *spelling* or *punctuation* errors.	Response, reply, and answer (discussion); Writing, composition, and style
36	Grammar, spelling, and punctuation	Written responses frequently contain obvious *grammatical*, *spelling* or *punctuation* errors.	Response, reply, and answer (discussion); Frequently, regularly, Occasionally, rarely, and sporadically; Writing, composition, and style
42	Grammar, spelling, and punctuation	Be *grammatically* correct and proofread for *spelling* errors. (2)	
50	Grammar, spelling, and punctuation	(i) Some; (ii) many *grammar* and/or *spelling* errors.	
50	Grammar, spelling, and punctuation	*Grammatically* correct and free of *spelling* errors.	
50	Grammar, spelling, and punctuation	Has three or more *grammar* and/or *spelling* errors per paragraph.	Language, sentence, paragraph, word, and vocabulary; Number
51	Grammar, spelling, and punctuation	Appropriate *grammar* is used throughout.	
51	Grammar, spelling, and punctuation	The posting needs improvement in the areas of organization and mechanics such as	Contribute and post; Mechanics, organization, structure, and expression

		grammar and *spelling*.	
56	Grammar, spelling, and punctuation	(i) Few *grammatical* or stylistic errors; (ii) obvious *grammatical* or stylistic errors, errors interfere with content; (iii) obvious *grammatical* or stylistic errors, makes understanding impossible; (iv) several *grammatical* or stylistic errors.	Writing, composition, and style; Content and information; Understand, comprehend, and grasp
62	Grammar, spelling, and punctuation	(i) *Grammatically* correct (3 errors or less); (ii) *grammatically* correct.	Number
62	Grammar, spelling, and punctuation	Writing is often unclear, and/or *grammatically* incorrect. (More than 3 errors).	Writing, composition, and style; Clarification, clarity, and clear; Number
63	Grammar, spelling, and punctuation	Text is well written and free from mechanical errors (*spelling*, *punctuation*, *grammar*).	Writing, composition, and style; Mechanics, organization, structure, and expression
66	Grammar, spelling, and punctuation	*Grammar*, *spelling*, and *punctuation* are flawless, which allows the reader to focus on the message.	
66	Grammar, spelling, and punctuation	Many errors in *grammar*, *spelling* and/or *punctuation* make reading the text difficult and communication is impaired.	Read and reading
66	Grammar, spelling, and punctuation	Some minor errors in *grammar*, *spelling*, and/or *punctuation* detract from the quality of the text, but do not impair the communication.	Quality, value, valid, and good
67	Grammar, spelling, and punctuation	Messages contain few if any errors in *spelling* and/or *grammar* (indicating proofreading).	

67	Grammar, spelling, and punctuation	Some messages may contain numerous errors in *spelling* and *grammar*.	
70	Grammar, spelling, and punctuation	Poor expression and *grammar*.	Mechanics, organization, structure, and expression
1	Response, reply, and answer (discussion)	Posts make no *response* to other comments.	Contribute and post
2	Response, reply, and answer (discussion)	Consistently posts *responses* related to discussion topic.	Contribute and post; Relevance and relationship
2	Response, reply, and answer (discussion)	Does not *respond* to most postings.	Contribute and post
7	Response, reply, and answer (discussion)	Furthers the discussion with questions, or statements that encourage others to *respond*.	Response, reply and answer (others); Questions, problems, and solutions
7	Response, reply, and answer (discussion)	*Responds*, but with minimum effort. (i.e. "I agree with Bob").	
12	Response, reply, and answer (discussion)	Messages contribute to ongoing conversations, as *replies* to questions or comments, or as new questions or comments.	Questions, problems, and solutions; Original, creative, novel, and new
12	Response, reply, and answer (discussion)	Messages that originate a thread usually generate *responses*.	
16	Response, reply, and answer (discussion)	(i) Frequently posts *responses* that are related to discussion content; (ii) posts *responses* which do not relate to the discussion content; makes short or irrelevant remarks; (iii) most *responses* are short in length and offer no further insight into the topic.	Content and information; Frequently, regularly, occasionally, rarely, and sporadically; Relevance and relationship; Contribute and post; Opinions and insights
16	Response, reply, and answer (discussion)	Does not *respond* to most postings.	Contribute and post

29	Response, reply, and answer (discussion)	Revealed a solid understanding of the topic as evidenced by thoughtful *responses* and questions.	Understand, comprehend, and grasp; Questions, problems, and solutions
32	Response, reply, and answer (discussion)	(i)*Respond*, (ii) *responds* to the question posted; (iii) *Responds* to the question posted but does not mention material from the readings.	Questions, problems, and solutions; Read and reading
33	Response, reply, and answer (discussion)	Definite thought into *responses* and *replies*.	Thinking, reflection, reasoning and critique
34	Response, reply, and answer (discussion)	The learner's *response* (i) has an obvious logical/sequential organization; (ii) lacks organization	Mechanics, organization, structure, and expression
36	Response, reply, and answer (discussion)	*Responses* are vague.	
45	Response, reply, and answer (discussion)	*Replied* to main topic.	
46	Response, reply, and answer (discussion)	(i) Thoughtful *responses* to peer work, (ii) thoughtful and lengthy *responses* to peer work (credit is given for participation), (iii) thoughtful *responses* to peer work, although more participation was expected; (iv) no *responses* to peer work.	Participation; Thinking, reflection, reasoning, and critique
53	Response, reply, and answer (discussion)	(i)Confused, hard to follow, key issues within the prompt are not identified or *answered*; (ii) discussed thoughtfully and with insightfulness, the key issues within the prompt are identified and *answered*	Other; Opinions and insights; Thinking, reflection, reasoning and critique

54	Response, reply, and answer (discussion)	Uses the *reply* function when discussing a topic from a previous post.	
63	Response, reply, and answer (discussion)	The posting makes a thoughtful contribution to the discussion that *responds* to the reflection question.	Thinking, reflection, reasoning, and critique; Questions, problems, and solutions; Contribute and post
64	Response, reply, and answer (discussion)	A(n) (i) good; (ii) average posting includes: *Response* to assigned discussion question.	Questions, problems, and solutions; Contribute and post
64	Response, reply, and answer (discussion)	An excellent posting includes: In depth *response* to assigned discussion question.	Questions, problems, and solutions; Contribute and post
67	Response, reply, and answer (discussion)	Messages tend to provide good general *answers* but may not always directly address discussion topics.	
69	Response, reply, and answer (discussion)	Initiates and *responds* actively on majority of discussions.	
69	Response, reply, and answer (discussion)	*Responds* to implications of ideas.	Ideas
70	Response, reply, and answer (discussion)	(i) Under 10 *responses*; (ii) between 10 – 20 *responses*; (iii) more than 20 *responses*	Number
71	Response, reply, and answer (discussion)	(i) No *response* or less than one page *response*; (ii)up to one page *response*; (iii)one page *response*, needs more information; (iv) two page *response*; (v)two-three page *response*.	Content and information; Number
71	Response, reply, and answer (discussion)	(i) 2 adequate; (ii) 2 or more in-depth, comprehensive *responses* to other posts.	Contribute and post; Number

12	Analysis, evaluation, summarization, and synthesis	Messages generally show little evidence of historical *analysis*, consisting instead of opinion and feelings and impressions.	Opinions and insights
12	Analysis, evaluation, summarization, and synthesis	Some messages do *analysis* or interpretation well, but a significant number do not. This might either be because the *analysis* was not done well, or because it was not attempted (that is, was simply opinion or hearsay).	Opinions and insights; Application, explanation, and interpretation; Number
17	Analysis, evaluation, summarization, and synthesis	*Analyzes* key information, questions, and problems (i) clearly and precisely; (ii) competently.	Content and information; Questions, problems, and solutions; Clarification, clarity, and clear
17	Analysis, evaluation, summarization, and synthesis	*Analyzes* some key information, questions, and problems competently.	Content and information; Questions, problems, and solutions
17	Analysis, evaluation, summarization, and synthesis	*Evaluates* material (i) competently; (ii) inconsistently; (iii) with insight.	
17	Analysis, evaluation, summarization, and synthesis	Is unable to *analyze* information, questions, and problems or does so superficially.	Content and information; Questions, problems, and solutions
17	Analysis, evaluation, summarization, and synthesis	Is unable to *evaluate* material or does so superficially.	
18	Analysis, evaluation, summarization, and synthesis	Largely informational, not *analytical* or interpretive: Repeats basic, correct information but does not link ideas to the primary sources nor provide critical *analysis* of evidence.	Ideas; Evidence and argument; Examples and sources; Content and information
18	Analysis, evaluation, summarization,	Makes a critical (*evaluative*) *analysis*.	Thinking, reflection, reasoning and critique

	and synthesis		
18	Analysis, evaluation, summarization, and synthesis	Shows critical and/or creative thinking and knowledge of all required readings: For example, poses a provocative interpretation that extends discussion; makes a critical (*evaluative*) *analysis*; contributes new information and/or insights; links ideas presented directly to primary sources or other evidence.	Ideas; Opinions and insights; Thinking, reflection, reasoning and critique; Evidence and argument; Examples and sources; Connections and links; Original, creative, novel, and new; Read and reading; Application, explanation, and interpretation
18	Analysis, evaluation, summarization, and synthesis	Shows critical and/or creative *evaluation* of the four best online discussions by other students (the best two on each side of an issue).	Number
19	Analysis, evaluation, summarization, and synthesis	Minimal, needs much work. Seemingly no critical assessment or active intellectual engagement with the *evaluation* process. Perhaps did not read enough discussions to identify the superior ones.	Read and reading; Thinking, reflection, reasoning, and critique
19	Analysis, evaluation, summarization, and synthesis	More informational, than *analytical* or *evaluative*.	Content and information;
29	Analysis, evaluation, summarization, and synthesis	Offered a critical *analysis* of an existing posted idea or introduced a different interpretation to an existing idea.	Ideas; Application, explanation, and interpretation; Thinking, reflection, reasoning, and critique
40	Analysis, evaluation, summarization, and synthesis	Are rudimentary and superficial, lacking any degree of *analysis* or critique.	Thinking, reflection, reasoning, and critique
40	Analysis, evaluation,	Are thoughtful, and *analyze* the content or question	Content and information; Thinking, reflection,

	summarization, and synthesis	asked. (2)	reasoning and critique; Questions, problems, and solutions
42	Analysis, evaluation, summarization, and synthesis	Critically *analyze* the content - your posting should not be just a *summary* of the reading.	Contribute and post; Read and reading; Thinking, reflection, reasoning, and critique
54	Analysis, evaluation, summarization, and synthesis	*Summarizes* readings	
55	Analysis, evaluation, summarization, and synthesis	Discussion postings are rudimentary and superficial; there is no evidence of insight or *analysis*.	Opinions and insights; Contribute and post; Evidence and argument
55	Analysis, evaluation, summarization, and synthesis	Discussion postings deliver information (i) that is full of thought, insight, and *analysis*; (ii) that shows that thought, insight, and *analysis* have taken place.	Opinions and insights; Content and information; Contribute and post; Thinking, reflection, reasoning and critique
56	Analysis, evaluation, summarization, and synthesis	(i) Substantial information, thought, insight, and *analysis* has taken place; (ii) rich in content full of thought, insight, and *analysis*; (iii) rudimentary and superficial, no *analysis* or insight is displayed.	Opinions and insights; Content and information; Thinking, reflection, reasoning and critique
62	Analysis, evaluation, summarization, and synthesis	(i) Posting contains several meaningful examples of application, *analysis*, and/or *evaluation* related to the content; (ii) Posting does not make an attempt at application, *analysis*, and/or *evaluation*.	Content and information; Application, explanation, and interpretation; Contribute and post; Examples and sources
63	Analysis, evaluation, summarization, and synthesis	Appropriate generalisation; theorising; *synthesis*.	
67	Analysis, evaluation, summarization,	Content is dominated by opinions rather than by *analysis* and creative	Content and information; Thinking, reflection, reasoning and 4critique;

	and synthesis	thought.	Questions, problems, and solutions; Opinions and insights
67	Analysis, evaluation, summarization, and synthesis	Rarely critically *evaluates* the work of others.	Thinking, reflection, reasoning, and critique
67	Analysis, evaluation, summarization, and synthesis	Willingness to critically *evaluate* the work of others with constructive comments.	Thinking, reflection, reasoning, and critique
69	Analysis, evaluation, summarization, and synthesis	*Analyses.*	
12	Response, reply, and answer (others)	When student asks a question, there's no acknowledgment to any *responses.*	Questions, problems, and solutions
15	Response, reply, and answer (others)	(i) *Responds*; (ii) does not *respond* to other students with thoughtful ideas and opinions.	Ideas; Opinions and insights; Thinking, reflection, reasoning, and critique
15	Response, reply, and answer (others)	*Responds* inappropriately to peers.	
18	Response, reply, and answer (others)	For a *response* to prior discussions by others, quotes directly from the two best arguments on each side of the issue.	Number; Evidence and argument
27	Response, reply, and answer (others)	(i) *Responds*, (ii) fails to *respond* to other students.	
32	Response, reply, and answer (others)	(i) *Respond* to a couple of student postings; (ii) *respond* to 3 - 4 other students; (iii) neglect to *respond* to any student postings.	Contribute and post; Number

33	Response, reply, and answer (others)	Covers content, own and others' experiences. Illustrates direct relationship of the assigned reading to own and others' *responses* from previous weeks.	Content and information; Relevance and relationship; Read and reading
34	Response, reply, and answer (others)	The learner's *response* (i) encourages; (ii) discourages other group members to share ideas.	Ideas
35	Response, reply, and answer (others)	*Responds* to (i) other members of the online community; (ii) *responds* to the instructor only; (iii) *responds* to the instructors and other members of the online community.	Community
36	Response, reply, and answer (others)	Posts at least three times per module to the WebBoard in *response* to communication from other participants.	Contribute and post; Participation; Number
45	Response, reply, and answer (others)	Evoked follow-up *responses* from other students (2)	
45	Response, reply, and answer (others)	*Replied* to (i) several other student postings on a regular basis; (ii) one other student posting.	Frequently, regularly, occasionally, rarely, and sporadically; Contribute and post; Number
47	Response, reply, and answer (others)	No entries *respond* to fellow student(s) or *response* to a fellow student just a personal remark, not a substnative (sic) *replies* (e.g. "Good. I really liked your coment (sic).")	Quality, value, valid, and good
47	Response, reply, and answer (others)	The entries are *responsive* to at least two other classmates, with detailed remarks about their writing or discussion *response*. (2)	Writing, composition, and style; Number

47	Response, reply, and answer (others)	Your *response* to class member(s) clearly indicates your postion (sic) in rleation (sic) to what fellow student(s) said or wrote (e.g., agreeing, disagreeing, adding to, modifying, extending or questionsing (sic).)	Clarification, clarity, and clear; Writing, comprehension, and style; Questions, problems, and solutions
53	Response, reply, and answer (others)	(i) 1 peer *response*;(ii) two peer *responses* that indicate(s) understanding of the other author's *response*.	Understand, comprehend, and grasp; Number
59	Response, reply, and answer (others)	In addition to your initial post, you must *respond* to the posts of others. You will be awarded one mark for each *response*, up to a possible two marks. In other words, if you write one *response*, you get 1 mark. If you *respond* twice, you get two marks.	Contribute and post; Number
63	Response, reply, and answer (others)	*Responds* creatively to other's ideas.	Ideas; Original, creative, novel, and new
64	Response, reply, and answer (others)	(i) *Response* to 1 of the postings entered by a student in the discussion group; (ii) additional *responses* to 2 postings from other students in the discussion group for the assigned readings.	Contribute and post; Number; Read and reading
67	Response, reply, and answer (others)	Sometimes *responds* to questions raised by others.	Questions, problems, and solutions
71	Response, reply, and answer (others)	(i) No *responses* ; (ii) very short *responses* to other posts	Contribute and post
71	Response, reply, and answer (others)	1 *response* to other posts which does not demonstrate knowledge of	Content and information; Contribute and post; Number

content.

1	Understand, comprehend, and grasp	Posts are off-topic or demonstrate no attempt to read or *understand* the course materials;	Contribute and post; Read and reading
1	Understand, comprehend, and grasp	Posts demonstrate that the student has read and *understood* course materials, often citing readings; posts make a significant contribution to the discussion; posts are substantial.	Contribute and post; Read and reading; Citations and references
1	Understand, comprehend, and grasp	Posts demonstrate that the student has read the course material and engaged it on some level; if the student doesn't fully *understand*, that student asks important questions and cites readings; posts are thorough.	Contribute and post; Read and reading; Citations and references; Questions, problems, and solutions
1	Understand, comprehend, and grasp	Posts demonstrate the student has made some effort to read the course materials, but perhaps doesn't *comprehend* them fully; the student asks only basic questions and may refer generally to readings; posts are of adequate length.	Contribute and post; Read and reading; Questions, problems, and solutions
1	Understand, comprehend, and grasp	Posts demonstrate little attempt to read or *understand* the course materials; posts refer only very generally to the readings.	Contribute and post; Read and reading
12	Understand, comprehend, and grasp	It demonstrates that the student has gained new *understanding* of the topic.	Original, creative, novel, and new

15	Understand, comprehend, and grasp	Provides evidence that lecture material was clearly *understood.*(2)	Evidence and argument; Clarification, clarity, and clear
15	Understand, comprehend, and grasp	Provides no evidence that readings were completed and/or *understood.*	Evidence and argument; Read and reading
18	Understand, comprehend, and grasp	Minimal, needs much work: Seemingly no *understanding* of nor engagement with the issues.	
23	Understand, comprehend, and grasp	Demonstrate a solid *understanding* of the issues associated with the topic (from reading an article, and/or participating in class discussions). Show evidence of your preparation.	Read and reading; Participation and involved; Evidence and argument
24	Understand, comprehend, and grasp	A three point comment makes a significant contribution to our *understanding* of the issue being discussed.	Contribute and post; Number
29	Understand, comprehend, and grasp	Revealed a restricted *understanding* of the topic limited to information that could be derived from prior posts.	Content and information; Contribute and post
29	Understand, comprehend, and grasp	Revealed an adequate *understanding* of the topic as evidenced by posts indicating superficial knowledge.	Contribute and post
29	Understand, comprehend, and grasp	Reveals a restricted *understanding* of the topic limited to information that could be derived from online material and prior posts.	Content and information; Contribute and post

34	Understand, comprehend, and grasp	The learner's contribution to the discussion board demonstrates (i) an *understanding* of the concept being presented; (ii) a thorough *understanding* of the concept being presented, be it remote sensing, NASA imagery, Data Slate, or Agriculture.	Contribute and post; Concepts
34	Understand, comprehend, and grasp	The learner's contribution to the discussion board demonstrates a developing *understanding*, but further explanation and exploration is needed.	Contribute and post; Application, explanation, and interpretation
36	Understand, comprehend, and grasp	Displays (i) a little *understanding*; (ii) an *understanding*; (iii) some *understanding* of the specific topic or comment under discussion.	
49	Understand, comprehend, and grasp	Not evident that readings were *understood* and/or not incorporated into discussion.	Weave, integrate, and incorporate; Read and reading
50	Understand, comprehend, and grasp	Reveals a lack of *understanding* of the topic.	
50	Understand, comprehend, and grasp	Reveals adequate *understanding* of topic	
50	Understand, comprehend, and grasp	Reveals solid *understanding* of topic as evidenced by original and thoughtful posts, responses and questions. Has considered the arguments deeply.	Response, reply, and answer (discussion); Questions, problems, and solutions; Evidence and argument; Contribute and post

51	Understand, comprehend, and grasp	The posting is demonstrates a deeper *understanding* of the subject matter by combining multiple theories and/or ideas into the analysis of the work.	Contribute and post; Ideas; Analysis, evaluation, summarization, and synthesis
63	Understand, comprehend, and grasp	Demonstrates *understanding* of the topic and the material covered.	
66	Understand, comprehend, and grasp	The contribution is completely self-contained so the reader does not have to read other contributions or published materials to *understand* what was written about.	Contribute and post; Writing, composition, and style
66	Understand, comprehend, and grasp	The text is written in a manner that presumes considerable prior knowledge, so the reader must have a thorough knowledge of what has been written about the subject in order to *understand* the main point of the contribution.	Writing, composition, and style; Contribute and post
66	Understand, comprehend, and grasp	The main body presents a number of points that allow the reader to *understand* the argument, but lapses in the writing may force the reader to make some connections between the parts.	Writing, composition, and style; Connections and links; Number
66	Understand, comprehend, and grasp	The text is sufficiently clear that the reader can *understand* the main point without further reading, but some parts of the text are not clear without consulting earlier contributions or other sources of information.	Clarification, clarity, and clear; Read and reading; Contribute and post; Content and information; Examples and sources

69	Understand, comprehend, and grasp	Has mostly shallow *grasp* of the material;	
69	Understand, comprehend, and grasp	Misses the point. Shows no significant *understanding* of the material.	
70	Understand, comprehend, and grasp	Clear that readings and course materials were accessed and *understood*.	Clarification, clarity, and clear; Read and reading
70	Understand, comprehend, and grasp	From the evidence in the postings it was not clear that readings and teaching materials were *understood* or used in the learner's own knowledge construction.	Evidence and argument; Clarification, clarity, and clear; Read and reading
2	Citations and references	(i) *Cites* additional *references* related to topic; (ii) *cites* additional *references* related to topic to further discussion.	Relevance and relationship
7	Citations and references	Some *reference* but taken out of context, the reader would not understand.	Miscellaneous; Understand, comprehend, and grasp
7	Citations and references	Clear *reference* to assignment or prior posting being discussed.	Contribute and post; Clarification, clarity, and clear
12	Citations and references	*Citations* are sometimes missing, are incorrect, or are from a poor source (e.g., a K12 internet site or an encyclopedia).	Examples and sources
12	Citations and references	Messages regularly lack any sort of *citation*.	Frequently, regularly, occasionally, rarely, and sporadically
16	Citations and references	*Cites* specific information and *references* from text and/or class discussions.	Content and information
18	Citations and references	Includes parenthetical *citations* to quoted documents.	
19	Citations and references	Includes parenthetical *citations* to any quoted discussions or documents.	

23	Citations and references	*Reference* specific articles. This entry must be made by Saturday.	
32	Citations and references	Makes *reference* to readings.	Read and reading
33	Citations and references	*Citations* all correct.	
45	Citations and references	*Cited* current news events. (2)	
45	Citations and references	*Referenced* other research, gave examples. (2)	Examples and sources
54	Citations and references	Offers accurate and appropriate *citations*.	
60	Citations and references	*References* do not meet either of the specified *reference* criteria.	
60	Citations and references	*References* meet (i) at least one; (ii) both of the specified *reference* criteria.	Number
66	Citations and references	More than one *reference* is *cited* to support key points, which adds strength and authority to the argument.	Support; Number; Evidence and argument
66	Citations and references	*Citation* format incorrect or poorly placed in the text, so *citations* distract from reading.	Read and reading
66	Citations and references	Sources are *cited* for some specific parts of the contribution, but no *references* are supplied for information and ideas that are clearly not the author's, so the reader has no *idea* of the validity and authority of the information.	Examples and sources; Content and information; Contribute and post; Ideas; Clarification, clarity, and clear; Number
66	Citations and references	Minor lapses in *citation* format do not prevent the reader from finding the sources in the *reference* list at the end of the contribution.	Examples and sources; Contribute and post

66	Citations and references	Not all *references* are listed, information in the *reference* list is incorrect, or important information is missing from the *reference* list, so the reader is unable to find the same sources of information and the authority of sources is almost entirely unknown.	Examples and sources; Content and information
66	Citations and references	*References cited* appropriately in the text, and the correct format is used in the text when *citing* information, so the reader clearly knows which information is attributable to which source.	Examples and sources; Content and information; Clarification, clarity, and clear
66	Citations and references	The *reference* list contains complete bibliographic information (author's name(s), publication date, title, source, date web page accessed), so a reader can easily find the *references* for their own research. The authority of sources can be evaluated by checking them.	Examples and sources; Analysis, evaluation, summarization, and synthesis; Content and information; Hour, day, minute, date, deadline, and late
71	Citations and references	(i) Three *references* in correct APA format; (ii) three *references* in APA format with a few mistakes; (iii) two *references* in APA format with mistakes; (iv) one *reference*, not in APA format.	Number
27	Content and information	*Content* is complete, accurate (i) and offers new ideas; (ii) but lacking in new ideas.	Ideas; Original, creative, novel, and new

33	Content and information	(i) Covers *content* of readings; (ii) covers *content* of readings. Includes own and others' experiences in work setting.	Read and reading
33	Content and information	No obvious thought on how this *information* impacts anyone.	Thinking, reflection, reasoning and critique
35	Content and information	*Information* (i) clearly *relates* to the main topic; (ii) *information* has little or nothing to do with the main topic or simply restates the main concepts.	Clarification, clarity, and clear; Concepts
40	Content and information	Discussion postings are generally competent, but the actual *information* they deliver seems thin and commonplace.	
42	Content and information	Relate *content* to your own personal experiences.	Relevance and relationship
42	Content and information	Relate new *content* to what you have already learned in the course to date.	Relevance and relationship; Original, creative, novel and new
46	Content and information	Essay contains inaccurate *information*.	
48	Content and information	Relation of *information* in article or reading to personal experience.	Read and reading; Relevance and relationship
48	Content and information	Relation of new *information* to old *information* learned in the course to date.	Original, creative, novel and new; Relevance and relationship
51	Content and information	Insufficient or irrelevant *information*.	Relevance and relationship
55	Content and information	Have posted (i) outstanding; (ii) proficient; (iii) basic *information*.	
55	Content and information	Posted *information* that was below expectations.	
56	Content and information	Are generally accurate, but the actual *information* they deliver seems thin and commonplace.	

56	Content and information	Generally competent, *information* is thin and commonplace.	
60	Content and information	*Content* of the post meets (i) at least one of the specified *content* criteria; (ii) both of the specified *content* criteria; (iii) does not meet either of the specified *content* criteria.	Contribute and post; Number
62	Content and information	(i) All; (ii) most *information* and ideas are organized clearly around a central focus.	Ideas; Mechanics, organization, structure, and expression; Clarification, clarity, and clear
66	Content and information	(i) The *information* is largely accurate but imprecise language could lead a reader to misinterpret aspects of the text; (ii) although the gist of the *information* is correct, there are problems with the interpretation of it. A reader can be misled by the text; (iii) all *information* is accurately reported using appropriate terminology so the *information* is reliable.	Language and grammar; Application, explanation, and interpretation; Questions, problems, and solutions
67	Content and information	*Content* is generally accurate, but with some omissions and/or errors. Tendency to re*cite* fact rather than address issues.	
70	Content and information	Some integration of the *content* of the readings and other course materials.	Understand, comprehend, and grasp; Incorporation, interweave, and integration; Read and reading
12	Questions, problems, and solutions	Student does not start a topic or pose a *question* and then abandon it.	
12	Questions, problems, and solutions	Student never answers someone else's *question*.	Response, reply, and answer (others)

15	Questions, problems, and solutions	Poses additional *questions* or discussion.	
23	Questions, problems, and solutions	Follows discussion; compiles and posts *questions*.	Contribute and post
23	Questions, problems, and solutions	Submit *questions* to your group, based on the readings. This entry must be made by Tuesday.	Read and reading
27	Questions, problems, and solutions	Raises *questions*.	
33	Questions, problems, and solutions	No *questions* regarding statements.	
33	Questions, problems, and solutions	Asks (i) *questions* of posting. Relates to what others have said/done; (ii) reflective *questions* of others; (iii) "why?" *questions*; (iv) "why?' *questions* of self and author as well as other students. Learned from process and related to future teaching; (v) "why?' *questions*, in attempt to understand. Reacts to author's opinions.	Contribute and post, Relevance and relationship; Opinions and insights; Thinking, reflection, reasoning, and critique; Understand, comprehend, and grasp
45	Questions, problems, and solutions	Asked *questions* that helped further discussion.	
45	Questions, problems, and solutions	Enhanced quality of discussion (i.e. asked *questions* that helped further discussion).	Quality, value, valid, and good
51	Questions, problems, and solutions	The *question* is (i) adequately; (ii) thoroughly answered.	Response, reply, answer (discussion)
54	Questions, problems, and solutions	*Questions* assumptions.	

59	Questions, problems, and solutions	(i) Adequately answers; (ii) does not adequately answer the discussion *question*(s).	Response, reply, answer (discussion)
59	Questions, problems, and solutions	Answers the discussion *questions* effectively and completely, adding to the knowledge of the group.	Response, reply, answer (discussion)
67	Questions, problems, and solutions	(i) Never; (ii) rarely includes *questions* that stimulate discussion.	Frequently, regularly, occasionally, rarely, and sporadically
67	Questions, problems, and solutions	Frequently responds to *questions* from others.	Response, reply, and answer (others); Frequently, regularly, occasionally, rarely, and sporadically
67	Questions, problems, and solutions	Rarely responds to *questions* raised by others.	Response, reply, and answer (others); Frequently, regularly, occasionally, rarely, and sporadically
67	Questions, problems, and solutions	Sometimes includes good *questions* that stimulate discussion.	Quality, value, valid, and good
70	Questions, problems, and solutions	No evidence of *problem* solving strategies.	Miscellaneous; Evidence and argument
70	Questions, problems, and solutions	The postings indicated a willingness to be involved in online issues and *problems*. The learner was able to utilize *problem* solving strategies to address issues.	Contribute and post; Participation; Miscellaneous
70	Questions, problems, and solutions	Frequently offers options and *solutions* to the group for discussion.	Frequently, regularly, occasionally, rarely, and sporadically
70	Questions, problems, and solutions	Occasionally offers *solutions* to the group.	Frequently, regularly, occasionally, rarely, and sporadically
70	Questions, problems, and solutions	Unable to offer *solutions* to others.	

13	Support	In addition to Level 1, examples are provided that are relative to the topic and may *support* or challenge the ideas that others have proposed.	Examples and sources; Ideas; relevance and relationship
27	Support	The discussion is well *supported* with details that explain the participant's conclusions.	Application, explanation, and interpretation; Participation
27	Support	There may be one areas (sic) an opinion is presented without *supporting* facts or references.	Opinions and insights; Citations and references; Number
27	Support	There are two or more opinions are (sic) presented without *supporting* facts.	Opinions and insights; Number
34	Support	Specific examples from the activity/resource are provided to *support* his/her ideas and opinions.(2)	Examples and sources; Ideas; Opinions and insights
42	Support	Be logically reasoned and *supported*.	Thinking, reflection, reasoning and critique
46	Support	Points within essay lacked *support* and/or elaboration.	
46	Support	Relatively strong essay that may require further *support* / elaboration.	
46	Support	Strong essay with well-*supported* points and adequate elaborations. (2)	
50	Support	Comments (i) well *supported*; (ii) mostly well *supported*; (iii) somewhat well *supported*; (iv) not very well *supported*.	
51	Support	Little or no *supporting* evidence is given to *support* the response.	Evidence and argument; Response, reply, and answer (discussion)

51	Support	The student's response is (i) well *supported*; (ii) somewhat *supported* by references and evidence (from the text, Web links, research articles, etc.).	Evidence and argument; Citations and references; Response, reply, and answer (discussion)
62	Support	At least (i)one piece of evidence; (ii) two types of evidence; (iii) more than 2 types of evidence; (iv)no evidence is/are used to *support* ideas.	Evidence and argument; Ideas; Number
66	Support	All information and ideas that are not commonly known are *supported* with references to sources, so the reader has confidence that the information is not based on hearsay or the writer's opinion or assumptions alone.	Citations and references; Content and information; Opinions and insights; Examples and sources; Ideas
66	Support	One or a few references are used to *support* the text. Thus the contribution is *supported* but this may be an idiosyncratic source. Some general references to textbooks are made that could have been replaced by primary references which are more thorough and authoritative.	Citations and references; Contribute and post; Examples and sources
67	Support	Assertions are not *supported* by evidence.	Evidence and argument
69	Support	(i) Provides ample evidence of *support* for opinions; (ii) occasional stand on issues; basic level of *support* for opinions.	Opinions and insights; Evidence and argument
69	Support	Offers inadequate levels of *support*.	Opinions and insights
2	Participation	Rarely *participates* freely.	

2	Participation	Does not make effort to *participate* in learning community as it develops; seems indifferent.	Community
2	Participation	Marginal effort to become *involved* with group.	
7	Participation	*Participates*, but does not post anything that encourages others to respond to the posting.	Response, reply, and answer (others)
16	Participation	Rarely *participates* freely.	
16	Participation	Rarely *participates* in discussion; does not make an effort to *participate*; seems indifferent.	Frequently, regularly, occasionally, rarely, and sporadically
16	Participation	Does not make effort to *participate* in learning community as it develops; seems indifferent.	Community
16	Participation	Marginal effort to become *involved* with group.	
20	Participation	The *participant* (i) consistently failed or refused to *participate* at all, even when specifically prompted or questioned, even if the *participant's participation* otherwise conforms to a higher level on the rubric; (ii) consistently had to be prompted or coaxed to *participate*: (iii) was extremely reluctant to *participate*, even when prompted.	Time, initiative, and prompting; Questions, answers, and solutions
20	Participation	The *participant* was (i) notably lacking in one or two (ii) consistently lacking in two or more of the items listed for A-level *participation*.	Number

27	Participation	*Participant* did not *participate* in the discussion.	
36	Participation	Does not *participate* in the WebBoard class discussions.	
46	Participation	No *participation.*	
46	Participation	Little to no *participation* with peers.	
55	Participation	Have *participated* (i) 3 or more times during the week; (ii) at least 2 times during the week; (iii) at least 1 time during the week.	Number; Time, initiative, and prompting
69	Participation	Always *participates* freely.	
69	Participation	Might *participate* in some discussions more than others.	
69	Participation	No *participation* or makes irrelevant remarks.	Relevance and relationship
69	Participation	*Participation* is patchy; picks and chooses topics to get *involved* in.	
70	Participation	Not actively *involved* in the online discussion.	
70	Participation	Only *participates* after prompting by the teacher.	Time, initiative, and prompting
70	Participation	Limited effort to become *involved* with group.	
7	Connections and links	Clearly *connects* the posting to text or reference points from previous readings, activities, and discussions.	Citations and references; Contribute and post; Read and reading
7	Connections and links	Mentions the text or previous activity without logical *link* to topic.	
7	Connections and links	Vague or possible *connection* to reference points from previous readings, activities, and	Citations and references; Read and reading

discussions.

8	Connections and links	Some evidence of *links* to contributions of others.	Evidence and argument; Contribute and post
18	Connections and links	*Links* ideas presented directly to primary sources or other evidence.	Examples and sources; Evidence and argument; Ideas
32	Connections and links	Makes reference to readings and provides *links* to other sources.	Examples and sources; Citations and references; Read and reading
40	Connections and links	Make *connections* to other content and real-life situations.	Content and information
40	Connections and links	Make *connections* to previous or current content or to real-life situations, but the *connections* are unclear, not firmly established or are not obvious.	Content and information
40	Connections and links	Make limited, vague *connections* between class readings and postings by other students.	Read and reading
52	Connections and links	*Links* course work to practice by citing texts and other course materials. (3)	Citations and references
54	Connections and links	*Connections* are unclear, shallow, and rudimentary.	Clarification, clarity, and clear
54	Connections and links	Consistently makes valid, insightful, and multi-faceted *connections* with attention to contextual differences, moderating variables, and assumptions.	Opinions and insights; Quality, value, valid, and good
54	Connections and links	Does not make *connections* among educational problems, personal experience or beliefs, and research concepts or practice.	Questions, problems, and solutions

54	Connections and links	Makes valid *connections* between educational problems, personal experience, and research practice or concepts.	Concepts; Questions, problems, and solutions
55	Connections and links	*Connections* are made, not really clear or too obvious.	Clarification, clarity, and clear
55	Connections and links	Discussion postings make *connections* to previous or current content or to real-life situations.	Content and information
55	Connections and links	Discussion postings make *connections* to previous or current content or to real-life situations, but the *connections* are not really clear or are too obvious.	Content and information; Clarification, clarity, and clear
55	Connections and links	Discussion postings make limited, if any, *connections*, and those art often cast in the form of vague generalities.	
56	Connections and links	Clear *connections* to previous or current content, to real-life situations.	Content and information; Clarification, clarity, and clear
56	Connections and links	Limited, if any *connections* vague generalities.	
66	Connections and links	*Connections* between the contribution and the main topic of the discussion are (i) clearly indicated; (ii) indicated or implied, but the reader needs to pause to clarify those *connections*.	Clarification, clarity, and clear
66	Connections and links	The *linkage* between the title and the text is not clear.	Clarification, clarity, and clear

66	Connections and links	The writer *links* ideas submitted by others to their own contribution in a manner that substantially strengthens the group's efforts to resolve the main problem. This *linkage* can include elaboration of what was previously written, a critique or questioning of it, demonstration of *linkages* among two or more earlier contributions, and/or utilization of an earlier contribution as a foundation to build your own.	Questions, problems, and solutions; Ideas; Contribute and post; Questions, problems, and solutions; Writing, composition, and style; Thinking, reflection, reasoning, and critique
2	Time, initiative, and prompting	Demonstrates good self-*initiative*.	Quality, value, valid and good
2	Time, initiative, and prompting	Limited *initiative*	
2	Time, initiative, and prompting	Requires occasional *prompting* to post (2)	Contribute and post
16	Time, initiative, and prompting	Demonstrates good self-*initiative*.	Quality, value, valid and good
16	Time, initiative, and prompting	Limited *initiative*	
16	Time, initiative, and prompting	Requires occasional *prompting* to post.	Contribute and post; Frequently, regularly, occasionally, rarely, sporadically, and spotty
34	Time, initiative, and prompting	The student contributes to the discussion board regularly and on a *timely* basis.	Frequently, regularly, occasionally, rarely, and sporadically; Contribute and post
40	Time, initiative, and prompting	Are made in a *timely* fashion, giving others an opportunity to respond. (2)	Response, reply, answer (others)
40	Time, initiative, and prompting	Are not made in a *timely* fashion, if at all, keeping other students from reading and responding.	Response, reply, answer (others); Read and reading
40	Time, initiative, and prompting	Are usually, but not always, made in a *timely* fashion.	

45	Time, initiative, and prompting	*Time* between posting indicated student had read and considered substantial number of student postings before responding. (2)	Response, reply, answer (discussion); Read and reading; Contribute and post; Number
55	Time, initiative, and prompting	Are made in *time* for others to read and respond. (2)	Response, reply, answer (others); Read and reading
69	Time, initiative, and prompting	(i) Offers short, perfunctory postings; (ii) Agrees or disagrees when *prompted*.	Contribute and post
69	Time, initiative, and prompting	Contributions are *prompt*, *timely*, relevant.	Relevance and relationship; Contribute and post
69	Time, initiative, and prompting	Needs an occasional *prompting* to contribute.	Contribute and post
69	Time, initiative, and prompting	Self-*initiates* and follows up on all topics.	
69	Time, initiative, and prompting	Takes limited *initiative*.	
70	Time, initiative, and prompting	Demonstrates good self-*initiative*.	
70	Time, initiative, and prompting	Responds *promptly* to postings.	Contribute and post
2	Opinions and insights	Unclear connection to topic evidenced in minimal expression of *opinions* or ideas.	Connections and links; Ideas; Original, creative, novel, and new; Clarification, clarity, and clear
2	Opinions and insights	Expresses *opinions* and ideas in a clear and concise manner with obvious connection to topic	Original, creative, novel and new; Connections and links; Ideas; Clarification, clarity, and clear
2	Opinions and insights	Does not express *opinions* or ideas clearly.	Ideas; Clarification, clarity, and clear
2	Opinions and insights	does not express *opinions* or ideas clearly; no connection to topic.	Clarification, clarity, and clear; Ideas; Connections and links

2	Opinions and insights	*opinions* and ideas are stated clearly with occasional lack of connection to topic	Clarification, clarity, and clear; Connections and links; Ideas
2	Opinions and insights	Most posts are short in length and offer no further *insight* into the topic.	Contribute and post
16	Opinions and insights	Unclear connection to topic evidenced in minimal expression of *opinions* or ideas.	Connections and links; Ideas; Original, creative, novel, and new; Clarification, clarity, and clear
16	Opinions and insights	Does not express *opinions* or ideas clearly.	Ideas; Clarification, clarity, and clear
16	Opinions and insights	Expresses *opinions* and ideas in a clear and concise manner (i) with obvious connection to topic; well-planned; (ii) (and) shows considerable effort and preparation.	Connections and links; Ideas; Clarification, clarity, and clear
16	Opinions and insights	*Opinions* and ideas are stated clearly.	Ideas; Clarification, clarity, and clear
16	Opinions and insights	Most posts are short in length and offer no further *insight* into the topic.	Contribute and post
18	Opinions and insights	Exhibits good *insights* and/or understanding,	Understand, comprehend, and grasp; Quality, value, valid, and good
20	Opinions and insights	The participant consistently posted *insightful* comments and questions that prompted on-topic discussion.	Questions, problems, and solutions; Contribute and Post
45	Opinions and insights	No depth of presentation, no research base, *opinion* only.	
57	Opinions and insights	Refers to others' *opinions* as well as readings in discussion.	Read and reading
67	Opinions and insights	Depth of *insight* into theoretical issues.	

67	Opinions and insights	Sometimes include unusual *insights*.	
69	Opinions and insights	Offers moderate level of support for *opinions*.	Support
70	Opinions and insights	(i) The learner is sometimes able to offer *insights* into issues; (ii) most posts offer no further *insight* into the topic.	Contribute and post
70	Opinions and insights	No evidence of *insight* into own learning.	Evidence and argument
71	Opinions and insights	*Insightful.*	
2	Original, creative, novel, and new	Presents *creative* approaches to topic.	
13	Original, creative, novel, and new	The participant explains how a *new* or previous concept connects to the current concept or how their daily experiences relate to class content and discussion.	Concepts; Connections and links; Content and information; Participation; Application, explanation, and interpretation
16	Original, creative, novel, and new	Presents *creative* approaches to topic.	
18	Original, creative, novel, and new	Contributes *new* information and/or insights.	Content and information; Opinions and insights; Contribute and post
24	Original, creative, novel, and new	The comment presents little or no *new* information.	Content and information
27	Original, creative, novel, and new	Postings are characterized by *originality* and relevance to the topic.	Relevance and relationship; Contribute and post

40	Original, creative, novel, and new	(i) Contribute no *novel* ideas, connections, or real-world applications; (ii) contain few *novel* ideas, reflecting what other students have already posted, and what class readings clearly articulate; (iii) contain *novel* ideas, connections, and/or real-world applications, but they may lack depth, detail and/or explanation.	Ideas; Connections and links; Application, explanation, and interpretation; Clarification, clarity, and clear; Read and reading; Contribute and post
45	Original, creative, novel, and new	Suggested *new* perspectives on issues. (2)	Miscellaneous
54	Original, creative, novel, and new	Does not offer *new* propositions, ideas, or insights.	Ideas; Opinions and insights
54	Original, creative, novel, and new	*New* ideas are not clearly expressed, sound, or well-supported.	Ideas; Support; Clarification, clarity, and clear
54	Original, creative, novel, and new	Offers and explains *new* propositions, ideas, judgments, and insights.	Ideas; Opinions and insights; Application, explanation, and interpretation
55	Original, creative, novel, and new	Discussion postings contain (i) *new* ideas, connections, or applications, but they may lack depth and/or detail; (ii) rich and fully developed *new* ideas, connections, or applications.	Ideas; Connections and links; Application, explanation, and interpretation; Contribution and post
55	Original, creative, novel, and new	Discussion postings contribute no *new* ideas, connections, or applications.	Ideas; Connections and links; Application, explanation, and interpretation; Contribute and post
56	Original, creative, novel, and new	Few, if any *new* ideas or connections.	Ideas; Connections and links
56	Original, creative, novel, and new	*New* ideas or connections, lack depth and/or detail.	Ideas; Connections and links
56	Original, creative, novel, and new	*New* ideas, *new* connections, made with	Ideas; Connections and links

		depth and detail.	
56	Original, creative, novel, and new	No *new* ideas, "I agree with …" statement.	Ideas
68	Original, creative, novel, and new	Well developed (at least one full paragraph) and introduces *new* ideas.	Language, sentence, paragraph, word, and vocabulary; Ideas
2	Hour, day, minute, date, deadline, and late	Consistently responds to postings in less than 24 *hours*.	Response, reply, answer (discussion); Contribute and post; Number
2	Hour, day, minute, date, deadline, and late	Responds to most postings (i) within a 24 *hour* period; (ii) several *days* after initial discussion.	Response, reply, answer (discussion); Contribute and post; Number
16	Hour, day, minute, date, deadline, and late	Consistently responds to postings in less than 24 *hours*.	Response, reply, answer (discussion); Contribute and post; Number
16	Hour, day, minute, date, deadline, and late	Responds to most postings (i) within a 24 *hour* period; (ii) several *days* after initial discussion.	Response, reply, answer (discussion); Contribute and post; Number
19	Hour, day, minute, date, deadline, and late	Did not submit the assignment or submitted it *late*.	
25	Hour, day, minute, date, deadline, and late	Posts and replies are completed on or before *deadlines*.	Response, reply, answer (discussion); Contribute and post
25	Hour, day, minute, date, deadline, and late	The post is *late*.	Contribute and post
27	Hour, day, minute, date, deadline, and late	Participant's answer is *late* but before the end of the week.	Response, reply, and answer (discussion)
45	Hour, day, minute, date, deadline, and late	All posts made within 24 *hours* of assignment due *date*.	Contribute and post; Number
45	Hour, day, minute, date, deadline, and late	Several posts, but all on same *day*.	Contribute and post
50	Hour, day, minute, date, deadline, and late	Posting (i) meets; (ii) fails to meet *deadline* (5)	Contribute and post

52	Hour, day, minute, date, deadline, and late	Assignment is turned in *late*, without having made the appropriate prior arrangements.	
53	Hour, day, minute, date, deadline, and late	Posted by (i) the *date* assigned; (ii) the *date* assigned (or *late*).	
56	Hour, day, minute, date, deadline, and late	All required postings, most at the last *minute* without allowing for response time.	Response, reply, answer (discussion); Contribute and post
2	Interaction	*Interacts* freely.	
16	Interaction	*Interacts* freely.	
23	Interaction	*Interact* with virtual guests.	
23	Interaction	*Interacts* during virtual guest visit.	
27	Interaction	*Interaction* is best described as "good idea ..." and of little substance to continue discussion.	Quality, value, valid, and good
29	Interaction	*Interacts* with (i) only one or two participants; (ii) with a few selected participants.	Number
29	Interaction	*Interacts* with a variety of participants.	
35	Interaction	Encourages and facilitates *interaction* among members of the online community.	Collaboration, community, and team-building
38	Interaction	*Interacts* (i) once a week; (ii) twice per week; (iii) three times per week; (iv) four or more times per week.	Number
50	Interaction	*Interacts* with a variety of participants.	
50	Interaction	*Interacts* with only one or two participants.	Number
57	Interaction	Sporadic *interaction* and discussion with other classmates.	Frequently, regularly, occasionally, rarely, and sporadically
68	Interaction	*Interacts* (i) multiple times; (ii) at least twice; (iii) once; (iv) at least 3 times with instructor and/or other students.	Number

70	Interaction	*Interacts* freely and encourages others.	
2	Relevance and relationship	Consistently posts topics *related* to discussion topic.	Contribute and post
2	Relevance and relationship	Posts topics which do not *relate* to the discussion content; makes short or *irrelevant* remarks.	Contribute and post; Content and information
2	Relevance and relationship	Frequently posts topics that are *related* to discussion content.	Contribute and post; Frequently, regularly, occasionally, rarely, and sporadically; Content and information
16	Relevance and relationship	Consistently posts topics *related* to assigned chapter.	Contribute and post
16	Relevance and relationship	Post topics are somewhat *related* to assigned chapter.	Contribute and post
16	Relevance and relationship	Posts topics which do not *relate* to the assigned chapter; makes short or *irrelevant* remarks.	Contribute and post
18	Relevance and relationship	Argues using *relevant* evidence.	Evidence and argument
18	Relevance and relationship	Perhaps *relates* the issue to prior material, offers comparisons or *relates* course material to outside world or to another class.	
29	Relevance and relationship	Message was *unrelated* to discussion.	
32	Relevance and relationship	Postings are not *relevant* to the question posted.	Contribute and post; Questions, problems, and solutions
33	Relevance and relationship	Covers content of reading. *Relates* to education generally.	Content and information; Read and reading
33	Relevance and relationship	*Relates* to learning in other courses in MTL or other programs. Brings in readings or information from sources outside those assigned.	Content and information; Examples and sources; Read and reading
35	Relevance and relationship	Contributions are thoughtful and *relevant* to the	Contribute and post

		discussion.	
45	Relevance and relationship	Comments were barely *related* to main discussion question and/or other student posting.	Questions, problems, and solutions; Contribute and post
49	Relevance and relationship	Postings have questionable *relationship* to reading material.	Contribute and post; Read and reading
54	Relevance and relationship	Message lacks clarity and *relevance*.	Clarification, clarity, and clear
66	Relevance and relationship	Although the text is *relevant*, this is not clearly indicated, so the reader must guess how the text *relates* to the main topic.	Clarification, clarity, and clear
66	Relevance and relationship	Reader may skip the contribution because they don't appreciate its *relevance*.	Contribute and post
69	Relevance and relationship	Applies *relevance*.	
69	Relevance and relationship	*Relates*.	
70	Relevance and relationship	Makes *irrelevant* remarks which are *unrelated* to the topic being discussed.	
29	Application, explanation, and interpretation	Agreed or disagreed with existing discussion and provided (i) limited justification/ *explanation*; (ii) no justification/*explanation*.	
34	Application, explanation, and interpretation	The learner is able to provide additional resources or *applications* of the discussion topic.	Resources
47	Application, explanation, and interpretation	Entries include an outside resource, or a relevatn (sic), specific real-life *application*.	Resources; Relevance and relationship
52	Application, explanation, and interpretation	Does not attempt to *apply* the topic to teaching practice.	

52	Application, explanation, and interpretation	Explores the nuances of the topic and how it might *apply* to teaching practice.	
52	Application, explanation, and interpretation	Shows emerging skills in identifying ways in which the topic might *apply* to teaching practice.	
55	Application, explanation, and interpretation	Discussion postings contain few, if any, new ideas or *applications*; often are a rehashing or summary of other comments.	Ideas; Original, creative, novel, and new; Weave, integrate, and incorporate; Analysis, evaluation, summarization, and synthesis
62	Application, explanation, and interpretation	(i) Posting makes an attempt at *application*, analysis, and/or evaluation. However, ideas do not add to the group's thinking on the topic; (ii) Posting contains at least one meaningful example of *application*, analysis, and/or evaluation related to the content. Ideas add to the group's thinking about the topic.	Thinking, reflection, reasoning, and critique; Ideas; Analysis, evaluation, summarization, and synthesis; Number; Contribute and post; Content and information; Examples and sources
66	Application, explanation, and interpretation	(i) Although the gist of the information is correct, there are problems with the *interpretation* of it. A reader can be misled by the text; (ii) the information is largely accurate but imprecise language could lead a reader to *misinterpret* aspects of the text.	Language, sentence, paragraph, word, and vocabulary; Content and information; Questions, problems, and solutions
66	Application, explanation, and interpretation	(i) The main points and new technical terms are clearly described and/or *explained* so the reader is left with no ambiguity about what was written; (ii) key points and *new* technical terms are not *explained* so the reader is	Original, creative, novel, and new; Clarification, clarity, and clear; Writing, composition, and style

confused.

66	Application, explanation, and interpretation	(i) The text mentions other contributions but neither *explains* the *reference* nor substantially adds to it, so there is no clear benefit to the resolution of the main problem from citing the earlier contribution; (ii) the reason why the contribution is important is touched on but not elucidated, so the reader must make some *interpretations* about the author's view of the contribution's significance.	Questions, problems, and solutions; Citations and references; Contribute and post; Clarification, clarity, and clear
66	Application, explanation, and interpretation	The concluding section does not reinforce or revisit the main point so the reader is unsure about it and likely to *misinterpret* or forget it.	
69	Application, explanation, and interpretation	*Explains* (i) causes; (ii) limitation in argument.	Evidence and argument
69	Application, explanation, and interpretation	Readily offers new *interpretations* of material.	Original, creative, novel and new
1	Mechanics, organization, structure, and expression	Posts are not badly written, but may include a number of *mechanical* errors.	Writing, composition, and style; Contribute and post; Number
25	Mechanics, organization, structure, and expression	Has errors in content or *mechanics*, or is incoherent, or so general in tone that the student could have written it without	Content and information; Writing, composition, and style

		looking at the assignment.	
29	Mechanics, organization, structure, and expression	Complete sentences, comprehensible, *organization* could be improved to present a more coherent argument or statement.	Language, sentence, paragraph, word, and vocabulary; Evidence and argument
29	Mechanics, organization, structure, and expression	Poor sentence *structure* inadequate *organization.*	Language, sentence, paragraph, word, and vocabulary
50	Mechanics, organization, structure, and expression	Poor sentence *structure*, confusing *organization* (2).	Language, sentence, paragraph, word, and vocabulary
52	Mechanics, organization, structure, and expression	(i) Shows a lack of care/competency; (ii) severe errors in *organization*, correctness and/or *expression*.	
52	Mechanics, organization, structure, and expression	Demonstrates competency and (i) attention to detail; (ii) some attention to detail in *organization*, correctness and *expression*.	
52	Mechanics, organization, structure, and expression	Demonstrates effort and some attention to detail in *organization*, correctness and *expression*.	
53	Mechanics, organization, structure, and expression	Weak *organization*.	
66	Mechanics, organization, structure, and expression	(i) The text is not well *structured* so the reader must stop reading at times to try to make sense of the text; (ii) many sentences are poorly *structured* so the reader must stop often to	Language, sentence, paragraph, word, and vocabulary; Thinking, reflection, reasoning, and critique; Clarification, clarity, and clear

		reflect on the meaning of the text; (iii) sentences and paragraphs are well structured and clear so the reader can focus on what is written. Each paragraph has a topic sentence that indicates the subject matter; (iv); minor lapses in sentence *structure*, such as run-on sentences and unnecessarily complex sentence *structures*, force the reader to pause and reflect on the meaning of the text.	
29, 50	Mechanics, organization, structure, and expression	Complete sentences, well *organized*.	Language, sentence, paragraph, word, and vocabulary
62	Language, sentence, paragraph, word and vocabulary	(i) Opening and closing *sentences* are used effectively to help focus the reader; (ii) opening and closing *sentences* are used.	
1	Language, sentence, paragraph, word, and vocabulary	Posts are only a few *sentences* long.	Contribute and post
12	Language, sentence, paragraph, word, and vocabulary	Correct *word* choice.	
12	Language, sentence, paragraph, word, and vocabulary	*Sentences* are clear and *wording* is unambiguous.	Clarification, clarity, and clear
24	Language, sentence, paragraph, word, and vocabulary	The subject field is a complete *sentence*, and conveys the main point of the comment. The reader clearly understands the main point of the comment	Understand, comprehend, and grasp; Clarification, clarity, and clear; read and reading

		before reading it.	
24	Language, sentence, paragraph, word, and vocabulary	The subject field provides key *word*(s) only. The reader knows the general area that the comment deals with.	
33	Language, sentence, paragraph, word, and vocabulary	Exceptional use of *vocabulary*. Creative and interesting to read.	Original, creative, novel, and new; Read and reading
33	Language, sentence, paragraph, word, and vocabulary	*Word* usage correct.	
35	Language, sentence, paragraph, word, and vocabulary	Professional *vocabulary* and writing style are used (i) consistently; (ii) frequently; (iii) occasionally throughout the discussion.	Writing, composition, and style; Frequently, regularly, occasionally, rarely, and sporadically
54	Language, sentence, paragraph, word, and vocabulary	Employs nonbiased, nonracist, and nonsexist *language*.	
66	Language, sentence, paragraph, word, and vocabulary	Many *paragraphs* lack topic *sentences* or have poor flow so the main points and linkages among explanatory text are not clear.	Connections and links; Clarification, clarity, and clear
66	Language, sentence, paragraph, word, and vocabulary	*Paragraphs* present a complete argument, but may not flow so well.	Evidence and argument
70	Language, sentence, paragraph, word, and vocabulary	Inappropriate *language* for the context and intended audience.	Miscellaneous
70	Language, sentence, paragraph, word,	The learner usually expressed themselves clearly. At times the	Mechanics, organization, structure, and expression; Clarification, clarity, and

	and vocabulary	*language* impeded the meaning of their message.	clear
1	Number	*3-4* posts spaced somewhat throughout the discussion period.	Contribute and post
1	Number	*4-5* posts spaced throughout the discussion period.	Contribute and post
1	Number	*5-6* posts spaced throughout the entire discussion period.	Contribute and post
2	Number	(i) *0-2*; (ii) *1-2* posts, not spaced throughout the discussion period.	Contribute and post
7	Number	(i) Less than required; (ii) participates beyond the required; (iii) participates with the required *number* of postings.	Contribute and post; Participation
15	Number	*2* or more postings per unit made on at least two different days, including: *1* student initiated topic AND *1* response to peer.	Contribute and post; Response, reply, and answer (others)
31	Number	Minimum *number* of postings not met.	Contribute and post
33	Number	Feedback is *one* or *two* word reply.	Response, reply, and answer (others); Feedback
48	Number	Length should be about *1/2* page in length (approximately *100* words).	Language, sentence, paragraph, word, and vocabulary
49	Number	(i) *2-6* not distributed; (ii) *3-6* postings somewhat distributed (iii) *4 - 6* postings distributed; (iv) *5-6* postings well distributed.	Contribute and post
67	Number	Posts at least *one* constructive message each week in forums other than the Water Cooler and Class Chapel.	Contribute and post

12	Evidence and argument	*Argumentation* is/are from (i) the *evidence*. No ad hominem *arguments*; (ii) opinion, not from *evidence*.	Opinions and insights
12	Evidence and argument	Ordinary, good writing. Lapses are regular and patterned, but do not undermine the communication or the persuasiveness of the *argument*.	Frequently, regularly, occasionally, rarely, and sporadically
18	Evidence and argument	*Argues* using relevant *evidence*.	Relevance and relationship
19	Evidence and argument	Shows with direct *evidence* (examples and quotations) from the discussions what makes them superior.	Examples and sources
19	Evidence and argument	Exhibits good insights on what makes the *arguments* convincing.	Opinions and insights
50	Evidence and argument	Complete sentences, but *argument* isn't coherent.	
50	Evidence and argument	(i) has considered the *arguments* well; (ii) has considered the *arguments*.	
54	Evidence and argument	Consistently justifies assertions and judgments with thorough explanations that are supported with empirical *evidence*, theory, and authority.	Support; Application, explanation, and interpretation
57	Evidence and argument	Basic organization with limited *evidence*.	Mechanics, organization, structure, and expression
57	Evidence and argument	Minimal organization with generalities to support *evidence*.	Mechanics, organization, structure, and expression; Support
57	Evidence and argument	Organized *argument* with good supporting *evidence*.	Support; Mechanics, organization, structure, and expression
57	Evidence and argument	Well-organized, persuasive *argument* with accurate, supporting *evidence*.	

66	Evidence and argument	Main body of contribution makes connected points that clearly build the *argument* so the text flows from introduction to conclusion in a logical manner, thereby helping the reader to follow the thinking behind the text.	Thinking, reflection, reasoning and critique; Clarification, clarity, and clear; Contribute and post
67	Evidence and Argument	*Arguments* are well supported.	
1	Frequently, regularly, occasionally, rarely, and sporadically	Posts respond to other students' comments *regularly*.	Response, reply, answer (others); Contribute and post
4	Frequently, regularly, occasionally, rarely, and sporadically	Posts respond to other students' comments (i) *occasionally*; (ii) *rarely*, or are simply "I agree" statements.	Response, reply, answer (others)
8	Frequently, regularly, occasionally, rarely, and sporadically	Read discussion but *infrequently*.	Read and reading
16	Frequently, regularly, occasionally, rarely, and sporadically	Posts *frequently*.	Contribute and post
29	Frequently, regularly, occasionally, rarely, and sporadically	Provides comments and new information in (i) a *regular* and equitable manner; (ii) a fairly *regular* manner.	Content and information; Original, creative, novel, and new
29	Frequently, regularly, occasionally, rarely, and sporadically	*Sporadically* provides comments and some new information.	Content and information; Original, creative, novel, and new

45	Frequently, regularly, occasionally, rarely, and sporadically	Posted *regularly* during the week.	Contribute and post
50	Frequently, regularly, occasionally, rarely, and sporadically	Provides comments (i) in a *regular* manner; (ii) *regularly*; (iii) *sporadically*	
67	Frequently, regularly, occasionally, rarely, and sporadically	A lurker tends to read messages in the discussion forums on a weekly or more *frequent* basis but contributions are *sporadic*.	Contribute and post; read and reading
67	Frequently, regularly, occasionally, rarely, and sporadically	Postings tend to be spread throughout the week indicating *frequent* access to the discussions.	Contribute and post
70	Frequently, regularly, occasionally, rarely, and sporadically	*Frequent* and even distribution throughout the course.	
70	Frequently, regularly, occasionally, rarely, and sporadically	Uneven and *infrequent* distribution.	
8	Ideas	Used *ideas*/words of others without attribution.	Language, sentence, paragraph, word, and vocabulary
16	Ideas	*Ideas* are difficult to understand; lack of preparation evident.	Understand, comprehend, and grasp
20	Ideas	The participant consistently helped clarify or synthesize other group members' *ideas*.	Analysis, evaluation, summarization, and synthesis; Clarification, clarity, and clear;
27	Ideas	*Ideas* were incomplete or had inaccuracies.	
33	Ideas	Initiates *ideas*	Time, initiative, and prompting

33	Ideas	Adds *ideas*; is specific and detailed. Relates to own personal experiences and to others'.	Relevance and relationship
34	Ideas	The learner communicates *ideas* (i) eloquently and thoroughly; (ii) well, but fails to provide evidence to support his/her *ideas*, opinions, and conclusions.	Evidence and argument; Opinions and insights; Support
38	Ideas	*Ideas* not well-developed, does not add to discussion.	
47	Ideas	Each entry (i) contains; (ii) has little in the way of thoughtful, substantive *ideas* concerning assignment or course content related to it.	Content and information; Relevance and relationship
54	Ideas	Presents *ideas* in a logical sequence with attention to composition standards.	
62	Ideas	*Ideas* add significantly to the groups thinking about the topic.	Thinking, reflection, reasoning, and critique
66	Ideas	The writer makes references to earlier works that are a starting point for new *ideas* but, apart from the reference to the earlier work, not much information is incorporated.	Citations and references; Content and information; Weave, integrate, and incorporate; Original, creative, novel, and new
68	Ideas	Developing *ideas*.	
69	Ideas	Rarely acknowledges conflicting or corroborating *ideas* and sources of those *ideas*.	Examples and sources; Frequently, regularly, occasionally, rarely, and sporadically
8	Examples and sources	(i) Clear referencing of all *sources*; (ii) clear referencing of all *sources*, some relevant; (iii) clear referencing of well-chosen and highly relevant *sources*.	Citations and references; Relevance and relationship; Clarification, clarity and clear

8	Examples and sources	*Sources* generally referenced.	Citations and references
12	Examples and sources	All *sources* are cited.	Citations and references
12	Examples and sources	The message uses historical *sources*, including outside as well as required reading.	Read and reading;
18	Examples and sources	Incorporates direct quotations from at least three different primary *sources*.	Weave, integrate, and incorporate; Number
32	Examples and sources	Postings reflect the reading but no information given to *source* of information.	Content and information; Read and reading; Contribute and post
45	Examples and sources	Illustrated a point with *examples*.	
54	Examples and sources	(i) Acknowledges; (ii) does not acknowledge the *source* of information.	Content and information
66	Examples and sources	Information comes from Web sites or other *sources* that have no recognized authority, so the validity or strength of the *source* is unknown.	Content and information
66	Examples and sources	Information, concepts and opinions are supported with references to published literature, especially primary (*original*) *sources* of information, rather than review articles or textbooks. This allows the reader to independently review the cited *sources*.	Content and information; Concepts; Opinions and insights; Citations and references; Support
66	Examples and sources	Bibliographic information largely complete, but some information missing so the reader may have difficulty finding some references. Most *sources* can still be easily checked.	Content and information; Citations and references

66	Examples and sources	Most *sources* are indicated, but in only a few cases the *sources* are not given or are ambiguous, so the reader has to check some of the *sources*.	
15	Etiquette and protocols	(i) 1-2; (ii) 2-3; (iii) significant infractions against discussion board *etiquette*.	Number
15	Etiquette and protocols	Follows discussion board *etiquette* as posted in Unit 1.	
27	Etiquette and protocols	Response was not applicable to the discussion or did not follow *Netiquette*.	Response, reply, and answer (discussion)
49	Etiquette and protocols	(i) 1; (ii) 2-3; (iii) 4 or more online *protocol*(s) not adhered to.	Number
49	Etiquette and protocols	All on-line *protocols* followed.	
63	Etiquette and protocols	Rules of *netiquette* are respected.	
70	Etiquette and protocols	Obviously aware of online *protocols* and rules and addressed themselves appropriately.	
70	Etiquette and protocols	Occasionally slipped in observing online *protocols*.	
70	Etiquette and protocols	Serious misuse of the medium. Failure to meet *protocols*.	
12	Writing, composition, and style	*Writing style* can still be conversational rather than formal. The writing does not have to be flawless, but it will be better than average *writing*.	
16	Writing, composition, and style	Occasional lack of connection to topic; well-*written* and presented.	Connections and links

36	Writing, composition, and style	The style of *writing* (i) contributes; (ii) generally contributes; (iii) does not contribute to open, honest communication.	Contribution and post
53	Writing, composition, and style	Many *stylistic* errors, not organized, no direct & clear communication.	Mechanics, organization, structure, and expression; Clarification, clarity, and clear
53	Writing, composition, and style	Several *stylistic* errors.	
54	Writing, composition, and style	Consistently applies appropriate *composition* standards.	
60	Writing, composition, and style	*Writing* in the post meets (i) all three; (ii) at least two; (iii) less than two of the specified readability criteria.	Contribute and post; Number
62	Writing, composition, and style	(i) All; (ii) almost all the *writing* is clear, complete.	Clarification, clarity, and clear
8	Weave, integrate, and incorporate	Skill shown in *weaving* contributions into general discussion, following up on contributions of others.	Contribute and post
18	Weave, integrate, and incorporate	*Incorporates* direct quotations from each of those discussions.	
23	Weave, integrate, and incorporate	Explicitly respond to your group members' postings and *integrate* them into your responses.	Response, reply, and answer (others); Contribute and post
32	Weave, integrate, and incorporate	Responds to question posted and to student posting (i) and *weaves* their information into their own posting; (ii) and weaves their information into their own posting. Additionally,	Response, reply, and answer (discussion); Questions, problems, and solutions; Content and information; Contribute and post; Connections and links; Examples and sources

		weaves information in from links to outside sources; (iii) but does not *weave* information into posting.	
42	Weave, integrate, and incorporate	*Incorporate* quotes from the other postings.	Contribute and post
49	Weave, integrate, and incorporate	(i) Very clear that readings were understood and *incorporated* well into responses; (ii) readings were understood and *incorporated* into responses.	Clarification, clarity, and clear; Understand, comprehend, and grasp; Response, reply, and answer (discussion); Read and reading
54	Weave, integrate, and incorporate	*Interweaves* and acknowledges the ideas of others.	Ideas
70	Weave, integrate, and incorporate	Issues and knowledge gained *incorporated* well into responses.	Response, reply, and answer (discussion)
8	Quality, value, valid, and good	(i) Made several *good* contributions; (ii) made several *good* contributions and one or more outstanding contribution.	Contribute and post
8	Quality, value, valid, and good	Made a few (i) *good*; (ii) *valid* contributions.	Contribute and post
24	Quality, value, valid, and good	The comment adds no *value* to the discussion.	
24	Quality, value, valid, and good	The comment lacks at least one of the above qualities, but is above average in *quality*.	Number
24	Quality, value, valid, and good	The comment lacks two or three of the required *qualities*. Comments which are based on personal opinion or personal experience often fall within this category.	Number; Opinions and insights

59	Quality, value, valid, and good	(i) High; (ii) average; (iii) poor *quality* post.	Contribute and post
33	Feedback	Discusses points briefly; *feedback* is non-.reflective.	Thinking, reflection, reasoning and critique
33	Feedback	Is specific and detailed in *feedback* given.	
34	Feedback	The learner provides comments on other's ideas, but not specific *feedback*.	Ideas
34	Feedback	The learner provides meaningful *feedback* on other's ideas. (i) comments include how the idea could be enhanced, how the idea might be applied to a different content area, or personal experience; (ii) comments include personal reactions and/or experience.	Ideas; Content and information
45	Feedback	Provided relevant responses and constructive *feedback* to the student posting.	Relevance and relationship; Response, reply, and answer (others); Contribute and post
45	Feedback	Replied to other student postings and provided relevant responses and constructive *feedback* to the student.	Relevance and relationship; Response, reply, and answer (others); Contribute and post
54	Feedback	Consistently offers meaningful, encouraging *feedback* to others interjecting specific examples and suggestions which stimulates group discussion.	Examples and sources
54	Feedback	Graciously offers and receives *feedback*.	
8	Read and reading	*Read* (i) 2-3; (ii) 3 times / week or more. (4)	Number
18	Read and reading	Little or no evidence of having done the *reading*.	Evidence and argument

25	Read and reading	Posts and replies show evidence of student's having *read* and thought carefully about all parts of the assignment.	Thinking, reflection, reasoning and critique; Contribute and post; Response and reply; Evidence and argument
25	Read and reading	There is some evidence that the student has *read* and completed all parts of the assignment.	Evidence and argument
33	Read and reading	Interesting to *read*.	
67	Read and reading	Messages are well-formatted with appropriate spacing and are easy to *read*.	
7	Clarification, clarity, and clear	Posting is attached to the right discussion board, but does not *clearly* reflect the assignment.	Contribute and post;
15	Clarification, clarity, and clear	Postings have *unclear* relationship to course material.	Relevance and relationship; Contribute and post
34	Clarification, clarity, and clear	The learner communicates ideas, opinions, and conclusions *clearly* and completely.	Opinions and insights; Ideas;
53	Clarification, clarity, and clear	(i)discussion *clear* most of t he time; (ii)discussion consistently *clear* with no digressions.	Time, initiative, and prompting;
54	Clarification, clarity, and clear	Seeks *clarification*.	
54	Clarification, clarity, and clear	Message lacks *clarity* and relevance.	Relevance and relationship
67	Clarification, clarity, and clear	Messages are characterized by conciseness, *clarity* of argument, depth of insight into theoretical issues, originality of treatment, relevancy.	Opinions and insights; Relevance and relationship; Evidence and argument
70	Clarification, clarity, and clear	The learner used *clear* and appropriate language for the context. Postings were *clear* and unambiguous.	Language, sentence, paragraph, word, and vocabulary; Miscellaneous; Contribute and post

8	Contribute and post	Did not *contribute*.	
16	Contribute and post	(i) does not *post*; (ii) *posts* minimum requirement.	
45	Contribute and post	*Posted* main topic information and one response on same day.	Content and information; Number; response, reply, and answer (discussion); Hour, day, minute, date, deadline, and late
46	Contribute and post	No initial *posting*.	
56	Contribute and post	Rehash or summarize other *postings*.	Analysis, evaluation, summarization, and synthesis
56	Contribute and post	Some, or all, required *postings* missing.	
70	Contribute and post	Uneven distribution throughout the course. Makes some *contributions* to the online discussion but not always present in an ongoing way.	
7	Respect, offensive, and abusive	Appropriate comments (i) and responds *respectfully* to other student's postings; (ii) thoughtful, reflective, and *respectful* of other student's postings.	Response, reply, and answer (others); Contribute and post; Thinking, reflection, reasoning, and critique
20	Respect, offensive, and abusive	The participant was rude or *abusive* to other course participants.	Participation
36	Respect, offensive, and abusive	Does not comply with established group best practices for learning. Postings do not adhere to the ground rules of *respect*, confidentiality, and professionalism.	Contribute and post
36	Respect, offensive, and abusive	Participates in the class in accordance with best practices for learning. Postings generally are *respectful* of others' ideas, opinions and feelings.	Participation; Contribute and post; Ideas; Opinions and insights

36	Respect, offensive, and abusive	Proactively participates in the class in accordance with all best practices for learning. All postings are *respectful* of others' ideas, opinions and feelings and assist in clarification of other participants' perspectives.	Contribute and post; Ideas; Opinions and insights; Clarification, clarity, and clear; participation; Miscellaneous
54	Respect, offensive, and abusive	Includes rare and stilted attempts to build mutually beneficial relationships with peers. Easily takes *offense* to feedback or employs *offensive* language.	Relevance and relationship; Language, sentence, paragraph, word, and vocabulary; Feedback
67	Respect, offensive, and abusive	Members of this course follow the model of Jesus Christ by being empathic rather than aggressive. Postings and e-mail reveal the ability of students to conduct themselves appropriately in professional relationships by manifesting such qualities as sociability, sensitivity, discernment, concern, kindness, and gentleness. Self-control is also demonstrated in qualities that would include *respectfulness*, flexibility, temperateness, discreteness, humbleness, forgiveness, and confidence.	Contribute and post; Relevance and relationship; Quality, value, valid, and good; Miscellaneous
62	Concepts	Content reveals (i) a general grasp of the theoretical *concepts*; (ii) a solid integration of theoretical *concepts*.	Understand, comprehend, and grasp; Content and information
62	Concepts	Content reveals (i) a very basic grasp of *concepts*; (ii) lack of understanding of the	Understand, comprehend, and grasp; Content and information

		concepts.	
69	Concepts	Demonstrates excellent grasp of key *concepts*.	Understand, comprehend, and grasp
69	Concepts	Shows evidence of understanding most of the major *concepts*.	Understand, comprehend, and grasp; Evidence and arguments
69	Concepts	Shows understanding of only minority of *concepts*.	Understand, comprehend, and grasp
53	Resources	No *Resource* added.	
53	Resources	*Resource* that extends the discussion is added, (i) "hot link" established, web s ite title and 2 sentence annotation that *clearly* explains the content of the site added; (ii) "hot link" established, web site title and annotation added.	Language, sentence, paragraph, word, and vocabulary; Content and information; Number; Clarification, clarity, and clear
54	Resources	(i) Does not share; (ii) shares *resources* and experiences.	
54	Resources	Consistently offers clear, elaborate descriptions of relevant *resources* and experiences appropriate for the reader and the context.	Miscellaneous; Relevance and relationship; Clarification, clarity, and clear
54	Resources	Shares relevant *resources* and experiences.	Relevance and relationship
54	Collaboration, community, and team-building	Effectively employs stress-reducing (e.g., humor) and *team-building* strategies.	
54	Collaboration, community, and team-building	Offers reasonable *collaboration* strategies.	
67	Collaboration, community, and team-building	Shows little evidence of *collaborative* learning.	Evidence and argument
2, 16, 70	Collaboration, community, and team-building	Aware of needs of *community*.	
18	Miscellaneous	Major lapses in many rubric areas.	

18	Miscellaneous	Meets minimum length requirement.	
19	Miscellaneous	Falls slightly short in one of the elements required of a superior evaluation.	
19	Miscellaneous	Major lapses in many rubric areas.	
24	Miscellaneous	One point comments may provide important social presence and contribute to a collegial atmosphere.	Number
27	Miscellaneous	Politely offers alternative perspectives.	
27	Miscellaneous	Does not enter class during the week.	
36	Miscellaneous	Little if any theoretical rationale underlying the use of specific strategies or materials included.	
38	Miscellaneous	Well-developed but not as substantive as above.	
51	Miscellaneous	The document can be easily followed.	
54	Miscellaneous	Identifies possibilities.	
54	Miscellaneous	Exploits functionalities of Blackboard and the Web to support meaningful discussions.	Support
54	Miscellaneous	Does not develop facility with the medium nor attend to acceptable standards of communication.	
54	Miscellaneous	Messages might include formatting or multimedia elements which enhance meaning.	
66	Miscellaneous	The contribution may include significant material but this is not indicated, so the reader must guess it.	Contribute and post
67	Miscellaneous	(i) frequently; (ii) rarely includes Christian/biblical	Frequently, regularly, occasionally, rarely, and

		perspectives.	sporadically
67	Miscellaneous	Evidence of support and encouragement is exchanged between students.	
69	Miscellaneous	Extending beyond existing principles.	
69	Miscellaneous	Focus of one feature in complex case (misses important attributes).	
69	Miscellaneous	Offers an occasional divergent viewpoint.	
69	Miscellaneous	Rarely takes a stand on issues.	
69	Miscellaneous	Shows compare/contrast.	
69	Miscellaneous	Shows description, appropriate combining/listing. Shows over- attention to detail; unstructured facts.	
69	Miscellaneous	Shows identification/ terminology.	
70	Miscellaneous	Able to set goals and develop strategies to achieve their learning goals.	
70	Miscellaneous	No strategies to develop learning goals.	
70	Miscellaneous	Needs constant encouragement.	
71	Miscellaneous	Comprehensive.	
38	Vague	Developing.	
64	Vague	A poor response does not meet any of the above criteria.	Response, reply, and answer (discussion)
68	Vague	Well developed.	

Appendix I

Performance criteria and ratings' categories assigned to the Cognitive core category, by percentage of category

Performance criteria category	% of category	Ratings category	% of category
Other	2.8%	Thinking, reflection, and reasoning	11.9%
Thinking and reflection	2.8%	Understand, comprehend, and	7.7%
Analysis, evaluation, interpretation, application, and	1.6%	Analysis, evaluation, summarization, and synthesis	7.4%
Quality and relevance	1.6%	Content and information	6.7%
Arguments	1.2%	Support	6.0%
Ideas, Insights, connections, and Links	1.2%	Connections and links	5.6%
Content	0.9%	Original, creative, novel, and new	5.1%
Feedback, incorporation, interweave, and integration	0.5%	Relevance and relationship	4.7%
References and support	0.2%	Response, reply, and answer (discussion)	4.4%
		Application, explanation, and	4.2%
		Miscellaneous	4.2%
		Evidence and	3.7%
		Opinions and insights	3.0%
		Ideas	2.8%
		Citations and references	2.6%
		Questions, problems, and solutions	2.3%
		Concepts	1.6%

Examples and sources	0.9%
Weave, integrate, and incorporate	0.9%
Clarification, clarity, and clear	0.7%
Contribute and post	0.2%
Feedback	0.2%
Read and reading	0.2%

Appendix J

Performance criteria and ratings' categories assigned to the Mechanical core category, by percentage of category

Performance criteria	% of category	Ratings	% of category
Writing and Style	7.9%	Grammar, spelling and punctuation	24.6%
Expression, Delivery, Mechanics, and Organization	4.2%	Citations and references	10.5%
References and Support	3.1%	Mechanics, organization, structure, and expression	9.4%
Language and grammar	2.6%	Language, sentence, paragraph, word and vocabulary	8.4%
		Writing, composition, and style	6.8%
		Examples and sources	5.8%
		Opinions and insights	3.7%
		Clarification, clarity, and clear	3.1%
		Response, reply, and answer (discussion)	2.6%
		Miscellaneous	1.6%
		Resources	1.6%
		Read and reading	1.0%
		Support	1.0%
		Understand, comprehend, and grasp	1.0%
		Content and information	0.5%
		Relevance and relationship	0.5%

Appendix K
Performance criteria and ratings' categories assigned to the Procedural/Mechanical core category, by percentage of category

Performance criteria	% of category	Ratings	% of category
Timing, Frequency, and Initiative	6.1%	Time, initiative, and prompting	13.3%
Participation	3.3%	Hour, day, minute, date, deadline, and late	11.6%
Best Practices, Etiquette, and Protocols	2.2%	Participation	11.0%
Expression, delivery, mechanics, and organization	1.1%	Number	9.4%
Other	1.1%	Etiquette and protocols	7.2%
Quality and relevance	1.1%	Frequently, regularly, freely, occasionally, rarely, and sporadically	7.2%
Content	0.6%	Quality, value, valid, and good	5.5%
Length	0.6%	Contribute and post	3.9%
		Miscellaneous	3.3%
		Read and reading	3.3%
		Respect, offensive, and abusive	3.3%
		Response, reply, and answer (discussion)	2.8%
		Opinions and insights	1.1%
		Ideas	0.6%
		Language, sentence, paragraph, word, and vocabulary	0.6%

Appendix L

Performance criteria and ratings' categories assigned to the Interactive core category, by percentage of category

Performance criteria	% of category	Ratings	% of category
Response and Reply	6.6%	Response, reply, and answer (others)	21.0%
Other	3.0%	Interaction	12.6%
Feedback, Incorporation, Interweave, and Integration	1.2%	Questions, problems, and solutions	11.4%
Interaction	1.2%	Response, reply, and answer (discussion)	9.0%
References and Support	1.2%	Feedback	4.8%
Ideas, Insights, connections, and Links	0.6%	Participation	4.2%
		Weave, integrate, and incorporate	4.2%
		Collaboration, community, and team-building	3.6%
		Resources	2.4%
		Thinking, reflection, reasoning and critique	2.4%
		Analysis, evaluation, summarization, and synthesis	1.8%
		Frequently, regularly, freely, occasionally, rarely, and sporadically	1.8%
		Ideas	1.8%
		Application, explanation, and interpretation	1.2%
		Connections and links	1.2%
		Miscellaneous	1.2%

Respect, offensive, and abusive	1.2%
Opinions and insights	0.6%