DEVELOPING A TAXONOMY OF INTERACTION STRATEGIES FOR TWO-WAY INTERACTIVE DISTANCE EDUCATION TELEVISION

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ABSTRACT
This study focuses specifically on teacher verbal behaviors that foster interaction in a two-way interactive television classroom. Research on taxonomies of teaching styles and discourse analysis was studied to determine which components would comprise the most practical and useful set of behaviors for the distance education teacher and researcher. Using both systematic observation and ethnographic approaches, the taxonomy was first developed and subsequently tested with content experts. (This article is the first of two parts. The first describes the development of the taxonomy. The second, "that will be published in a future issue," describes its validation.)

KEY WORDS: distance education, interaction, taxonomy, two-way television, discourse analysis

The fundamental vehicle of the learning process, at its most basic, is communication. A critical component of communication is interaction between the learner and the source of information. Teachers often play an influential role in how information is delivered through the strategies they choose. Research has provided practitioners with empirical justification for redesigning and reconceptualizing pedagogy, yet, current teaching strategies continue to emphasize and institutionalize the roles and responsibilities traditionally imposed on students. These roles afford students very limited "communicative and semantic options" (Edwards and Westgate, 1987, p. 38). Instructors continue to dominate classroom interaction and impose direct, formal classroom atmospheres (Shuy, 1988). Further, despite the general consensus for provision of two-way communication and interaction, "the reality is that not enough is done to actually facilitate it." (Garrison, 1989, p. 18).

Perhaps most importantly, findings concerning interaction in traditional, self-
contained classrooms cannot be applied unequivocally in technology-mediated, distance learning environments (Nahl, 1993). The introduction of technology necessarily imposes delivery constraints on instructors (DeFleur and Ball-Rochech, 1982) besides affecting students’ perceptions of the learning experience. Distance educators will be increasingly required to investigate and understand the implications of technology on communication and interaction or risk being “unprepared to put that technology to use in a productive way.” (Larsen, 1985, in Garrison, 1989, p. 19). However, research on distance learning in the two-way, audio/video, interactive environment has heretofore not directly defined what specific teacher behaviors foster increased levels of interaction as perceived by students nor the relationship between actual teacher behaviors and student satisfaction. Therefore, the purpose this study was to examine various interaction strategies for the distance education context and develop a taxonomy that could be applied to research and practice.

Fulford and Zhang (1993, 1994, 1996), Zhang and Fulford (1994), and Sholdt, Zhang, and Fulford (1995) correlated data on student overall satisfaction and perceptions of the level of interaction. Their findings suggest that (a) perceived levels of interaction are not significantly associated with actual levels of interaction, (b) student satisfaction with interaction is not significantly related to overall interaction time, and (c) a student’s perception of overall interactivity is somewhat dependent on that student’s perception of participation of peers in classroom activities. Collectively, these studies demonstrate that influencing the type and quality of interaction may affect student satisfaction and perceptions of overall classroom interactivity more than simply increasing the time spent in interactive activities. This current study was designed to continue the line of inquiry by developing a taxonomy through which instructors’ verbal strategies to elicit interaction can be identified and described.

**TAXONOMIES FOR DISCOURSE ANALYSIS**

Interaction and communication are complex. Any given research study will be capable of addressing only a fraction of the total facets possible. While many studies focus on the structure of learning activities or the media through which content is presented, discourse analysis focuses on the nature and content of underlying interactions and the implications of discourse patterns on teaching and learning. Since a taxonomy designed to study participant utterances will determine to a significant extent what will be learned from the study (Furlong and Edwards, 1993; Hammersley, 1993), the taxonomy should account for only those behaviors it was intended to describe. This study focuses specifically on teacher verbal behaviors that foster interaction in a two-way interactive television classroom. Research on taxonomies of teaching styles and discourse analysis was studied to determine which components would comprise the most practical and useful set of behaviors for the distance education teacher and researcher.
Teaching Styles

A number of taxonomies have been developed to describe teaching styles through the types of discourse displayed in the learning environment. For example, prior studies have made distinctions between (a) direct and indirect, (b) problem-centered and person-centered, (c) and dominative and integrative approaches.

Direct versus indirect teaching styles.

A number of researchers have studied the effects of indirect and direct teaching styles through the use of systematic observation schedules. Conclusions derived from these studies generally concur that there are circumstances under which one of the two styles is more appropriate (Flanders, 1967). For example, indirect teaching styles have been found to be more effective in terms of student achievement and satisfaction in the teaching of vocabulary (Soar, 1967) and for achieving objectives through negotiated meaning and structured controversy (Johnson, Johnson, and Smith, 1986). In contrast, Bennett, Jordan, Long, and Wade (1976) found formal or direct teaching styles to be more effective in teaching reading, math, and English.

Flanders' Interaction Analysis Category system (1967) and subsequent works building on this framework (Hough, 1967; Soar, 1967) describe well examples of teacher verbal behaviors characteristic of these two delivery styles. Specifically, indirect teaching styles involve the use of strategies which afford the learner implied flexibility and control in the learning process. In contrast, direct teaching behaviors, similar to dominative styles described hereafter, impose upon learners a highly structured and directed learning experience.

Problem-centered versus person-centered teaching styles.

Research has also found that teaching styles can be described as either problem-centered or person-centered. Person-centered approaches have been further defined as learner or teacher-centered (Eggleston, Galton, and Jones, 1976) with distinctions between approaches revolving primarily around the issue of control, similar to distinctions between direct and indirect and dominative and integrative teaching styles. Problem-centered categories have generally referred to teacher behaviors which (a) focus on the content regardless of linguistic form or (b) structure students’ cognitive or physical behaviors to facilitate problem solving.

Dominative versus integrative teaching styles.

Dominative teaching techniques include the use of force, commands, threats, blame, and attacks against students’ personal status as individuals. In general, dominative techniques are inflexible and unsupportive of differences in attitude, perspectives, and opinion. Integrative behaviors, in contrast, are those which encourage differences in opinion and perspective (Anderson, 1939). Though similarities between these and the aforementioned styles have been acknowledged, the operational distinction between these two categories explicitly focuses on issues of control over the learning process.
Teacher immediacy.

Gorham (1988) distinguishes teacher verbal and non-verbal behaviors as either immediate or non-immediate. Past research has shown that student satisfaction levels increase when teachers express immediacy behaviors such as using personal examples, encouraging student talk, and inviting students to meet after class or pursue extra help. Interpreted against the backdrop of student motivation, immediacy behaviors can be associated with increasing student motivation to engage in the learning process and, potentially, to participate more readily in interactive activities.

METHODS OF DISCOURSE ANALYSIS

Review of existing literature suggests that there are five major methods of studying verbal utterances: (a) by participants, (b) by form, (c) by content, (d) by references to participants, and (e) by function the utterance serves. Additional descriptive categories might also be employed given the potential impact of verbal utterances on personalization of the learning environment. The outline in Figure 1 demonstrates the number and complexity of categories for discourse analysis of classroom interaction. This figure provides the context from which the taxonomy was designed. It was considerably narrowed in scope to make it more manageable for practitioners.

Participants

Participant structures can be defined as the arrangements of speakers and listeners or the communicative network linking participants (Edwards and Furlong, 1978). Participant structures provide one basis for understanding interaction patterns in the classroom. For example, to the extent that the meaning and function of utterances is defined by receivers’ ensuing behavior (Green, Weade, and Graham, 1988), not only must the speaker but also the receiver be identified. Moore (1987), building on previous work by Amidon and Hunter (1967), identifies three fundamental participant structures: (a) interaction between learner and instructor, (b) interaction between learner and learner, and (c) interaction of a learner with instructional materials. Subsequent models, such as Wragg’s (1994) and, Fulford and Zhang’s (1993) models, have further elaborated on Moore’s framework. Specifically, Wragg suggests that given the number of learners in any given class, teacher verbal behaviors should be distinguished as targeting a specific learner, group of learners, or the entire class. Further, Fulford, designing a model specifically for multiple-site, interactive distance classrooms, suggests receivers should be delineated also by site.

Form

A second facet along which utterances may vary is linguistic structure. The rationale behind distinguishing between form (linguistic structure) and function (content) of utterances is that specific forms of utterances often imply different
meanings (Bames, 1990; Green, Weade, and Graham, 1988; Ramirez, 1988; Shuy, 1988). For example, after repeated direct requests for students to sit down, a teacher utterance such as “Why isn’t everyone seated?” will likely serve to direct or, perhaps, command students to be seated. Major linguistic structures previously studied have included these categories: (a) indicative, or statement, (b) imperative, or command, and (c) interrogative, or question.

Content

A third facet of interaction is the type of content or meaning implied by specific utterances. Three major categories or types of content can be identified: (a) discipline or management (Bennett, Jordan, Long, and Wade, 1976; Hertz-Lazarowitz and Shachar, 1990), (b) instructional or structuring (Bellack, Kliebard, Hyman, and Smith, 1966), and (c) substantive. Discipline and management-related utterances relate to student behavior. Instructional or structuring utterances describe how the course, lesson, or activity will be structured. These utterances describe, for example, the participant structure of or directions for specific activities, assignments, reward and grading schedules, or deadlines. Substantive utterances deal specifically with the content of the course or material intended to be taught and learned during the course.

The substantive category can be further delineated into metacognitive and cognitive utterances. Metacognitive utterances are those which help the learner understand, encode, or later retrieve the immediate content being discussed. For example, statements performing the function of advance organizers, examples, or other task-enhancing utterances (Bennett, Desforges, Cockburn and Wilkinson, 1984) would be placed into this category. Cognitive utterances are those which deal explicitly with the content.

Personal Reference

A fourth facet of utterances derives from the work of Ramirez (1988) who has distinguished between participant and non-participant utterances. According to Ramirez’s classification, participant utterances include reference to personal experience or personal opinions. In contrast, non-participant utterances include impersonal information or abstract concepts. In part substantiated by studies on the impact of teacher immediacy (Gorham, 1988), personal reference can also be conceived as including specific references to individuals in the immediate interaction or exchange. Instructor references to personal experiences, students, and student experiences or responses were correlated with greater student satisfaction.

Function

A fifth facet of interaction is the function utterances serve. A number of taxonomies, developed to describe these structures and multiple layers of discourse have generally supported the notion that five levels of classroom discourse exist (Bellack et al., 1966; Brown and Armstrong, 1978; Sinclair and Coulthard, 1975). Though terminology has differed across taxonomies, the terms keys,
transactions, exchanges, moves, and acts have generally been employed.

Keys are the broadest level of classroom discourse and serve to "unlock" the understanding of a major discussion topic (Brown and Armstrong, 1978). Transactions, in turn, are subsections comprising keys and serve to communicate the content of a key. Exchanges perform a similar function for transactions. Moves, generally described as opening, answering/responding, and follow-up, delineate the boundaries of exchanges (Stubbs, 1983). Finally, within any given move, or set of utterances expressed by one participant during one turn, a number of acts or phrases can be uttered.

Based on prior studies, exchanges in learning contexts can be described by opening, responding, and follow-up categories. In turn, opening moves can be further defined as eliciting, directing, or informing (Amidon and Hunter, 1967; Eggleston, Galton, and Jones, 1976). Follow-up moves have been defined as including accepting, rejecting, acknowledging, and monitoring categories (Harris and Rosenthal, 1986). Accepting moves refer to praise or building upon students' replies. Rejecting moves refer to ignoring, criticizing or rejecting, correcting, or modifying student responses. Acknowledging moves imply the instructor does not necessarily agree or disagree with student responses and have been operationally defined as including those instances wherein the instructor (a) reinitiates the exchange, (b) repeats, translates, or comments on a student response, (c) provides an unsolicited response, or (d) does not respond to induce further student comments. Monitoring has also been used as an independent category, particularly to capture those instances where student activities, such as group work, group discussions, whole-class discussions, or presentations occur.

**PROJECT OBJECTIVES**

The manner in which existing taxonomies describe teachers' verbal behaviors is constrained by their underlying intent. The scope of this project was to develop a taxonomy describing teacher strategies which foster or elicit interaction in two-way, audio/video, interactive television classrooms. The study was designed to determine whether distinct categories could be defined to describe teacher verbal behaviors exclusively.

This project was intended to provide the basis for realizing two primary outcomes. First, by describing a method through which teacher verbal behaviors in the distance classroom can be accurately coded, future research will be able to identify the relationship between student satisfaction and more specific interaction strategies. Second, this project potentially provides practitioners with an objective, relatively easy-to-use tool to assess and evaluate their own teaching behaviors. Of note, studies conducted to determine whether teachers will act differently as a direct result of training on the use of such classification schedules (Flanders, 1963a, 1963b, 1963c) have shown that student teachers receiving such training have demonstrated: (a) positive attitudinal changes (Zahn, 1967), (b) the ability to execute self-evaluation of verbal behaviors (Kirk, 1967), (c) increased student-teacher interaction ratios (Kirk, 1967), (d) increased openness
and acceptance of student opinions and ideas (Furst, 1967; Lohman, Ober, and Hough, 1967), and (e) increased experimentation in methodology (Hough and Amidon, 1967; Hough and Ober, 1971).

METHODOLOGY

Historically, two major approaches have been employed in the development of categorization schedules. The ethnographic approach is primarily characterized by the derivation of descriptive categories from classroom observations (Furlong and Edwards, 1993). This project used an initial set of interaction strategies for distance education developed by Fulford (1994) using this approach. The categories were derived by examining videotapes of fifteen two-way television courses from a variety of disciplines.

In contrast, systematic observation approaches begin with a predetermined schedule and subsequently describe classroom behaviors in terms of these predetermined categories (Edwards and Westgate, 1987; McIntyre and Macleod, 1993). Using Fulford's set of categories as the predetermined set, the current project followed this second approach. Again with the aid of videotaped class sessions, the taxonomy expanded and evaluated by three content experts for its ability to describe teacher verbal behaviors.

The procedures for development included (a) the review and editing of an initial draft of the taxonomy by instructional design experts in the field of distance education at the University of Hawaii, and (b) using this first version as an instrument to examine a variety of previously videotaped courses delivered by various instructors to evaluate the extent to which categories in the taxonomy had been defined exclusively and clearly.

PROCEDURE I - STRATEGIES TO FOSTER AND ELICIT INTERACTION: THE FIRST DRAFT

Based on Fulford's (1994) categorization of interaction strategies, the first draft of the taxonomy was developed through a review of relevant research and discussions with and evaluations by three instructional design specialists. Given the intent to objectively describe verbal strategies to foster interaction within a class session, the categories generated did not include types of strategies other than verbal utterances communicated in a class session (for example, non-verbal communicative behaviors). The six major categories of strategies include utterances fostering student-teacher, student-student, student-content, and delayed interaction and those utterances enhancing student motivation and teacher immediacy/personalization. For each of the six categories, the taxonomy further identified specific verbal, teacher strategies. Operational definitions of each strategy are provided in Figure 2.
DEFINING THE CATEGORIES

The taxonomy is basic and rather simple in design. The intent was to provide a tool which could be employed with relative ease. Moore's framework for understanding interaction in the classroom that distinguishes between learner-learner, learner-content, and learner-instructor interaction was used as the basis for the taxonomy. Three concepts in addition to Moore's were included in the taxonomy. First, it was assumed the framework should account for how or why interaction does or should occur. Hence, it was determined that a distinct category of strategies should be incorporated which attempted to elucidate the extent to which the instructor directly motivated or provided incentives for students to engage in the various forms of interaction. This characteristic is perhaps best illustrated by the distinctions between direct and indirect (Flanders, 1967), formal and informal (Johnson and Johnson, 1994), and dominiative and integrative (Anderson, 1939) teaching styles, which attempt to describe the classroom climate in terms of control and, implicitly therefore, student incentive and motivation to interact. Building on the works of Bruning, Sommer, and Jones (1966), Slavin (1992), and Fulford and Zhang (1993), the assumption is that students will assume control or responsibility for engaging in forms of interaction depending on their motivation.

Gorham (1988) found that student satisfaction levels increase when teachers express certain immediacy behaviors such as using personal examples or inviting students to meet after class. It appeared that the motivation category did not conceptually capture particulars associated with this and other research on teacher immediacy. Therefore, developed from the Motivation category, an Immediacy and Personalization category was included.

Finally, it was also determined that the taxonomy should directly acknowledge the discontinuities in time present in a distance education environment. Both as a means to account for this time discrepancy and to somewhat compensate for the lack of investigation of interactions which occur outside of class, a Delayed Interaction category was also created. This category includes those strategies directed specifically at fostering asynchronous communication flows between teacher and student such as the instructor requesting student responses, information, or communiqué via, for example, electronic mail, web-based discussion forums, facsimiles, electronic bulletin boards, or listservs.

PROCEDURE II - EXPERT ASSESSMENT AND APPLICATION

Once the first draft was designed, three instructional design experts evaluated the instrument based on both prior experience and through applying the draft schedule to videotaped samples of class sessions delivered through the Hawaii Interactive Television System (HITS). The segments of videotape were selected by the three instructional design individuals and the researcher, all of whom have observed a variety of teachers, their strategies, and the level of interaction in their courses in the HITS environment. Selection criteria for the class sessions included (a) the total amount and variety of interaction, and (b) the diversity of
strategies demonstrated in each segment. It was assumed that one or more of the prespecified categories would not be demonstrated in the selected class sessions, and this assumption proved to be true. Yet, it is likely that the number of strategies for which there were no examples was less than had the videotape been selected randomly.

Once the class sessions were identified, the researcher reviewed each 2-hour videotape, selecting specific segments displaying verbal interaction. Lectures, student group work for which no audible verbal utterances were recorded, and other activities such as examinations were omitted. The remaining 27 segments ranging from one to thirty minutes, a total of approximately three hours, were copied to a separate videotape for use as the sample. Of the 27 segments, the researcher then selected one 12-minute segment which appeared to demonstrate the majority of strategies at that time listed in the first draft of the categorization schedule. This segment was intended as a training tool to provide examples of the strategies and the process of data collection for the three experts.

Subsequently, each expert was provided a written summary including background on the purpose of the project, the operational definitions of each category, and specific instructions regarding their intended roles in the project. These experts then met with the researcher to view the selected videotape in entirety, identifying and categorizing each occurrence of a strategy. Once convened, the researcher reviewed the project background and objectives, the definitions, and instructions with the experts. Pursuant to a lack of questions, the researcher then provided copies of the data collection instrument and verbally explained the assessment process. Using the 12-minute training segment, the researcher demonstrated the process through which the experts would first independently record specific occurrences of strategies and subsequently determine if agreement existed. After approximately three hours, a mutual decision to reconvene on another date was reached. Given the experiences of this initial meeting, it was decided that in the interim, each expert would familiarize himself/herself with the data recording instrument and the definitions and examples of the strategies. Contemporaneously, the researcher was responsible for providing written transcripts of the verbal exchanges which occurred in the 27 segments. The latter was decided based on an assumption that written scripts would preclude to a large extent the need for replay and review of each video segment.

Upon reconvening, the experts evaluated the videotaped class session simultaneously. First, each individual was asked to categorize specific utterances independently. The independent ratings were then compared. In the case of disagreement, the specific utterance was discussed until agreement was reached, either through redefining the existing categories or adding another category. Over the next three hours, the three experts were able to analyze four of the 27 video segments (approximately 30 minutes of videotape), to a large extent agreeing on each occurrence of a verbal strategy. Where disagreement existed, the strategy and closely related strategies in question were redefined to account for or exclude specific types of utterances. Where it was deemed appropriate, additional categories such as the last strategy under the Immediacy and Person-
alization category, "Uses other personalization or immediacy strategies not captured by other strategies," were created.

Although only four segments were analyzed during the three-hour period, the time required for analysis was discounted because it was particularly critical for this project that the experts mutually agree upon each instance of a verbal strategy. The instructional designers’ definition and categorization of the videotaped utterances would in future research serve as the "answer key" against which independent raters’ categorization of each utterance would be compared. Hence, reliability of the instrument necessarily depended on the agreement of all experts.

**DISCUSSION**

Based on the review of literature and the results of this project, it can be reasonably argued that verbal utterances can be categorized objectively given specific and explicit operational definitions of each category. One major concern regards the feasibility of use of the taxonomy to observe and categorize behavior. Given the intent for use by instructors, the time required for training and for actual application must be minimized. This constraint does not necessarily preclude practical use of this instrument in the future. Yet, prior to use in practical settings, observers or raters should be afforded additional training, practice in using the instrument, and assessment of their understanding of and ability to use the instrument appropriately. It is hoped that with continued use in both practice and research, this instrument will provide one mechanism to not only assess the quality of teaching and learning in distance learning environment but also improve the effectiveness and efficiency of the teaching and learning process. The results of this project in conjunction with previous and on-going research regarding two-way, audio/video interactive television provide strong impetus for further investigation in the value of interaction and methods to foster effective interaction in the learning process.

*Note: A report of the validation of the instrument will be in a future issue.*
REFERENCES


NOTES ON AUTHORS

Catherine P. Fulford, Ph.D., is an Associate Professor in the Department of Educational Technology at the University of Hawaii.

Greg Sakaguchi is an institutional analyst at Kauai Community College and educational specialist with the University of Hawaii Center on Kauai.
# FIGURE 1. CATEGORIES OF VERBAL UTTERANCES IDENTIFIED IN PAST RESEARCH

## I. Participant
- **A. Speaker**
  - 1. Instructor
  - 2. Student
    - a. Site 1
    - b. Site 2
- **B. Receiver**
  - 1. Instructor
  - 2. Whole class
  - 3. Specific group
    - a. Site 1
    - b. Site 2

## II. Form
- **A. Statement (indicative)**
- **B. Command (imperative)**
- **C. Question (interrogative)**

## III. Content
- **A. Discipline and management**
- **B. Instructional or structuring**
  - 1. Technology
  - 2. Interaction (e.g. outside of class, e-mail)
  - 3. Assignments
  - 4. Class work (e.g., group work)
- **C. Substantive**
  - 1. Metacognitive
    - a. Advance organizer
    - b. Example
    - c. Task-enhancing (catch-all)
  - 2. Cognitive
    - a. Cognitive level
      - i. Discriminations
      - ii. Concrete concepts
      - iii. Rules and defined concepts
      - iv. Higher-order rules
      - v. Problem-solving
    - b. Objectivity
      - i. Objective
      - ii. Subjective

## IV. Personal Reference
- **A. Participant**
  - 1. Self-reference
  - 2. Student reference (using student’s name)
  - 3. Class reference
    - a. Reference to class as “My” class
    - b. Reference to class as “Our” or “We”
- **B. Non Participant**

## V. Function
- **A. Key**
- **B. Transaction**
- **C. Exchange**
- **D. Move**
  - 1. Opening
    - a. Directing
    - b. Informing
    - c. Eliciting
      - i. Open or closed question
      - ii. Real or pseudo question
  - 2. Responding
  - 3. Follow-Up
    - a. Accepting
      - i. Praise
      - ii. Build
      - iii. Encourage
      - iv. Reward
    - b. Rejecting
      - i. Ignore
      - ii. Reject
      - iii. Criticize
      - iv. Correct
      - v. Modify
      - vi. Punish or reprimand
    - c. Acknowledging
      - i. Reinitiate
      - ii. Repeat
      - iii. Translate
      - iv. Comment (including comparing students’ comments)
      - v. Unsolicited response
      - vi. Silence
  - E. Monitoring
    - 1. Student presentation
    - 2. Group work
    - 3. Individuals
  - F. Demonstration

## VI. Emotional content
- **A. Humor**
- **B. Command**
- **C. Concern**
- **D. No valence (e.g., lecture or indicative statements with no explicit emotional intent)**

## VII. Suprasegmentals
- **A. Pitch**
- **B. Intonation**
- **C. Stress**
- **D. Pace**
- **E. Inflection**
**FIGURE 2. OPERATIONAL DEFINITIONS OF TEACHER VERBAL STRATEGIES TO FOSTER INTERACTION**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Operational Definition</th>
<th>Examples</th>
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<tbody>
<tr>
<td><strong>Student-Teacher Strategies</strong></td>
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<tr>
<td>Asks for information or content</td>
<td>All teacher-student categories will not distinguish whether questions are directed or open, real or pseudo. The category under which each question will be itemized will be determined by the type of response sought. Information or content will likely be the most frequently employed category. This category also does not distinguish between instructional, structuring, or other non-instructional information.</td>
<td>“When did I assign that paper?” “In what year did the attach on Pearl Harbor occur?” “What is today’s date?”</td>
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<tr>
<td>Asks for student information, experience, or personal examples</td>
<td>This category will include those questions which ask student to provide personal examples, information, or experiences. It shall also include questions which imply student experience though not necessarily request elaboration. Answers sought by these questions are distinguished from student opinions and reflections by their objective, fact-based nature.</td>
<td>“Have any of you ever been robbed?” Students’ hands go up. “John, what happened?” “John, have you finished your presentation?” This shows three examples of this category</td>
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<tr>
<td>Asks for student reflections or opinions</td>
<td>This category solicits student subjective perspectives. Implied is that there is no “right” answer, distinguishing this category from that of “asks for information or content.” It is likely that these questions will involve the use of terms such as “What do you think or feel about...?” or be structured in the form of open-ended, real questions. This question type is likely to be the most frequently employed in Social Science and Humanities courses.</td>
<td>“Why do people sometimes behave irrationally?” “Who should pay for graduate education?” “Is higher education a right or a privilege?” “What do yo think motivates people to get a doctorate?”</td>
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<tr>
<td>Ask for clarification or elaboration</td>
<td>This category will necessarily be preceded by student comments or ideas. It may involve an exchange initiated either by the teacher or student, but the determining factor is that the instructor seeks further information regarding what the student has just said. There may exist overlap of this category with the other three. However, any question which does not diverge from the student’s previous comment shall be included here excepting those instances where the follow-up question serves to direct student inquiry or thought.</td>
<td>Teacher: Who should pay for education? Student: The people to whom benefits accrue. Example: Who are these people? Non-examples: Okay, but do you pay for your whole education? Or Okay. What are the costs of education and how do we define benefits? The latter two questions guide students further down the line of inquiry and hence should be placed in other categories.</td>
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<td>Student-Student Strategies</td>
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<td><strong>Initiates student-to-student in-class activities within sites</strong></td>
<td>This and the following category include any activity, formal or informal, instructional or otherwise, assigned, initiated, required, encouraged, or otherwise facilitated by the instructor involving groups of students, during or outside of class. These categories will likely overlap with one or more student-content strategies. For example, an instructor may state, “Please form groups of two where members are from remote sites and research the pros and cons of any one HRS.” Both the following category and the category of assigning research will be used. This particular category refers only to those utterances which structure activities in the form of intra-site groups during class.</td>
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<td>“Let’s get into groups, now, and discuss...” “Today, I’d like to take fifteen minutes to have you discuss within your sites the reasons for...”</td>
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<td><strong>Initiates student-to-student in-class activities across sites</strong></td>
<td>Teacher verbal strategies initiating, requiring, or assigning in-class, student activities in which students are from different sites will be placed in this category. This category includes specific utterances functioning solely to initiate across-site, in-class activities. The category of “redirects students question to other students” is distinguished though the result may be the same. Similarly, teacher-facilitated student discussions after group presentation or such questions as “Does anyone have any questions?” should be placed in other categories.</td>
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<td>“During the break, it might be good for Group 1 to spend some time discussing their paper,” where students are from different sites. “Assume I am not here and you all are the facilitators. Discuss the issues across sites, amongst yourselves.”</td>
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<tr>
<td><strong>Initiates student-to-student out-of-class activities within sites</strong></td>
<td>This category includes those utterances which initiate, require, assign, or otherwise encourage student-to-student activities out of class where students are from a given site, inclusively.</td>
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<td></td>
<td>“To do the assignment, form groups of 3 or 4 within sites.” “It would be a benefit to form study groups at your sites to facilitate the learning process.”</td>
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<tr>
<td><strong>Initiates student-to-student out-of-class activities across sites</strong></td>
<td>In contrast to the category above, this category includes references to out-of-class activities involving students from different sites.</td>
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<td>“You should view the students from all sites as your colleagues and discuss your questions with them.”</td>
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<tr>
<td><strong>Redirects student questions to other students</strong></td>
<td>This category involves student questions redirected to other students as opposed to the instructor fielding the question personally. Instances involving this category will be likely preceded by student questions.</td>
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<td></td>
<td>Student: Who should pay for education? Teacher: What do you think? or Well, let’s ask the class.</td>
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</tr>
<tr>
<td><strong>Initiates or encourages student-to-student interaction in general</strong></td>
<td>This category has been included to account for those instances wherein the instructor broadly encourages student-to-student interaction. In these instances, interactive activities are not assigned but rather tend to be recommended or implied</td>
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<tr>
<td>Student-Content Strategies</td>
<td>Description</td>
<td>Example</td>
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<td>Assigns problems or written work</td>
<td>This category should be distinguished from utterances which provide logistical instructions and directions, though they may occur in the same transaction. This and the following categories include only those utterances which explicitly assign tasks to students.</td>
<td>“The assignment for tomorrow is to do problems 1-10 on page 11.” “You are also required to turn in a final paper.”</td>
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<td>Assigns reading or literature/historical research</td>
<td>This category includes the assigning of reading or research. It is distinguished from assigning problems or written work by the explicit reference to reading or research.</td>
<td>“For next week, read the two articles I’ve handed out.” “I’d like you to research the issue of individual choice patterns. You don’t need to write anything, but I’d like you to find some sources and develop a position or theory.”</td>
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<tr>
<td>Provides focussing or direction to guide or facilitate students’ line of inquiry or thought process</td>
<td>This strategy derives from the theories of conceptual mapping and autodidactic conversation (Holmberg 1986). It includes those utterances which attempt to engage students in internal conversation or reflection, to help students organize information, or to direct students toward a specific line of thought. While it could be argued that any lecture would serve such focusing purposes, this category will also include instances where meta-cognitive processes are addressed indirectly, or an instructor is asymmetrically providing a framework for how specific concepts are linked or what topics will be covered. Another example might be a question which serves to guide a student’s thoughts in a specific direction or away from the direction it appears to be heading. This category should also be distinguished from logistical or process-related directions such as deadlines for assignments, paper formats, etc.</td>
<td>“As you read tomorrow’s assignment, think of how it fits into what we discussed today? How does the concept of xxx apply?” “What I’d like to do tonight is discuss the effects of student participant structures on achievement. We’ll begin with identifying different participant structures and then move on to reviewing the research associating these participant structures with outcomes.”</td>
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<tr>
<td>Explicitly provides recommendations for or refers to meta-cognitive information processing</td>
<td>This task appears similar to guiding a student’s thought process but is fundamentally different. It describes an instructor’s attending to how information is processed rather than what information is processed. Though somewhat difficult to expound concisely, this category refers primarily to instructor’s references of how to analyze, interpret or deal with information</td>
<td>“In order for you to remember all of the dates, names, and outcomes of these wars, you should create a map in your mind.” “Think of these two items as associated. It’ll help you understand the topic.”</td>
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<tr>
<td><strong>Student-Content Strategies</strong></td>
<td><strong>Motivation Strategies</strong></td>
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<td>Responds to student question regarding content</td>
<td>This strategy has been included primarily because it is assumed that student questions regarding content imply they are interacting with the content and hence an instructor’s response facilitates this interaction.</td>
<td>“Class participation will account for 15% of your grade. This includes active communication.”</td>
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<tr>
<td>Assigns a grade or score for interaction</td>
<td>This category includes any explicit reference to formal assessment and grading of student interaction or participation.</td>
<td>Student-content: “I’m glad you’ve all read the assignment.”</td>
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<td>Explicitly encourages or praises interaction, comments, or responses</td>
<td>This strategy shall include any explicit encouragement, direction, or praise of student interaction.</td>
<td>Student-student: “It’s great that you’ve been talking in your groups.”</td>
</tr>
<tr>
<td>Reference previous student comments or ideas</td>
<td>This strategy has been differentiated from restating student comments or ideas. It includes only references to such ideas or comments made previously whether during or outside of class.</td>
<td>Student-teacher: “Feel free to ask anything in class. Discussions and your input will be an integral part of the class.”</td>
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<tr>
<td>Accepts student comments or ideas</td>
<td>Because acceptance is implied in a variety of ways, this strategy will include all utterances which accept student comments regardless of valence, or the extent to which the instructor’s utterance agrees with or disagrees with the student’s comment. This category also includes agreement with a student comment. These agreements may come often in the form of exclamations, phrases, or embedded in other utterances. Finally, instructors may disagree with student comments. The rationale underlying grouping agreement, acceptance, and disagreement into one broad category is due to the assumed subjectivity of determining valence. For example, instructors who often accept student comments with an emphatic, “Yes!” could be perceived to have disagreed with a student, if in the latter instance, the instructor’s utterance was “Okay.”</td>
<td>“This theory is similar to that which Mary described.”</td>
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<td>Examples of accepting strategies with no valence include, in response to a student comment, the instructor says, “Okay,” or in response to a student’s address, “Yes?”</td>
<td>“Jack had said earlier that...”</td>
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<td>Examples of agreement strategies might include, “I agree” or “Exactly.”</td>
<td>Examples of disagreement strategies might include “I disagree” or “I don’t think that’s correct” or “Wrong.”</td>
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</tbody>
</table>
| Builds on or expounds student comments or ideas | This strategy includes instructor comments which develop or use previously stated student comments or ideas as the basis for further discussion, regardless or whether that future discussion is in agreement or otherwise with the student’s comment. It will likely be preceded by a reference to a specific student’s comment or immediately follow such comment. | Student: I think black is a mixture of all colors. 
Teacher: Okay. Black is a mixture of all colors. This is a common perception. *In reality, white is a mixture of all colors. The true color of black is a color devoid of all colors.* |
|-------|--------|-------------------|
| Restates student comments or ideas | This strategy differs from building on student comments in that it is a simple reiteration of a comment. It will likely precede the use of such comment as a starting point for future discussion or may be reiteration for clarification. | Student: I think black is a mixture of all colors. 
Teacher: Okay. Black is a mixture of all colors. |
| Explicitly presents opportunities for student questions, comments, or ideas | This strategy differs from encouraging student comments or questions though both may occur sequentially. It includes those utterances which serve only to establish that questions are not acceptable. These are utterances which do not imply encouragement or request for such interaction as in the category of explicitly praising or encouraging interaction. | “Are there any questions?” or “Let’s start a discussion.” |

**IMMEDIACY/PERSOINLIZATION STRATEGIES**

| Calls on or refers to students by name or nickname | This category shall include specific references to students by name or nickname. The utterances may be intended to attract the attention of students, call on students for responses, or simply to refer to students. The distinguishing characteristic is use of a student’s name or nickname. | “John!” 
“What do you think, John?” 
“I noticed John did well on the exam.” |
| Calls on or refers to specific students verbally in some fashion other than by name | This strategy has been included because of those instances in which an instructor may verbally call upon a student without using a name. | “You, on Maui” referring to an individual on Maui with her hand raised. 
“The student presenting tomorrow...” where there is only one student presenting tomorrow. |
| Calls on or refers to students by site | This strategy includes those instances wherein the teacher addresses a group of students by site. | “Does anyone on Maui have any questions?” 
“Maui?” 
“Students on Maui should...” |
| Calls on or refers to students by groups | This category will likely not be used except on occasion. It presumes that group work has previously been assigned and that the instructor is now seeking “reports” or responses from various groups. | “Group 1” 
“Group 2, on Maui.” 
“The group presenting on Wednesday...” |
| Uses personal reference or examples | This strategy includes the use of personal examples or references, whether instructional or otherwise. This strategy can involve the use of phrases, sentences, or entire monologues as long as each utterance refers to only one personal example. Where a monologue involves two personal examples such as an instructor describing two previous vacations, this category would be used twice. | "I remember when I used to go skiing during winter breaks. I used to..." "When I was in school..." "My dog behaves somewhat like Pavlov's dog." |
| Uses specific students as examples | This strategy may be confused with referring to student comments. It shall be distinguished by including those instances where specific students, their behavior or experiences are used as examples. | "John has a wonderful haircut." "I think John lost a fight with a lawn mower." "You should all read John's paper." |
| Uses humor or wit | This category may prove ambiguous given that humor and wit are necessarily interpreted by the individual. If laughter is the intended purpose of a statement, then this category would apply. | Telling a joke or funny story, using puns or wit, clowning, or making fun of oneself or problems such as equipment failure. "Have you heard the one about the student who forgot his paper..." "I know - if the system isn't working by tomorrow let's all go the beach and communicate with conch shells." |
| Requests or encourages student contact, in person, outside of class | This category is distinguished from the following two categories by specific reference, either implied or explicit, to face-to-face contact. | "Please meet me after class." "My office hours are 8 to 10. Come and visit." |
| Requests or encourages real-time student contact via any means | This category includes interacting in various contexts such as by phone, on-air, or chat lines. It is possible that the instructor may not distinguish between media and may group them in a single sentence. | "Please let me know of your paper topics by phone or contact me in person during on-air office hours, after class, or through the chat line." |
| Explicitly acknowledges or apologizes for potential delays in interaction outside of class | The rationale underlying the inclusion of this category is primarily hypothetical. It assumes that the explicit acknowledgment of the constraints of delayed interaction caused by media or other circumstances reduces the impact of such delays by creating more realistic expectations of the media's or individual's capacity to engage in live or otherwise timely interaction. | "For those of you who have submitted your papers, I apologize for the delay in feedback." "The system went down this weekend. I'm sorry. I was unable to respond to e-mail." "If you leave a voice mail, please be patient. I will return your call." |
These strategies include a wide array of examples from a simple, “Hi Jack,” to expressing empathy or understanding for student concerns, problems, or interests.

### Uses other immediacy or personalization strategies

This strategy has been included upon the recommendations of the instructional design experts and individual raters. Both experts and individual raters agree that instructors can personalize the learning environment implying increases in motivation or student satisfaction.

### DELAYED INTERACTION STRATEGIES

| Requests or encourages asynchronous, delayed interaction via any or all means | This category will include those requests where any specific means of asynchronous media is identified or where a combination of media are specified. Examples include facsimile, electronic mail, web discussion forums, bulletin boards, listservs, or voice mail. | “I’d like all of you to submit your proposed paper topics via e-mail.”
“Use the web site discussion forum which has been set up for this class to discuss these topics.” |
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