M A N U A L

THE SQUAIES INTERACTION ANALYSIS CODING SYSTEM

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INTRODUCTION

The SQUAIES Interaction Analysis Coding System analyses teacher and pupil verbal behaviours that occur during small group discussion sessions in which the teacher-learning focus is on some relatively self-contained unit of subject matter. Examples of such subject matter are a presentation, production or composition of some kind (for example, an article, story, poem or picture), some social problem, or some behavioural situation.

Field trials with this coding instrument have shown it to be useful in analysing the nature of verbal interaction at the middle and upper primary school, secondary school, and tertiary education levels. Further studies are required in order to assess the instrument's value for analysing discussion situations in the junior primary school and preschool settings, parent-child verbal interaction, discussion situations across various kinds of school curriculum, and use with a wider range of teaching situations than the small group discussion lesson.

Originally produced for informal pilot studies in 1973, this Manual is a revised version which was used in conjunction with a microteaching research programme conducted by the author in 1974.

CONTENTS

TABLES

FIGURES

1. NEED FOR THE SYSTEM

The SQUAIES Interaction Analysis Coding System was developed in response to a need of the Teacher Education Research Project at the University of Waikato to provide objective and reliable data on the verbal behaviour of teachers and pupils interacting in the small group discussion lesson.

Since 1970, a main concern of this Project has been to increase the sensitivity of teachers and student-teachers to the interaction patterns they might use in order to encourage critical thinking responses by pupils. Specifically, the aim is to help teachers become sensitised to and in control of an extensive repertoire of cognitive questioning and reacting skills which can be used flexibly as appropriate circumstances are perceived during actual teaching (Freyberg and Katterns, 1971; Freyberg, Katterns and Rogers, 1974). The sensitised teacher is seen to be very like the professional golfer who not only plays a wide range of clubs well, but selects his club and the particular shot with that club, in accord with his keen perception of subtly changing conditions in the environment.

This view of the teacher and the teaching process is one way out of a dilemma facing teacher educators today, namely, the immediate need to prepare effective teachers while faced with little, if any, clear guidelines from research as to the superiority of any given teaching behaviour over another for causing effective pupil learning (Rosenshine, 1971; Smith, 1971). Accepting this solution to the dilemma, the Teacher Education Research Project uses microteaching procedures to help teachers explore and evaluate the appropriateness of using different verbal behaviours and different combinations of these behaviours. This self-exploration approach contrasts with other microteaching programmes which encourage adherance to specified

verbal interaction models, or which require microteachers to meet certain frequency of usage criteria for particular verbal skills.

A self-exploration approach to microteaching requires some means of providing fairly immediate and objective feedback data to a teacher so that, as soon as possible, he may analyse his teaching to compare intentions with teaching actualities and plan further teaching explorations. Thus, a main problem for the Teacher Education Research Project became the development of a verbal interaction analysis system which could match the objectives of the microteaching programme as described above, provide on-the-spot feedback, and also produce reliable, quantifiable data for any experimental research undertaken.

Following examination of the research literature and pilot checks using audiotapes of small group discussions in primary school classrooms, it was decided that no single interaction analysis system, or series of systems used together, could satisfactorily meet these specific requirements. At the risk, therefore, of adding yet another system to the existing plethora of classroom interaction analysis systems, as well as possibly complicating further the general problem of how best to analyse teaching, development of the SQUAIES coding system was deemed justifiable.

The SQUAIES Interaction Analysis Coding System focuses, primarily, on the cognitive aspects of teacher-pupil interaction in the small group discussion lesson and is constructed at two levels of complexity:

Level 1

A 25 main and extended category system which is designed for on-the-spot coding by microteachers themselves of audiotape or videotape replays of their teaching to meet their feedback

needs (see Section 3.1).

Level 2

A 45 main and extended category system which is designed for use by specially trained coders who analyse transcripts made from audiotapes of discussion lessons (see Sections 3.2 and 3.3).

In general, then, SQUAIES Level 1 is a relatively simple category system able to be used by teachers who are inexperienced in interaction analysis, while SQUAIES Level 2 facilitates more detailed quantitative analysis in experimental research programmes. Both levels of SQUAIES, however, contain the same verbal behaviour categories except that certain behaviours in the Level 1 system are grouped under more general headings to afford ease of learning and on-the-spot coding. This identity of one level with the other means that SQUAIES can be used for the pre-test, treatment and post-test phases of a microteaching research programme which follows this classical research design.

Special strengths of the SQUAIES Interaction Analysis Coding System may be summarised as follows:

(a) Both levels of SQUAIES lead to a flow chart of verbal interaction patterns and their component verbal behaviours as they occur, in sequence, in a discussion lesson (see Sections 3.1, 3.2 and 3.3). In addition, both levels of the system are capable of providing quantifiable data, albeit that Level 2 generates more detailed information.

(b) SQUAIES Level 1 may be learned with relative ease by means of a cumulative learning sequence built into a microteaching laboratory series. Experience shows that coders can be trained to a high

degree of inter-coder reliability with SQUAIES Level 2 when they follow the learning sequence: (i) Study-discussion sessions on the Manual, and (ii) Practice with SQUAIES Level 2 using transcripts of discussion lessons accompanied by systematic use of the Manual and inter-coder reliability checks for diagnostic purposes.

(c) In research programmes on microteaching following the classical pre-test/ treatment/ post-test design, measurement and developmental aspects of the programme may use the same analysis system but at two different levels of complexity.

(d) SQUAIES has sufficient points of commonality with other interaction analysis systems used in research on teaching, to create possibilities for comparing and sharing research findings.

(e) Although SQUAIES uses Bloom's taxonomy of educational objectives as the basis for its classification of teachers' "lead-off" or initial questions in discussion episodes, the system can accommodate substitution of other approaches to the analysis of teacher questions. This flexibility may operate without preventing SQUAIES from achieving one of its major objectives, namely, to sensitise teachers to verbal skills patterns.

(f) Unlike some interaction analysis systems, SQUAIES is based on a theoretical model rather than on *a priori* foundations. In addition, SQUAIES is free of what has been called "commitment" in interaction analysis systems (Dunkin and Biddle, 1974). That is, SQUAIES is not designed to promote some ideal model of the teaching process, but simply to state what a teacher and his pupils do verbally. On the latter basis, a teacher is meant to take personal responsibility for exploring the effects on group

dynamics and pupil learning of the particular combinations of verbal behaviours he uses.

This Manual concerns itself with the SQUAIES Level 2 coding system for the analysis of discussion lesson transcripts. A sample of the Level 1 system and the kinds of data it can produce are provided in Section 3.1. Detailed information on SQUAIES Level 1 may be found in the title Microteaching : A Year 3 Course (Katterns, 1974).

2. DEVELOPMENT OF THE THEORETICAL AND EMPIRICAL MODELS FOR THE SQUAIES INTERACTION ANALYSIS CODING SYSTEM

2.1 PROCEDURES

In order to develop SQUAIES as a two-level interaction analysis system, the following steps were taken:

(a) A theoretical model was developed to provide a conceptual framework within which teacher-pupil verbal behaviour in discussion lessons could be analysed. Structural components and verbal categories within this model were operationally defined and checked against a series of observations in classrooms in order to confirm that an appropriate behavioural repertoire, organised in a viable structure, was being presented.

(b) From (a), an empirical model was developed which would reflect the desired objective of producing an interaction analysis system capable of pointing up the teacher's control of an extensive verbal skills repertoire.

(c) Based on (a) and (b), a coding system was developed which could be used for analysis of discussion lesson transcripts and which, by collapsing selected categories to simplify it, could also be used for on-the-spot coding of live microteaching or audiotape/videotape replays of microteaching. In conjunction with this development, a flow chart was designed which would show graphically the variety of verbal interaction patterns occurring between a teacher and his pupils. The flow chart had to be capable of producing quantitative data in addition to graphic display and, in the case of the simplified coding system, would need to be the actual coding form upon which

observer-coders working in the microteaching situation would record their observations of live teaching or audiotape/ videotape replays.

(d) Operational definitions and a supporting bank of illustrative classroom examples were developed for each category in the coding system to reduce the likelihood of high inference coding and thus maintain reliability for the system. Materials developed here were written into the SQUAIES Manual for transcript coding (SQUAIES Level 2), and were also incorporated as a cumulative learning sequence in a micro-teaching laboratory book series (SQUAIES Level 1). Informal pilot studies were conducted at this stage in order to identify important behavioural omissions, make necessary re-categorisations, assess the dependability of operational definitions and the meaningfulness of classroom examples, and to determine reliability for the system at each of its two levels.

(e) Finally, a check was made on the system to determine its potential for producing quantifiable data for experimental research purposes. In this regard, a summary form and a set of measures were developed.

2.2 DEVELOPMENT OF THE THEORETICAL MODEL

2.2.1 Major Sources

The SQUAIES Interaction Analysis Coding System is a modification and extension of Bellack's theoretical model and analysis system (Bellack, Kliebard, Hyman and Smith, 1966), but is also based on the following sources:

(a) Cognitively orientated analysis systems which emphasise the meaning and control functions of verbal behaviours within the framework of teaching episodes, or sub-topic focuses, which occur during teaching (Smith and Mieux, 1962; Nuthall, 1970; Nuthall, 1973; Nuthall and Church, 1973).

(b) Flanders' interaction analysis system, and extensions of it, which research classroom social-emotional climate (Flanders, 1964; Amidon, Amidon and Rosenshine, 1969; Flanders, 1970).

(c) Teaching behaviour analyses made by major research and development centres in the United States (The Far West Laboratory for Educational Research and Development; Northwest Regional Educational Laboratory; Stanford Center for Research and Development in Teaching; and The Research and Development Center for Teacher Education, The University of Texas at Austin).

2.2.2 The Theoretical Model of Classroom Discourse Developed by Bellack

Adopting Wittgenstein's view of language (Wittgenstein, 1958), Bellack sees classroom discourse as a kind of "language game" in which participants make various verbal moves. These moves are classified in terms which indicate how discussion participants relate to each other by : (i) making statements which set the context for discussion, (ii) asking questions, (iii) attempting to provide answers, and (iv) commenting on previous statements. Such moves are regarded as having an educational function and are thus termed pedagogical moves. These moves are classified as follows:

1. Structuring
2. Soliciting
3. Responding
4. Reacting - accepting
   - rejecting
   - modifying
   - expanding

Structuring moves : Structuring moves serve the pedagogical function of setting the context for subsequent behaviour by launching or halting-excluding interaction between pupils and the teacher, and by indicating the nature of the interaction.

Soliciting moves : Moves in this category directly elicit verbal, physical or mental response. Thus all questions are solicitations, as also are commands, imperatives and requests.

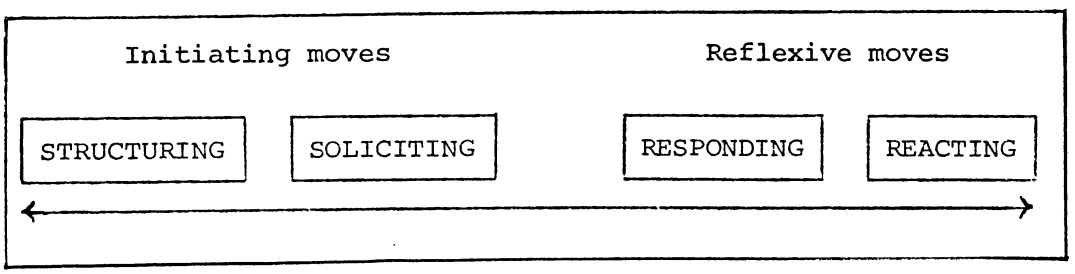
Responding moves : These moves fulfil the expectations of

solicitations; that is, they bear a reciprocal relationship to soliciting moves and occur only in relation to them. Thus, answers by pupils and the teacher to pupil questions, or answers by pupils to teacher questions, are responding moves.

Reacting moves : These moves are occasioned by a structuring, soliciting, responding, or another reacting move, but are not directly elicited by them. Pedagogically, these moves serve to modify (by clarifying, synthesising or expanding), or to rate positively or negatively what has been said previously. Reacting moves differ from responding moves in that while a responding move is always directly elicited by a solicitation, preceding moves serve only as the occasion for reactions.

As shown in Figure 1, structuring and soliciting moves are initiating moves while responding and reacting moves are classified as reflexive.

Fig.1 The Theoretical Model of Classroom Discourse Developed by Bellack (Bellack, Kliebard, Hyman and Smith, 1966).



A pedagogical move, whether it is made by a teacher or a pupil, serves two highly interrelated functions:

1. An inter-personal control function.
2. A content or meaning function.

Control function refers to the moves of structuring, soliciting,

responding and reacting. However, in exercising such control, a verbal move also communicates meaning. For example, a teacher question (solicitation) functions to elicit pupil response, but the meaning of the content or subject matter within that question is intended to determine the content or meaning in any response elicited. This dual control and meaning function is not universal among verbal moves, for some verbal behaviours appear to have only a single function. Lecturing, for example, appears to have only a content or meaning function, while the giving of directions (*Put your hands down.*) appears to have only a control function in the sense that there is no reference to subject matter (Nuthall and Church, 1973).

Bellack distinguishes two functionally different kinds of meaning that may be communicated by teacher and pupil verbal moves. One type of meaning is substantive and substantive-logical: it has to do with certain subject matter and with the cognitive processes involved in dealing with that subject matter. For example, a given verbal move may refer to a certain sub-topic of the main discussion theme and involve its speaker in thinking analytically, empirically or evaluatively. The other type of meaning is instructional and instructional-logical: it has to do with managerial-procedural and didactic matters and with the cognitive processes involved in dealing with these matters, including the rating of the truth, falsity, appropriateness or inappropriateness of the substantive-logical meaning of preceding statements.

Thus, Bellack's interaction analysis coding system classifies any given verbal move according to both its control

and meaning functions. In the case of a teacher question, it may have the pedagogical function of soliciting certain substantive-logical thinking and responding about certain substantive information; an appropriate response to this solicitation will have the pedagogical function of responding which involves substantive-logical thinking processes about substantive information in keeping with the intention of the teacher's solicitation.

2.2.3 The Theoretical Model for SQUAIES

The theoretical model for the SQUAIES Interaction Analysis Coding System (see Figure 2) modifies and extends Bellack's model in the following ways :

Variation 1 : Units of Analysis

The SQUAIES theoretical model emphasises both the control and meaning function of pedagogical moves as described by Bellack in Section 2.2.2 above. However, Bellack's interest in the pedagogical move as the basic unit of discourse is with reference to what he calls the teaching cycle. The teaching cycle is defined as beginning with either a structuring move, or a solicitation that is not preceded with a structuring move, and ending with the move which precedes a new cycle. There are 21 possible types of teaching cycle, each defined as a different combination of structuring, soliciting, responding and reacting moves (Bellack, Kliebard, Hyman and Smith, 1966, 195).

In developing the theoretical model for SQUAIES, the verbal

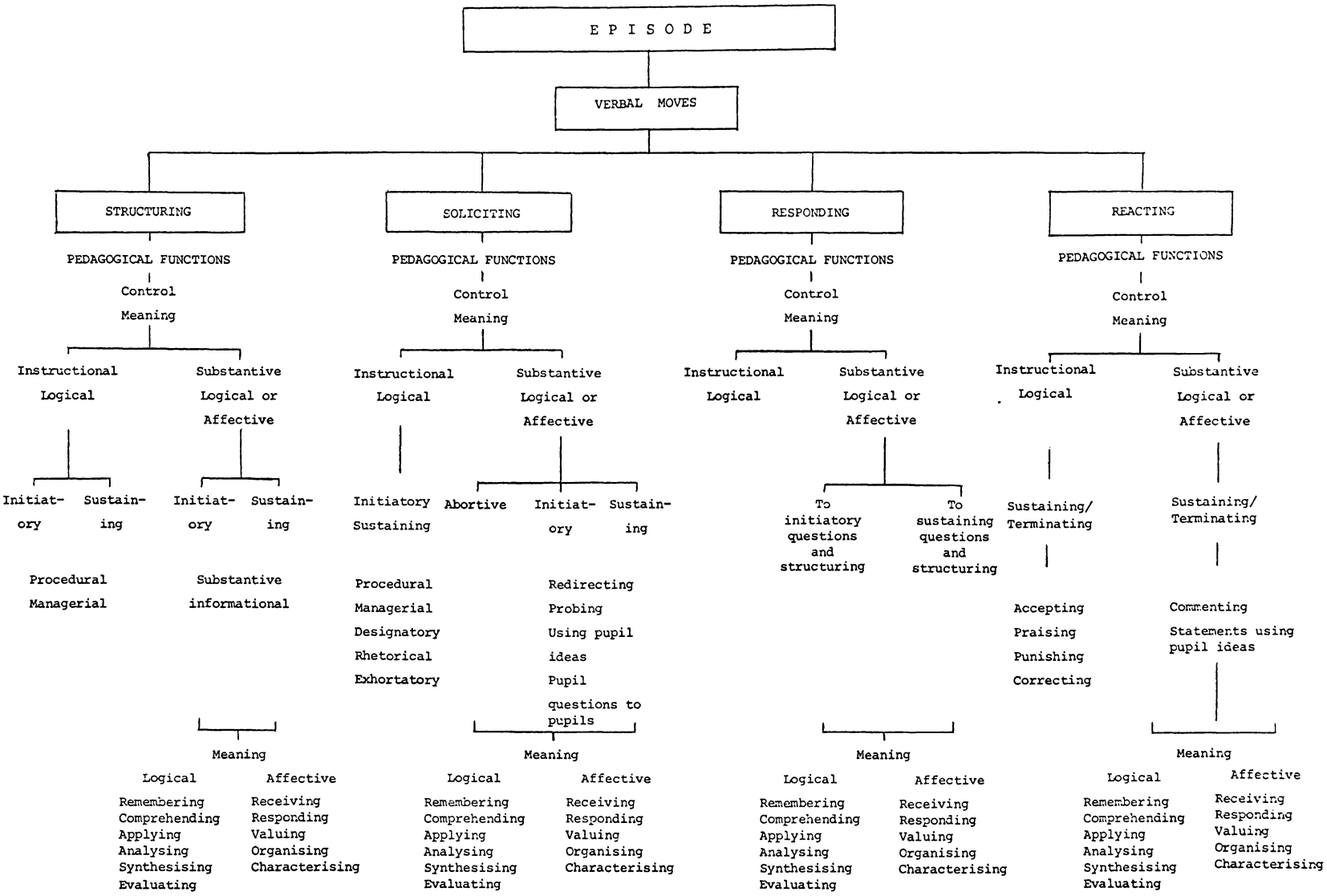


FIG. 2 The Theoretical Model for the SQUAIES Interaction Analysis Coding System.

move was accepted as a basic analysis unit but interest was not so much in teaching cycles *per se*, as it was in the variety of teaching cycle patterns that might occur with reference to each of the different sub-topics within an overall discussion theme.

Extensive study of audiotapes of teacher-led discussions revealed that verbal moves tended to occur in interdependent or independent clusters, each cluster relating to a particular content or topic focus within the discussion theme as a whole. Within each cluster of moves, one could find a variety of teaching cycles. Audiotape analysis also showed the special significance of two kinds of teacher question : the question which tended to initiate discussion on a particular topic, and the question which tended to sustain discussion on any given topic when used following pupil response to an initiating question.

Thus the theoretical model for the SQUAIES analysis system includes the pedagogical MOVE as one unit of analysis and relates it to a second analysis unit termed the EPISODE. An episode consists of a single, content-orientated question and all the verbal moves made by the teacher and pupils which are associated directly with that question. As defined here, the episode is the content unit of the same name identified by other investigators (Smith and Mieux, 1962; Nuthall, 1970; Nuthall, 1973; Nuthall and Church, 1973). Fuller discussion and illustrative classroom examples of the MOVE and the EPISODE are provided in Section 2.3.1 of this Manual in the context of the empirical model for the coding system to which the theoretical model led.

Directional lines drawn in the theoretical model indicate that a given verbal move may fulfil the pedagogical function of structuring, soliciting, responding or reacting at different points within an episode. As noted already above, for example, a teacher question may initiate or sustain an episode; again, a structuring move may accompany a teacher question that initiates or sustains an episode. And again, responses in the form of direct answers to questions, or initiation of ideas as reactions to preceding responses, may occur throughout an episode. These examples point up the difference between the episode analysis unit and Bellack's teaching cycle.

Variation 2 : Extended Categories for Verbal Behaviour

In the theoretical model of SQUAIES, extended categories differ from those found in Bellack's extensions of his four basic pedagogical moves. One difference relates to the temporal position of moves within a discussion episode: that is, initial questions and sustaining questions. Another difference is in the meaning dimension where greater category extension is provided for the substantive-logical than for the instructional-logical aspect, the argument being that the former is of more import in the analysis of classroom discourse. The exception to this position in the SQUAIES theoretical model is in the instructional-logical meaning categories for reacting behaviour, for it is considered that positive or negative meanings may transact to promote or hinder further verbal interaction and, concomitantly, further substantive-logical meaning transactions.

Variation 3 : Inclusion of a Substantive-Affective Meaning Dimension

Both a substantive-logical and a substantive-affective meaning dimension are included in the theoretical model for SQUAIES. It is argued that the meaningful sending and receiving of messages during any discussion episode may involve predominantly cognitive processes, predominantly affective processes, or some combination of both of these thinking processes. Bellack's basic theoretical model for the patterning of pedagogical moves in classroom discourse incorporates substantive-logical (cognitive) thinking processes only.

Thus, the meaning dimension in the theoretical model for SQUAIES may be summarised as being of three kinds:

(a) SUBSTANTIVE-LOGICAL MEANING

A pedagogical move may involve certain kinds of cognitive thinking process related to some subject matter, topic or situation. For example, a teacher question may aim at, and actually elicit, pupil responses which have involved pupils in one of the following kinds of thinking process: remembering, understanding, interpreting, analysing, synthesising or evaluating.

(b) SUBSTANTIVE-AFFECTIVE MEANING

A pedagogical move may involve certain kinds of affective thinking processes related to some subject matter, topic or situation. For example, a teacher question may aim at, and actually elicit, pupil responses which involve expression of feelings or opinions ranging from

snap reaction to deeper valuing.

(c) INSTRUCTIONAL-LOGICAL MEANING

A pedagogical move may involve thinking related to some procedural, managerial, or organisational matter; or it may relate to thinking that evaluates in a positive or negative way, the ideas expressed by another person.

2.3 DEVELOPMENT OF THE EMPIRICAL MODEL

2.3.1 Units of Analysis

As discussed in Section 2.2.3, the SQUAIES Interaction Analysis Coding System uses two basic units of analysis: the EPISODE and the VERBAL MOVE. With SQUAIES Level 1, observation of live teaching or audiotape/videotape replays of teaching leads to coding of verbal moves within episodes directly onto a special flow chart (see Section 3.1). When using SQUAIES Level 2 with transcripts of discussion lessons, the transcript is first subdivided into episodes by means of lines drawn horizontally between the end of one episode and the beginning of the next episode. These transcript episodes are then analysed and coded to determine their component verbal moves and the control and meaning function each of these moves serves. Later, coding data is transferred to a flow chart (see Section 3.2).

(a) The Verbal Move

The verbal move is the smaller of the two basic units of analysis. It is defined as a single verbal statement with a single, identifiable pedagogical function (control and meaning function). Figure 3 provides some examples of verbal moves.

A verbal move is independent in the sense that it represents a change in control and/or meaning function. While it is often the case that this change in function occurs because a new speaker makes a new move, it may also happen that the same speaker uses several moves, each of which serves a different function. For example, a teacher may orient a group towards responding to a question by providing some background information to it, the function of this information being to add meaning to the forthcoming question and to facilitate pupil attention on it. The question is then asked and its function is to elicit responses, perhaps of an interpretive thinking kind. In this example, control and meaning functions can be recognised in each of two moves by the same speaker, the move functions being different in each case.

On occasions, contiguous repetitions of moves may occur. For example, a teacher may repeat a question in the same or nearly the same form, and thus control and meaning function is repeated. Strictly speaking, the repetition is not a new move. However, the SQUAIES analysis system is designed to identify repetitive moves by teachers and includes a special coding category for this purpose. In contradistinction, repetitive moves by pupils are not classified as separate moves. Thus, a pupil who makes

Fig.3 Some Examples of Verbal Moves

	Some Teacher Examples	Some Pupil Examples
Structuring Moves	1. *Let me say something here. I think ...* etc.... *which brings us to the question:* 2. *In this poem we are told that ...* etc. *We are really asked by the poet to try and put ourselves in the shoes of an orphan. Now, ...* (a question follows).	1. *I think that we should leave the animal side and talk about the intelligence of human beings....* 2. *All these ideas remind me of what my father is always saying about government. He says ...* etc. *So, what I'd like to know is ...* (a question follows).
Soliciting Moves (Initial Questions).	1. *What is the capital of New Zealand?* 2. *Why do you think the pygmies are becoming extinct?* 3. *What would happen if the world turned inside out?* 4. *How does the plot of Hamlet relate to any television programmes you've seen?*	1. *All this is right, but I'd like to know about the reason for war, not just that it happens.* 2. *But, sir ... what about the theory of evolution?*
Reacting Moves (these can include evaluations and/or further question moves).	1. *Great!* 2. *Okay, right.* 3. *No, you're off the track there.* 4. *What do you mean when you say ... ?* 5. *But why do you say that?* 6. *How does this idea of yours relate to ... ?* 7. *It seems to me that all of your ideas could be summarised by saying that ....* 8. *No, no, no!*	1. *Oh, yes, I should have thought of that.* 2. *Say, that's a great idea.* 3. *Yeh, but you've left out the bit about ...* 4. *Oh, no, that's not right!* 5. *No. What about the case of ... ?*

contiguous repetitions of his response to a teacher question is regarded as having made one answer move only.

(b) The Episode

Typically, a classroom group discussion led by the teacher relates to an overall substantive theme which can be divided structually into a number of EPISODES. An episode consists of all teacher and pupil verbal moves which relate to one sub-topic in an overall discussion theme. The sub-topic represents the substantive focus of the episode. Some substantive focuses (episodes) may be repeated at different points in a discussion, and any one focus may be dealt with at length or briefly depending upon such factors as significance for the discussion theme as a whole, interest level, or ability of the discussants to handle the substantive ideas it contains.

Often, an episode begins with the teacher combining a structuring (information-giving) move with an initial question move, or with the teacher using an initial question move only, which has led some investigators to conclude that the episode consists, essentially, of an initial question by the teacher and all the subsequent pupil and teacher moves which are associated directly with the substantive focus of that question (Nuthall and Church, 1973). It should be noted, however, that pupils, too, may initiate episodes using structuring and/or question moves.

The overall substantive meaning of an episode may be cognitive or affective in nature. In the case of a cognitive episode, the initial question introducing it will

have substantive-logical meaning; it calls for thinking about some content or sub-topic which involves such processes as remembering, understanding, analysing, synthesising or evaluating. On the other hand, the initial question introducing an affective episode may have substantive-affective meaning; it calls for thinking involving feelings or opinions. Figure 4 presents an extract from a transcript of a discussion lesson in which three cognitive episodes occur.

2.3.2 The Empirical Model for SQUAIES

As discussed earlier (see Section 2.2.3), the SQUAIES Interaction Analysis Coding System is not designed to classify and code teaching cycles as defined by Bellack, but the patterns for teaching cycles within each episode in a discussion lesson. There was special interest in the functional significance of the teacher's use of questioning and reacting moves, and in the patterns for such moves across all episodes in a discussion. As a result, the empirical model for SQUAIES (see Figure 5) reorganises the reciprocal move possibilities for teacher and pupils evident in the theoretical models of both Bellack and SQUAIES.

This reorganisation produces a five-part structure in which four categories refer to the teacher's pedagogical moves (reflecting the desired emphasis), while one category only is devoted to pupil pedagogical moves. It should be noted, however, that the structural category "AI" in the empirical model which

Fig.4 Three Episodes in a Discussion Lesson

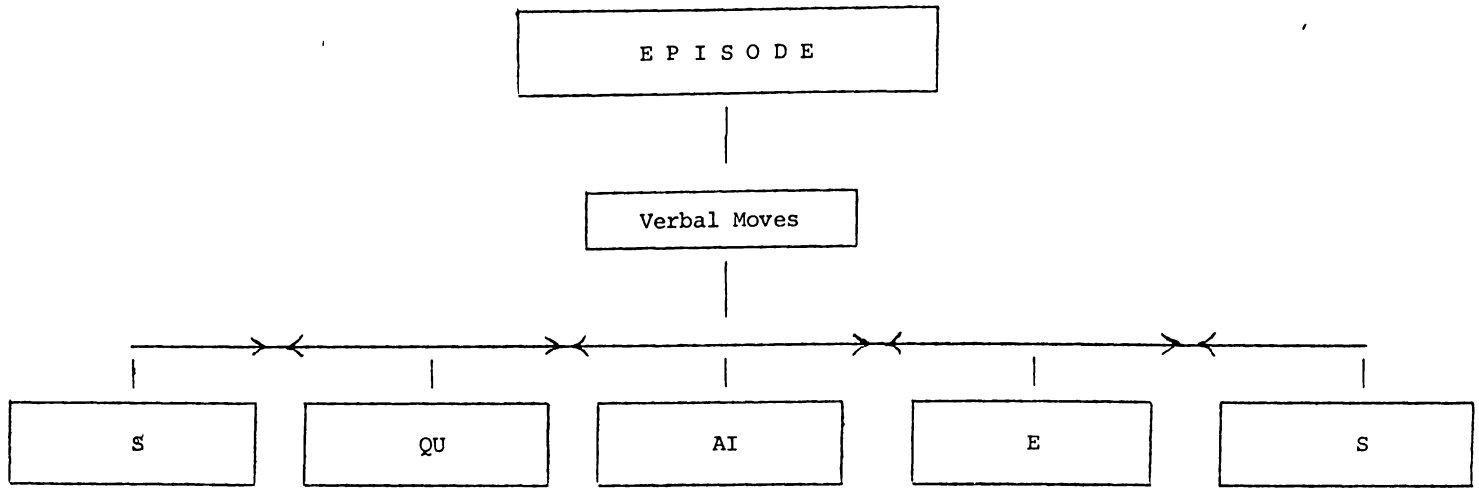
		MOVES
T:	*Each bear had something around its neck. What was it, and what was its purpose? Ann.*	STRUCTURING AND INITIAL QUESTION.
Ann:	*It was a collar so that the scientists could pick up the ways in which ... um, the ways ...*	ANSWER
T:	*Well, I wonder if someone could go on. David.*	A REDIRECTION REACTION
David:	*It was a yellow collar which had attached to it a radio transmitter, and it transmitted its messages from where the bear's location was, so they could track the bear to its hibernation spot.*	ANSWER
T:	*Righto. Sharon.*	A REACTION OF ACCEPTANCE AND REDIRECTION
Sharon:	*Oh, when they ... ah ... it had a collar and the beeps used to be really jerky and strong. But when the bear fell into a deep sleep, the beeps got all weak.*	ANSWER
T:	*So it was measuring what?*	A PROBING QUESTION REACTION
Sharon:	*The heartbeat.*	ANSWER
T:	*Right.*	A PRAISE REACTION
T:	*Well, let's look at this technique. Do you think this was a good way to track down the bears? Jack*	STRUCTURING AND INITIAL QUESTION
Jack:	*Yes, because if you tried any other way it would be really hard. If you didn't have that collar, you'd have to be about one hundred yards away only. Anyhow, you'd die of cold.*	ANSWER
		AN ACCEPTANCE REACTION
T:	*All right. Can we think of any other ways men could track down an animal if this little radio transmitter were not available? David?*	INITIAL QUESTION
David:	*Ah, if it was a dark bear, you could ... ah ... one way you could see it far away would be to paint some water paint or ... um ... that bright stuff ... irri ... irridescent paint ... on its back.*	ANSWER
T:	*So you could see it?*	A REACTION QUESTION
David:	*Yes.*	ANSWER

refers to pupil answer and initiation moves, actually includes all four of the pedagogical functions for verbal moves listed in the theoretical models of Bellack and SQUAIES, namely, structuring, soliciting, responding and reacting.

Four further observations should be made concerning the empirical model: (1) Teacher solicitations are included under two structural categories, namely, "QU" referring to questions which initiate an episode, and "S" at the right of the model referring to questions which help to sustain the content focus of an episode; (2) teacher structuring moves, which may or may not accompany both initial and sustaining questions, can be included under structural category "S" at the left of the model, or under structural category "S" at the right of the model; (3) teacher responding moves, such as answering a pupil question or making a comment which adds information to a previous pupil response, are categorised as sustaining moves under "S" at the right of the model; and (4), among the many combinations of pedagogical moves which may make up the verbal interaction pattern for an episode, there is the sequence pattern which initiates the episode with a pupil rather than a teacher question, in which case category "I" in "AI" precedes categories "S" and/or "QU".

Directional lines in Figure 5 indicate the numerous pedagogical move combinations possible for an episode. In Figure 6, based substantially on work by Nuthall and Church (Nuthall and Church, 1973), a more dynamic picture of these possibilities is presented. Here, directional lines and the boxes indicate decision points on control and, concomitantly, of course, differing potential for meaning transactions.

Fig.5 The Empirical Model for the SQUAIES Interaction Analysis Coding System



Teacher Structuring moves that initiate an episode.

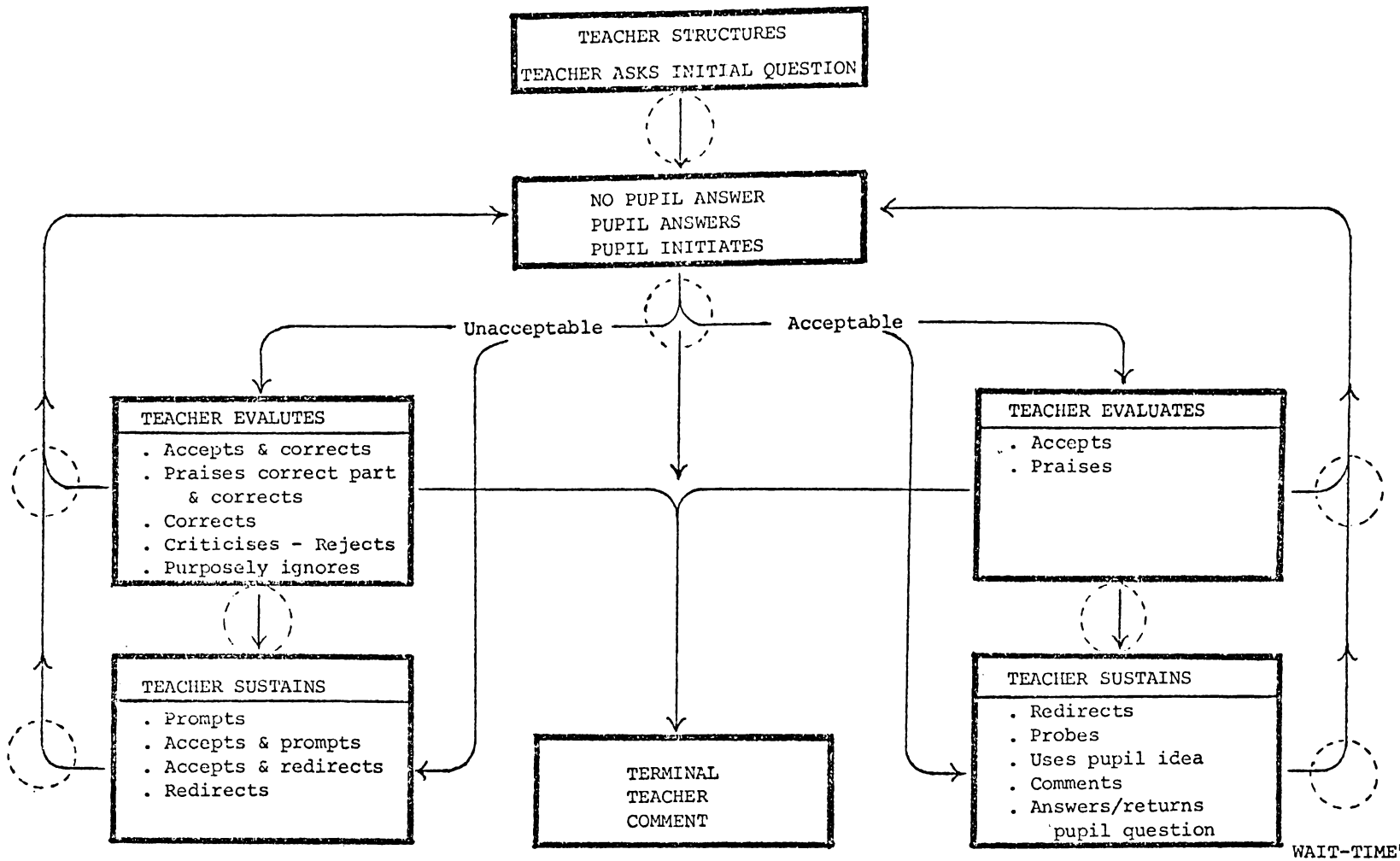
Teacher question moves that initiate an episode.

Pupil answer/initiation moves in an episode. Initiation moves include structuring, questioning and evaluative reaction moves.

Teacher reaction moves which evaluate pupil responses positively or negatively.

Teacher reaction moves which sustain the content focus of an episode as introduced by initial structuring and/or an initial question. Sustaining moves include questioning and commenting.

Fig.6 Teacher-led Discussion Model . . . Possible Move Decisions in an Episode



Finally, this more dynamic model directly reflects the concern of the microteaching project at the University of Waikato with sensitising teachers to a wide verbal skills repertoire by pointing up the pivotal role of the teacher in controlling discussion flow within any given episode. At the same time, however, the model accommodates the possibility of pupil initiation of discussion episodes, or pupil responsibility for sustaining episodes, by inclusion of directional lines stemming from the box labelled "Pupil Initiation".

2.3.3 The Classification System for the Substantive-logical Meaning of Questions in SQUAIES

As an analysis and coding instrument supporting developmental and research programmes in microteaching, SQUAIES was required, particularly, to provide data on the substantive-logical meaning of teacher questions. In accord with the theoretical and empirical models for SQUAIES, a classification system for the substantive-logical meaning function of teacher questions (i.e., the cognitive thinking processes they are intended to engender in pupils) had to take into account their two kinds of control function: (1) Initiating an episode; and (2) sustaining an episode (see Section 2.2.3, Variation 1).

(a) The Classification System for Initial Questions

Criteria for selection of the classification system for the substantive-logical meaning levels of initial questions were established as follows: (1) Presence of an

adequate theoretical model as opposed to some arbitrary or *a priori* basis; (2) empirical research evidence showing low inference codability; (3) hierarchy, indicating progression from less complex, reproductive kinds of thinking demands upon pupils to more complex, relational, reasoning and judgmental kinds of thinking demands; and (4) reasonable degree of match with the kinds of question classifications used by student-teachers in their pre-service professional studies courses and by teachers in the school setting.

Of the many possibilities researched, three received final consideration. The Aschner-Gallagher Classification System (Aschner *et al.*, 1965), based on Guilford's model of the structure of intellect (Guilford, 1956), had been reasonably well researched and appeared to be codable at a low inference level. However, the classification was considered to be insufficiently hierarchical in nature and it was unfamiliar to student-teachers and teachers. Moreover, pilot research by the author of SQUAIES with the Aschner-Gallagher system had shown that microteachers had difficulty using in their teaching and coding activities, the numerous sub-categories of the four-fold major classification of questions into Cognitive-Memory, Convergent, Divergent and Evaluative Thinking types (Freyberg, Katterns and Rogers, 1974).

Because of its close links with Bellack's substantive-logical classification system for solicitation moves, and the fact that research on teaching at the University of Canterbury in New Zealand bases its system directly upon it,

Smith and Mieux's logical analysis system for teacher questions received serious consideration for adoption (Smith and Mieux, 1962). This system has a strong theoretical base linking logic and linguistics, and is extremely well researched. Unfortunately, it lacks hierarchy and, if anything, focuses too much on the cognitive demands of remembering and comprehending for questions, with insufficient coverage of analytical and creative thinking demands. Further, the system lacks a clear-cut organisational structure which could ease learning pressures on microteachers and/or coders.

The substantive-logical classification system for initial questions chosen for use in SQUAIES is Bloom's as presented in his Taxonomy of Educational Objectives (Bloom, 1956). Of the three systems examined, Bloom's appeared to meet all four of the selection criteria established albeit, as discussed below, the system has built-in limitations which can cause coding problems. Above all, Bloom's system is used widely in both pre-service and in-service professional studies courses, and could constitute an over-learning rather than a novel learning experience for many microteachers or coders using SQUAIES.

As originally formulated, the taxonomy was concerned with educational objectives rather than with teaching processes (including, therefore, oral questioning skills). However, educational research using the taxonomy has encompassed curriculum design, evaluation and teacher questioning, and indicates that teachers can readily

understand and apply it to their question-asking behaviour.

The taxonomic hierarchy of the system contains six major classes each with sub-classes, defined in such a way that the intended behaviours in one class are likely to make use of and be based on the intended behaviours in the preceding classes (see Figure 7). For example, thinking

Fig.7 Bloom's Taxonomy of Educational Objectives in the Cognitive Domain (adapted from Bloom *et al.*, 1956 pp.201-207)

1.00 KNOWLEDGE

- 1.10 Knowledge of specifics
- 1.20 Knowledge of ways and means of dealing with specifics
- 1.30 Knowledge of the universals and abstractions in a field

2.00 COMPREHENSION

- 2.10 Translation
- 2.20 Interpretation
- 2.30 Extrapolation

3.00 APPLICATION

4.00 ANALYSIS

- 4.10 Analysis of elements
- 4.20 Analysis of relationships
- 4.30 Analysis of organisational principles

5.00 SYNTHESIS

- 5.10 Production of a unique communication
- 5.20 Production of a plan, or proposed set of operations
- 5.30 Derivation of a set of abstract relations

6.00 EVALUATION

- 6.10 Judgments in terms of internal evidence
- 6.20 Judgments in terms of external criteria

---

behaviour demanded by a teacher question at the analysis level in the taxonomy would assume knowledge (memory) of certain ideas, comprehension of certain ideas, and ability to apply these same ideas, all of which would contribute to ability to think analytically about and respond to the question actually posed.

Four features of Bloom's taxonomy for cognitive behaviour, however, may sometimes result in high inference classification of the intended meaning or substantive-logical level of a teacher's initial question in a discussion episode. There is associated risk, therefore, of low inter-coder reliability.

First, the hierarchical referencing of level to level in the general pattern of less to more complex thinking, often makes it difficult to discern which particular level is being used in a question. For example, an observer-coder may often confuse the comprehension and analysis levels.

Secondly, a problem arises concerning the "presumed unidimensionality of the categories of the taxonomy" (Dunkin and Biddle, 1974, 243), this being the simple-to-complex dimension as one moves from the Knowledge (Memory) level to that of Evaluation. It seems, however, that cognitive interactions in classrooms may vary along two cognitive dimensions rather than one. These two dimensions may be simple-versus-complex and concrete-versus-abstract. Thus, one may ask a simple question about quite abstract material (for example, *What is a democracy?*), a complex

question about quite concrete material (for example, *How would you go about creating new kinds of music using these instruments described in the article?*), a simple question about concrete material (for example, *What is the name of that tool there?*), or a complex question about quite abstract material (for example, *What are the true motives, do you think, of the Women's Liberation movement in the Western world of today?*).

Thirdly, classifying a question at a particular level in the taxonomy does not necessarily guarantee that a respondent to the question is thinking and responding in concert with that level. For example, a pupil's response to what was intended to be an analytical question may, because of past learning experience, merely be at the knowledge (memory) level. Other pupils, of course, may indeed respond to this same question having used appropriate analytical thinking.

Fourthly, the observer-coder who is unfamiliar with the substantive context to which a question refers may elevate that question beyond its true taxonomic level. For instance, what appears to be an Analysis type question may, in fact, be a Knowledge (Memory) type because the answer to this question is actually provided in the story just studied by the pupils and teacher who are being observed.

Section 4 of this Manual includes a wide range of classroom examples and detailed ground rules as aids to classifying the meaning level of questions arising from difficulties with the taxonomy described above.

(b) The Classification System for Sustaining Questions

Teacher questions which sustain the topic or content focus of an initial question for an episode are termed sustaining questions in SQUAIES. These questions usually follow the first and any subsequent pupil responses to an initial question, and also responses to preceding sustaining questions.

Sustaining or "follow-up" questions in SQUAIES are classified in terms of control rather than meaning function--for example, Redirecting, Probing, Probe-redirecting, Using Pupil Ideas, Returning a Pupil Question to the Pupil(s). Nevertheless, probing questions in SQUAIES have several extended categorisations which do, in fact, ask different thinking or substantive-logical meaning processes of pupils. Thus, a pupil might be asked to clarify a response just given, justify an answer, or attempt to relate an idea in a response just given to another idea, situation or event. However, the actual formulation of substantive-logical meaning levels for sustaining questions in the theoretical model for SQUAIES is not transferred to the coding system itself, apart from the classification of higher order thinking related to experimental research for those probing questions which ask for justification or refocusing of a pupil's response. Attempts to parallel use of Bloom's taxonomy levels for initial and sustaining questions proved unfruitful and poses a problem for any future revisions to the SQUAIES Interaction Analysis Coding System.

3. THE SQUAIES INTERACTION ANALYSIS CODING SYSTEM

3.1 SQUAIES LEVEL 1

SQUAIES Level 1 is a low inference 25 main and extended category system for use with live observation or videotape/audiotape replays of microteaching. The system permits on-the-spot coding and direct recording of teacher-pupil verbal behaviour on a specially designed flow chart. By use of two basic units of analysis, the episode and the verbal move, recorded codings on this flow chart present a graphic picture of the kinds of verbal interaction patterns which occur within and across episodes of a small group, discussion type lesson.

The flow chart is a direct reflection of the empirical model for SQUAIES, stressing the pivotal role of teacher verbal moves. However, recording is based on changing control and meaning functions for teacher and pupil verbal behaviours, used singly or in some combination sequence. Thus, the coding system is verbal event based; it does not record verbal behaviour occurrence on any fixed time interval such as those which happen to be occurring every 3 seconds (c.f. Flanders, 1970). Nor does SQUAIES operate as a sign system whereby the observer-coder simply marks off against a check-list of verbal behaviours (i) those which occur or do not occur, or (ii) the total incidence within each of a series of fixed time intervals, or (iii) the total incidence over a whole teaching session. SQUAIES Level 1 records every verbal event, in sequence, which its coding categories embrace.

As an on-the-spot interaction analysis system, SQUAIES Level 1 can provide immediate and objective feedback data to teachers working in the microteaching situation on a 5-10 minute discussion lesson basis.

Concentration and fatigue factors would make the system unsuitable for the prolonged coding that would be necessary with longer discussion lessons typically found outside the microteaching laboratory. Nevertheless, one might use SQUAIES Level 1 to analyse discussion lessons of longer than 10 minutes duration when the availability of audiotape or videotape replays would facilitate coding of a discussion lesson as a series of 5-10 minute segments.

Figure 8 presents the SQUAIES Level 1 system while Figure 9 provides a sample flow chart in which the following kinds of verbal interaction patterns appear:

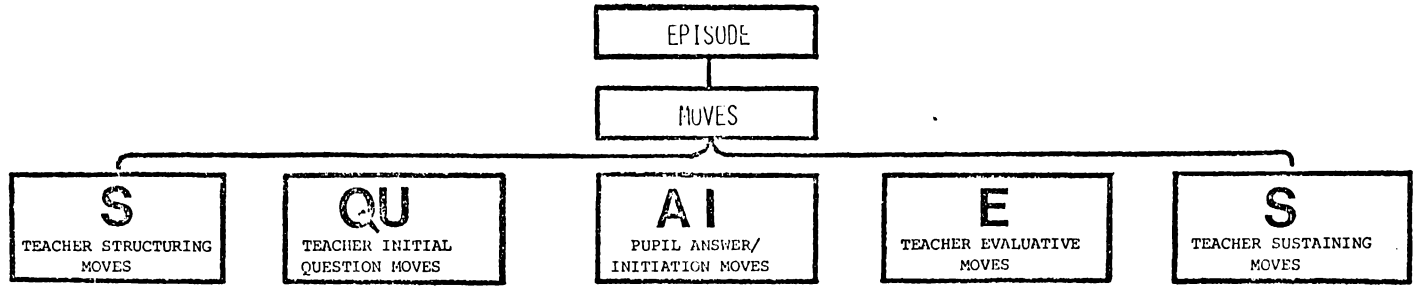
(a) Short and long episode strategies (called "short-riding" and "long-riding" the substantive idea and thinking demand of a question initiating an episode).

(b) Reciprocal patterns in which a teacher typically controls a question-answer, question-answer, question-answer, etc. kind of sequence (called "zig-zagging").

(c) Coordinate, reactive and coordinate-reactive patterns in which a first response to a question is followed by one or more further responses. Called "table-topping", further responses here are unsolicited and may consist of a series of further answers to a question posed, one or more self-initiated reactions to a first answer to a question, or a combination of further answers and reactions.

These patterns are akin to those observed by Smith and Mieux, although these two investigators do not provide detailed procedures for the identification, analysis and measurement of such interaction patterns (Smith and Mieux, 1962).

Fig.8 The SQUAIES Interaction Analysis Coding System Level 1



S Backgrounding
Motivating
Orienting
Problem Posing
Managing
Organising
Direction-Giving
Procedural Guidance

M Memory-Recall Question

C Comprehension Question

Ap Application Question

An Analysis Question

Sy Synthesis Question

Ev Evaluation Question

X All Other Questions:
- Procedural
- Affective
- Preframed
- Rhetorical, Exhortatory
- Complex, Confused, Ambiguous

A Answer to Teacher Question

I Initiation Move (Structuring, Questioning, Evaluating, Commenting)

? Teacher or Pupil Question Aborts
No Response
Chorus Answer
Yes/No Answer
Confusion, Partial Response

S Reflective Silence

Ac Simple Acceptance, Acknowledgment

+ Praise/Positive Reinforcement
- No Criteria
- Private Criteria
- Public Criteria

− Criticism/Aversive Reinforcement
- No Criteria
- Private Criteria
- Public Criteria

Cor Correction
- No Criteria
- Private Criteria
- Public Criteria

R Redirection

P Probing
- Prompt
- Clarification
- Critical Awareness
- Refocus

PR Probing - Redirecting
- Prompt
- Clarification
- Critical Awareness
- Refocus

U Uses pupil ideas

TC Teacher Comment

A Answers own Question
Answers Pupil Question

Q Returns Pupil Question to Pupil Framer, or to Other Pupils

SS Sustaining Structuring

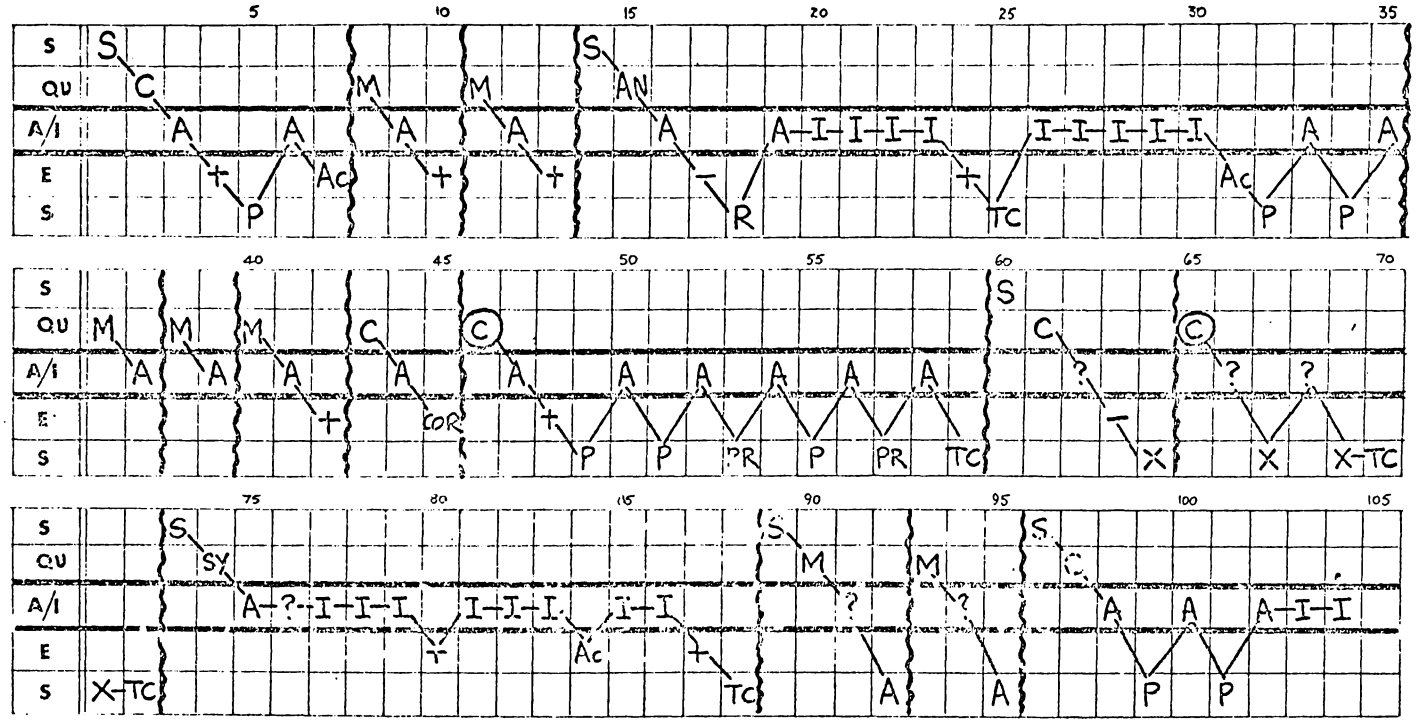
NOTE: REPEATED, REPHRASED QUESTIONS (M)etc (P)etc.

Fig.9 Sample Verbal Interaction Flow Chart Using SQUAIES Level 1

MICROTEACHING SQUAIES CODING SHEET

Microteacher ...Smith, J.R..... Coder ...Jones, B.....

Date ...12 Oct '73..... Time ...10.00-10.10 a.m.



Episodes	15
Q^M	7
Q^C / (Q^C)	4/2
Q^{SY}	1

Q^{An}	1
A	22
I	19
?	6

P Pl	8
R / PR	1/2
X / TC	4/5
+ - Ac	1/2/3

Patterns:

- zig-zag
- table top
- valley
- tail
- slash

3.2 SQUAIES LEVEL 2

SQUAIES Level 2 is a 45 main and extended category verbal interaction analysis system. A more complex version of SQUAIES Level 1, it is designed for analysis of transcripts of small group discussion lessons of longer duration than the 5-10 minutes period typical of the microteaching laboratory.

SQUAIES Level 2 uses the same units of analysis as the Level 1 system and, although coding is recorded on a lesson transcript, verbal interaction patterns within and across discussion lesson episodes can be presented graphically by transfer of verbal behaviour codings to the same kind of flow chart used with SQUAIES Level 1. Figure 10 presents the SQUAIES Level 2 system. In Figure 11, a sample of a coded transcript is provided and Figure 12 shows this same transcript's verbal interaction recorded in flow chart form. Figure 13 illustrates one possible summary of data that may be derived from a coded transcript or flow chart, while Figure 14 outlines a set of measurement data that might be used for experimental research purposes.

Fig.10 The SQUAIES Interaction Analysis Coding System Level 2.

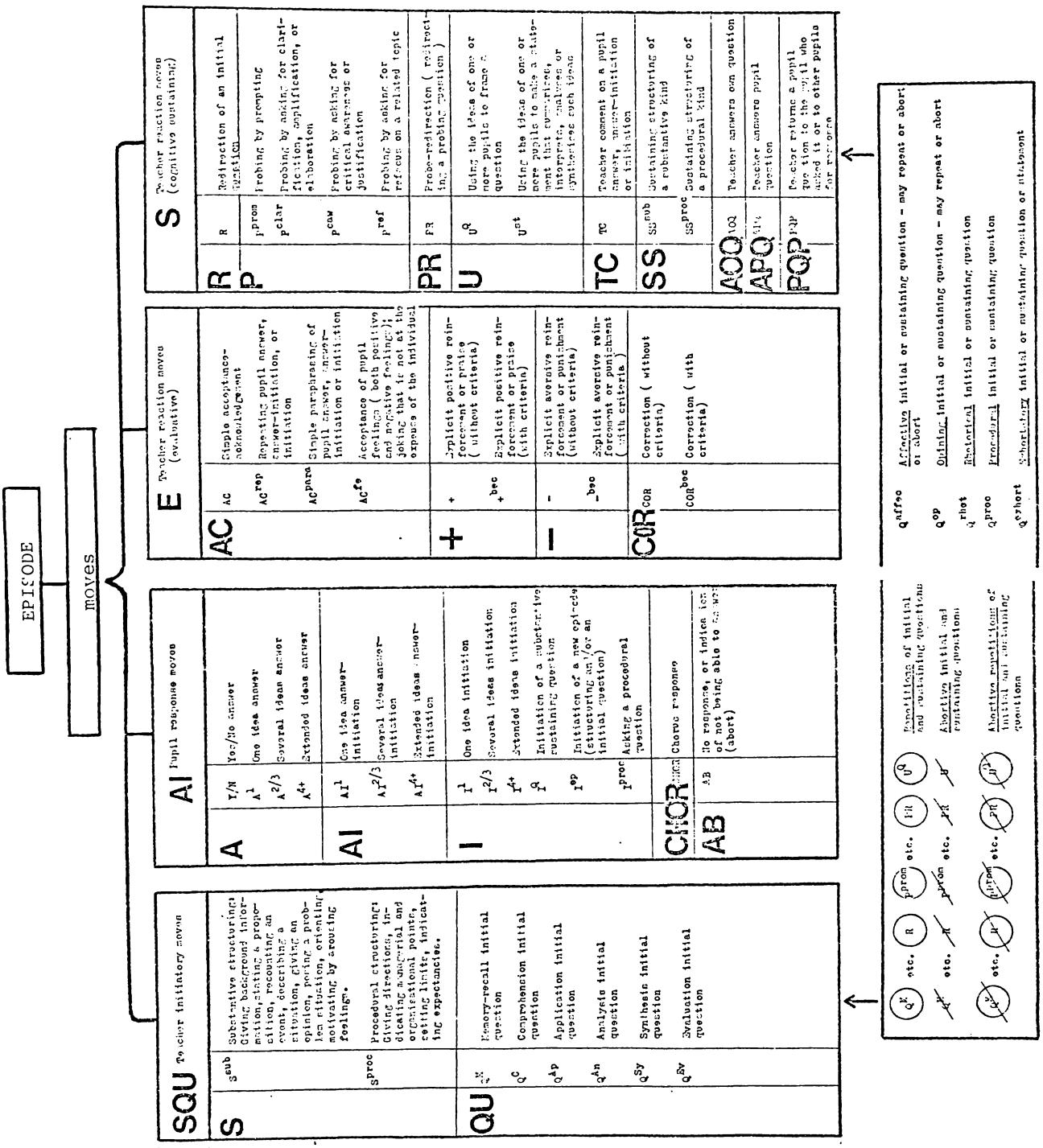


Fig.11 Sample Discussion Lesson Transcript
Coded Using SQUAIES Level 2

UNIVERSITY OF WAIKATO
TEACHER EDUCATION RESEARCH PROJECT
IN MICROTEACHING

Audiotape Transcript for Discussion Lesson, , 1973

TEACHER I.D. NUMBER: O

RECORDING: 10 minutes from the beginning of the lesson transcribed from a Sanyo cassette tape (Model M-2500)

STIMULUS MATERIAL: Story: 'The Day the Bears Go to Bed' (Readers' Digest)

PUPILS:
1. Gordon
2. Glenn
3. Joyce
4. Lynette
5. Ann

CLASS: S.4

		X	Y	M	E
T	*Well what do you think causes the bear's body temperature to cool, and heartbeat and breathing to slow down? Why do you think this happens? What causes it?*	QM QM QM			
Gord.	*Because ... because of its hibernation.*	A1 Ac			
T	*Mm. Mm. Right. What ... what actually ... why do you think this happens?* (REFERS TO BODY COOLING ETC.)	+ QM			
Glenn	*Because they go to sleep, they go into a deep sleep.*	A2/3 Ac			
T	*Mm, yeah, but why ... why can you not do anything? Why does your heartbeat slow down?*	~~Q~~ Qc			

Girl	*'Cause you don't ---*	A¹
P	*'Cause you're not using as much energy.*	A1¹
Girl	*---- you're not moving the same.*	A¹
T	*Right. Energy's the key word there, I think. When you're running your temperature goes up and your heartbeat quickens. You'll know that from your fitness things.*	Ac TC
	What was the purpose of the radio transmitter?	Q^M
Lyn	*So they knew where the bears ... um ... things were, like dens.*	A¹
T	*But what was the purpose of the whole experiment that they were doing?*	Q^M
Lyn	*To find out when and ... where and things like that ... where the b... bears hibernate.*	A^2|3
Glenn	*When ... when ... they were asleep, when they were in a deep sleep or something or when they were walking around or something.*	A1^2|3
T	*Yes.*	Ac
Joyce	*Um ... to find out about the bear's life so they could ... um ... save them.*	A1^2|3
T	*But ... but ... what would finding out about how bears live and that ... how would that help them preserve animals?*	caw P
Joyce	*Then they could ... um ... they they could ... um ... find out what they do and then they could sort of ---*	A^2|3
T	*Yes.*	Ac
Joyce	*---- try and help them.*	A^2|3
T	*Glenn?*	PR
Glenn	*If they want to help them they'd know where to look ... um ... on the slopes 'n that.*	A^2|3
T	*Right! Gordon, what were you going to say?*	+ PR
Gord.	*Well ... like ... say ... before they started hibernating, well there's one sort of food they like and there wasn't very much of it, well they could probably get more of it.*	A^2|3
T	*Oh, that's a good idea. Any other reasons?*	+ P clar
Glenn	*In case they get sick ... find sick animals ---*	A^2|3

T	*Mm.*	Ac
Glenn	*---- know what to do with them.*	$A^{2\|3}$
T	*Why ... why do you think they had to weigh the bears and get paw and tag prints and take a blood sample, and all the other things they did? Why do you think they had to do that?*	Q^{c} (Q^{c})
	(PAUSE)	
	How do you think it helped them?	prom P
Lyn	*Um ... they knew how well they are.*	A^{1}
T	*Mm.*	Ac
Joyce	*And to find out how old they are, and then they could find out what age they died at.*	$A1^{2\|3}$
T	*Right!*	+
Glenn	*M ... How much do they weigh up to.*	$A1^{1}$
T	*Yeh.*	Ac
Joyce	*Um ... to help them sort of if .. when they take their ... um ... teeth things, it would ... um ... help them if they lose them or something ... might, y'know, know which bear they lose.*	$A1^{2\|3}$
T	*Y'know it talked about, um ... the range, the home range that bears have. Why do you think some needed more range than others?*	S^{sub} Q^{c}
Joyce	*Um ... 'cause there mightn't be so much food in one spot, they have to travel further.*	$A^{2\|3}$
T	*Mm.*	Ac
Glenn	*There might be more bears in one range.*	$A1^{1}$ Ac
T	*Yeah, but each bear's got a certain range. And why do you think ... one needs more than the other?*	S^{sub} (Q^{c})
Lyn	*Um ... some might be weaker than the others.*	A^{1}
T	*Mm. Gordon?*	Ac R
Gord.	*Different types ... of bears.*	A^{1}
T	*Could be.*	Ac
Glenn	*Some might eat more than others.*	$A1^{1}$
T	*Mm.*	Ac

Lyn	*Some might be ... they're all different sizes.*	$A1^{1}$ Ac
T	*Mm.* *What were some of the things that the Craigheads ... they were the people that were doing the experiments ... found out about the habits of bears? What good i ... unusual things did they find out?*	S^{Sub} Q^{M} (QM)
P	*Ooh! Ooh!*	
T	*Glenn?*	
Glenn	*Um ... they ... they make their den near a slope and so, when there's a hot day or something, the ... um ... snow doesn't melt round their den.*	$A^{2\|3}$
T	*Yeah. Any ... anything else you've found out? Lyn?*	Ac P^{clar}
Lyn	*They make their dens, um ... a few days earlier than when ... um ... what they need them.*	A^{1}
T	*Mm.*	Ac
Joyce	*Um ... when they make their dens they usually stay pretty close to them.*	$A1^{2\|3}$
Lyn	*And before they hibernate, they wait till the snow is definite to cover all their tracks ... they hibernate then.*	$A1^{2\|3}$ +
T	*Right.* *What was the eve ... the event that started the hibernation period? What happened?*	Q^{M} (QM)
Joyce	*Um ... they found out that there w ... that there weren't so many grizzly bears and they ... and they were getting extinct.*	$A^{2\|3}$ Ac
T	*Right.* *How ... how do you think they, ah ... bears knew when to start getting their dens ready?*	Q^{C}
Glenn	*Gettin' cold!*	A^{1} Ac^{rep}
T	*Getting cold. Any other reasons?*	P^{clar} A^{1}
Lyn	*The weather.*	Ac^{rep}
T	*Mm, it's got to do with the weather.* *What country do you think this is taking place in?*	Q^{M}
Joyce	*America.*	A^{1}
T	*Why America?*	P^{caw}

Joyce	*Because Yellowstone Park's in America.*	A' +
T	*Right.* *What else ... talking about the conservation of animals .. what else can you say about ... what else have we done related to this?* (REFERS TO AN EARLIER CURRICULUM STUDY WITH THE PUPILS)	S^{sub} Q^{M}
Lyn	*What we've done?*	I^{proc}
T	*Mm.*	APQ
Joyce	*'Serengeti Bus'.*	A' + Ac^{rep} Tc
T	*Right. Serengetti. That was all about the conservation of animals. And what did Grzimeks have to find out?*	Q^{M}
Lyn	*That they had to photograph the animals to find out where they were.*	A$^{2\|3}$
T	*Right, they had to, um ... find out about the lives of animals. Tell me about the ... looking back ... it ends up: '... the strangest thing is still a secret, the feel of that first big winter storm.' What do you think about that?*	+ Ac^{para}
Pupils	SILENCE. NO RESPONSE. ABORT.	
T	*What d'you ... what'd you think that means? Glenn?*	(Q^{c})
Glenn	*Um ... the winter storm was a pretty bad one. They ... the bears weren't sort of used to the bad weather and they ----*	A$^{2\|3}$
T	*Mm.*	Ac
Glenn	*--- might be their first time in bad weather.*	A$^{2\|3}$
T	*Joyce?*	R
Joyce	*They felt the cold was coming and they never ... they started to go to their dens.*	A$^{2\|3}$
T	*Gordon?*	R
Gord.	*Well, it was a bad storm, so it could've, um ... made some of their food quite* (TWO WORDS UNCLEAR).	A$^{2\|3}$ +
T	*Right.* *What was ... what was the big mystery that these people were trying to solve about bears? What was the big mystery?*	Q^{M} (Q^{M})
P	*Oh!*	

T	*Gordon?*	
Gord.	*That ... um ... when they knew to wake up. Oh! It might have been hibernation!*	$A^{2\|3}$
T	*I don't know if it was when they knew to wake up. Lyn?*	COR R
Lyn	*How they knew when to hibernate because, um ... the snow covered their tracks so that's the only time they hibernate*	$A^{2\|3}$
T	*Joyce?*	R
Joyce	*Um ... they want ... they wanted to find out how the bears know what time to hibernate.*	A^{1}
T	*That's what they did find out, didn't they?*	Q^{rhet}
	But it said there was a big snowstorm ... you know ... the rain, the weather sort of was very bad one day and it was good the next day, and yet when it was very bad the bears didn't hibernate. Why do you think this was?	S^{sub} Q^{C}
Joyce	*'Cause in this d'site it wasn't cold enough and there was still heat to come.*	$A^{2\|3}$
T	*Glenn?*	R
Glenn	*They might get covered over and they might not be able to get out.*	$A^{2\|3}$
T	*Mm.*	Ac
Lyn	*'Cause the snow wasn't covering their steps. It didn't just cover their tracks.*	$A1^{2\|3}$
T	*But how did they know that it ... was going to be fine next day ... if there was a big snowstorm?*	caw P
Lyn	*Because ... um ... their tracks were still in the snow!*	A^{1}
T	*Mm. Any ideas, Joyce?*	Ac PR
Joyce	*It didn't completely cover the entrance to their den ... um, it didn't cover it up so that people couldn't see it.*	$A^{2\|3}$
T	*Lyn?*	PR
Lyn	*It wasn't very deep.*	A^{1}
T	*Could've been. Did it say how deep they made the dens, how big they were?*	Ac p^{cla} r
Lyn	*No. I don't know where to use ---*	A^{1}

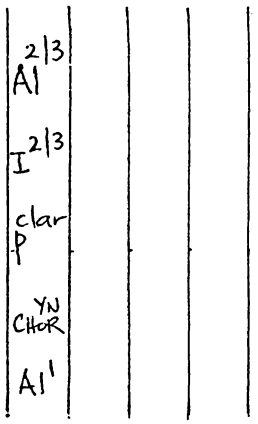
Gord. *Well, they said sometimes they ... um ... bears had their dens under big roots.*

Glenn *Fir trees. Big fir trees.*

T *Did they always have their dens under fir trees?*

Pupils *No!* (CHORUS)

P *Under pines.*



END

Fig.12 Sample Verbal Interaction Flow Chart Using SQUAIES Level 2 with Reference to the Fig.11 Transcript

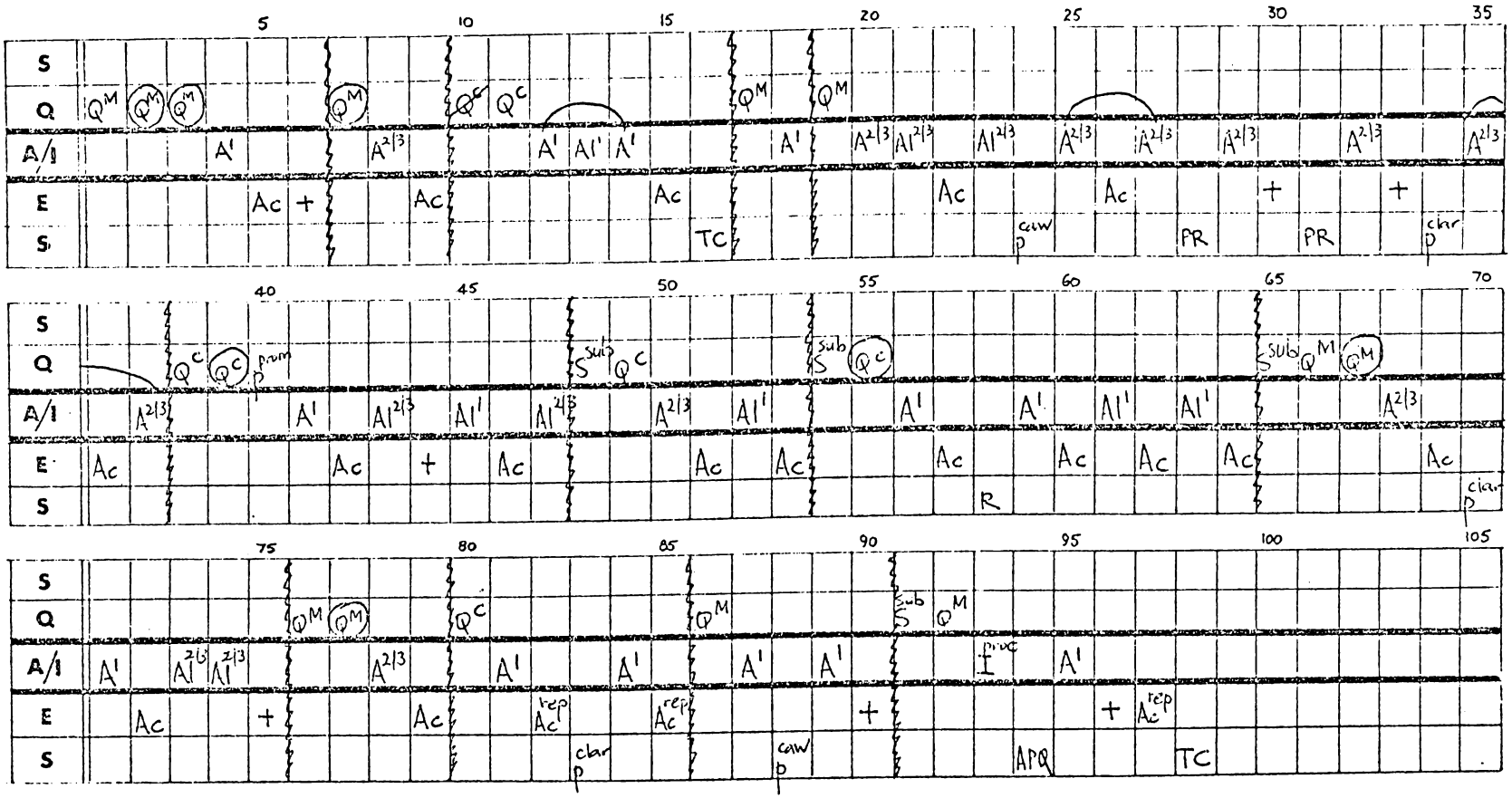


Fig.13 Sample Data Summary Sheet from Transcript Coding Using SQUAIES Level 2

I.D.

TRANSCRIPT DATA SUMMARY

QUESTIONS

PEDAGOGICAL FUNCTIONS

Instructional (initiatory/sustaining) Procedural Rhetorical Exhortatory	Q^{proc} Q^{rhet} Q^{exhort}		
Substantive-affective (initiatory/sustaining)	Q^{affec}		
Substantive-logical (initiatory)	Q^{op} Q^{M} Q^{C} Q^{Ap} Q^{An} Q^{Sy} Q^{Ev}		
Substantive-logical (sustaining) Redirect Probe-redirect	R PR		
Opine Probe-prompt Probe-clarify/amp. Probe-crit.awareness Probe-refocus	Q^{op} P^{prom} P^{clar} P^{caw} P^{ref}		
Use pupil ideas	U^{Q}		
Pupil question to pupil(s)	PQP		
Substantive-logical/ Substantive-affective (initiatory/sustaining) Repeats Aborts Repeat-aborts Attached prompts False starts	0 / ø P^{prom} FS		

SUBSTANTIVE-LOGICAL MEANING

Initiatory Low order: Opining Remembering	Q^{op} Q^{M}		
Middle order: Comprehending Applying	Q^{C} Q^{Ap}		
High order: Analysing Synthesising Evaluating	Q^{An} Q^{Sy} Q^{Ev}		
TOTAL SL INITIAL QUESTIONS	TSLQ		

Probing Low order: Opining	Q^{op}		
Middle order: Clarifying/ amplifying	Q^{clar}		
High order: Critical awareness Refocusing	P^{caw} P^{ref}		
TOTAL SL PROBING QUESTIONS	TSLP		

Fig.13 (continued)

OTHER VARIABLES

AVOIDS

Repeats pupil answer	Ac^{rep}		
Answers own question	AQ		
Asks Yes/No question	Y/N CHOR/YN		
TOTAL AVOIDS			

USES PUPIL IDEAS

With a question	U^{Q}		
With statement	U^{St}		
Paraphrases	Ac^{para}		
TOTAL USE PUPIL IDEAS			

TEACHER TALK

Total teacher talk time		
Total pupil talk time		
TOTAL TALK TIME		

STRUCTURING WITH QUESTIONS

With	Q^{op}	Q^{M}	Q^{C}	Q^{Ap}	Q^{An}	Q^{Sy}	Q^{Ev}	
With	Q^{op}	P^{prom}	P^{clar}	P^{caw}	P^{ref}	U^{Q}	PQP	
TOTAL STRUCTURING WITH QUESTIONS								

TOTAL TEACHER COMMENT

TOTAL ANSWERS PUPIL QUESTION

TOTAL EPISODES [ ] MINUS SUB.AFFECTIVE EPISODES [ ] = TOTAL SL EPISODES [ ]

VERSATILITY

Initiating	S^{sub}	S^{proc}	Q^{M}	Q^{C}	Q^{Ap}	Q^{An}	Q^{Sy}	Q^{Ev}					
Sustaining	SS^{sub}	SS^{proc}	R	PR	P^{prom}	P^{clar}	P^{caw}	P^{ref}	U^{Q}	U^{st}	TC	PQP	APQ
Evaluative reacting	Ac	Ac^{para}	Ac^{fe}	+	$+^{bec}$	$-^{bec}$	COR	COR^{bec}					
Pupil talk	AI	I	I^{ep}	I^{Q}									

TOTAL SCORE : / 33

EVALUATIVE REACTS

Accept-acknowledge	Ac		
Accept-repeats	Ac^{rep}		
Accept-paraphrases	Ac^{para}		
Accept-pupil feelings	Ac^{fe}		
Pos. reinforcement (no criteria)	+		
Pos. reinforcement (with criteria)	$+^{bec}$		
Avers. reinforcement (no criteria)	-		
Avers. reinforcement (with criteria)	$-^{bec}$		
Correction (no criteria)	Cor		
Correction (with criteria)	Cor^{bec}		
TOTAL EVALUATIVE REACTS			

PUPIL TALK

	A	AI	I	Totals
1 word/idea				
Sev. ideas 2/3				
Ext. ideas 4^{+}				
TOTALS				

Y/N CHOR/YN [ ]

I^{ep} [ ]

I^{Q} [ ]

	A	AI	I	TOTAL
TOTAL PUPIL RESPONSES				

Fig.14 Sample Measurement Data Available from Transcript Coding Using SQUAIES Level 2 Interaction Analysis Coding System

A. QUESTIONS : PEDAGOGICAL FUNCTIONS

1. FLUENCY - CONTROL (substantive logical questions)

Total questions -(instructional + substantive-affective + repeated + abortive + repeated-abortive + attached prompts + false starts)

Total substantive logical questions (TSLQ) =

TSLQ as ratio of TQ (total questions) =

2. EPISODE SUSTAINING TENDENCY

Total R + PR + Q^{op} + PQP + U^{Q} as ratio of total substantive logical episodes.

3. REDIRECTION TENDENCY

Total R + PR as ratio of TSLQ

4. PROBING TENDENCY

Total P as ratio of TSLQ

5. STRUCTURING TENDENCY

Total S and SS moves as ratio of TSLQ

B. QUESTIONS : SUBSTANTIVE LOGICAL MEANING OF INITIAL QUESTIONS

1. INITIAL QUESTIONS OF LOW ORDER COGNITIVE DEMAND

Total LO as ratio of TSLIQ

2. INITIAL QUESTIONS OF MIDDLE ORDER COGNITIVE DEMAND

Total MO as ratio of TSLIQ

3. INITIAL QUESTIONS OF HIGH ORDER COGNITIVE DEMAND

Total HO as ratio of TSLIQ

C. QUESTIONS : SUBSTANTIVE LOGICAL MEANING OF PROBING QUESTIONS

1. Total HO probing questions as ratio of TSLSQ (sustaining questions)

Fig.14 (continued)

D. TEACHER - PUPIL TALK PATTERNS

1. TEACHER USE OF PUPIL IDEAS

Total $U^{Q} + U^{st} + Ac^{para}$ as ratio of total pupil responses

2. NUMBER OF EPISODES

Total number.
Total - total substantive affective = Total substantive logical episodes

3. REPEATING PUPIL RESPONSES

Total Ac^{rep} as ratio of total pupil responses (A + AI + I)

4. TEACHER ANSWERING HIS OWN QUESTION

Total AQ as ratio of TSLQ

5. TEACHER ASKING OF YES/NO QUESTIONS

Total Y/N as ratio of TSLQ

6. PUPIL INITIATED QUESTIONS AND EPISODES

Total $I^{Q} + I^{ep}$ as ratio of total pupil responses

7. ONE IDEA PUPIL RESPONSES

Total one idea responses as ratio of total A + AI + I

8. SEVERAL IDEAS PUPIL RESPONSES

Total several ideas responses as ratio of total A + AI + I

9. EXTENDED IDEAS PUPIL RESPONSES

Total extended ideas responses as ratio of total A + AI + I

10. RECIPROCAL RESPONDING PATTERNS

Total A as ratio of total pupil responses

11. COORDINATE RESPONDING PATTERNS

Total AI as ratio of total pupil responses

12. REACTIVE RESPONDING PATTERNS

Total I as ratio of total pupil responses

13. COORDINATE-REACTIVE RESPONDING PATTERNS

Total AI + I + I^{Q} + I^{ep} as ratio of total pupil responses

Fig.14 (continued)

E. TEACHER EVALUATIVE REACTING TENDENCY

1. TENDENCY TO REACT POSITIVELY TO PUPIL RESPONSES

Ratio of Ac to total of + and $+^{bec}$

Ratio of + to $+^{bec}$

Ratio of + and $+^{bec}$ to total evaluative moves (Ac Ac^{rep} Ac^{para} Ac^{fe} + $+^{bec}$ - $-^{bec}$ COR COR^{bec})

2. TENDENCY TO REACT NEGATIVELY TO PUPIL RESPONSES

Ratio of - and $-^{bec}$ to + and $+^{bec}$

Ratio of - to $-^{bec}$

Ratio of - and $-^{bec}$ to total evaluative moves (Ac Ac^{rep} Ac^{para} Ac^{fe} + $+^{bec}$ - $-^{bec}$ COR COR^{bec})

3. TENDENCY TO CORRECT PUPIL RESPONSES

Ratio of COR to COR^{bec} with reference to incorrect responses

Ratio of COR and COR^{bec} to - and $-^{bec}$ with reference to incorrect responses

4. HANDLING OF NO-RESPONSES TO QUESTIONS (ABORTIVE QUESTIONS)

Ratios of the following kinds of coding data to the total no-responses:

-

$-^{bec}$

COR

COR^{bec}

Ac and COR

Ac and COR^{bec}

TC

AQQ

3.3 PROCEDURES TO FOLLOW WHEN USING SQUAIES LEVEL 2 TO CODE TRANSCRIPTS OF DISCUSSION LESSONS

3.3.1 Transcript Format and Conventions

The sample transcript of a discussion lesson provided in Section 3.2 (Figure 11) illustrates a standard format and certain conventions which are designed to assist SQUAIES Level 2 coders:

(a) Either the name of the teacher, or some identification number, is presented at the top right-hand corner of the transcript together with data on the stimulus material used, the discussion's duration time and details on the pupil discussants.

(b) In the left-hand margin, indication of the person talking is provided by the following conventions:

T	Teacher
P	Pupil
P^1	Pupil 1
P^2	Pupil 2
Ps or Pupils	More than one pupil talking in chorus
B	Boy
G	Girl

Often, the actual name of the child speaking will be used instead of the symbols P, B or G.

When the teacher or one pupil talking is cut off by another discussant and then picks up his oral contribution again, the left-hand margin will provide clear indication of this event by use of loop lines linking the first and second parts of the interrupted statement. When a person is interrupted several times and continues his statement after each interruption, several loop lines will appear in the left-hand margin linking the continuing statement. Sometimes discussants will interrupt each other's statements more than once, each person picking up the thread of his own oral contribution several times. When this situation occurs, the left-hand margin will show a pattern of loop lines to help the coder identify individual speakers.

(c) The centre section of a transcript form contains the speakers' individual discussion statements. Special conventions used in this section are as follows:

(Words)....(words)	Dotted lines indicate a pause
Statement ---	Speaker is cut off.
--- statement	Speaker picks up previous statement which was cut off.
Statement	Speaker voluntarily fades out.
ABORTS	No response at all is given to a question
CHORUS	A chorus of responses, by two or more persons in which individual statements cannot be identified.
SILENCE	Indicates reflection.

Occasionally, unclear audiotape production prevents transcription of a statement or part of a statement. In

such circumstances, the transcript will record the word INDISCERNIBLE in parentheses.

(d) Coding of verbal moves is done in Column X on the right-hand side of a transcript, working down the page and keeping each coding symbol as nearly opposite as possible to the verbal move to which it refers. Columns Y, M and E on the right-hand side of the transcript are reserved for inter-judge agreement checks (see Sections 3.3.3 and 3.3.4).

3.3.2 Coding Procedure

Coding should proceed with the quick reference coding guidesheet and SQUAIES Manual at hand, Section 4 of this Manual being used as need arises for checking on operational definitions, examples and coding ground rules.

To assist coding of the substantive-logical meaning level of initial questions which begin discussion episodes, prior to beginning, the coder is strongly recommended to familiarise himself with the general content and specific ideas of a discussion theme. Such familiarisation is especially important for discrimination of Memory and Comprehension level initial questions. For example, related to a story, what at first glance appears to be a question calling for perceiving relationships among ideas may, in fact, be simply asking for memory of a relationship actually stated in the story.

Transcript coding should proceed in two steps:

(1) Read through the transcript as a whole to gain an initial "feel" for the episode sequences. Then re-read the transcript to mark off episodes by ruling a horizontal line between the end of one episode and the beginning of the next. Revisional study of the ground rules for initial questions will be of special help in recognising episodes (see Section 4.2.2).

(2) Code the transcript, episode by episode.

3.3.3 Recommended Sequence and Experiences for Learning to Use SQUAIES Level 2

After thorough study of the Manual, work with a coder-judge partner or in a group of four coder-judges on the following learning sequence.

1. Marking off transcript episodes.
2. Coding initial question moves.
3. Coding pupil response moves.
4. Coding teacher evaluative moves.
5. Coding teacher sustaining moves.
6. Coding episodes and moves in full transcripts.

For each phase of this learning sequence:

1. Use the same set of transcripts initially so that full SQUAIES coding is built up gradually. In Phase 6 randomly selected transcripts may be used.

2. Move from initial identification and coding on a consensus basis to independent coder-judging (working either as two independent judges or as two independent pairs of judges, each pair working on a consensus basis).

3. Discuss all coding-judging disagreements, making regular use of the Manual, Section 4, in which operational definitions and illustrative examples are supplied of all verbal behaviour analysed by SQUAIES.

4. With reference to identification and coding activity, it may be helpful for coder-judges to write out their own examples for coding categories, and to compare and discuss these examples with each other and with reference to Section 4 of the Manual.

5. When coding-judging on an independent basis, regular checks on inter-judge reliability should be taken. These checks result in a coefficient of inter-judge agreement which is based on the percent of agreement between independent judges (or pairs of judges). For any one phase in the recommended learning sequence, it is desirable that the coefficient of inter-judge agreement be 0.80 or higher. Until this minimum criterion level is consistently met, coder-judges should not proceed from one phase to the next in the learning sequence. Section 3.3.4 below provides guidelines for calculating and interpreting the coefficient of inter-judge agreement.

3.3.4 Calculating and Interpreting the Coefficient of Inter-judge Agreement When Using SQUAIES Level 2

The coefficient of inter-judge agreement is determined by the formula

$$R = \frac{A_{XY}}{\text{Max}(B_X, B_Y)}$$

where A_{XY} is the number of agreements between judges X and Y, B_X is the total number of verbal behaviours coded by judge X (or episodes marked off in the case of episode judgment), B_Y is the total number of verbal behaviours coded by judge Y (or episodes marked off in the case of episode judgment), and $\text{Max}(B_X, B_Y)$ is the maximum value of the two judges B_X and B_Y (i.e., the numerically larger of the two numbers, B_X and B_Y).

Thus, suppose that in marking off episodes on a given discussion lesson transcript, the total number of agreements by judges X and Y, working independently, were 6 (A_{XY}), and that B_X was 7 and B_Y was 8. $\text{Max}(B_X, B_Y)$ would thus be 8, and the coefficient of inter-judge agreement would be

$$R = \frac{A_{XY}}{\text{Max}(B_X, B_Y)}$$

$$= \frac{6}{8}$$

$$= 0.75$$

We would say, therefore, that with reference to this transcript, judges X and Y are in agreement with each other on episode identification 75 percent of the time but have not reached a satisfactory level of inter-judge agreement (0.80 or

higher).

Figure 15 presents the same discussion lesson transcript shown in Figure 10 for which coding-judging has been completed independently by two judges and which, for illustrative purposes, has been checked for inter-judge agreement concerning

(a) episode identification,

(b) main SQUAIES categories, and

(c) extended SQUAIES categories.

Several points should be noted about the method of arriving at the entry figures for the coefficient of inter-judge agreement formula related to this transcript:

(i) All agreements and disagreements are recorded with a tick or cross respectively on one copy only of the two matched transcripts that were coded independently. Recording related to episodes is done in the left-hand margin, while main and extended category comparisons are recorded on the right-hand side of the transcript in the columns provided. It should be noted that column Y contains a record of any coding disagreement by judge Y with judge X on whose transcript copy recording is being completed. This facilitates appropriate agreement-disagreement check marks in columns M and E (main category and extended category respectively).

(ii) A single verbal move involves one main category, but it may involve more than one extended category. Thus, the move coded  belongs to the main coding

category of initial question but has two extended categories: memory level and repetition. Similar examples would be Q^{An}, P^{caw}, and P^{prom}. The following example illustrates three extended categories: Q^{M} (an initial question with the extended categories memory level, repeated and abortive). In cases like these, one credit only for agreement between judges is given for the main category while extended category agreements (or disagreements) are checked off in accord with the number of extended categories involved. Some illustrations follow:

X	Y	M	E
Q^{M}		✓	✓
Q^{M}		(✓)	✓ ✓
Q^{M}		✓	✓
Q^{C}	Q^{C}	(✓)	✓ X
R	PR	X	X
R	PR	(X)	X X
A^{1}		✓	✓
$Al^{2/3}$	$I^{2/3}$	X	X
I^{1}	$I^{2/3}$	✓	X

It will be observed in these illustrations that when disagreement on the main category is recorded, credit

is not given for match of extended category. Thus, $Al^{2/3}$ and $I^{2/3}$ are not credited with agreement on either category.

Table 1 presents inter-judge reliability coefficients for SQUAIES Level 2. These were derived from agreement checks taken between two independent pairs of coder-judges coding a set of discussion lesson transcripts related to a research project conducted by the author in 1973 and 1974. Each pair worked on half the total number of transcripts to be coded, arranged in 10 pairs of coding sets. Unknown to each pair of coders a secretary had typed two copies of 10 transcripts selected at random, and had distributed these throughout the 10 sets of transcripts allocated to each coding pair so that for every set coded, the pairs coded one transcript in common. Thus, 10 checks on inter-judge level of agreement became available. Although the coder-judge pairs knew one transcript in each of the 10 sets coded was common, they had no knowledge of which transcript it was.

The coefficients in Table 1 reveal a consistent pattern of high level of inter-judge agreement. However, the four coder-judges were all fairly sophisticated in classroom interaction analysis of one kind or another, albeit that SQUAIES was unfamiliar to all but the author who was one member of the judge-pairs. The other three members were a masters student in Education, a teachers college Lecturer in Education, and a Research Fellow in the University of Waikato's Teacher Education Research Project.

Table 1. Inter-judge Reliability for Coding Small Group Discussion Lesson Transcripts Using the SQUAIES Interaction Analysis Coding System, Level 2.

Small Group Discussion Lesson Transcript	Agreement Coefficient 22 Main Categories	Agreement Coefficient 45 Extended Categories
1	0.97	0.88
2	0.92	0.85
3	0.92	0.85
4	0.96	0.88
5	0.97	0.91
6	0.92	0.90
7	0.92	0.83
8	0.95	0.87
9	0.93	0.85
10	0.94	0.88
Mean	0.94	0.87
S.D.	0.02	0.02
Median	0.93	0.88

With the author's guidance, this team gained competence with SQUAIES in 5 weeks involving one 2-3 hour laboratory each week, plus assigned reading of the SQUAIES Manual and a comprehensive set of practical exercises to be completed on an independent basis. In keeping with the Manual's recommendation, the training programme included weekly checks on level of inter-judge agreement related to assigned independent study, as well as to tasks completed within each laboratory session. Apart from the author, the three trainees spent approximately 20 hours each learning to use SQUAIES. Future studies will need to occur in order to show that teams of less experienced persons can gain competency with SQUAIES in as short a training period.

Fig.15 Sample Inter-judge Agreement for Coding a Transcript

UNIVERSITY OF WAIKATO

TEACHER EDUCATION RESEARCH PROJECT

IN MICROTEACHING

Audiotape Transcript for Discussion Lesson, , 1973

TEACHER I.D. NUMBER: O

RECORDING: 10 minutes from the beginning of the lesson transcribed from a Sanyo cassette tape (Model M-2500).

STIMULUS MATERIAL: Story: "The Day the Bears Go to Bed" (Readers' Digest).

PUPILS:

1. Gordon
2. Glenn
3. Joyce
4. Lynette
5. Ann

CLASS: S.4

		X	Y	M	E
T	*Well what do you think causes the bear's body temperature to cool, and heartbeat and breathing to slow down? Why do you think this happens? What causes it?*	Q^M Q^M Q^M		✓ (✓) (✓)	✓ ✓ ✓
Gord.	*Because ... because of its hibernation.*	A' Ac +		✓ ✓ ✓	✓ ✓ ✓
✓ T	*Mm. Mm. Right.* *What ... what actually ... why do you think this happens?* (REFERS TO BODY COOLING ETC.)	Q^M		(✓)	✓ ✓
Glenn	*Because they go to sleep, they go into a deep sleep.*	$A^{2/3}$ Ac		✓ ✓	✓ ✓
✓ T	*Mm, yeah,* *but why ... why can you not do anything? Why does your heartbeat slow down?*	~~Q^C~~ Q^C	~~Q^M~~ Q^M	✓ ✓	✗ ✓ ✗

Girl	*'Cause you don't ---*	A^1		✓	✓
P	*'Cause you're not using as much energy.*	$A1^1$		✓	✓
Girl	*---- you're not moving the same.*	A^1			
T	*Right. Energy's the key word there, I think. When you're running your temperature goes up and your heartbeat quickens. You'll know that from your fitness things. What was the purpose of the radio transmitter?*	Ac TC Q^M	+ clar P	× ✓ ×	× ✓ ×
Lyn	*So they knew where the bears ... um ... things were, like dens.*	A^1		✓	✓
T	*But what was the purpose of the whole experiment that they were doing?*	Q^M	clar P	×	×
Lyn	*To find out when and ... where and things like that ... where the b... bears hibernate.*	$A^{2\|3}$		✓	✓
Glenn	*When ... when ... they were asleep, when they were in a deep sleep or something or when they were walking round or something.*	$A1^{2\|3}$		✓	✓
T	*Yes.*	Ac		✓	✓
Joyce	*Um ... to find out about the bear's life so they could ... um ... save them.*	$A1^{2\|3}$		✓	✓
T	*But ... but ... what would finding out about how bears live and that ... how would that help them preserve animals?*	P caw		✓	✓
Joyce	*Then they could ... um ... then they could ... um ... find out what they do and then they could sort of ---*	$A^{2\|3}$		✓	✓
T	*Yes.*	Ac		✓	✓
Joyce	*---- try and help them.*	$A^{2\|3}$			
T	*Glenn?*	PR		✓	✓
Glenn	*If they want to help them they'd know where to look ... um ... on the slopes 'n that.*	$A^{2\|3}$		✓	✓
T	*Right! Gordon, what were you going to say?*	+ PR		✓ ✓	✓ ✓
Gord.	*Well ... like ... say ... before they started hibernating, well there's one sort of food they like and there wasn't very much of it, well they could probably get more of it.*	$A^{2\|3}$	A^{4+}	✓	×
T	*Oh, that's a good idea. Any other reasons?*	+ P clar		✓ ✓	✓ ✓
Glenn	*In case they get sick ... find sick animals ---*	$A^{2\|3}$		✓	✓

T	*Mm.*	Ac		✓	✓
Glenn	*---- know what to do with them.*	$A^{2\|3}$			
T	*Why ... why do you think they had to weigh the bears and get paw and tag prints and take a blood sample, and all the other things they did? Why do you think they had to do that?*	Q^{c}		✓	✓
		(Q^{c})		(✓)	✓ ✓
	(PAUSE)		Ab	×	×
	How do you think it helped them?	P^{prom}	(Q^{c})	(×)	× ×
Lyn	*Um ... they knew how well they are.*	A^{1}		✓	✓
T	*Mm.*	Ac		✓	✓
Joyce	*And to find out how old they are, and then they could find out what age they died at.*	$A1^{2\|3}$		✓	✓
T	*Right!*	+		✓	✓
Glenn	*M ... How much do they weight up to.*	$A1^{1}$		✓	✓
T	*Yeh.*	Ac		✓	✓
Joyce	*Um ... to help them sort of if ... when they take their ... um ... teeth things, it would ... um ... help them if they lose them or something ... might, y'know, know which bear they lose.*	$A1^{2\|3}$		✓	✓
T	*Y'know it talked about, um ... the range, the home range that bears have. Why do you think some needed more range than others?*	S^{sub}		✓	✓
		Q^{c}		✓	✓
Joyce	*Um ... 'cause there mightn't be so much food in one spot, they have to travel further.*	$A^{2\|3}$		✓	✓
T	*Mm.*	Ac		✓	✓
Glenn	*There might be more bears in one range.*	$A1^{1}$		✓	✓
		Ac		✓	✓
T	*Yeah, but each bear's got a certain range. And why do you think ... one needs more than the other?*	S^{sub}	COR	×	×
		(Q^{c})	caw P	(×)	× ×
Lyn	*Um ... some might be weaker than the others.*	A^{1}		✓	✓
T	*Mm. Gordon?*	Ac		✓	✓
		R		✓	✓
Gord.	*Different types ... of bears.*	A^{1}		✓	✓
T	*Could be.*	Ac		✓	✓
Glenn	*Some might eat more than others.*	$A1^{1}$		✓	✓
T	*Mm.*	Ac		✓	✓

Lyn	*Some might be ... they're all different sizes.*	$A1^{1}$ Ac		✓ ✓	✓ ✓
✓ T	*Mm.* | *What were some of the things that the Craigheads ... they were the people that were doing the experiments ... found out about the habits of bears? What good i ... unusual things did they find out?*	S^{Sub} Q^{M} Q^{M}		✓ ✓ (✓)	✓ ✓ ✓
P	*Ooh! Ooh!*				
T	*Glenn?*				
Glenn	*Um ... they ... they make their den near a slope and so, when there's a hot day or something, the ... um ... snow doesn't melt round their den.*	$A^{2\|3}$		✓	✓
T	*Yeah. Any ... anything else you've found out? Lyn?*	Ac P^{clar}		✓ ✓	✓ ✓
Lyn	*They make their dens, um ... a few days earlier than when ... um ... what they need them.*	A^{1}	$A^{2\|3}$	✓	×
T	*Mm.*	Ac		✓	✓
Joyce	*Um ... when they make their dens they usually stay pretty close to them.*	$A1^{2\|3}$		✓	✓
Lyn	*And before they hibernate, they wait till the snow is definite to cover all their tracks ... they hibernate then.*	$A1^{2\|3}$ +	$A1^{4+}$	✓ ✓	× ✓
✓ T	*Right.* | *What was the eve ... the event that started the hibernation period? What happened?*	Q^{M} Q^{M}	 P^{prom}	✓ (×)	✓ × ×
Joyce	*Um ... they found out that there w ... that there weren't so many grizzly bears and they ... and they were getting extinct.*	$A^{2\|3}$ Ac	 +	✓ ×	✓ ×
✓ T	*Right.* | *How ... how do you think they, ah ... bears knew when to start getting their dens ready?*	Q^{C}		✓	✓
Glenn	*Gettin' cold!*	A^{1}		✓	✓
T	*Getting cold. Any other reasons?*	Ac^{rep} P^{clar} A^{1} Ac^{rep}		✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
Lyn	*The weather.*				
✓ T	*Mm, it's got to do with the weather.* | *What country do you think this is taking place in?*	Q^{M}		✓	✓
Joyce	*America.*	A^{1}		✓	✓
T	*Why America?*	P^{caw}		✓	✓

Joyce	*Because Yellowstone Park's in America.*	A' +		✓ ✓	✓ ✓
✓ T	*Right.* | *What else ... talking about the conservation of animals ... what else can you say about ... what else have we done related to this?* (REFERS TO AN EARLIER CURRICULUM STUDY WITH THE PUPILS)	S^{sub} Q^{M}		✓ ✓	✓ ✓
Lyn	*What we've done?*	I^{proc}		✓	✓
T	*Mm.*	APQ		✓	✓
Joyce	*'Serengeti Bus'.*	A' + Ac^{rep} Tc		✓ ✓ ✓ ✓	✓ ✓ ✓ ✓
X T	*Right. Serengetti. That was all about the conservation of animals.* | *And what did Grzimeks have to find out?*	Q^{M}	clar P	X	X
Lyn	*That they had to photograph the animals to find out where they were.*	A$^{2\|3}$		✓	✓
T	*Right, they had to, um ... find out about the lives of animals. Tell me about the ... looking back ... it ends up: '... the strangest thing is still a secret, the feel of that first big winter storm.' What do you think about that?*	+ Ac^{para}		✓ ✓	✓ ✓
✓ Pupils	SILENCE. NO RESPONSE. ABORT.				
T	*What d'you ... what'd you think that means? Glenn?*	(Q^{c})		(✓)	✓ ✓
Glenn	*Um ... the winter storm was a pretty bad one. They ... the bears weren't sort of used to the bad weather and they ----*	A$^{2\|3}$		✓	✓
T	*Mm.*	Ac		✓	✓
Glenn	*--- might be their first time in bad weather.*	A$^{2\|3}$			
T	*Joyce?*	R		✓	✓
Joyce	*They felt the cold was coming and they never ... they started to go to their dens.*	A$^{2\|3}$		✓	✓
T	*Gordon?*	R		✓	✓
Gord.	*Well, it was a bad storm, so it could've um ... made some of their food quite* (TWO WORDS UNCLEAR).	A$^{2\|3}$ +		✓ ✓	✓ ✓
✓ T	*Right.* | *What was ... what was the big mystery that these people were trying to solve about bears? What was the big mystery?*	Q^{M} (Q^{M})		✓ (✓)	✓ ✓
P	*Oh!*				

T	*Gordon?*				
Gord.	*That ... um ... when they knew to wake up. Oh! It might have been hibernation!*	$A^{2\|3}$		✓	✓
T	*I don't know if it was when they knew to wake up. Lyn?*	COR R		✓ ✓	✓ ✓
Lyn	*How they knew when to hibernate because, um ... the snow covered their tracks so that's the only time they hibernate.*	$A^{2\|3}$		✓	✓
T	*Joyce?*	R		✓	✓
Joyce	*Um ... they want ... they wanted to find out how the bears know what time to hibernate.*	A^1		✓	✓
✓ T	*That's what they <u>did</u> find out, didn't they?*	rhet Q		✓	✓
	But it said there was a <u>big</u> snowstorm ... you know ... the rain, the weather sort of was very bad one day and it was good the next day, and yet when it was very bad the bears didn't hibernate. Why do you think this was?	Sub Q^c	Q^M	✓ ✓	✓ ✗
Joyce	*'Cause in this d'site it wasn't cold enough and there was still heat to come.*	$A^{2\|3}$		✓	✓
T	*Glenn?*	R		✓	✓
Glenn	*They might get covered over and they might not be able to get out.*	$A^{2\|3}$		✓	✓
T	*Mm.*	Ac		✓	✓
Lyn	*'Cause the snow wasn't covering their steps. It didn't just cover their tracks.*	$A^{2\|3}$		✓	✓
T	*But how did they know that it ... was going to be fine next day ... if there was a big snowstorm?*	caw P		✓	✓
Lyn	*Because ... um ... their tracks were still in the snow!*	A^1		✓	✓
T	*Mm. Any ideas, Joyce?*	Ac PR		✓ ✓	✓ ✓
Joyce	*It didn't completely cover the entrance to their den ... um, it didn't cover it up so that people couldn't see it.*	$A^{2\|3}$		✓	✓
T	*Lyn?*	PR		✓	✓
Lyn	*It wasn't very deep.*	A^1		✓	✓
T	*Could've been. Did it say how deep they made the dens, how big they were?*	Ac clar P		✓ ✓	✓ ✓
Lyn	*No. I don't know where to use ---*	A^1	YN	✓	✗

Gord.	*Well, they said sometimes they ... um ... bears had their dens under big roots.*	$A1^{2\|3}$	$A1^{1}$	✓	×
Glenn	*Fir trees. Big fir trees.*	$I^{2\|3}$		✓	✓
T	*Did they always have their dens under fir trees?*	P^{clar}		✓	✓
Pupils	*No!* (CHORUS)	$CHOR^{YN}$		✓	✓
P	*Under pines.*	$A1^{1}$		✓	✓

END

INTER-JUDGE RELIABILITY:

(1) Episodes: $\frac{14}{18} = 0.78$

(2) Main Categories:

$$\frac{141}{151} = 0.93$$

(3) Extended Categories:

$$\frac{153}{175} = 0.87$$

4. OPERATIONAL DEFINITIONS AND CODING GROUND RULES FOR USING SQUAIES LEVEL 2 WITH TRANSCRIPTS OF DISCUSSION LESSONS

4.1 IDENTIFICATION OF EPISODES

An episode is defined as a set of teacher and pupil verbal moves which relate to one sub-topic in an overall discussion theme. Thus, the sub-topic represents the substantive focus of the episode. Often, an episode begins with the teacher combining a structuring (information-giving) move with an initial question move, or with the teacher using an initial question move only, followed by other teacher and pupil moves which are associated directly with the substantive focus of the initial question. The initial question for an episode may originate with a pupil rather than the teacher. Moves which follow the initial question may consist of pupil responses (answers to questions as well as voluntary comments and reactions), and further teacher questions, evaluative reactions and comments, the latter sometimes including a terminal statement which "rounds off" an episode.

The first step in coding a transcript of a discussion lesson is to mark off episodes. This is done by reading through the transcript as a whole first to get "the feel" of the overall discussion theme and to make first estimates of episode beginning and ending points. The latter will be determined by discrimination of initial questions (coming from either the teacher or a pupil) and any accompanying information-giving or orientation moves for these questions.

The second step is to re-study the transcript to check on first episode estimates, and to mark off final decisions by ruling a horizontal line between the end of one episode and the beginning of

the next.

In order to mark off episodes appropriately, it is necessary to have first studied carefully Section 4 of this Manual, giving special attention to operational definitions for Structuring and Initial Question moves by the teacher (see Sections 4.2.1 and 4.2.2 respectively), the Initiation of Episodes move by pupils (see Section 4.3.3), and moves which Sustain episodes (see Sections 4.5.1 to 4.5.9). Such study will help clarify episode recognition problems arising from incidence of the repeated or rephrased initial question, or from failure of a coder to distinguish between an initial and a sustaining question.

Once episodes have been marked off on a transcript, a coder proceeds to classify and code component moves for each episode, in sequence, by use of the SQUAIES Level 2 guidesheet and Section 4 of this Manual in which operational definitions and coding ground rules are provided for all verbal moves in SQUAIES.

4.2 TEACHER MOVES WHICH INITIATE EPISODES

4.2.1 The Initial Structuring Move

The initial structuring move by the teacher sets the stage or context for subsequent discussion in an episode. Usually it does this by linking substantive or procedural information to an initial question. A structuring move may occur prior to or following an initial question, and sometimes the move is sandwiched between repetitions of an initial question, or between several different kinds of initial questions. There are occasions when an initial structuring move alone is sufficient to launch discussion in an episode; that is, no initial question follows or accompanies the initial structuring move.

(a) The Substantive Initial Structuring Move S^{sub}

This kind of structuring move at the beginning of an episode provides information of the following kinds to accompany an initial question: stating a proposition, recounting an event, describing a situation, giving an opinion on some matter, posing a problem situation, or motivating by arousing feelings.

(b) The Procedural Initial Structuring Move S^{proc}

This kind of structuring move at the beginning of an episode provides procedural or managerial

information of the following kinds to accompany an initial question: giving directions, indicating managerial or organisational points, setting limits for discussion (e.g., time to be spent on a topic), or indicating teacher expectancies of the discussion group.

Examples:

(i) *Now I want you to forget your stories for a moment and think about this question.* (PROCEDURAL STRUCTURING) *Why does the Treaty of Waitangi remain a source of trouble even to this day?* (INITIAL QUESTION)

(ii) *How would you go about solving Hamilton's parking problems?* (INITIAL QUESTION) *Don't bother to put up your hands. Just nod your head to let me know if you want to contribute.* (PROCEDURAL STRUCTURING)

(iii) *What need is there, today, for big motorways?* (INITIAL QUESTION) *I want well thought out ideas here, not the first thing that comes into your mind.* (PROCEDURAL STRUCTURING) *Why do we need big motorways in our kind of society?* (REPETITION OF INITIAL QUESTION)

(iv) *Back in 1840 the Treaty of Waitangi was signed. This treaty was supposed to bring about good relations between Maori and Pakeha, yet today we find some Maori leaders arguing that the treaty has never operated as it was written and agreed to.* (SUBSTANTIVE STRUCTURING) *What problems claimed by these Maori leaders do exist?* (INITIAL QUESTION) *I think you should restrict yourself to this point, to raising problems, say, just over the last ten years.* (PROCEDURAL STRUCTURING)

(v) *Many people nowadays say that young folk are very irresponsible ---* (SUBSTANTIVE STRUCTURING - NO INITIAL QUESTION FOLLOWED BECAUSE PUPILS RESPONDED IMMEDIATELY)

(vi) *What is this poet's purpose in writing this poem?* (INITIAL QUESTION) *When you read poetry, it often makes you wonder why it has been written.* (SUBSTANTIVE STRUCTURING)

Coding Rules for the Initial Structuring Move:

1. When an initial structuring move is immediately repeated or restated, both the statement and the repetition of it should be coded as a single structuring move.

2. When an initial question separates initial structuring moves, separate coding should occur for these structuring moves.

3. When an initial structuring move takes the form of a rhetorical question (for which no response is expected or received), the coding should be for a rhetorical question and not a structuring move.

4. Sometimes initial structuring includes the provision of hints, clues or prompts. When this occurs, the probe-prompt category should be used for coding purposes (p^{prom}). It is sometimes the case that the structuring, prompting and initial question moves combine in order to initiate an episode.

4.2.2 The Initial Question Move

The initial question move is defined as one which introduces a new episode by calling for pupil response related to a new or different topic within an overall discussion theme. By definition, it follows that preceding responses would be inappropriate to this new question. In beginning an episode, an initial question may or may not be accompanied by one or more structuring moves, rhetorical questions or prompts, and may sometimes be repeated. It should be noted that questions may sometimes be framed in statement rather than in interrogative form, e.g., *Tell me the capital of New Zealand* rather than *What is the capital of New Zealand?*

(a) The Substantive-logical Initial Question

The substantive-logical initial question calls for pupil thinking and responding related to certain subject matter at one of six levels of thinking process: memory-recall, comprehension, application, analysis, synthesis and evaluation. The coding symbols and brief definitions for each of these thinking levels are presented below. Following pages provide fuller definitions, together with examples of each type of initial question.

Q^M

The Memory-recall Initial Question: This question calls upon pupils to provide previously learned information in substantially the same form by remembering, recalling, defining, recognising, identifying, stating facts, describing, reporting, re-telling or naming.

The Comprehension Initial Question: This question calls upon pupils to demonstrate their understanding of ideas by translating them into their own words or into a different form, by explaining and relating them, by interpreting them, by comparing them and by making inferences from them. Q^{C}

The Application Initial Question: This question calls upon pupils to use remembered and understood ideas in order to recognise and solve new problems. Q^{Ap}

The Analysis Initial Question: This question calls upon pupils to perceive the parts and the interrelationships among parts in a whole idea, statement, point of view, piece of behaviour, presentation or composition. Q^{An}

The Synthesis Initial Question: This question calls upon pupils to solve a problem by putting ideas together in a new way. Hypothesising would be included in this category. Q^{Sy}

The Evaluation Initial Question: This question calls upon pupils to judge the worth, rightness or appropriateness of ideas, statements, a point of view, a piece of behaviour, a presentation or a composition. Criteria are also called for. Q^{Ev}

Coding Rules for the Substantive-logical Initial Question Move:

1. Initial questions at any given substantive-logical level may ask for simple or complex thinking. For example, in the following two memory-recall questions the first asks for recall of a single fact whereas the second asks for more complex remembering: *When was the Magna Carta signed? What was the full sequence of events that led up to the signing of the Magna Carta?* Both questions here would be classified and coded as memory-recall questions. Questions at the same level in the classification system may also vary on an easy-to-difficult or

concrete-to-abstract continuum. For example, both of the following questions would be classified at the synthesis level yet the first is framed in more concrete terms: *Can you think up new ways we could use to help people in our country have more say in how laws are made? How can we develop new forms of democracy in New Zealand?*

2. When there is doubt about the intended substantive-logical level of a question, the rule is to code it at the highest level of any tentative estimates made. Two main kinds of information are used to help in coding the substantive-logical level of an initial question:

   (i) The first response to the question and how its content relates to the question.

   (ii) The context and form of the question: While the form or way in which a question is framed will often facilitate immediate classification of its substantive-logical level, the coder should always check question form clues against the context to which a question refers. For example, the following question appears to be a comprehension question calling for explanation, but the article studied by the pupils and on which the question is based actually lists the reasons the question asks for: *Why are raspberries grown in Otago?* Thus the question's substantive-logical level is really memory-recall.

3. When more than one question initiates an episode, each of which calls for a different kind of substantive response, the rule is to code the question which is responded to <u>first</u> as the one which is substantively active. Other questions are then coded as abortive because they do not elicit a response (see also (d) in Section 4.2.2). This rule also applies when several questions are linked together, e.g., *What did the explorers find in the cave, how did they go about their search and why did they want to*

explore this area anyway? If it is not possible to determine from the first response which question is to be coded as substantively active and which will be abortive, the rule is to code the last question as substantively active.

4. If no response at all occurs for any set of questions, each of which calls for a different substantive response, each question is held to abort and is coded accordingly (see also (d) in Section 4.2.2).

5. When more than one question attempts to initiate an episode (each of which calls for a different substantive response) and the first response includes content relevant to more than one of the questions, then substantive coding of the questions should be in accord with the substantive focus of the first response. Question content not covered in this first response will determine which question or questions will be coded as abortive.

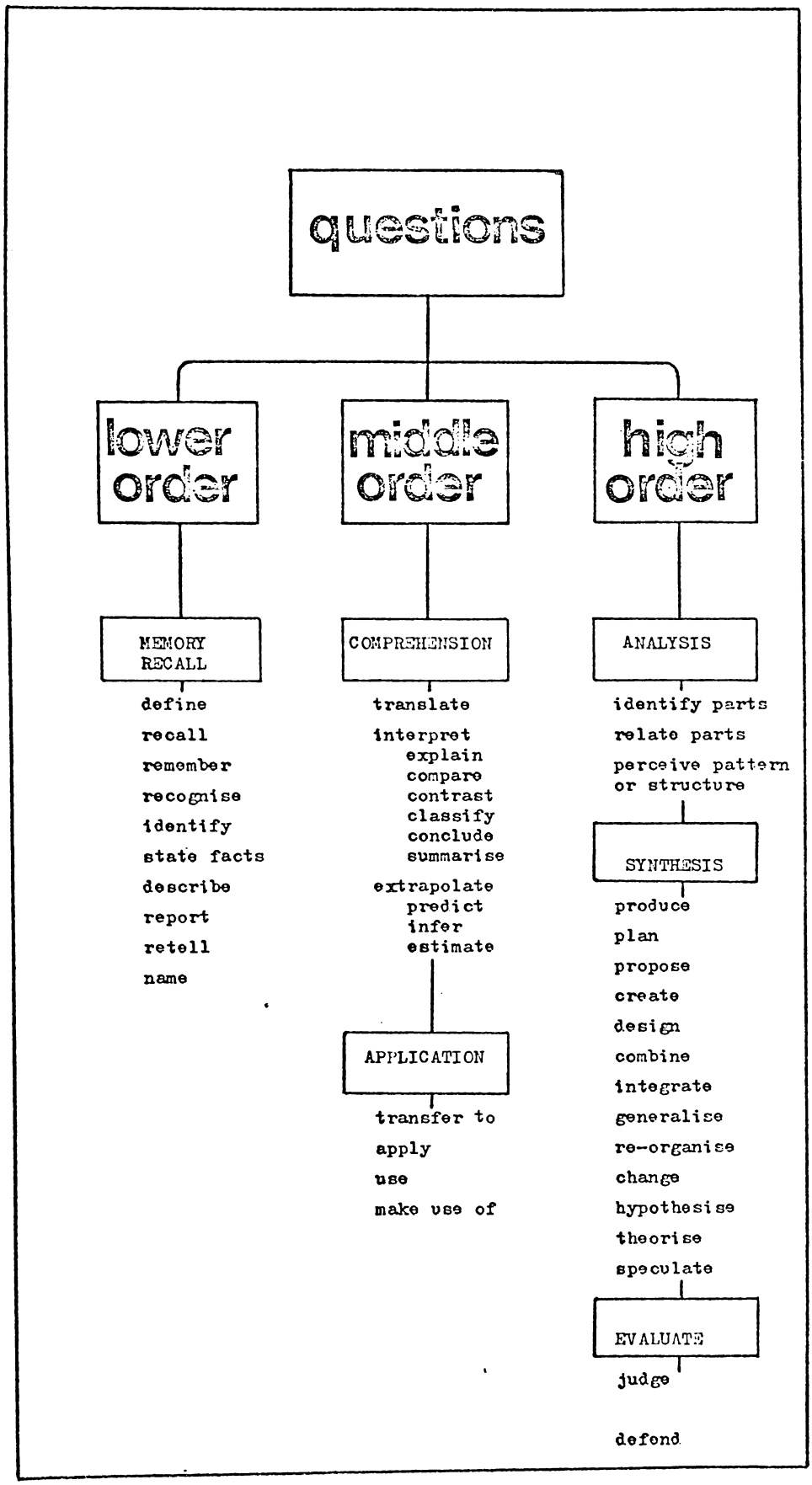
6. The self-reference question eliciting pupil response concerning personal experience, or confirmation of having had a certain experience, should always be coded as starting a new episode and is regarded as a special kind of memory-recall question e.g.,

Have you ever been to a zoo?

Did any of you see the television programme called Daktari?

How many of you already know how to tie a reef-knot?

Have you ever seen a live rhinocerous?


questions
lower order
middle order
high order
MEMORY RECALL
define
recall
remember
recognise
identify
state facts
describe
report
retell
name
COMPREHENSION
translate
interpret
explain
compare
contrast
classify
conclude
summarise
extrapolate
predict
infer
estimate
APPLICATION
transfer to
apply
use
make use of
ANALYSIS
identify parts
relate parts
perceive pattern or structure
SYNTHESIS
produce
plan
propose
create
design
combine
integrate
generalise
re-organise
change
hypothesise
theorise
speculate
EVALUATE
judge
defend

QUESTION LEVEL	THINKING PROCESSES AND INFORMATION CATEGORIES
1. MEMORY-RECALL Questions that ask pupils to remember or selectively recall information that has been learned by rote, by association, or by higher thinking processes after which it has been committed to memory. Questions that ask pupils to describe what they observe now, or what they have observed in the past. Information may range from specific facts to complete theories, but all that is required is the bringing to mind of previously learned or currently provided information in substantially the same form.	With reference to information that is remembered or which is provided, ask pupils to: 1. DEFINE-RECALL-RECOGNISE Terms Symbols Vocabulary Rules Formats Usages 2. STATE FACTS Dates Times Events Places Persons Parts Properties Categories 3. DESCRIBE People Places Events Steps Processes Methods Objects Sequences Causes Influences Uses Structures Organisations Systems 4. REPORT BACK-RETELL ...About what was or will be done, said, thought, concluded, decided, made. 5. NAME Universal theories or Laws Propositions Organisations Systems

KEY QUESTION WORDS	SOME EXAMPLES OF QUESTIONS
DEFINE RECALL RECOGNISE IDENTIFY	*"What are deciduous trees?"* *"What does H_2SO_4 mean?"* *"What is a kilometer?"* *"What is the sign for 'divide'?"* *"Is the oak an exotic or a native tree?"*
STATE REMEMBER	*"What are the four stages in the life cycle of the ant?"* *"Who was Emily Pankhurst?"* *Who killed the whale?"* *"When was the Treaty of Waitangi signed?"* *"Why do jets carry oxygen masks for passengers?"* (the pamphlet states why) *"Where in London did Shakespeare stage most of his plays?"* *"What is the length of pregnancy for an elephant?"*
DESCRIBE	*"What does an abominable snowman look like?"* *"How is dough prepared for making bread?"* *"Describe the steps a bill goes through before it becomes law."* *"How does an ocean oil-rig work?"* *"What happened when the hi-jackers landed the jet?"*
REPORT	*"What did President Nixon say at the end of his speech about what his next step would be on the Watergate Affair?"* *"What was the final point we all agreed upon?"* *"What did the submarine commander conclude was the only decision left open to him?"* *"How many industrial strikes did this article state that we've had in New Zealand so far this year?"* *"What caused World War II?"* (The article lists the causes.)
NAME	*"What do you call an animal that is part mammal and part fish?"* *"The theory that Darwin developed about how man came to exist is called what?"* *"What do you call a society in which descent and property rights come through the females?"*

QUESTION LEVEL	THINKING PROCESSES AND INFORMATION CATEGORIES
2. COMPREHENSION Questions that ask pupils to reveal their grasp of the meaning of information by relating ideas to construct an answer. Three levels of thinking complexity are involved: (a) Translating information from one form into another. (b) Interpreting information (perceiving relationships, causes, reasons). (c) Extending trends in given information to predict, to estimate, and to draw implications or corollaries that are in line with the conditions given in the original information. Comprehension questions are often objective or convergent in the sense that one or possibly only a few appropriate answers can be justified beyond a reasonable doubt. Answers to these questions have to be worked out or inferred by relating ideas in any information that is provided, or, when the information provided is data poor, by relating remembered ideas.	Have pupils relate ideas by asking them to: TRANSLATE 1. Restate in their own words or paraphrase. 2. Expand in their own words. 3. Restate in briefer terms. 4. Give concrete examples, illustrations, or analogies for abstract ideas. 5. Change the symbolic form of a communication. INTERPRET 6. Explain (a) causes or evidence behind some result, effect, behaviour, generalisation, theory. (b) what led up to some event, behaviour, situation. (c) how something was done, achieved, processed. (d) the reasons or justification for some classification, name, conclusion, viewpoint. (e) the purpose, aim, intention, or need for some thing, behaviour, social institution, practice. (f) why something exists, is important, is a problem, is used. (g) how it is known that something is the case, has happened. 7. Conclude/summarise from observation of evidence or a situation. 8. Compare and contrast ideas, events, objects, places, behaviours (similarities and differences). 9. Classify ideas, behaviours, events, objects. EXTRAPOLATE (EXTEND) 10. Estimate, predict or infer consequences implied in data (what is most likely to happen on the basis of trends or patterns observed).

KEY QUESTION WORDS	SOME EXAMPLES OF QUESTIONS
RESTATE GIVE EXAMPLE SAY ANOTHER WAY SAY IN OWN WORDS	*"What do you think the writer means by the expression 'He was a Don Quixote'?"* *"Can you give me an example of democracy in action?"* *"How can we say this proverb in everyday language?"* *"What does the sign '@' mean?"* *"Sum up Jack's ideas in a few words."*
EXPLAIN	*"How do you account for the fact that the U.S.A. and the U.S.S.R. are now planning joint space missions?"* *"Why did the Titanic's captain abandon ship so late?"* *"What keeps a human being's body temperature from rising on a hot day?"* *"Why was the soldier in this story so miserable?"*
GIVE REASONS	*"How did the Government manage to stop the strikes?"* *"How did rugby get to be called football when soccer is much closer to this name?"*
HOW WAS...	*"How did Horatio go about persuading the City Elders to trust him?"*
HOW IS IT THAT	*"Why should we need to have a capital city?"* *"What's the reason for using a name like Queen City for Auckland?"* *"How do you know that John's decision was suitable?"*
WHAT IS IT THAT	*"Why do we have special building regulations?"* *"Why can't you say 'Ycuse men' - people understand what it means?"*
WHY	*"Why do you think Russell was chosen for our first capital?"* *"Why do we have elections every three years?"* *"What is the purpose of writing poetry in this style?"*
WHAT	*"Why is it important to have a body like the S.P.C.A.?"* *"Why are these special helmets worn by construction workers?"*
HOW DO YOU KNOW	*"Why have the discussions on Lake Manapouri persisted?"* *"How do you know that an earthquake occurred?"*
CONCLUDE SUMMARISE	*"What can we conclude, then, about the life of a ballet dancer?"*
COMPARE DIFFERENCE SIMILARITY CONTRAST DISTINGUISH	*"What is the difference between a gnat and a midge?"* *"Why is a pop song something like a ditty?"* *"How different are New Zealanders and Australians in their way of life?"* *"What do X and Y have in common?"* *"How do you explain the difference between...?"* *"How are a goldfish and a turtle alike when they move?"* *"How would living in a primitive society compare with, say, living in Auckland today?"*
GROUP CLASSIFY	*"What type of behaviour would you say Al's reaction was?"* *"Which one of the kings mentioned would you call a tyrant?"*
PREDICT	*"If the present birth rate continues, when will the world's population reach 10 billion inhabitants?"* *"Looking at the number of times in recent years that rescue services have been called out to save mountaineers, what do you think Government or local tourist bodies might do in the very near future?"* *"If X is happening, what else is likely to be present?"*

QUESTION LEVEL	THINKING PROCESSES AND INFORMATION CATEGORIES
3. APPLICATION Questions that ask pupils to apply or transfer remembered or understood information to new situations. Application may be with reference to rules, ideas, methods, principles, generalisations, conclusions, relationships, laws and theories. Thinking required here is at a higher level of understanding than is called for by comprehension questions.	Have pupils make use of information that they remember and/or understand, in new situations. RECOGNISE THE PROBLEM AND TRANSFER
4. ANALYSIS Questions that ask pupils to break down information into its component parts in order to discover its pattern or structure. Three main kinds of analysis are involved: (a) Identification of parts. (b) Analysis of relationships among parts. (c) Perceiving organisational patterns or structures. Thinking required here is at a higher level than that called for by comprehension or application questions. This is because an understanding is required of both the content and the structural form of the information or material. Analysis questions may often be fairly closed in nature. Sometimes, however, they may refer to material that permits more openness for answers.	Have pupils analyse material that is of a verbal communication kind, or about their environment, or about situations, by asking them to: IDENTIFY PARTS 1. Distinguish fact from opinion. 2. Distinguish fact from hypothesis. 3. Distinguish a conclusion from an hypothesis by looking at the evidence that supports each. 4. Point out stated and unstated assumptions. 5. Distinguish relevant from irrelevant information. ANALYSE RELATIONSHIPS 6. Point out the reasoning behind a viewpoint or some behaviour. 7. Analyse an argument for its consistency. 8. Detect error in thinking (logical fallacies). 9. Recognise and explain bias, emotional appeal, propaganda or persuasive devices. ANALYSE ORGANISATIONAL ASPECTS 10. The way an argument or composition is developed. 11. The main points or significant features. 12. The mood, intent, motive or purpose of an author, a speaker, or of a composition of some kind. 13. The overall pattern or structure of a composition or piece of behaviour.

KEY QUESTION WORDS	SOME EXAMPLES OF QUESTIONS
APPLY RELATE TO USE MAKE USE OF TRANSFER	*"If you are right about the best way to climb loose rock faces, how would you go about scaling a sandstone cliff?"* *"Which countries, then, have a climate most like Sweden's?"* *"If plants need air as you've agreed, why then do some plants grow well inside a plastic bag?"* *"How could we use Newton's theory to solve the situation where...?"* *"Try your conclusion on different kinds of people... how would older people react, for example?"* *"How would this idea of Joan's apply to the lives of people in New Zealand?"*
SHOW TELL WHERE DISTINGUISH	*"Where in this poem can you spot an assumption that all human beings love natural growing things?"* *"What are the main points on which this man bases his conclusion?"* *"Can you pick out several irrelevant parts (bits that don't count or matter) in Mr Smith's argument?"* *"Which of these ideas do you think are true, and which seem to be more a matter of the imagination?"* *"People in this article seem to miss some points about the advantages of one-way streets...what do you think these points might be?"*
SPOT PICK OUT DETECT	*"Where has the girl in this story got her ideas confused?"* *"We are told that the idea X leads to situations like Y. What is your impression about this reasoning?"* *"Where do you think Joan of Arc went wrong in her thinking?"* *"Can you pick out (detect) any special biases in this article?"* *"How does this writer try to get us on his side?"*
LINK	*"What point is this writer trying to make?"* *"What are the outstanding or main ideas in this story?"* *"Can you make up another title for this story (picture) which would tell us the main point it is trying to make?"* *"What main impressions do you get about this poem?"* *"How has this writer (artist etc.) gone about getting his ideas across?"* *"How does Mr X's policy relate old and new Maori cultural ideas?"*

QUESTION LEVEL	THINKING PROCESSES AND INFORMATION CATEGORIES
5. SYNTHESIS Questions that ask pupils to put ideas together to form new wholes. The result may be not so much a creative thing as a pupil's own slant or interpretation. Synthesis questions may call for the production of a new communication of some kind (e.g. a new way of expressing something), a plan of action for solving some problem, or speculation upon what might happen or what might have happened had circumstances been different. They can also call for the invention of a principle, a generalisation, an hypothesis or a theory. Synthesis questions usually elicit divergent responses. Thus they are classified as open questions. Sometimes all divergent answers may be deemed appropriate; at other times a group of divergent answers may be evaluated to determine which are the most appropriate.	Have pupils synthesise by asking them to: 1. Produce some unique communication. 2. Produce a plan or proposal to solve some problem. 3. Draw an inductive generalisation from specific data by combining or integrating ideas. 4. Develop a new approach, pattern organisational structure, or classification scheme. 5. Rearrange, restructure, reformulate or modify something. 6. Invent something. 7. Formulate an hypothesis or intelligent guess as to what will happen given certain conditions. 8. Speculate; use conjecture.
6. EVALUATION Questions that ask pupils to judge the value of something for a given purpose. The evaluation may refer to the rightness-wrongness, worth, appropriateness-inappropriateness effectiveness, "should-ness" or "ought-ness" etc. of such things as behaviours, a statement, a production of some kind, proposals or plans for action, social institutions, theories, generalisations etc. Judgments should be based on definite criteria which may be determined by the pupil or he may be given them. In the former case a teacher might question further in order to reveal and check the validity of the criteria being used by a pupil. Responses to evaluation questions are highest in the cognitive hierarchy because they contain elements of all the other categories, plus conscious value judgments based on clearly defined criteria.	Have pupils evaluate by asking them to: Judge and defend the judgment.

KEY QUESTION WORDS	SOME EXAMPLES OF QUESTIONS
PRODUCE PLAN PROPOSE CREATE DESIGN COMPOSE GENERATE COMBINE INTEGRATE GENERALISE RE-ORGANISE RE-ARRANGE CHANGE HYPOTHESISE THEORISE SPECULATE	*"What are some new ways these men could have used to prevent the forest fires?"* *"How could the Hamilton City Council solve its parking problems?"* *"What other ways might this writer have ended (started) his story to make it more exciting (dramatic etc.)?"* *"Let's re-do Hamilton's 1973 traffic blitz...what ideas could we think up that would definitely increase safe driving?"* *"If you met a man from an U.F.O., how would you communicate to him that you were friendly and that you wanted to talk with him?"* *"What big idea (statement, generalisation) can you make out of all these ideas (this information, data)?"* *"What recommendations would you make to help solve ...?"* *"What set of rules or laws would you devise for a new city if we were setting it up on the moon?"* *"How many different ways can you...?"* *"What would happen if the ice-caps at the two poles of the earth were to melt rather suddenly?"* *"Suppose we had wheels for feet...what new and different kinds of daily activities might we experience?"* *"How might our lives be different today if no Maoris had been in New Zealand when the first white man arrived?"* *"What would happen if...?"* *"How would you go about developing a scheme to reduce the amount of unneccessary pill and patent medicine taking that goes on in this country?"*
JUDGE DEFEND APPRAISE ARGUE FOR OR AGAINST	*"Which type of government do you think is the best devised by Man to date?"* *"What makes this picture better than that one?"* *"What would be the best way to arrange the room?"* *"What do you think about the accuracy and truth of these U.F.O. sightings?"* *"Which country would you rate as having the highest degree of law and order in the World today?"* *"In your opinion, what is the value of allowing more oriental people into New Zealand?"* *"What do you think about the idea of letting pupils have a say in developing a set of school rules?"* *"How effectively do you think this writer has got his message across?"* *"What makes art 'great art'?"* *"How do you feel about using this Traffic Blitz technique?"* *"Which argument of the three presented so far is the least controversial?"* *"What's the value of spending all that money each year on art exhibitions when only a small number of people bother to visit the art gallery?"* *"Who is the most pitiful character in this story?"*

(b) The Substantive-Affective Initial Question Q^{Affec}

The affective initial question calls for an expression of feelings, likes, dislikes, enjoyments, how one would feel in certain situations, or interests.

Examples:

(i) *Can you describe your feelings straight after you'd read this poem?*

(ii) *Tell me about the most horrifying experience you've ever had.*

(iii) *What kinds of television programmes give you most pleasure?*

(iv) *How would you feel if you were a zoo animal locked up day after day in a pen?*

(v) *What part of this story did you like (best)?*

(vi) *What was interesting about this story?*

Coding Rules for the Substantive-affective Initial Question:

1. Questions that call for recall, interpretation, or analysis of the feelings of some person or being, are not coded as affective initial questions. The affective question refers only to the emotional experience of the person to whom the question is addressed. Thus, the following questions are not affective initial questions:

(a) *How do you think the lion-tamer felt when the protection bars suddenly collapsed?* (A comprehension interpretation question because the story does not explicitly state the lion-tamer's feelings).

(b) *What were the emotional reactions of Lindbergh as he stepped from his plane near Paris after flying the North Atlantic for the first time?*

(A memory-recall question because the newspaper article actually states Lindbergh's feelings at this moment as expressed to a reporter).

2. Some initial questions do not appear to be definitely affective in nature e.g., *What do you feel about war? Did you enjoy the story? What did you think of this story?* For questions like these the rule is to call them opinion questions, except when sustaining moves follow up on first responses to ascertain criteria behind the judgement or opinion given. If sustaining moves do elicit responses that provide reasons for the opinion expressed, then the initial question would be coded at the evaluation level. It would thus be a substantive-logical question and not an opining question which is substantive-affective in nature (see also (c) in Section 4.2.2).

(c) The Opining Initial Question Q^{Op}

This category includes all questions that seek an opinion, not necessarily based on any criteria, and often being more affective than substantive-logical in nature.

Response to an opining question (termed "Opine" for short) is often of the "Yes", "No", "Mm" variety, expressing agreement or disagreement with some proposition, behaviour, point of view or situation.

Opining responses may come from individuals or involve a chorus response from two or more individuals.

Examples:

(i) T: *What did you think of the story?* (Q^{Op})

P^1: *Good.*

P^2: *Terrific!*

(ii) T: *There's a new law now on wearing seat-belts. Is this a good law?* (S^{Sub} Q^{Op})

Ps: *Yes!!* (Chorus)

(iii) T: *Do you think it's worthwhile stationing extra police at airports to prevent drug traffic?* (Q^{Op})

P^1: *Yes!*

P^2: *No!!*

(iv) T: *Which is better: television or movies?* (Q^{Op})

Ps: *Television!!* *Movies!!* (Chorus)

(v) T: *Do you think the Romans would admire the central heating systems we have in our*

society today? (Q^{Op})

P^1: *Gosh, yes!*

P^2: *Mm.*

Coding Rules for the Opining Initial Question:

1. When first response moves are not followed up by teacher sustaining moves to elicit reasons or criteria behind expressed opinion, then the initial question should always be coded as an opining question.

2. When there is follow-up to first expression of opinion (for example, by the use of such sustaining moves as the Probe-Critical Awareness, Probe-Prompt, Use of Pupil Ideas, and the Probe-Redirect), and provided that the responses elicited reveal reasons for holding opinion, then the question that might have been coded as an "Opine" will be coded substantively at an appropriate level. In most cases it will be found that this appropriate level is Evaluation (Q^{Ev}).

Example:

T: *Napoleon failed in his attempt to conquer Russia. Was he foolish to even try this?* (Q^{Ev})

John: *Foolish.*

T: *Why do you think he was foolish, John?*

John: *Because ...* (Response gives reasons).

IN THIS EXAMPLE, SUFFICIENT FOLLOW-UP HAS OCCURRED TO QUALIFY THE INITIAL QUESTION AT THE SUBSTANTIVE EVALUATION LEVEL AND NOT AS AN OPINE. HOWEVER, EVEN FURTHER SUSTAINING MOVES BY THE TEACHER (OR PUPILS) COULD OCCUR ....

T: *Good, any other ideas?*

Ann: *Well, Napoleon should have known that ...* etc.

T: *What do you think of Ann's suggestion, Bill?*

Bill: *It's okay, but she hasn't realised that, um ... that in some ways Napoleon was forced into ....* etc.

Sue: *Yes, there were a lot of reasons why he should have and should not have gone into Russia. For instance, ...* etc.

T: *Well, we've had about four views now and they make me think that the common thread is Napoleon's personality. Was there anything about his personality that might have almost forced him to take the steps he did?*

2. Some initial questions which have the potential to be an opining question, have a strong affective flavour about them. e.g., *Well, you've seen the movie. Did you enjoy it? What part of this poem did you like or find most interesting?*

If questions like these are not followed up by use of sustaining moves to elicit reasons behind first responses, then these questions should be coded as opines.

However, if questions like these are followed up by use of sustaining moves to elicit reasons behind first responses, then the initial question should be coded in accord with its essential nature, namely, affective.

Example:

T: *What was interesting about the story?*

P^1: *Oh, the adventure stuff.*

P^2: *How they captured the native chief.*

T: *Why did you find that part interesting?*

P: *Oh, 'cause* .... etc.

THE INITIAL QUESTION HERE QUALIFIES AS AN AFFECTIVE QUESTION, AND NOT AS AN OPINE.

(d) The Abortive Initial Question | Ø |

This category applies to all initial questions which clearly call for a response (that is, they are not rhetorical questions), but which fail to elicit any substantive response.

Pupil reaction to the abortive initial question may consist of failure to respond, indication through word that an answer is not known, mumbling something to indicate that an answer is not forthcoming, provision of a response that in no sense relates to the question, or an incorrect response.

It should be noted that a pupil initial question that begins an episode may also be coded as abortive.

Example:

T: *How could we make a car go without petrol?*

Ps: (SILENCE) (ABORT)

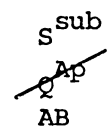
T: *Think of other forms of energy. Sue?*

Sue: (SILENCE) (ABORTS)

T: *Oh, well, there's fuel we could make from coal, battery power, nuclear power, or even water, believe it or not!!* (ANSWERS OWN QUESTION)

Coding Rules for the Abortive Initial Question:

1. Code questions that abort by drawing a slash diagonally from bottom left to top right through the coding symbol. An example from a transcript might be:



2. When an episode consists of an initial question and a nil-response or one incorrect response only, then the question aborts. However, if by means of prompting or redirecting, an initial question which aborts in the first instance eventually leads to a response, it is not coded as abortive. In this case, the eventual response need not be correct.

Example:

T: *What is the capital of France? Jill.*

Jill: (SILENCE) (ABORTS)

T: *Any idea, Jack?*

Jack: *I dunno.* (ABORTS)

T: *Janie?*

Janie: *Oh, it's Brussels.* (INCORRECT SIMPLE SENTENCE ANSWER)

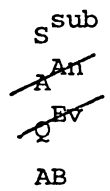
T: *No, it's Paris.* (CORRECTS)

3. When more than one initial question introduces an episode, each calling for a different kind of substantive response, it is the question that is matched by the first response that is coded as substantively active. Other questions are coded as abortive. An example from a transcript might be:

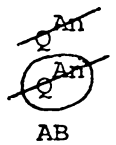
S^{proc}
~~Q^{An}~~
Q^{Ev}
A^{3} (Evaluative)

4. When more than one question is used in an effort to initiate an episode, each of which calls for a different kind of substantive response, it is possible that all of the questions may abort. In these circumstances, no first

response is present to guide coding of the substantive level of the active or the abortive questions. One must rely, therefore, upon estimation of teacher intent for each question by using the form, content and context of the question. Of course, in the circumstances described above, each question is coded as abortive. An example from a transcript might be:



5. An initial question <u>and</u> its repetition may both abort. An example from a transcript might be:



(See also Coding Rule 4 for the abortive initial question).

(e) The Repeated or Rephrased Initial Question (Q)

Included in this category are substantive questions which are repeated with the same or nearly the same form and content.

The repeated or rephrased initial question qualifies as such when the following criteria are met: (i) it occurs prior to the first substantive response in the episode, and (ii) it is an independent question qualifying as an initial question in its own right, but calling for the same kind of response as the initial question introducing the episode.

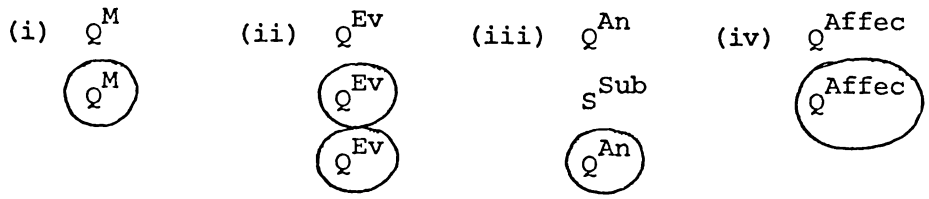
Coding Rules for the Repeated or Rephrased Initial Question:

1. A repeated initial question may follow immediately after the question it repeats, or it may be separated from it by one or more structuring moves, questions asking for a different kind of substantive response, address moves, or rhetorical questions.

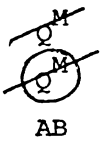
2. Once response to any initial question has occurred, any repetition of that initial question is the signal for the episode to begin anew. The initial question in this new episode is coded substantively and encircled to indicate that it is a repeated question. The marking off of such a new episode will have been completed on a transcript prior to coding beginning.

3. In a repeated question series, the first instance of the question is coded substantively and each repetition of it

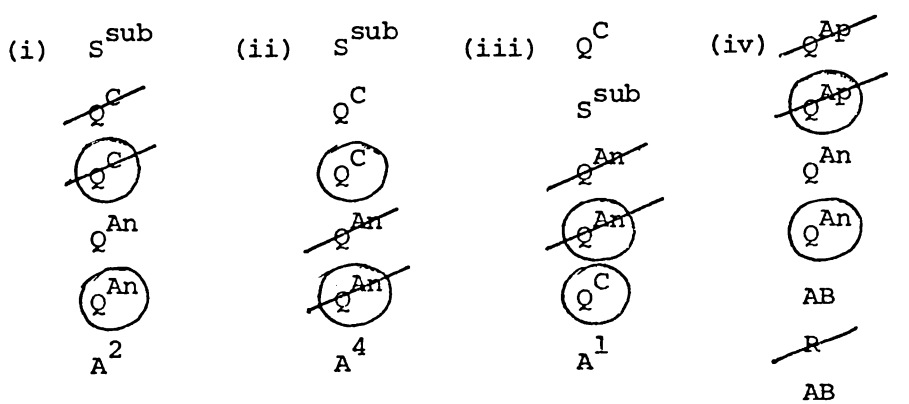
is coded substantively but encircled. Some examples from transcript might be:



4. A repeated initial question may abort--that is, it may not elicit any response. When this occurs, each question in the repeating series is coded as abortive. An example from a transcript might be:



5. As Coding Rule 1 above indicates, the introduction to an episode may consist of a combination of initial moves. A move combination may include more than one set of repeated questions, each set asking for a different kind of substantive response. In cases of the latter, it is <u>the first response</u> which will determine which question in which repeating series will be coded as substantively active. Once this has been decided, questions in the other repeat question series should be coded as abortive. Some examples from the transcripts might be:



(Analytical) (Comprehension) (Analytical)

6. Sometimes, an initial question is not heard, or is not understood, and a repeat of it is asked for. In such cases, the first instance of the question is coded as abortive and the repetition of it is not only encircled but is also coded as being a new episode--more properly, it is coded as beginning the same episode anew.

Example:

T: *What were the names of the two explorers?* ~~Q^{M}~~

P: *What was the question?* I^{proc}

T: *What were the two explorers' names?* (circled) Q^{M}

7. When an initial question, intended to elicit more than a simple "agree/do not agree" type response, merely gains this type of response and is then repeated, then the first instance of the question is coded Q^{op} and its second instance is coded at its appropriate substantive-logical level, is encircled to indicate repetition, and, of course, begins a new episode.

Example:

T: *Do you think the scientists were right to do this?* Q^{op}

Ps: *Yes.*

T: *Do you think they were right to do this though?* (circled) Q^{Ev}

P: *Yes, because mankind needs atomic energy today.*

(f) The Rhetorical Initial Question Q^{rhet}

The rhetorical question is one for which no response is intended and for which none is actually elicited.

Although sometimes used unintentionally in the initiation of an episode, the rhetorical question may be used purposely to arouse motivation

Coding Rule:

If used at the end of an introduction to an episode and actually eliciting a response, the rhetorical question cannot be coded as such but as either an opining question, substantive-logical question, or substantive-affective question, depending upon the nature of the response to it.

(g) The Procedural Initial Question | Q^{proc} |

Included in this category are any questions which call for response indicating that any procedural matters are understood or ready to be acted upon. These questions tend to occur more often once an episode is in progress, but they may also occur at the start of an episode.

Examples:

T: *Who will start off?*

T: *Now, is everyone happy about what is wanted here?*

T: *Any questions?*

T: *Any words in this story that gave you trouble?*

T: *Any words, first of all, in this story that you didn't understand?*

T: *Do you all understand?*

T: *I didn't hear you, Bill. Could you please repeat your answer?*

T: *Who would like to answer this one?*

T: *Will you stop open discussion now, and think about this next question?*

(h) The Exhortatory Initial Question Q^{exhort}

Included in this category are urgings, questions, commands, demands, and admonitions to try harder, respond better, or respond more frequently.

More common once episode discussion has moved beyond the first response, nevertheless the exhortatory question (or statement) may be used in combination with one or more substantive questions at the beginning of an episode. This is more likely to occur when response in one or more previous episodes has not been especially forthcoming.

Examples:

T: *Now, let's see if we can think a little harder about this question!!*

T: *Come on, now, get your thinking caps on!*

Coding Rule for the Exhortatory Initial Question:

This move bears relationship to some kinds of Procedural Structuring move. The difference is that the exhortatory question or statement is expressed more strongly. When in doubt about which of these two moves to code, the rule is to code as a Procedural Structuring move.

(i) The Prompt Move Accompanying Initial Questions | P^{prom}

An initial question may be preceded or followed by one or more prompting moves, usually for the purpose of ensuring appropriate response to the question. Such prompting behaviour is coded P^{prom} (which is the same coding symbol as for the sustaining move of probe-prompting). Sometimes, prompting accompanying initial questions is a kind of "nurturing" technique, designed to build confidence in prospective respondents to the question. Verbal moves in this matter category are also coded as prompts.

Examples:

(i) T: *What caused the explorers to give up their search? You remember, don't you, Jane?*

(ii) T: *Why did Sherlock Holmes check the library? Jane, I think you've got the answer.*

(iii) T: *Well, what was the use of doing all those years of study before going to the Himalayas? What do you think, Mary?* (ENCOURAGING REMARK).

4.3 PUPIL RESPONSE MOVES DURING EPISODES

Pupil verbal response during a discussion session may relate to initial or sustaining questions by the teacher, to teacher evaluative remarks, to teacher comments, or to the questions or comments of fellow pupils.

All pupil responses are classified as belonging to one of the following four major categories:

1. Answer moves
2. Answer-initiation moves
3. Initiation moves
4. Chorus responses

In addition, a special coding category exists for situations where a teacher or pupil question meets with no response, or with some verbal indication of not knowing, or of not being able to respond. This special category is the "abort".

4.3.1 The Pupil Answer Move

A pupil answer move is one which is directly elicited by a question from the teacher. Pupil answers are classified and coded according to the number of substantive ideas they contain.

(a) The Yes/No Answer Move Y/N

"Yes", "No", "Mm" type answers or "I agree", "I disagree" type answers are not considered to be substantive responses. However, all answers of this type are coded if they are first response moves directly related to and elicited by a teacher or pupil question (including the intended rhetorical question should it be responded to).

(b) The One Word/One Idea Answer Move A^1

This category applies to all direct answers to teacher questions which consist of one substantive idea. The one idea may be in a one word response, or in one or more complex syntactical structures which do not have to be conventional in form or sequence. Excluded are Yes/No responses.

(c) The Several Ideas Answer Move $A^{2/3}$

This category applies to all direct answers to teacher questions which consist of two or three substantive ideas. The several ideas may be contained in one or more complex syntactical structures which do not have to be conventional in form or sequence.

(d) The Extended Ideas Answer Move A^{4+}

This category applies to all direct answers to teacher questions which consist of four or more substantive ideas. The extended ideas may be contained in one or more complex syntactical structures which do not have to be conventional in form or sequence.

4.3.2 The Pupil Answer-Initiation Move

After a first response which is directly elicited by a teacher question, more responses may be volunteered by other pupils. These volunteered responses relate to the substantive intent of the original question but they have not been directly elicited by it. Thus, such responses are classified and coded as answer-initiation moves because they are both an answer and at least, in part, a reaction to any previous response.

(a) The One Word/One Idea Answer Initiation Move AI^{1}

This category applies to all answer-initiation moves which consist of one substantive idea. The one idea may be in a one word response, or in one or more complex syntactical structures which do not have to be conventional in form or sequence.

(b) The Several Ideas Answer-Initiation Move $AI^{2/3}$

This category applies to all answer-initiation moves which consist of two or three substantive ideas. The several ideas may be in one or more complex syntactical structures which do not have to be conventional in form or sequence.

(c) The Extended Ideas Answer-Initiation Move AI^{4+}

This category applies to all answer-initiation moves which consist of four or more substantive ideas. The extended ideas may be in one or more complex syntactical structures which do not have to be conventional in form or sequence.

4.3.3 The Pupil Initiation Move

A pupil move is classified and coded as an initiation when it meets the following criteria:

(i) It is a voluntary contribution to discussion that is an interaction with, or reaction to, one or more previous statements by others (teacher or pupils).

(ii) It occurs without any direct solicitation or request from the teacher (or another pupil).

Initiation moves may involve a pupil in making claims or assertions, providing additional information, challenging or debating the content of earlier comments, asking questions, or evaluating previous comments in a positive or negative way.

(a) The One Word/One Idea Initiation Move I^1

This category applies to all initiation moves which consist of one substantive idea. The one idea may be in a one word response or in one or more complex syntactical structures which do not have to be conventional in form or sequence.

(b) The Several Ideas Initiation Move $I^{2/3}$

This category applies to all initiation moves which consist of two or three substantive ideas. The several ideas may be in one or more complex syntactical structures which do not have to be conventional in form or sequence.

(c) The Extended Ideas Initiation Move I^{4+}

This category applies to all initiation moves which

consist of four or more substantive ideas. The extended ideas may be in one or more complex syntactical structures which do not have to be conventional in form or sequence.

(d) The Question Initiation Move I^{Q}

This category includes all substantive questions asked by pupils that are addressed to other pupils or the teacher and which are intended to gain clarification, elaboration, critical awareness, justification or a refocus for previously mentioned ideas. In general, the question initiation move may be described as a probing move by pupils which helps to sustain the content focus of an episode.

Example:

T: *What is the difference between classical opera and light opera?*

P^{1}: *One has much more music in it, I think.* (A^{1})

P^{2}: *No, no. Light opera isn't as serious as classical opera.* ($I^{2/3}$ NOT AN ANSWER-INITIATION MOVE BECAUSE THE RESPONSE IS A REACTION TO THE ANSWER OF $PUPIL^{1}$)

P^{3}: *In light opera there's a story just like in classical opera but light opera's music is sort of more modern.* ($AI^{2/3}$)

P^{4}: *How do you mean "more modern"?* (QUESTION INITIATION MOVE, CODED AS I^{Q})

Note that question initiation moves are sometimes not answered. When this is so, the question initiation is abortive and is slash coded as follows: $\not{I}^{Q}$

(e) The Episode Initiation Move I^{ep}

Pupils, as well as the teacher, may initiate a new episode in a discussion. Any pupil move consisting of structuring and/or a question which launches a new topic is a new episode initiation move. Prior to the coding of a transcript for specific teacher and pupil moves, the transcript will have been marked off in episodes and any pupil initiated episode will thus need to be identified along with those that are teacher initiated.

(f) The Procedural Question Initiation Move I^{proc}

The procedural question initiation move is a non-substantive move which seeks guidance from the teacher or other pupils concerning procedural matters. The category includes requests for repetition of remarks.

Examples:

P: *What was the question?*

P: *What did you say?*

P: *Do you mean why he wrote it?*

P: *What do we have to do?*

4.3.4 The Chorus Response Move [CHOR] and [CHOR/YN]

Included in this category are verbal responses uttered simultaneously, or nearly simultaneously, by two or more pupils and consisting of the same or almost the same substantive content. The chorus response may be of the simple "Yes", "No" type, or it may consist of one word or a short phrase. A transcript will indicate where chorus responses occur by the term CHORUS. Chorus answers should be coded appropriately, CHOR or CHOR/YN.

4.3.5 The "No Response" or "Can't Respond" Move (the Abort) [AB]

The coding category AB (abort) is used when a pupil to whom a direct question is addressed, gives no response or indicates in some verbal way that no substantive response can be given. A transcript will indicate where AB situations occur by the term ABORT. Typical verbal indications of not being able to respond are:

P: *I dunno.*

P: *I don't know.*

P: *Ooh, I've forgotten.*

P: *Search me.*

P: *I wouldn't have a clue.*

Examples of Answer, Answer-Initiation and Initiation Moves of Differing Number of Substantive Ideas

(i) T: *In what continent is the Sahara Desert?*

P^1: *America.* (A^1)

P^2: *Africa.* (AI^1)

P^3: *I think it's in South America/'cause I read it somewhere.* ($AI^{2/3}$)

P^4: *No, you're all wrong./It's in Africa.* ($I^{2/3}$)

(ii) T: *What is the name of the New Zealand pacer who was bought by some Americans to race in the U.S.A. in 1971 and who won the World Pacer Championship?*

P^1: *Cardigan Bay.* (A^1)

P^2: *They retired that horse in New Zealand.* (I^1)

P^3: *Yeh,/'cause the Americans raced him too hard.* ($I^{2/3}$)

P^2: *No, that's not right./The New Zealand owners only hired him out for three years/and then he had to be shipped back here.* ($I^{2/3}$)

P^4: *Oh ... um ... um ... he ... he ... um ... yeh, he ... that horse you're thinking of, sir, was Flying Fox wasn't it?* (AI^1)

P^1: *No!/Cardigan Bay!!* ($I^{2/3}$)

(iii) T: *Do you think this could have possibly been a monster?*

P^1: *If it was a ... known ... for a dinosaur first,/it started off with a mountain blowing up,/and a little wee bud/and then it got a ... great big monster./And first they said it travelled at 10 miles per hour,/and then it ... went up to 35 miles an hour.* (A^{4+})

(iv) T: *Because they've got a film of this Loch Ness monster, do you think that it <u>is</u> true?*

P^1: *Oh, it could be something else.* (A^1)

P^2: *It could be something else.* ((A ^{1}))

P^3: *They could have just drawn it into the photograph.* (AI^1)

P^4: *<u>You can't really draw a film/but it's got ... oh, it's got proof all right. It's mostly proof, you know,/'cause you couldn't do anything to make it up,/unless it ... was ... the effect of the stones or something/... a huge rock!</u>*
(CHUCKLES TO SELF) (I^{4+})

Coding Rules for Pupil Response Moves:

1. The "Yes", "No", "Mm", "I agree" and Chorus Response Moves: These responses are coded only when they are a direct first response to a question, whether the question is an initial or a sustaining question. Subsequent instances of any of these responses are not coded, being regarded as non-substantive contributions to discussion.

Example:

T: *Do you think the men's plan was a good one?* (OPINE)

P: *Yes.* (Y/N answer coded Y/N)

P: *Yeah.* (NOT CODED)

2. Incomplete responses: Unless an incomplete response contains some definite substantive content, it is not coded. Thus the following kinds of response would not be coded:

P:	*What ...*	P:	*Ooh!*
P:	*On the, um ...*	P:	*But ...*
P:	*Um ...*	P:	*Once I saw ...*
P:	*Ah ...*	P:	*Oh, I ...*
P:	*It was on the ...*	P:	*And if ...*
P:	*The, um ...*	P:	*Oh.*
P:	*Once the boy saw...*	P:	*You know, the ...*

3. Other non-substantive remarks: None of the following kinds of response are coded: exclamations (unless these are positive or negative evaluation initiating moves), chuckles,

laughter, asides, murmuring, mumbling, muttering, calling out the name of the teacher or of a fellow pupil to gain attention, idle jokes, non-verbal affirmation or denials. Thus the following kinds of response would not be coded:

P:	*Heck!*	P:	*Oh, now I get it.*
P:	*Ha-ha.*	P:	*Sir! Sir!*
P:	*Heh!*	P:	*Wow!*
P:	*Ooh, I know.*	P:	*Pl-e-a-se*
P:	*Gee.*	P:	*Male flower ... posts letters. Ha-ha.*

4. The repeated response: Repetitions of a previous response are coded as answer-initiations or as initiations depending upon the coding classification of the response they repeat, and are encircled to indicate repetition. The exception to this rule is the repeated "Yes" or "No" type repetition which, as stated in Rule 1 above, is not coded at all.

5. Sometimes a pupil asked the same question as a previous pupil, responds with: *I think the same* or *The same*. Such answers are coded (A) with the same number of substantive ideas included as the previous response. Thus: (A^1) or $(A^{2/3})$ or (A^{4+}).

6. Distinguishing the answer-initiation and initiation moves: When difficulty arises in classifying a pupil response as an answer-initiation or an initiation, first of all examine the degree of match between the content of the response and the preceding question (initial question or sustaining question, whichever is pertinent). If there is a close substantive link, yet the response is separated from the question by a

first answer, code the response as an answer-initiation. If the relationship appears slight and, at the same time, the response has a clear reaction-interaction quality about it with regard to the preceding response, code the response as an initiation. When it is felt that the above guidelines do not help, the rule is to code the response as an initiation.

7. Pupil claim versus denial interactions: Sometimes pupils exchange quick, short statements which may be termed "claims" and "denials". These exchanges may be along the lines of the following:

P^1: *It's an evergreen.* (A^1)
P^2: *No, it's not.* (I^1)
P^3: *Yes, it is.* (I^1)
P^1: *Yes.* (I^1)
P^2: *No.* (I^1)

As the coding shows, moves like the above are coded as evaluation initiations. It should be noted here, too, that "Yes", "No" type responses <u>are</u> coded because they are <u>initiations</u>. Compare Rule 1 above which refers to <u>answers</u>.

8. Pupil answers to another pupil's question initiation move are coded as initiations and not as answer moves. Should a pupil question initiation move not get answered it aborts and is coded thus: ~~I^Q~~

9. The "no response" and "can't respond" move: For each episode containing instance of non-response, the transcript will show this by the term <u>abort</u> alongside a

pupil's name. All such occasions should be coded AB. As the coding rules for initial and sustaining questions indicate, should an answer eventuate to a question which aborts at first, the question is not coded as abortive although all non-responses to it until the first response are coded as aborts.

10. Quoting from a text: Part or all of a pupil response (answer, answer-initiation or initiation) may consist of quoting directly from a text. When this occurs it should be coded as one substantive idea only. If the response is a mixture of the pupil's own ideas plus direct quotation from a text, code the former according to the number of substantive ideas and the latter as one substantive idea.

11. Pupil initiation of a new episode: A transcript is marked off into episodes before coding of specific verbal moves begins. In coding moves at the beginning of episodes it will be necessary for the coder to distinguish whether or not an episode is begun by a pupil rather than the teacher. This will be obvious from the marginal designations on a transcript (T, P, or a pupil's name). A pupil-initiated episode is coded I^{ep}.

12. Interrupted responses: A transcript will show when a pupil's response has been interrupted by use of a horizontal bar after the last word spoken before interruption. If an interrupted response continues after an interruption, the "pick up" is indicated by another horizontal bar at the beginning of the continuing statement, as well as a loop line to clearly show the connection

between the first and second parts of the response. This transcript technique also applies when a response is interrupted several times, more "link loops" being used.

Example:

T: *Why do men persist in trying to climb mountains when there are so many tragic accidents as the result of mountain climbing?* — Q^C

P^1: *Oh, I've heard mountain climbers interviewed on TV and they all ----* — $A^{2/3}$

P^2: *They just love the danger.* — AI^1

P^1: *---- seem to say that they have no real reason. It's just some kind of feeling they have.* — $A^{2/3}$

P^3: *No, that's not right. They see a mountain as a challenge to their personality.* — I^2

NOTE THAT AN INTERRUPTED BUT CONTINUING RESPONSE IS CODED USING A LINK LINE TO THE RIGHT AND WITH THE TOTAL NUMBER OF SUBSTANTIVE IDEAS IT CONTAINS. THIS INDICATES THAT ONE MOVE ONLY HAS REALLY OCCURRED.

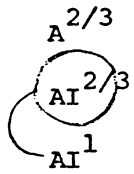
13. When a pupil reacts directly to either a teacher or pupil correction of his earlier response, then this reaction is coded as an initiation move.

14. Occasionally, a pupil answer-initiation or initiation move within an episode actually refers to the topic of an immediately preceding (or even earlier) episode. SQUAIES cannot code such "embedded" or "nested" moves, except by coding them as if they belong to the present episode in which they occur.

15. When in doubt about the number of sustaining ideas in a response, the rule is "code high". Thus, if the doubt is between 1 or 2/3 ideas, code 2/3 ideas; if between 2/3 and

4^{+} ideas, code 4^{+} ideas.

16. A special case of the repeated response: An answer-initiation, or initiation, move following an answer move may repeat some or all of the substantive ideas in that answer move (see Coding Rule 4 above), but may add new substantive ideas. When this occurs, a kind of dual coding is used. For example, a transcript might be coded as follows:



indicating that one new substantive idea has been added to the repetition of the first answer's 2/3 substantive ideas.

4.4 TEACHER EVALUATION MOVES DURING EPISODES

Any response by the teacher which indicates his evaluation of a pupil response as being acceptable, unacceptable, appropriate, inappropriate, correct or incorrect, is coded as a teacher reacting move which evaluates pupil response.

4.4.1 The Acceptance-Acknowledgement Move

(a) The Simple Acceptance-Acknowledgement Move | AC |

Simple teacher moves which indicate acceptance or acknowledgement of a pupil response, or a supportive attitude on the teacher's part, when a pupil has difficulty in responding.

Examples:

Mm.	*Okay.*
Mhm.	*Yeh.*
Mm-m.	*Yes.*
Mm-m-m (pondering)	*Thank you.*
Perhaps.	*Yes, okay.*
Maybe.	*All right.*
Could be.	*Yes, all right.*
You could be right.	*You can't think.*
Rig-h-h-t.	*You don't know.*
Uh-uh.	*You don't.*

(b) The Move of Repeating of a Pupil Response AC^{rep}

All teacher moves which repeat the immediately preceding pupil response verbatim, or in nearly the same words.

(c) The Move of Paraphrasing a Pupil Response AC^{para}

All teacher moves which are a simple paraphrase of the immediately preceding pupil response.

(d) The Move of Accepting Pupil Feeling AC^{feel}

Included in this category are teacher statements which clearly indicate acceptance of pupil feelings, whether these feelings are of a positive or negative kind. This coding category is also used when the teacher jokes, but not at the expense of the individual.

Examples:

(i) *I understand how you feel.*

(ii) *I get like this too, sometimes when I* ...etc.

(iii) *All right, John, I can see you're really excited about this.*

(iv) *Wow-ey, Johno! That response of yours really was like Mohammed Ali: Fly like a Butterfly and Sting like a Bee! You caught us all out!* (EVERYONE LAUGHS)

4.4.2 The Positive Reinforcement (or Praise) Move

Included in this category are any praise statements which indicate explicitly to a pupil that his response is correct, very appropriate or very acceptable.

(a) The Positive Reinforcement Move Without Criteria [+]

This category includes statements of explicit praise for acceptable or correct pupil response, but which provide no reasons why the praise is given other than perhaps the teacher's personal criteria.

Examples:

Right.
Right!
Yes.
Correct.
Fine.
That's good.
Good.
Excellent.
Yes, sir!
That's partly right.
That's true.
Well done.
That's good.
Grand.
You're on the right track.
Sure.
Yes, I agree.
That's an interesting point.
I think that's a good idea.

(b) The Positive Reinforcement Move with Criteria [+bec]

This category includes statements of explicit praise for acceptable or correct pupil response which also provide a publicly verifiable reason for the praise. Examples of publicly verifiable criteria would be reference to: data in an article, book, encyclopaedia, dictionary or atlas; a

universal law; a principle; a well-known fact; a reputable authority figure; some empirical validation etc.

Examples:

(i) *That's right because as the television series on Man and Nature showed, the platypus is a marsupial.*

(ii) *Yes, there's scientific proof that this idea of yours is correct, John.*

(iii) *Well that's interesting because there's a man in England who's written many books on this.*

(iv) *Yes, because the story tells us that there was much doubt in the engineer's mind about whether his invention would work.*

4.4.3 The Aversive Reinforcement (or Punishment) Move

Included in this category are any statements which inform a pupil that his response is being punished, strongly criticised, rejected, or ridiculed because of its incorrectness or inappropriateness. Facetious or sarcastic remarks by the teacher would be included in the aversive reinforcement category. In addition, the category includes teacher desist statements e.g., calling out a pupil's name in strong tones to prevent his "off-task" behaviour.

(a) The Aversive Reinforcement Move without Criteria [-]

This category includes any statement which indicates explicitly to a pupil that his response is being strongly criticised or rejected because of its incorrectness or inappropriateness. The statement provides no reason why the criticism or rejection is being given, except perhaps the teacher's personal opinion.

Examples:

No!	*Nonsense!*
No, no!	*That's a poor answer.*
No, that's not right at all.	*I disagree.*
Goodness me!	*Not at all!*
What kind of answer is that!	*Aren't you a smart Alec!*

(b) The Aversive Reinforcement Move with Criteria [-bec]

This category includes any statement which indicates explicitly to a pupil, with reasons, that his response is being strongly criticised or rejected because of its

incorrectness or inappropriateness. The reasons given by the teacher are publicly verifiable ones; that is, they make reference to: data in an article, book, encyclopaedia, dictionary, or atlas; a universal law; a principle; a well-known fact; a reputable authority figure; some empirical validation etc.

Examples:

(i) *That's nothing like it! Anyone would know that's wrong because they'd have read it in the newspaper!.*

(ii) *No! Because if you'd listened to what Bill said, you'd have known!*

(iii) *Look, there's plenty of evidence to show that your idea is hopeless to stop crime!*

(iv) *How can that be right! The story tells you just the opposite!*

4.4.4 The Correction Move

Included in this category are statements that indicate to a pupil that his response is incorrect or inappropriate, but the communication is not punitive in nature. Thus the correction move does not have the negatively critical tone of an aversive reinforcement move.

(a) The Correction Move Without Criteria | COR |

Included in this category are mild, simple negation statements indicating to a pupil the incorrectness of his response.

Examples:

(i) *No.*

(ii) *I'm afraid not.*

(iii) *No, it's really the larva.*

(iv) *Uh-uh.* (denial)

(v) *You're off the track a bit there.*

(b) The Correction Move With Criteria | COR^{bec} |

Moves in this category are mild negation statements indicating not only the incorrectness of a pupil response, but also providing the correct answer and/or one or more reasons why the response is incorrect. The reasons given make reference to some publicly verifiable information such as: data in an article, story, encyclopaedia, dictionary or atlas; a universal law; a principle; a well-known fact; a reputable authority figure; some empirical validation etc.

Examples:

(i) *Sorry, it's a chemical process, not electrical.*

(ii) *No, because scientists haven't yet discovered how to do that.*

(iii) *I think you may be confusing the first and the second points the article discusses.*

(iv) *Not really, because not all plant reproduction needs both a male and female plant.*

Coding Rules for Teacher Evaluation Moves:

1. When combinations of different kinds of evaluation moves are used by the teacher, the general rule to follow is to code these as a single evaluation move. Common examples and their correct coding are as follows:

(a) CODED AS + ONLY, NOT CODED AS AC AND + :

Okay, you're right.

Yes, good.

Right, that's good.

Mm, good.

Good, m-m.

Good, right.

Mm, that's right.

(b) CODED AS COR ONLY, NOT CODED AS AC AND COR:

Yes, but the story says - that it's ... etc.

Okay, yet the answer is really ... etc.

2. Some moves which appear to be corrections are really probes seeking critical awareness e.g., *But what about ...?* etc.

Yes, but you haven't thought about ... etc.

3. Sometimes the same words that communicate an acceptance of a pupil response are used to preface a teacher question or comment. When this occurs, these words are <u>not</u> coded as acceptance moves e.g., *Yes. All right, what ...* ? etc. (ACCEPTANCE for "Yes", but the words "All right" are not coded.

4. The following teacher moves are coded as probe-prompts, and not as acceptance moves:

   Are you sure you don't know?

   Haven't you got any ideas?

5. The correction move and the move whereby a teacher answers his own question (AOQ) should not be confused. When preceding attempts to obtain pupil response to a question have all failed or aborted (both the initial question and any sustaining questions) and the teacher answers his own question, the coding symbol AOQ is used for this answer. If responses have occurred which are correct, partially correct, or incorrect, then the teacher's provision of an answer is coded as a correction move (COR).

<u>Examples:</u>

(i) T: *What is the highest mountain in the world? Jill?*

Jill: (SILENCE) (ABORTS)

T: *John?*

John: *Um, it's ... um ...* (ABORTS)

T: *Okay, well it's Mt. Everest.* (ANSWERS OWN QUESTION)

(ii) T: *What is the highest mountain in the world? Jill?*

Jill: (SILENCE) (ABORTS)

T: *John?*

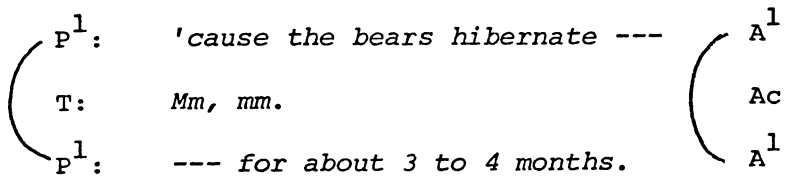
John: *Mt. Blanc.*

T: *No.* (CORRECTION)

Bill: *Mt. Rainier.*

T: *No, it's Mt. Everest.* (CORRECTION)

6. Sometimes a pupil response is cut off by a teacher acceptance or reinforcement move, but the response then continues. When this occurs, coding of evaluation moves is completed in the usual manner, but the pupil response is coded as one response. A transcript indicates this situation by the use of horizontal bar lines showing the "cutting off" and the "picking up", as well as loop lines between parts of the response.



7. Some teacher reaction moves <u>appear</u> to be evaluation moves but are not coded as such. The following moves, for example, are coded as rhetorical questions if they are not answered (Q^{rhet}), or as opining questions (Q^{op}) if they are answered. (See also Coding Rule 5 for Probing Moves)

T: *That's right, isn't it?*

T: *Yes, they do, don't they?*

T: *True, don't you think?*

4.5 TEACHER MOVES WHICH SUSTAIN EPISODES

Following the first response to an initial question which starts an episode, the teacher may not move to a new episode but, instead, sustains the idea contained in this initial question by following through on responses to it using further questioning and/or information-giving moves.

A sustaining move is any teacher move which helps to maintain the content focus of an episode as introduced in an initial question (whether this initial question has been combined or not with initial structuring). Following is the range of teacher sustaining moves which the SQUAIES analysis system codes:

Redirect

Probe - Probe-Prompt

- Probe-Clarification
- Probe-Critical Awareness
- Probe-Refocus
- Probe-Redirect

Using Pupil Ideas

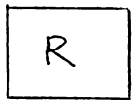
Teacher Comment

Sustaining Structuring

Answering Own Question

Answering Pupil Question

Returning Pupil Question.

4.5.1 The Redirect Move 

This move addresses the same initial question in an episode to one or more other pupils. A series of redirection moves may follow the first response to an initial question. The initial question itself does not have to be repeated and the move often consists of merely calling another pupil by name, or of calling upon any volunteers from the group to answer. In general, the objective of the redirection move is to gain additional ideas from pupils other than the first pupil who responded to a question.

Examples:

(i) T: *Why did William direct his archers to fire their arrows up in the air?*

Jack: *Because of the danger to his own advancing soldiers.*

T: *One possible reason.* (ACCEPTS) *Mary?* (REDIRECT)

Mary: *Harold's palisades on the slopes prevented straight arrows getting through.*

T: *What do you think, Bill?* (REDIRECT)

Bill: *I dunno.*

T: *Any other ideas?* (REDIRECT)

Sue: *It was shorter.*

T: *Anyone else?* (REDIRECT)

Jack: *Easier to kill them.*

T: *Sally, you had something to say.* (REDIRECT) etc.

(ii) Other examples:

T: *Would anyone like to add to that?*

T: *Anyone else?*

T: *Sue, what do you think?*

T: *Somebody tell him the answer.* (FOLLOWING A PUPIL INCORRECT RESPONSE)

Coding Rules for the Redirection Move:

1. Although non-verbal signals may act to redirect, the SQUAIES analysis system codes verbal redirects only. Moves coded as answer-initiations (AI moves) may, in fact, have been non-verbally redirected and thus should really be answers rather than answer-initiations. However, the analysis system cannot discern such non-verbal redirection, and these answers are therefore coded as answer-initiations.

2. A redirect move may occur not only in the series of pupil and teacher moves immediately following an initial question, but also after teacher sustaining moves and pupil responses to these have occurred. In such cases, the teacher usually makes a definite reference back to the initial question when he redirects.

Example:

T: *What can Hamilton do to solve its parking problems?*

Bill: *Build more car parks.*

T: *But there's not enough space for that.* (CORRECT) *What do you think, Mary?* (REDIRECT)

Mary: *Oh, well, we could try to get people to leave their cars at home and bus into the city.*

T: *How do you mean?* (PROBE-CLARIFICATION)

Mary: *You know, if there's less cars in the city each day, the car parks we've got should be enough.*

T: *But how are you going to persuade people to leave their expensive cars at home?*

Mary: *Well, I guess you'd have to have a law of some kind.*

T: *How would you solve the parking problems, Sue?* (REDIRECT - REFERS BACK TO THE INITIAL QUESTION).

If the teacher's last move in the example above had not included specific reference to the initial question, but had simply consisted of calling upon one or more other pupils (e.g., *Jack? Anyone else?*), then the last move would be coded as a probe-redirect because it is a redirect move following one or more probing moves (see also Section 4.5.3 on the Probe-Redirect move).

3. Sometimes a teacher's verbal move appears to be structuring procedurally (S^{proc}) when, in fact, it is redirecting.

Example:

T: *You were going to say something, Tom.*

Tom: .....

This is a Redirect move. It would, of course, be a Probe-Redirect move if the immediately preceding teacher question had been a Probing question.

4.5.2 The Probe Move

Included in this category are teacher questions which seek to have pupils go beyond a first response--to expand it, improve its quality, justify it, or broaden it by relating it to other ideas. A probing move may be addressed to same pupil who has just responded or, following a pupil response, the probing move may be addressed to other pupils.

In addition to the function of getting pupils to go beyond first responses, the probing move serves to sustain the idea or ideas presented in an initial question which begins an episode.

The probing question is likely to be used when pupil response is superficial, vague, poorly organised, or incomplete. It may also be used when the teacher feels that a correct or appropriate response needs to be explored further.

The probe-prompt is a special kind of probing move which attempts to encourage pupil response to a question when none occurs, or when a pupil is having trouble expressing what he wants to say.

There are five types of probing move:

The Probe-Prompt

The Probe-Clarification

The Probe-Critical Awareness

The Probe-Refocus

The Probe-Redirect.

(a) The Probe-Prompt Move p^{prom}

Included in this category are moves which provide clues, hints, or prompts to help a pupil make a response if he cannot answer (Aborts), or if he has trouble expressing what he wants to say.

The category does not include moves which exhort pupils to respond or which admonish them for not responding well enough. However, the category does include nurturant or encouraging remarks.

The Probe-prompt may accompany other sustaining question moves, or it may stand alone such as when pupils can't answer, or answer inappropriately. As for prompts accompanying initial questions, the probe-prompt may also be of the "nurturant" type (see also (i) of Section 4.2.2).

Examples:

(i) *Think of an egg. It might help you.*

(ii) *Yes, but why did they call it the Boston Tea Party?*

(iii) *It begins with 'A --- .*

(iv) *Think what 'super' means, then link that with 'natural' to get the meaning.*

(v) *I think you know this one, Jane. Try and think.* (ENCOURAGING REMARKS)

(vi) *Let me try and help you. It's a kind of chemical I'm thinking of.*

(vii) *Are you sure you don't know?*

(viii) *Wouldn't you like to have a try?*

(b) The Probe-Clarification Move p^{clar}

Probes which ask for elaboration, amplification or clarification of a response are included in this category. These probes may be addressed to the same pupil who has just responded, to other pupils following a pupil's response, or in such a way that either the pupil who has just responded or anyone else may answer.

Examples:

Addressed to the Same Pupil

(i) *What else?*

(ii) *Anything else?*

(iii) *Can you explain further what you mean?*

(iv) *Can you put this idea another way?*

(v) *What do you mean exactly?*

(vi) *Can you be a little clearer?*

(vii) *Have you got any more to add to that?*

(viii) *Can you be a bit more specific?*

(ix) *Are you saying that ... ?* etc.

(x) *I think you mean ...* etc.

Addressed to Other Pupils Regarding a Response Just Given

(i) *What does this mean?*

(ii) *What is Jack saying here?*

(iii) *Can anyone put this answer (Bill's answer) in a different way?*

(iv) *Can someone be a bit clearer about this?*

(v) *Anything to add, anyone?*

Addressed Openly to the Group (the pupil who has just responded or any other pupils)

(i) *What's meant here?*

(ii) *What can we add to this?*

(iii) *Anything else?*

(c) The Probe-Critical Awareness Move P^{caw}

Probes in this category seek to make pupils more critically aware of responses already given. They are questions which ask for three main kinds of response:

(i) *Justification for an answer.*

(ii) *The evaluation of an answer.*

(iii) *A critical examination of the appropriateness of an answer.*

The probe-critical awareness may be addressed to the same pupil who has just given a response, to other pupils who are called upon to look critically at a response just given by another pupil, or openly to the pupil who has just responded and to all others.

Examples:

Addressed to the Same Pupil

(i) *Why?*

(ii) *Why do you say that?*

(iii) *What's the reason for this?*

(iv) *What have you left out?*

(v) *What are you getting mixed up about here?*

(vi) *How do you know ... ?* etc.

(vii) *This is overgeneralising. Give me something more specific.*

(viii) *What evidence have you got for saying that?*

Addressed to Other Pupils Regarding a Response Just Given

(i) *How do you react to this?*

(ii) *What do you think of Barry's answer?*

(iii) *Is Jenny right and if so, why?*

(iv) *What do you think of that, Janet?*

(v) *Are you happy about Jill's idea, Sam?*

(vi) *Would anyone like to comment on Sue's answer?*

(vii) *Do you agree with this idea of Bill's?*

Addressed Openly to the Group (the pupil who has just responded or any other pupils)

(i) *Well, what about this?*

(ii) *Is this idea satisfactory?*

(iii) *What's been left out?*

(iv) *What's the danger in this idea?*

(v) *But what about the problem of proving this?*

(d) The Probe-Refocus Move P^{ref}

This type of probe calls upon pupils to take the idea in an answer and:

(i) relate it to other ideas or events;

(ii) apply it in a different situation.

As with the probe-clarification and probe-critical awareness moves, the probe-refocus question may be asked of the

same pupil who has just responded, of other pupils, or be asked openly of the group.

Examples:

Addressed to the Same Pupil

(i) *How does this idea of yours relate to ... etc?*

(ii) *Can you take your idea and see how it matches up with the point ... ?*

(iii) *If this is true, what will happen if we ... ?*

(iv) *How does your idea fit into the view that ... ?*

(v) *Now, apply this to the country of India. Will it still work?*

Addressed to Other Pupils Regarding a Response Just Given

(i) *How does Jack's idea relate to ... ?*

(ii) *Take Jan's idea and see how it matches up with the point .... What do you think?*

(iii) *If this is true, what will happen if we ... ?*

(iv) *How does this idea fit into the view that ... ?*

(v) *Now, apply this to the country of India. Will it work?*

Addressed Openly to the Group (the pupil who has just responded or any other pupils

(i) *How does this idea relate to ... ?*

(ii) *Can we take this idea and see how it matches up with the point ... ?*

(iii) *If this is true, what will happen if we ... ?*

(iv) *How does this idea fit into the view that ... ?*

(v) *Now, apply this to the country of India. Will it work?*

4.5.3 The Probe-Redirect Move | PR |

As its name suggests, this move is defined as a redirection which occurs after a preceding probing move and the response or non-response to it.

Examples:

T: *Why did the men not present their report on the grizzlies' habits after the first year? Jill.* (INITIAL QUESTION)

Jill: *'Cause they were still in the mountains.*

T: *Maybe. Ben.* (REDIRECT)

Ben: *Well, their records were ready and they were still observing but they didn't have enough material.*

T: *Why didn't they have enough material?* (PROBE-CRITICAL AWARENESS)

Ben: *'Cause ... um ...*

T: *Jenny?* (PROBE-REDIRECT)

Jenny: *They need years of tracking.*

T: *Anyone else?* (PROBE-REDIRECT)

Coding Rules for Probing Moves:

1. When a probing question is framed in such a way that it results in a "Yes", "No", "Mm" type of response indicating simple agreement or disagreement, it is not coded as a probe but as an opining question (Q^{op}). However, if subsequent to this simple kind of agreement-disagreement response, the teacher probes further and manages to obtain elaboration or reasons for the first short response, the probing category is applied. On the other hand, if further probing proves abortive, then the opining classification

should stand for what was intended to be a probing move.

Examples:

(i) T: *Why did David Frost bother coming to a little country like New Zealand when he's got plenty of work to keep him busy in the U.S.A. and Great Britain?* (INITIAL QUESTION)

Bill: *'Cause the N.Z.B.C. paid him a lot of money.*

T: *Was it worth the N.Z.B.C. doing this?* (OPINE)

Bill: *Yes.*

Sue: *Mm.* (NOT CODED)

T: *In his shows, Frost seems to get only a few people talking. Why is this?* (STRUCTURING AND NEW INITIAL QUESTION)

IN THE ABOVE EXAMPLE THE INTENDED PROBE IS CODED AS AN OPINING QUESTION. CONTRAST THIS WITH THE SAME EXAMPLE BELOW WHERE THE TEACHER FOLLOWS UP ON THE "YES" ANSWER WITH SUCCESS.

(ii) T: *Why did David Frost bother coming to a little country like New Zealand when he's got plenty of work to keep him busy in the U.S.A. and Great Britain?* (INITIAL QUESTION)

Bill: *'Cause the N.Z.B.C. paid him a lot of money.*

T: *Was it worth the N.Z.B.C. doing this?* (PROBE-CRITICAL AWARENESS)

Bill: *Yes.*

T: *Why?* (PROBE-CRITICAL AWARENESS)

Bill: *'Cause he's a big name in television.*

T: *Anyone else?* (PROBE-REDIRECT)

Sue: *Well, maybe David Frost treats a trip to New Zealand like a holiday.*

T: *What do you others think of that idea?* (PROBE-CRITICAL AWARENESS ADDRESSED TO THE GROUP)

(iii) TAKING THE SAME EXAMPLE, THE TEACHER'S FURTHER PROBING OF AN OPINING RESPONSE MAY ABORT, THUS THE FIRST PROBE IS CODED AS AN OPINE ($Q^{O}P$) BECAUSE NOTHING HAS BEEN ELICITED TO MAKE THE FIRST "YES" RESPONSE ANYTHING MORE THAN AN OPINION.

Bill: *'Cause the N.Z.B.C. paid him a lot of money.*

T: *Was it worth the N.Z.B.C. doing this?* (OPINE)

Bill: *Yes.*

T: *Why?* (ABORTIVE PROBE-CRITICAL AWARENESS P^{caw})

Bill: *Oh ... um ... I dunno really.*

T: *Why, Mary?* (ABORTIVE PROBE-REDIRECT PR)

Mary: (SILENCE) (ABORTS).

(iv) T: *What does hibernation mean?*

P: *Going to sleep.*

T: *Do you mean for a long period once a year?* (OPINE)

P: *Mm.*

T: *Well, what animals do we know that hibernate in winter?* (NEW INITIAL QUESTION)

COMPARE THE SAME EXAMPLE WHEN THE FIRST PROBE IS FOLLOWED UP BY THE TEACHER.

T: *What does hibernation mean?*

P: *Going to sleep.*

T: *Do you mean for a long period once a year?* (PROBE-CLARIFICATION)

P: *Mm.*

T: *Well, can you tell me more about this sleep and its yearly occurrence?*

P: *Oh, usually in winter in cold countries, animals like the bear ...* etc.

T: *Well, what animals do we know that hibernate in winter* (NEW INITIAL QUESTION)

(v) T: *What does 'fiery' mean?*

P: *Angry. Hot-tempered.*

T: *Everyone agree?* (OPINE)

Ps: *Yes.* (CHORUS)

(vi) T: *Where is the country of Nepal?*

P: *Near Kenya, I think.*

T: *Is he right?* (PROBE-CRITICAL AWARENESS)

P^2: *No, it's in Asia, north of India.*

(vii) T: *Where is the country of Nepal?*

P^1: *Near Kenya, I think.*

T: *Is he right?* (PROBE-CRITICAL AWARENESS)

P^2: *No.*

T: *Well where is it, then?* (PROBE-CLARIFICATION)

P^3: *In Asia, north of India.*

(viii) T: *Where is the country of Nepal?*

P^1: *Near Kenya, I think.*

T: *Is he right?* (OPINE)

Ps: *No!* (CHORUS)

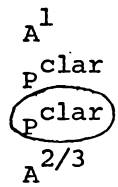
T: *No, it's in Asia, north of India.* (CORRECTION) *Isn't it?* (OPINE)

Ps: *Yes!* (CHORUS)

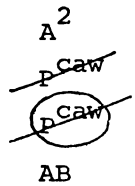
2. Probing moves which receive no response, or pupil response indicating that no answer is known, are coded as abortive. The abortive probe is coded by drawing a slash diagonally from bottom left to top right through the coding symbol e.g., P~~prom~~, AB.

If by means of the probe-prompt, probe-redirect, or exhortatory moves, a response to the original probe eventuates, then the original probe is not coded as abortive, although the AB coding symbol will remain for the first pupil's non-response.

3. A probing move may be repeated with the same or nearly the same form and content. The repeated probing move qualifies as such when the following criteria are met: (i) it occurs prior to the first response, (ii) it is an independent question but calls for the same kind of response as the probe preceding it. The repeated probe may follow immediately after the probe it repeats or be separated from it by a teacher comment or structuring move. The repeated probe is coded by an encircling line. An example from a transcript might be:



A probe and its repetition may both abort and should be coded accordingly. A sample from a transcript might be:



4. Two or more different types of probe may follow a pupil response. To identify the probe to be coded as active, examine the first pupil response and which probe it matches. The other probe(s) should then be coded as abortive. This situation may also involve repetitions of probes. Some examples from transcripts might be:

(i) A^{4+}
P^{clar}
~~P^{caw}~~
$A^{2/3}$ (clarification

(ii) A^{1}
~~P^{clar}~~
~~P^{clar}~~
AB
TC (Teacher comment)
P^{caw}
$A^{2/3}$ (critical awareness)

5. The following teacher reaction moves to pupil responses should be coded as rhetorical questions if they are not answered (Q^{rhet}), as opining questions (Q^{op}) if they are answered (whether the answer is a simple expression of agreement or disagreement or a longer answer).

T: *That's right, isn't it?*

T: *You do, don't you?*

T: *Do you?*

T: *Grizzly bears, aren't they?*

T: *Yes, they do, don't they?*

Do you?

Examples:

(i) T: *What value is there in making sure you read the newspaper every day?*

P: *You keep up with the news.*

T: *You do, don't you?* (RHETORICAL QUESTION)

T: *Well, what main kinds of service do we have to help us with news other than newspapers?* (NEW INITIAL QUESTION)

(ii) T: *What value is there in making sure you read the newspaper every day?*

P: *You keep up with the news.*

T: *You do, don't you?* (OPINE)

P: *Mm.*

T: *Well, what main kinds of service do we have to help us with news other than newspapers?* (NEW INITIAL QUESTION)

(iii) T: *What value is there in making sure you read the newspaper daily?*

P: *You keep up with the news.*

T: *You do, don't you?* (PROBE CLARIFICATION)

P: *Yeh, well, there's international news plus the local stuff.*

T: *Well, what main kinds of service do we have to help us with news other than newspapers?* (NEW INITIAL QUESTION)

(iv) T: *What value is there in making sure you read the newspaper daily?*

P: *You keep up with the news.*

T: *You do, don't you?* (OPINE)

P: *Mm.*

T: *But why is this important?* (PROBE CRITICAL AWARENESS).

P: *I dunno.* (ABORTS)

4.5.4 The Use-Pupil-Ideas Move

Included in this category is any sustaining question or statement which quite clearly draws upon the ideas of one pupil, or more than one pupil, for its content. The move may occur soon after pupil responding to an initial question, at a later point, or near the end of an episode. Because the move is based on preceding pupil ideas within an episode, it is coded as sustaining that episode; that is, it does not start a new episode.

(a) The Use Pupil Ideas Question Move U^Q

To qualify as a U^Q move, a sustaining question must clearly lead out of one or more preceding pupil ideas, or draw two or more preceding ideas together into a question. The question may ask for any of the following:

A summary or conclusion of preceding ideas.

An analysis of preceding ideas.

A synthesis of preceding ideas.

An interpretation of preceding ideas.

A comparison of preceding ideas.

An inference from preceding ideas.

Examples:

(i) *Related to all the points so far, what is the main idea we've come up with?*

(ii) *How would you summarise everything we've said so far on this idea of conservation?*

(iii) *What does Bill's idea suggest to you about the nature of life in the future?*

(iv) *If we take Joe and Alan's thoughts on this thing, what does it mean for changes in our laws?*

(v) *Now, think about this point Mary mentioned and ask yourselves: Why do men want to kill each other?*

(vi) *So far we've said that water pollution is increasing and Joan's point is an important one because even though she disagrees with the experts, it is true that many people find it hard to change their ways. What ways can you think of to ensure that people do stop polluting water?*

(vii) *We've had three ideas so far: Barry said ... Jill said ... and Ricky said .... Well what conclusions can you draw from these three ideas?*

(b) The Use-Pupil-Ideas Statement Move | U^{st} |

This category is coded when at some point in an episode the teacher makes a statement which leads out of one pupil's idea(s) or draws together the ideas of two or more pupils. The statement may consist of any of the following:

A summary or conclusion of preceding ideas.

An analysis of preceding ideas.

A synthesis of preceding ideas.

An interpretation of preceding ideas.

A comparison of preceding ideas.

An inference from preceding ideas.

Examples:

(i) *Well, it seems to me that the gist of what you've all been saying is that in spite of all man's knowledge about medicine, there's still many mysterious diseases we can't cure.*

(ii) *Your idea about stopping the building of houses on little sections of land makes me think of the thing they were trying to do at the World Fair in Montreal where they had on display a*

huge piling of concrete prefabricated homes which would prevent wastage of precious land.

(iii) *Let me summarise all the points so far. First, ..., secondly ..., thirdly .... So, we've really said ....*

(iv) *Now your idea, Jane, seems to agree with Jack's that sooner or later we'll have to stop using motor-cars altogether.*

(v) *Bill's suggestion links up pretty well with the discovery by scientists that it is possible to control bloat in cattle by treating pasture.*

Coding Rules for the Use of Pupil Ideas Move:

1. The use pupil ideas move U^{st} and the teacher comment move should not be confused. The U^{st} move quite clearly makes a reference to preceding pupil ideas by mentioning pupil names or by referring specifically to the ideas. The teacher comment move, on the other hand, involves the presentation of new information which is added to, rather than coming out of, preceding ideas. When in doubt about whether a move should be coded as U^{st} or TC, the rule is to code it as a teacher comment.

2. When a statement and question form of the use pupil ideas move are combined, the rule is to code the question form only.

3. Procedural structuring may accompany a use pupil ideas question move. Because such structuring is associated with a sustaining move and not an initial question move, the coding symbol SS^{proc} is used (not S^{proc}).

Example:

Now don't answer straight off about this. Think about Joe's point on New Zealand's

coal-mining and tell me what is this industry going to be like over the next ten years?

4. At times it may be difficult to distinguish between a use pupil ideas move and the probing moves of clarification, critical awareness and refocus. The rule to follow here is to code the move as an U^{Q} move.

COMPARE

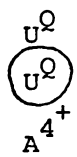
(i) *What is Sue saying here?* (PROBE-CLARIFICATION)

(ii) *Let's take Sue's idea and pull it apart for a bit. Where has she gone wrong?* (PROBE-CRITICAL AWARENESS)

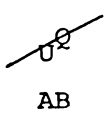
(iii) *Now, how does Sue's idea relate to living, say, one hundred years ago?* (P^{ref} or U^{Q}? THE CODING WOULD BE U^{Q} BECAUSE THERE IS CLEAR REFERENCE TO SUE'S IDEA BEING USED).

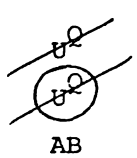
5. Sometimes the U^{Q} and the U^{st} moves may refer to ideas across several episodes preceding. When this occurs, the rule is to code the move within the present episode.

6. The U^{Q} move may occur with repetitions which should be coded as for all repeat question moves, namely, encircled. A transcript might be as follows:



7. The U^{Q} move may abort, as also may its repetitions. Some samples from a transcript might be:





4.5.5 The Teacher-Comment Move | TC

Included in this category are any teacher statements which add new information to that already offered by one or more preceding pupil responses. Comments giving the teacher's own opinion are classified as teacher comments.

Coding Rules for the Teacher Comment Move:

1. When a teacher comment is immediately repeated or restated, both the comment and its repetition are coded as a single teacher comment move.

2. The teacher comment and the acceptance-paraphrase move should not be confused. The AC^{para} move does not add new information to a pupil response.

3. Teacher remarks such as "asides" are not coded in the analysis system. They are considered to be non-substantive. Thus, the following examples would not be coded at all:

   T: *Well, I'm stupid. I should've known that.*

   T: *I can't for the life of me think of what it was.*

4. The teacher comment move often follows an evaluation move by the teacher. Thus, the following example would be coded: +TC

   P: *I think it was the Aztecs who lived in Montezuma.* A^1

   T: *That's right. The Aztecs were a race of people with tremendous cultural development. They had a well-developed social and political system in which ...* etc. +TC

5. The TC and the U^{st} move can sometimes be confused. Refer to Section 4.5.4 on the Use of Pupil Ideas move, Coding Rule 1.

5. A teacher comment at the very end of an episode may sometimes seem to be actually a structuring move accompanying the initial question of the next episode. When uncertain, the rule is to code as a teacher comment move.

4.5.6 The Sustaining-Structuring Move SS^{sub} SS^{proc}

Sustaining moves such as the redirect, probing question, probe-redirect, and use pupil idea question may be accompanied by procedural or substantive structuring. Such structuring is coded with the symbol SS indicating sustaining-structuring, plus the extended category as appropriate: SS^{sub} for sustaining structuring that is substantive, and SS^{proc} when the sustaining structuring is procedural (for information on these two types of sustaining structuring, see the section on structuring with initial questions: 4.2.1).

. When it is difficult to distinguish sustaining structuring of the substantive kind from the content of a sustaining question itself, the rule is to code the question only.

4.4.7 The Answer-Own-Question Move | AOQ

When an initial question or a sustaining question receives no response (it aborts) and the teacher provides the answer to the question, the teacher's move is coded as an AOQ (Answers Own Question). It should be noted that if incorrect or inappropriate responses have occurred to either an initial or a sustaining question, then eventual teacher provision of the correct answer is not coded AOQ but as a correction move (COR or COR^{bec}).

Examples:

T: *What is the highest mountain in the world? Jill*

Jill: (SILENCE) (ABORTS)

T: *John?*

John: *Um ... it's ... um ...*

T: *Okay, well, it's Mt. Everest.* (ANSWERS OWN QUESTION).

T: *Well, who was the first man in the world to climb to the top of Mt. Everest? Ann?*

Ann: (SILENCE) (ABORTS)

T: *John?*

John: *I don't know.*

T: *Well, it was Edmund Hillary, now Sir Edmund Hillary, and he is a New Zealander.* (ANSWERS OWN QUESTION).

T: *What can you tell me about the people of Nepal where Mt. Everest is?*

Sam: *Oh, they're probably good mountain climbers.*

T: *Mm. Can you tell me anything else?*

Sam: (SILENCE) (ABORTS)

T: *Anyone?*

Ps: (SILENCE) (ABORT)

T: *Well they are called Sherpas and their country is rather a poor one because ...* etc. (ANSWERS OWN PROBING QUESTION)

In the above example, it should be noted that it is the teacher's initial question which is answered by himself in the first two episodes, and the teacher's sustaining question (probe-clarification) which he answers himself in the third episode.

4.5.8 The Answers-Pupil-Question Move | APQ |

Included in this category are all teacher answers to direct pupil questions that are addressed to the teacher. These pupil questions may be substantive or procedural in nature.

4.5.9 The Return-Pupil-Question Move | PQP |

This category includes all occasions when the teacher responds to a pupil's substantive or procedural question by either returning the question to the pupil who asked it, or to other pupils, to respond. Hence the coding symbol: PQP (Pupil Question Returned to the Pupil or Pupils).

It should be noted that if a pupil substantive question asked of the teacher introduces a new and different topic from that of the current episode, then a new pupil-initiative episode will begin, and the transcript will already show this by an episode division line.

Examples:

(i) T: *How do you react when people claim that there are such things as ghosts?*

P^1: *I think they're superstitious, you know, they must be simple-minded.*

P^2: *I don't know about that. I saw a television programme on ghosts in an old Hollywood house. Don't you think they wouldn't have a programme, Sir, if it wasn't true?*

T: *Well, you saw the programme. What did you think of the evidence it gave?* (PQP MOVE)
etc.

(ii) T: *In these days of synthetic materials it's surprising really that you can still buy fur coats. Why do you think some people still prefer the real thing to something that is made out of synthetic material?*

P^1: *It's value, you know, they say: 'My coat's real bear fur or fox fur, or something.'*

P^2: *Yeh, people say synthetic stuff's cheap-looking.*

T: *Perhaps, but ---*

P^3: *But why should man kill off all the animals just to make clothes? Sir, you saw the news thing the other night on T.V. Didn't you think it was cruel to skin those baby seals alive and we should put a stop to this?* (PUPIL INITIATED EPISODE BY MEANS OF ASKING A QUESTION OF THE TEACHER)

T: *Well, I wonder what how you others react to this kind of practice?* (PQP MOVE)

P^2: *It's terrible because ...* etc.

4.6 OTHER TEACHER MOVES WHICH SUSTAIN EPISODES

It should be noted that the following moves which were fully defined and discussed in the section on initial questions in the beginning of SECTION V, may occur as both initial and sustaining moves in an episode. For this reason, the same coding symbols and rules are used for each.

4.6.1

Q^{affec}	The affective question
Q^{op}	The opining question (opine)
Q^{rhet}	The rhetorical question
Q^{proc}	The procedural question
Q^{exhort}	The exhortatory question.

4.6.2 Sustaining Moves which are Repeated:

R	Repeated redirect
p^{prom}	Repeated probe-prompt
p^{clar}	Repeated probe-clarification
p^{caw}	Repeated probe-critical awareness
p^{ref}	Repeated probe-refocus
PR	Repeated probe-redirect
u^{Q}	Repeated use pupil ideas question.

4.6.3 Sustaining Moves which Abort:

R	Abortive redirect
P^{prom}	Abortive probe-prompt
P^{clar}	Abortive probe-clarification
P^{caw}	Abortive probe-critical awareness
P^{ref}	Abortive probe-refocus
PR	Abortive probe-redirect
U^{Q}	Abortive use pupil ideas question.

5. SPECIAL CODING PROBLEMS IDENTIFIED DURING PILOT WORK WITH SQUAIES LEVEL 2

5.1 TEACHER MOVES

(a) Watch for the double (or more) initial question:

Be careful that you code all questions when the double^{+} question is used. These are usually substantively different and only one may be answered, thus making the other(s) abortive. On the other hand, sometimes both (or more) of the initial questions may be answered and are thus substantively active.

(b) Repeated and Abortive Q's, R's, P^{prom}, P^{clar}, P^{caw}, P^{ref}, U^{Q}:

Please watch out for these. If you miss these, it could affect any student's "Fluency Score".

(c) The Cognitive Level of an Initial Question:

Remember that form and context are often necessary to get the level. Please also double-check the story if any doubts occur.

(d) Q^{op} Move:

Any pupil response indicating simple agreement or disagreement with a teacher question may signal a Q^{op} move for the teacher (unless it is followed through by the teacher, or one or more pupils pick up the thread). Thus, not only *Yes*, *No*, *Mhm* pupil responses may signal a Q^{op}, but also such pupil responses as *Could be*, *S'pose so*, *I'd say so*, *No, I don't*, *It should*, *Not really*, *No, not really*, etc.

(e) The APQ Move and the Repeat Question Move:

The APQ move refers only to cases where the teacher provides a

substantive answer to a pupil question (I^{Q} move). When a pupil asks the teacher to repeat the question or I^{proc} move (e.g., *What was the question?*), the teacher's reply consisting of giving the question again is coded as a repeat question move. This repeated question (circled) could be with reference to an initial question or a sustaining question move such as a probe. If its referent is an initial question, then the repeated question introduces a new episode.

(f) The Nurturant Prompt:

Along with initiating moves for an episode by the teacher, or along with probes, a teacher will sometimes add in questions that are essentially nurturant prompts e.g., *D'you remember? Can you think about that?* Code such moves as P^{prom}.

(g) S^{sub}, S^{proc}, SS^{sub}, SS^{proc}:

Note that the SS move should, when it occurs, be coded using the extended categories of "sub" and "proc", just as for initial structuring moves.

(h) P^{caw} and P^{clar}:

These two moves are often hard to distinguish. The P^{caw} move has a definite "ring" of challenge about it (looking for justification, evaluation, relational thinking or a critical look at a response).

(i) T: *Mmh-m-m?* (Expressing doubt)

Code this move as a P^{clar}.

(j) Teacher asides or jokes to himself:

Don't code these moves.

(k) U^{st} and U^{Q}:

To be a U^{Q} move, the move must definitely "pull together" two or more previous ideas by specifically mentioning the pupils or their ideas as a lead-up to the U^{Q} move *per se* (similarly, for the U^{st} move). The U^{st} is not a TC move. The TC move adds new information.

(l) *That's right:*

This move is always coded as a positive reinforcer (+).

5.2 PUPIL MOVES

(a) Substantive Idea Counts in Pupil Responses:

No credit is given in the response for any repetition of the soliciting question's stem or content.

(b) I^{ep}:

Although seeming to occur seldom, pupil initiation moves that actually start a new episode should always be coded as I^{ep} moves.

(c) A Pupil Answering Another Pupil's I^{Q} Move:

The pupil answer here is an initiation and should be coded I, not A (A is reserved for answers to teacher questions).

(d) A Pupil Indicating that he Thinks the Same:

e.g., John: *3 sub. ideas.*

T: *What do you think, Bill?*

Bill: *The same as John.*

Use the circle technique.

(e) A Pupil Repeats the Response of a Previous Pupil:

When this occurs, the repetition should be coded AI, but encircled.

e.g., T: *What is the reason for ... etc. ?*

P^1: *Oh, it's because ... etc.* A^1

P^2: Repeats the substance of P^1's response. (AI^1)

If the additional response repeats all or part only of a

previous response, and then includes new or extra information, then coding should be on the following lines:

e.g., T: Question

P^1: Response $A^{2/3}$

P^2: Repeats previous response then adds new information. $AI^{2/3}$ AI^1

e.g., T: Question

P^1: Response $A^{2/3}$

P^2: Repeats all of previous response $AI^{2/3}$

P^3: Repeats part of previous response and then adds new information. AI^1 $AI^{2/3}$

(f) Pupil Responses that are Intoned as Questions:

Code these moves as A, AI or I, whichever is applicable. The pupil's intonation indicates that he is a bit doubtful about the "appropriateness" of his idea. Nevertheless, it is an A, AI or I move, whichever category is applicable.

(g) Pupil Corrections of the Teacher:

These moves should be coded as pupil initiations.

(h) Pupil "Thoughts to Themselves":

Instances here should not be coded.

e.g., P: (substantive part of response), and things like that.
CODE DON'T CODE

(i) CHORUS Response:

Code these moves as CHOR/YN or CHOR, except if the chorus response is the equivalent of an aside when it is not coded at all.

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