

Design and Use of a Rubric to Assess and Encourage Interactive Qualities in Distance Courses

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Distance learning theory and research holds that interaction is an essential characteristic of successful distance learning courses. However, the lack of definition as to what constitutes observable, measurable interactive qualities in distance learning courses has prevented transfer from theory and research to design practices and has hindered research on ways to improve interactive qualities of courses. In this article the authors describe how findings from theory and research were used to develop a rubric for assessing interactive qualities in distance courses. The rubric is presented, along with data from formative uses of the instrument in distance learning courses. Current and anticipated applications of the rubric include use by students as part of postcourse evaluations and by researchers and instructors as a tool to allow more meaningful examination of the role of interaction in enhancing achievement and student satisfaction in distance learning courses.

The topic of interaction figures prominently in discussions of effective distance learning practices. Considering that, as Fulford and Zhang (1993, 8) observed, "interaction has long been considered the key to success in traditional classrooms," it is not surprising that it has also come to be considered

a *sine qua non* for successful distance courses. Research yields consistent indications that increased interaction in distance courses is associated with higher achievement and student satisfaction (Zhang and Fulford 1994; Zirkin and Sumler 1995). Additionally, there is agreement that the dimension of physical presence creates substantial differences between characteristics of communications in face-to-face environments and those in distance learning ones and that, as a consequence, distance courses must use different, often more intensive means than traditional courses do to infuse instruction with interactive qualities (Rheingold 2001).

In a series of articles that received widespread attention, Clark (1983, 1985, 1991, 1994) maintained that no technology resources of any kind have unique characteristics to increase learning. However, Kozma (1991, 1994) countered that, when embedded in instruction that was well grounded in "cognitive and social processes by which knowledge is constructed" (1994, 1), technologies could indeed offer uniquely powerful learning opportunities. As distance courses become more common in education, anecdotal reports are beginning to appear from instructors and students that they are experiencing a higher degree of interaction in distance courses than they have in any previous face-to-face ones (Edmonds 1996; Loupe 2001). These reports offer little or no empirical verification, but in combination with acknowledged differences between interactive methods required by distance versus face-to-face settings, they suggest the intriguing possibility of support for Kozma's argument. Distance environments that are designed to make effective use of various technology resources could offer unique opportunities for learner engagement and the learning benefits that accrue when students are thus engaged. Wagner (1994) stipulated three prerequisites in order to explore this possibility and make interaction a more useful construct to inform design and research techniques for distance learning environments:

1. An operational definition of interaction based on relevant theory and research.
2. Course designs that go beyond replicating face-to-face methods and infuse interaction in ways that take advantage of the mediation possible between learner and technology.
3. Empirical assessments of interaction and measurement of effects on achievement.

Much useful work has been done to define interaction as a construct and identify a theoretical basis for the characteristics of interaction associated with distance learning (Gilbert and Moore 1998; Moore 1989; Vrasidas and

McIsaac 1999; Wagner 1994; Yacci 2000). However, the needed articulation from theory and research to course design guidelines and impact research has not taken place. Course designers and instructors continue to report design guidelines primarily as "best practices" based on personal experiences.

One reason for the lack of transfer from theory to practice in this area is the complex nature of interaction in distance courses and the difficulty of designing assessment and evaluation tools that build on a solid theoretical framework, yet provide sufficiently practical guidelines to make the concept of interaction measurable and useful to distance instructors and researchers alike. Jonassen, Peck, and Wilson (1999) recommended rubrics as tools for assessing complex performance in a way that gives input and feedback to help improve the performance. Rubrics, which consist of a set of elements that describe a performance together with a scale (e.g., of 1–5 points) based on levels of performance for each element, have become increasingly popular in educational technology as a means of assessing complex tasks such as multimedia design (McCullen 1999), Web page creation (Chenau 2000), and quality of school technology plans (Kimball and Sibley 1998). When these rubrics are combined with descriptions and examples of effective performances for each component quality, they become a powerful way to clarify expectations and guide performance.

As a means of encouraging the next steps in the study and use of interaction in distance learning that will lead to more uniformly high quality, the authors performed an analysis of theories and research on features that contribute to interaction in distance learning environments, and a rubric for assessing interactive qualities in distance courses was derived from the analysis. Presented here are (1) an analysis of theories and research, (2) the rubric derived from the analysis, (3) sample interaction-building techniques reported by distance learning practitioners to clarify each performance element, and (4) feedback from formative uses of the rubric by distance course instructors and students. It should be noted that the rubric presented here has been formulated and tested to address distance learning environments in which an instructor is available to a specific group of learners, rather than courses that have been set up for students to complete on a self-paced, self-instructional basis.

Analysis of Theories and Research on Interaction

Theories from several disciplines and domains of research have been brought to bear on the task of creating a useful model of interactive qualities for distance learning. Insights of two kinds have proven informative:

(1) characteristics that define interaction in distance learning and (2) factors that influence it in distance learning settings.

Characteristics That Define Interaction

Three concepts permeate discussions of interaction and form a foundation and context for understanding all work related to interactive processes. The first is Moore's (1989) identification of types of interaction by members involved in each exchange: learner-content, learner-instructor, and learner-learner. This has proven a durable and useful framework from several standpoints. It identifies the entities involved in instructional interaction and affirms the value of student-to-student exchanges, thus making a key addition to the traditional, instructor-centered view of instruction. Equally important is the contribution of an easily observable, measurable variable (e.g., presence and qualities of each type of interaction) to evaluate the impact of interaction in specific courses.

A second perspective, the characterization of interaction as message transmission, is derived from early communications models initially offered by Shannon and Weaver (1949). Wagner (1994) reported modifications to this model by Schramm and Chute. However, common to all these models and discussions based on them is identification of elements involved in a completed message: a message source, a means of signal transmission, a destination or receiver, and extraneous "noise," or interference with message communication. Yacci (2000) referred to these interactions as "completed message loops." Like Moore's (1989) classification, completed messages offer a measurable component of interaction.

Yet a third quality is usually mentioned in descriptions of highly interactive distance courses but defies easy measurement: interaction as social and psychological connections. Zhang and Fulford (1994), Wolcott (1996), and Gilbert and Moore (1998) emphasized the important and complex interplay between interaction for instructional purposes and interaction based on social connections and perceptions of connections among participants. Just as in traditional classrooms, students and instructors in distance learning environments exchange messages and form perceptions of each other, of the subject matter content, and of the course; these exchanges and perceptions affect the nature of messages and thus of the learning processes that take place. These authors share the view that a distance learning environment in which there is friendly and open exchange among students and instructor is likely to be more productive from a learning standpoint than an environment in which exchanges are formal and circumscribed.

These defining elements related to interaction help clarify and make more significant a key distinction Wagner (1994) drew between a desired quality of instruction, which she referred to as "interaction," and attributes of instruction made possible by characteristics of instructional delivery systems, which she termed "interactivity." When this distinction is made, interaction either as social or instructional messages among entities in a course may be enabled or limited by the characteristics of technological resources—what Wagner called interactivity as "machine attributes." This distinction between interaction and interactivity, although a potentially useful contribution to measurement of interactive qualities, has proven less helpful from a semantic standpoint, because the terms often have been used interchangeably in the literature. Differentiating these terms becomes important if one is to make the case that various kinds of distance learning system resources used to convey messages (e.g., fax, e-mail, videoconferencing) have differing potential for enhancing interaction and that some have, if used in ways described by Kozma (1991, 1994), greater inherent capabilities than others to increase the interactive qualities of a course.

Moore's theory of transactional distance (Moore 1983; Moore and Kearsley 1996) emphasizes the interplay among elements that help define interaction in distance courses. Moore posited that transactional distance is both a pedagogical and psychological phenomenon—a potential gap in understanding between the behaviors of teacher and learners that can occur in any course. In distance courses, this potential is *increased* by the physical distance separating teacher and students but can be *decreased* by teacher-controlled variables such as dialogue (i.e., message loops) and course structures (i.e., instructional activities and technology uses) and by student variables (e.g., the degree of autonomy learners must employ to be successful).

Figure 1 shows the interrelationship among entities, messages, and social exchanges in a distance learning course in which both students and instructor(s) are present. This figure depicts a functional definition of interaction in such courses as *a created environment in which both social and instructional messages are exchanged among the entities in the course, and in which messages are both carried and influenced by the activities and the technology resources being employed.*

The primary purpose served by defining these components is, as Wagner (1994) said, to generate a conceptual framework for interaction as a context to shape and direct ongoing discussion and study. To make this model most useful as a source of design guidelines, a rubric can help make assessment of interaction more feasible. Such a rubric should be based on a synthesis of identifiable and measurable elements that contribute to and comprise in-

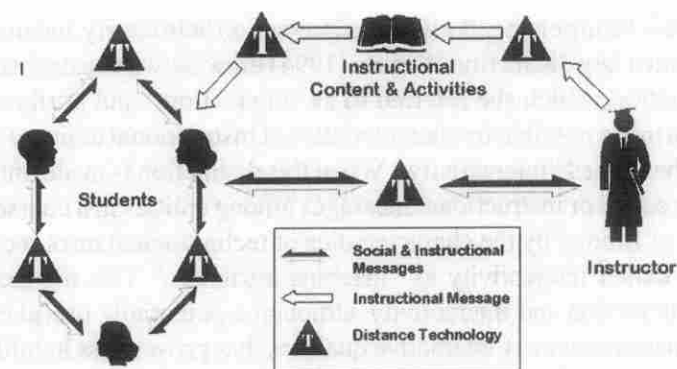


Figure 1. Model of an Instructor-Directed Interactive Distance Learning Environment

teraction. Identifying these elements and the component types and levels of behaviors in them was informed by a review of factors that influence interaction in distance learning.

Factors Influencing Interaction in Distance Settings

In a comprehensive literature review, Wagner (1994) sought to identify variables that relate to interaction in an instructional environment. Drawing on work in four categories of inquiry (learning theories, instructional theories, instructional design models, and instructional delivery systems), she reviewed research findings and constructs from each area that contribute to interaction:

Learning theories. Wagner's review of learning theories yielded five variables whose types, amounts, and qualities impact the interactions (e.g., messages, exchanges, and perceptions) that occur among the entities in a course (learner, instructor, and content). These learning variables are feedback, elaboration, learner control, self-regulation, and motivation.

Instructional theories. Learning theories have given rise to theories about instructional methods that can enhance the learning theory variables described previously, thereby increasing the interactive qualities required for more effective learning. For example, Gagne, Briggs, and Wager (1992) proposed that nine different "events of instruction" could provide conditions "external to the learner to support internal processes of learning" (188) and that instructional activities to accomplish each event would differ according to the desired learning outcome (238–244). Instruction based on this theory

would call for differing methods to achieve interaction for each type of learning outcome (e.g., concepts, rules, problem solving, verbal information, motor skills). Thus, teaching types of sentence structures would require different interactive techniques than would teaching types of, say, tennis serves.

Instructional design models. Analyzing the instructional requirements of a given course and arranging for an optimal (e.g., interactive) sequence of instructional activities is based on concepts from both learning theory and instructional theory, and has come to be known as "systematic instructional design." As Wagner (1994) pointed out, systematic instructional design can be a valuable strategy, because it calls for a heuristic approach to prescribing interactive activities and delivery systems for specific subject area objectives. However, she also noted that it is more useful for learning with product outcomes (e.g., achievement scores, pre/posttests) than for complex, ill-defined performances.

Instructional delivery systems. Finally, Wagner (1994) cited the characteristics of interactive technologies used to transmit messages as important variables in the type and quality of interactions that can take place in a distance environment.

Wagner (1994) discussed learning and instructional theory variables from a perspective on learning as individual performance and achievement. However, other authors emphasize theories that view learning as a shared, collaborative activity and discuss the contributions to interaction of methods that derive from this view. In their discussion of transactional distance theory, Moore and Kearsley (1996) identified learner autonomy as a critical factor in reducing transactional distance in low-structure courses. However, they also stressed that program designs that encourage and promote learner autonomy could "allow for more collaborative relationships of teachers and learners" (205). These designs move away from behaviorist models and toward more constructivist ones. Echoing Moore and Kearsley, Garrison (2000) found that this emphasis on learner autonomy and collaboration in distance learning moves the field away from industrial-era emphasis on structure issues and toward a "postindustrial" view of transactional ones.

Other authors support Moore's proposal by suggesting ways that learner autonomy could be fostered within course designs. For example, J. S. Brown (2000) found that "learning often involves the joint construction of understanding around a focal point of interest" (9). Barclay (2001) concurred, observing that "knowledge can be viewed as a social construct and,

therefore, a successful online instructional process is facilitated by social interaction in an environment that supports peer interaction, cooperation, and evaluation." In their study of factors that influenced interaction in a graduate course on the use of telecommunications, Vrasidas and McIsaac (1999) found that course interaction increased when a course structure required students to engage in discussions and collaborate on projects. Obviously, viewing learning as socially constructed knowledge would call for dramatically different strategies to encourage interaction than would be the case if learning were seen as an individual accomplishment. Collaborative strategies seem to be mentioned most frequently when describing courses of study in highly complex, ill-defined subject domains such as content-area teaching methods.

In other findings from the same study, Vrasidas and McIsaac (1999) found that class size, amount and type of feedback provided by instructors to students, and students' prior experience with distance learning were important variables contributing to interaction. It seems logical that class size impacts the timeliness and depth of feedback instructors are able to provide each student and that students who are less comfortable with the distance technologies are less likely to participate. Barclay (2001) arrived at similar conclusions from an analysis of instructor views on qualities contributing to interaction. She found that a high degree of instructor knowledge about and experience in group processes and facilitation skills was seen as a critical factor contributing to collaborative interaction in distance courses. Instructor skills in design and facilitation of community building seem especially important in light of R. Brown's (2001) findings that some students will not voluntarily interact and become participating members of a learning community in a distance course unless specific kinds of interaction are required by the course design.

Drawing on communication theory, Yacci (2000) examined messages in terms of their feedback characteristics that contribute to or inhibit interaction. Two factors related to time: message duration and response lag time. Both have to do with elapsed time between the beginning and end of a message loop. He recommended moderate to short durations—that is, short time periods between a student's receipt of new information and his or her required reaction to it, and between the student's sending of a product to the instructor and the instructor's response with evaluative comments. Interaction also is usually perceived as higher when instructors provide faster feedback to student-initiated queries. Message content also contributes to interaction. Yacci also recommended high "message coherence," or feedback that is both easily understood and meets a spe-

cific, identifiable learning need (e.g., correcting facts or requesting additional information).

Emphasizing the social nature of learning, Gilbert and Moore (1998), Hillman, Willis, and Gunawardena (1994), and Wolcott (1996) discussed the combination of technological variables (what Wagner would call *interactivity* characteristics) with instructional designs that make use of them as a key influence on interaction. Hillman, Willis, and Gunawardena referred to the interaction between students and the distance resources as "learner-interface interaction" and proposed that instructors build special instructional activities into the course to enable students to better use the technology interface. They emphasized that students' ability to use the distance technologies successfully is such a critical influence on their ability to interact in the course that it comprises a fourth kind of interaction in addition to the three posited by Moore (1989).

Like Barclay (2001) and Vrasidas and McIsaac (1999), Gilbert and Moore (1998) viewed social interaction as an important component of a productive learning environment. They saw collaboration as not only an effective strategy for accomplishing social and instructional interaction but also a requirement for using the interactivity of distance technologies to simulate (or even surpass) the interactive qualities of a face-to-face classroom. Like Moore (1983; Moore and Kearsley 1996), who emphasized that "transactional distance" could be reduced through employing appropriate course structures, Wolcott (1996) saw "psychological distance" as a problem inherent in most distance courses that must be overcome with specific strategies designed to build rapport and decrease feelings of isolation among students. Confirming that interaction is more a psychological construct than a technological one, Zhang and Fulford (1994) found that actual time spent completing messages online had little relation to students' perceptions of the degree of interaction in a course. Their observation that "psychological interactivity is predominantly vicarious in nature" (64) may offer further evidence that interactive learning is also a highly social activity.

Elements of a Rubric to Encourage and Assess Interactive Qualities

Despite the different lenses used to examine interaction, three conclusions from the analysis of these discussions contributed to the design of a rubric to assess interactive qualities of distance learning courses. First, it is apparent that interaction is achieved through a complex interplay of social, instructional, and technological variables. Second, though influenced by

all these factors, the aspect of interaction acknowledged to be most meaningful to instructors and designers is student engagement in the learning process. Third, student engagement can be increased when learning is structured around collaborative experiences.

Based on the analysis of the literature, five elements were identified that were both observable and measurable and were felt to be most comprehensive in describing indicators of all these qualities. Two of these elements were course variables over which the instructor has control during both design and implementation phases of the course: designs for social interaction and designs for instructional interaction. A third element allows an assessment of the interactive capabilities (interactivity) of the technologies used in the course. Two other elements are measures of the kinds and qualities of messages exchanged during the course: learner engagement and instructor engagement.

Social and Rapport-Building Designs for Interaction

Wolcott (1996) said that increasing social rapport among participants helps decrease the psychological distance and isolation often experienced by distance students. She found that decreasing psychological distance had the effect of increasing both motivation and observed interaction in the course and, thus, enhancing learning. Gilbert and Moore (1998) concurred; they found that interaction could be both social and instructional in nature, but that "social interaction can directly foster instructional interaction" (31). Vrasidas and McIsaac (1999) observed that students have a need to interact socially, as well as to learn, in a course setting. Activities designed to increase social rapport among course participants may help meet this need, as well as facilitate the learner-to-learner interaction that Moore (1989) identified as one of the three essential types. Strategies suggested by Wolcott and by Gilbert and Moore to increase social rapport and interaction include introductions at the beginning of the course, icebreakers or other commonly used group-building strategies, an exchange of brief bios and background information, sharing photos or other personal information, small-group discussions (in which both social and instructional exchange is encouraged), intermittent chats and e-mails, and "locations" (e.g., bulletin boards or conferences) in the course in which students are encouraged to post ongoing informal observations and information. Horn (1994) is among those practitioners who encourage including some face-to-face interactions to build rapport among participants. However, as distance learning becomes increas-

ingly Web based and students are in locations around the world, Horn's recommendation is becoming more difficult to implement.

Instructional Designs for Interaction

As Wagner (1994) pointed out, instructional design theory and practice impact directly the kind and extent of interaction possible in a distance learning course. Highly interactive learning environments are rarely serendipitous; activities must be designed to encourage, support, and even require interaction. Wagner (1997) felt that interaction as a means of increasing learning would become more useful if there were a focus on designing for specific "outcomes of interaction"; thus, she listed thirteen possible outcomes (e.g., interaction to increase participation, interaction to enhance learner control and self-regulation). These outcomes may be most helpful when viewed in the context of designs that enable collaboration among students and instructor as coparticipants in the course.

Vrasidas and McIsaac (1999) found that class size can influence the amount of interaction, with larger class sizes inhibiting high interaction. Distance learning designers have frequently cited collaborative learning strategies as a way to increase interaction among participants (Hamza and Alhalabi 1999; Hirumi and Bermudez 1996; Hughes and Hewson 1998; Kimeldorf 1995; Klemm 1998). Small-group, collaborative designs not only require students to interact, but also make frequent, meaningful interaction more manageable. Simonson et al. (2000) said that "building collaboration and group interaction may be more important than focusing on individual participation" (64).

Although small-group learning is often cited as a constructivist strategy, curriculum examples provided by Hamza and Alhalabi (1999) and Hirumi and Bermudez (1996) indicate that systematic instructional design and cooperative learning strategies need not be mutually exclusive. Activities to foster interaction through cooperative work include team-building activities, structured discussion or debate on course content-related issues, guest "speakers" or guest expert Q&A sessions, brainstorming sessions, problem-solving sessions, and cooperative group development projects (e.g., research papers, Web pages, or other multimedia products).

Interactivity of Technology Resources

As Wagner (1994) noted, technologies vary greatly in their potential to promote interaction, a quality she referred to as "interactivity." However,

exploiting this potential depends on the instructional designs in which the technologies are employed. Simonson et al. (2000) described two different aspects of technologies that contribute to interactivity, as Wagner defined it: degrees of realism (e.g., abstract vs. concrete presentations) and communication capabilities (e.g., one-way vs. two-way communications). Although Simonson et al. felt that each distance education technology could contribute to the overall quality of the learning experience, differences in technology characteristics become especially relevant when they impact critical learning variables such as types and immediacy of feedback mechanisms and methods of presenting and elaborating on information (Wagner 1994), and when they impact the amount and kind of collaboration techniques possible among participants of small groups.

Horn (1994) said that "interactivity varies based on the transmission medium" (15), and that "absence of immediate feedback and nonverbal cues leads to unnecessary anxiety and hostility among students" (13). Thus, technologies that permit more visual and hypermedia presentations and two-way, more-immediate communications also permit higher interactivity than those that allow only written or audio messages and one-way communications. Technologies with low interactivity include one-way transmission technologies such as fax and recorded audio/video media; higher interactivity technologies include two-way, delayed or immediate feedback technologies such as chat rooms, groupware tools, and electronic conferencing or bulletin board systems. At the highest level of technological interactivity are resources that permit a simulation of face-to-face communications, with all the accompanying visual cues and immediacy of feedback: two-way videoconferencing and virtual environments.

It should be emphasized that levels of interactivity offered by various technologies are only *potential* contributors to interaction. They become meaningful components to promote interaction only in the context of course designs that make effective use of them.

Evidence of Student Engagement

Implicit in the concept of online learning communities is that instructors share responsibility with students to promote interactive learning (Moore and Kearsley 1996; Solloway and Harris 1999). As Moore and Kearsley emphasized, instructors can create an environment conducive to high interaction and learner autonomy and can, as Hillman, Willis, and Gunawardena (1994) proposed, give students assistance and practice to increase success in what they call learner-interface interaction. However, the manner in which

students respond to these requirements can still vary greatly. Vrasidas and McIsaac (1999) and R. Brown (2001) found that less-experienced distance learners participated less frequently and less spontaneously, either for social or instructional purposes. The more comfortable the students become with distance formats, the more likely they are to participate both spontaneously and when required. Although student background is a variable over which instructors have limited control, it nonetheless seems to have an impact on the interaction possible in a distance course.

Roblyer (2002) found high student engagement was characterized by voluntary as well as required messages that were responsive to the purpose of the discussion. Students' responsiveness to the focus of a learning activity seems one of the most observable indications that the course designs for interactions are, indeed, enabling students to achieve the enhanced learning outcomes proposed by Wagner (1997). In the rubric offered here, evidence of high student interaction was identified as the number of students who reply to and initiate messages on a frequent basis; send messages both when required and spontaneously; and send detailed, informative, well-developed communications that are responsive to discussion purposes.

Evidence of Instructor Engagement

As work by Zhang and Fulford (1994) illustrates, students' perceptions of interaction in a distance learning course do not correlate with the actual number of interactions or amount of time spent on interaction. Yacci (2000) concurred with this finding, characterizing interaction as a psychological construct that is influenced both by the lag time and coherence (i.e., perceived instructional value) of responses during message loops. Kearsley (2000) and Simonson et al. (2000) agreed that instructors can either enhance or decrease interaction in a course, depending on how consistently, quickly, and helpfully they respond. Thus, evidence of high instructor engagement includes consistent, timely, and useful feedback to students.

Formative Uses of the Interactive Qualities Rubric by Student and Faculty

A central premise of the work reported here is that identifying and assessing observable indicators of interaction in distance courses is essential in order to encourage greater interaction and study its impact. Assessing the quality of an interaction measure in such an area presented a challenging task. To establish the usefulness of the rubric, two kinds of formative

evaluation activities were done: (1) reviews by experts in the field and (2) uses with sample distance classes. A rubric should be shown to have sufficient validity and reliability to establish its usefulness in clarifying expected performance. Taggart et al. (2001) recommended improving rubric content validity by involving experts in its development. Content validity results when content-area experts agree that the instrument meets specified criteria. After the rubric was drafted, distance learning instructors in two universities were asked to review and rate it according to criteria identified by Jonassen, Peck, and Wilson (1999). They were asked if it

- had elements that are comprehensive in describing performance and are “unidimensional,” or not able to be broken down further into component behaviors;
- had ratings that represent clearly different categories that do not overlap and were comprehensive in covering the full range of performance;
- was stated so that it communicated elements and ratings clearly and unambiguously.

Responses were received from forty-two instructors, and their feedback led to substantial improvements to the clarity of ratings and comprehensiveness of elements. The resulting rubric is shown in Table 1. A subsequent review by twelve additional distance learning instructors yielded much discussion but no additional substantive recommendations for changes.

Taggart et al. (2001) also said that reliability is increased by training the rubric's users so that they share a common understanding of qualities to look for and how to rate them. However, because students are typically users of the rubric in order to provide feedback to instructors, training to ensure reliability usually is not feasible. Despite a lack of training, students' ratings should exhibit some degree of consistency if the rubric is indeed reliable. The rubric was used with two sections of a Web-based course. A total of forty-three students rated the courses anonymously. Consistency was high, with 95% of students giving the course a total rating between nineteen and twenty-three points. Ratings on individual elements also showed high consistency (see Table 2).

Formative data also indicated that the rubric demonstrated convergent and divergent validity. The course being evaluated with the rubric received very high scores on university postcourse evaluations. If students were rating only their satisfaction with the course, ratings on all rubric elements would be expected to be uniformly high. In fact, ratings for the third element (Interactivity of Technology Resources) diverged as expected. The

Table 1. Rubric for Assessing Interactive Qualities in Distance Courses

Scale (see points at end of table)	Element #1: Social/Rapport-Building Designs for Interaction	Element #2: Instructional Designs for Interaction	Element #3: Interactivity of Technology Resources	Element #4: Evidence of Learner Engagement	Element #5: Evidence of Instructor Engagement
Low interactive qualities (1 point each)	The instructor does not encourage students to get to know one another on a personal basis. Activities do not require social interaction or are limited to brief introductions at the beginning of the course.	Instructional activities do not require two-way interaction between instructor and students; they call for one-way delivery of information (e.g., instructor lectures, text delivery) and student products based on the information.	Fax, Web pages, or other technology resource allows one-way delivery of information (text and/or graphics).	By end of course, most students (50%–75%) are <i>replying to</i> messages from the instructor but only when required; messages are sometimes unresponsive to topics and tend to be either brief or wordy and rambling.	Instructor responds only randomly to student queries; responses usually take more than 48 hours; feedback is brief and provides little analysis of student work or suggestions for improvement.

(continued)

Table 1 (Continued)

Scale (see points at end of table)	Element #1: Social/Rapport-Building Designs for Interaction	Element #2: Instructional Designs for Interaction	Element #3: Interactivity of Technology Resources	Element #4: Evidence of Learner Engagement	Element #5: Evidence of Instructor Engagement
Minimum interactive qualities (2 points each)	In addition to brief introductions, the instructor requires one other exchange of personal information among students (e.g., written bio of personal background and experiences).	Instructional activities require students to communicate with the instructor on an individual basis only (e.g., asking/responding to instructor questions).	E-mail, Listserv, conference/bulletin board, or other technology resource allows two-way, asynchronous exchanges of information (text and graphics).	By end of course, most students (50%–75%) are <i>replying to</i> messages from the instructor and other students, both when required and on a voluntary basis; replies are usually responsive to topics but often are either brief or wordy and rambling.	Instructor responds to most student queries; responses usually are within 48 hours; feedback sometimes offers some analysis of student work and suggestions for improvement.
Moderate interactive qualities (3 points each)	In addition to providing for exchanges of personal information among students, the instructor provides at least one other in-class activity designed to increase communication and social rapport among students.	In addition to requiring students to communicate with the instructor, instructional activities require students to communicate with one another (e.g., discussions in pairs or small groups).	In addition to technologies used for two-way asynchronous exchanges of information, chat room or other technology allows synchronous exchanges of primarily written information.	By end of course, all or nearly all students (90%–100%) are <i>replying to</i> messages from the instructor and other students, both when required and voluntarily; replies are always responsive to topics but sometimes are either brief or wordy and rambling.	Instructor responds to all student queries; responses usually are within 48 hours; feedback usually offers some analysis of student work and suggestions for improvement.

Above-average interactive qualities (4 points each)	In addition to providing for exchanges of personal information among students and encouraging communication and social interaction, the instructor also interacts with students on a social/personal basis.	In addition to requiring students to communicate with the instructor, instructional activities require students to develop products by working together cooperatively (e.g., in pairs or small groups) and sharing feedback.	In addition to technologies used for two-way synchronous and asynchronous exchanges of written information, additional technologies (e.g., teleconferencing) allow one-way visual and two-way voice communications between instructor and students.	By end of course, most students (50%–75%) are <i>both replying to and initiating</i> messages when required and voluntarily; messages are detailed and responsive to topics and usually reflect an effort to communicate well.	Instructor responds to all student queries; responses usually are prompt (i.e., within 24 hours); feedback always offers detailed analysis of student work and suggestions for improvement.
High level of interactive qualities (5 points each)	In addition to providing for exchanges of information and encouraging student–student and instructor–student interaction, the instructor provides ongoing course structures designed to promote social rapport among students and instructor.	In addition to requiring students to communicate with the instructor, instructional activities require students to develop products by working together cooperatively (e.g., in pairs or small groups) and share results and feedback with other groups in the class.	In addition to technologies to allow two-way exchanges of text information, visual technologies such as two-way video or videoconferencing technologies allow synchronous voice and visual communications between instructor and students among students.	By end of course, all or nearly all students (90%–100%) are both <i>replying to and initiating messages</i> , both when required and voluntarily; messages are detailed, responsive to topics, and are well-developed communications.	Instructor responds to all student queries; responses are always prompt (i.e., within 24 hours); feedback always offers detailed analysis of student work and suggestions for improvement, along with additional hints and information to supplement learning.

(continued)

Table 1 (Continued)

Scale (see points at end of table)	Element #1: Social/Rapport-Building Designs for Interaction	Element #2: Instructional Designs for Interaction	Element #3: Interactivity of Technology Resources	Element #4: Evidence of Learner Engagement	Element #5: Evidence of Instructor Engagement
Total each	— points	— points	— points	— points	— points
Total overall	— points				

Note: Rubric Directions: The rubric shown above has five separate elements that contribute to a course's level of interaction and interactivity. For each of these five elements, circle a description below it that applies best to your course. After reviewing all elements and circling the appropriate level, add up the points to determine the course's level of interactive qualities (e.g., low, moderate, or high).

Low interactive qualities 1–9 points

Moderate interactive qualities 10–17 points

High interactive qualities 18–25 points

Table 2. Number and Percentage of Students' Rubric Ratings of a Sample Distance Course

Ratings of Elements (N = 43)	Rubric Elements				
	Element #1	Element #2	Element #3	Element #4	Element #5
1	0	0	0	0	0
2	0	0	3 (7%)	2 (5%)	0
3	0	1 (2%)	34 (79%)	3 (7%)	1 (2%)
4	8 (19%)	8 (19%)	4 (9%)	12 (28%)	6 (14%)
5	35 (81%)	34 (79%)	2 (5%)	26 (60%)	36 (84%)

course did not, in fact, use the types of technologies described in the fourth and fifth levels. Ratings on other elements, such as Social/Rapport-Building Designs for Interaction and Evidence of Instructor Engagement, correlated as expected with course satisfaction.

Current and Future Uses of the Interactive Qualities Rubric

The rubric shown in Table 1 currently is being used as part of postcourse evaluations in the authors' Web-based courses. Because students give comments, as well as a rating on each element, the rubric provides substantial, useful feedback on how to make the course more interactive. The instrument also is being used by distance learning instructors in several locations around the world; they report it has added to their own and their students' insight on characteristics required to make a course highly interactive. Further data are being collected to confirm consistency across users in other courses.

It is anticipated that the rubric also should help further both the design and research of optimal distance learning environments by helping to define and quantify observed interaction and allow empirical assessments of its contributions to course effectiveness. It is offered here as one tool that can allow more meaningful examination of the role of interaction in enhancing both achievement and student satisfaction in distance learning courses.

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