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DEVELOPMENT OF STUDENT TEACHER EFFECTIVENESS OVER AN EXTENDED PRACTICUM

by

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B.Sc. University of British Columbia 1963

M.A.(Educ.) Simon Fraser University 1977

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

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ABSTRACT

Despite widespread support for practice teaching, few studies have examined student teachers' development of skill as it actually occurs during the practicum phase of teacher training. This study gauged the extent to which student teachers improved in the skills and behaviours that prior research has found to be associated with effective teaching. During a 13-week extended practicum, a sample of student teachers was observed five times. During the observations the focus was on four selected teacher effectiveness variables; pupil opportunity to learn, teacher awareness of pupil differences, teacher clarity of presentation, and classroom management. Additionally, data were obtained about the students' teaching assignment and supervision by cooperating teachers. No overall improvement in the performance of teaching skills was observed although considerable variation was found for individual students. Major changes occurred in student teaching load, frequency and quality of observation of the students' teaching by the cooperating teachers, and the effectiveness of the feedback about the students' teaching. The data indicated that unsupervised teaching times and the quality of feedback from ccoperating teachers were most consistently linked to variability in practice teaching performance.

The overall conclusion of this study is that the student

teachers did not improve their skills as a result of the kind of practice that occurred in their teaching practicum. Implications for practice teaching and limitations to these generalizations are discussed.

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I. Introduction

The debate over what should constitute the education of preservice teachers has been well documented e.g., Ryan (1978). The work of educators such as Gage (1972), has begun to identify the essential components of an effective teacher education program. Gage (1972) argued that teacher education should provide students with the opportunity to learn the models of teaching skills, to practice those skills in a controlled environment with appropriate feedback, and finally to practice those skills in an actual classroom setting. Although practice teaching is but one component, it has been identified as a very important and universal component of teacher education programs (Clifton, 1979). It has been claimed by some educators to be the most important component of such programs (Gallegos, 1972; Shaplin, 1961), while others warn against an over reliance on the practicum (Gregory & Allen, 1978; Stiles, 1971).

Currently, there are believed to be three important functions of the practicum. First, it is claimed that future performance as classroom teachers is improved by giving student teachers explicit practice with teaching skills and strategies through a well-planned sequence of classroom activities (Pearl, Burns, & Foster, 1969). This conclusion was strongly supported by Schalock (1979) in his review of the research on work samples

as predictors of success in teaching. He concluded that, when carefully assessed, practice teaching performance is one of the best predictors of a beginning teacher's performance.

The second important function claimed for practice teaching is that prolonged periods in the classroom are thought to be necessary for supervisory personnel to assess the student's suitability for teaching (Howsam, Corrigan, Denemark, & Nash, 1976). That systematic observation of student teachers, such as that required by clinical supervision, requires extensive observation time in the classroom has been well documented (Coogan, 1973; Wilhelms, 1973). Clinical supervision is what Acheson and Gall (1980) call an interactive, democratic, teacher-centered supervisory style designed to help teachers improve their instructional performance.

Finally, it is believed that the practicum provides the student teacher with an opportunity to link theory with practice (Howsam et al., 1976; Russell, 1979). Fuller and Brown (1975) stated that the linkages between theory and practice begin to become apparent during the practicum, when student teachers become concerned about the content of the education courses they have taken and how that knowledge may be used in the classroom.

In spite of the perceived importance and functions of the practicum, reviews of the research in both the United States (Turner, 1975) and Great Britain (Lomax, 1972) have produced little dependable information on the functioning and

effectiveness of this component of teacher education. Few longitudinal studies have examined the development of student teachers' skills as it occurs over time (Popkewitz, Tabachnik & Zeichner, 1979). Most studies that have examined the impact of the practicum have concerned themselves with specific attitudes and behaviours of prospective teachers, such as teacher self-concept and anxiety (e.g., Tattersall, 1979). And most of these studies relied on pre- and posttesting with questionnaires and surveys as their data source (Popkewitz et al., 1979).

Few studies can be found that examined the relationship between this group of personality presage variables and pupil[1] achievement (Dunkin & Biddle, 1974). An exception is the review of the literature on teacher expectations and pupil performance by Nash and Borich (1978). They concluded that teacher expectations did alter teacher perceptions of pupils, and that the subsequent teacher behaviours resulting from those expectations affected pupil performance. While the results of the research have generally been disappointing, the use of presage variables and pretest-posttest research designs has provided data that have greatest utility in the setting of admission standards for teacher education programs. This type of research has not permitted an evaluation of features of the practicum itself, thereby limiting knowledge about how to design

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[1] I will use the term pupil to refer to children in the classroom. The use of student will refer exclusively to student teachers.

student teachers' practice teaching experience to provide the most effective programs for maximizing post-practicum classroom teaching performance.

Teacher effectiveness research, on the other hand, attempts to discover clear, consistent relationships between certain teacher behaviours (process variables) and pupil achievement (product variables). Over the last decade, this research has begun to identify classroom teaching behaviours which are positively associated with pupil achievement (Brophy, 1979). Certainly, a legitimate subject for research is the method by which these teacher behaviours develop in student teachers, and the extent to which student teachers become proficient in modelling them during practice teaching. This is the topic of the present research. It examined the extent to which measureable features of teacher behaviour, demonstrated to be associated with a teacher's effectiveness, were present during the practice teaching experience. The focus for this study was how, over an extended practicum, student teachers gained facility in the skills and behaviours associated with effective teaching and how those gains were reflected in measures of those skills and behaviours.

It is important to place this study in the broader perspective of teacher education by contrasting the conceptual framework of teacher effectiveness with other points-of-view on teacher education. Joyce (1975) examined a number of alternative

modes of teacher education. Each reflects a particular view of the role of the teacher and the nature of the learner and learning.

Historically, schooling was based upon an economic conception of man according to Joyce. Schools were created to meet the requirements of an industrial society for a literate population. The role of the teacher was one of taskmaster and disciplinarian. Learning was based upon reward and punishment, and a pupil's failure to learn was due to lack of motivation or laziness. Teachers were trained in teachers colleges or normal schools rather than universities. The importance of the practicum in teacher education was seen as a means of socializing student teachers into the practices of experienced teachers much like the models of apprenticeship characteristic of earlier craft guilds. As method courses were kept segregated from the practicum, it was more difficult for innovations presented in these courses to directly influence the students' teaching experience. This segregation effectively separated theory from practice and assigned the former to a place of lesser importance in teacher education.

The wide sweeping social changes that subsequently occurred over the latter half of this century have raised increasing concern about the adequacy of this economic mode of education. One of these movements attempted to reform schooling and the training of teachers. They have sought to develop alternatives

to the training of teachers by apprenticeship. These reforms can be characterized as progressive, academic, personalistic, and competency-based.

The earliest of the reform movements was the progressive movement. As articulated by the writings of John Dewey (1916), the movement was based upon a view of man as the creator of culture and knowledge. In this view, the major function of teachers is to lead children to identify and solve problems, thereby creating knowledge. To facilitate this, the classroom functions as a miniature democracy, with pupils working as a group on their problem-solving activities. In contrast to the economic model, teachers need to individualize instruction as meaningful learning can proceed only when a child begins at her/his level of understanding. To be successful, teachers require a methodology to cope with the many characteristics of children. Methods courses therefore, should emphasize teaching methodologies rather than subject matter competence. The student teachers' classroom experience must blend appropriately with what has been learned in methods courses. To accomplish this, there must be a balance in the importance accorded the practicum and the universities' role in teacher education.

With the launching of the first man-made satellites and the beginning of the technological revolution, a movement arose that attempted to base education on man as a scholar. Bruner (1963) argued that instruction should be organized around the structure

of the academic disciplines. Curriculum projects developed by scholars were designed to have children experience the academic disciplines as practitioners of those disciplines. The development of these curricula was accompanied by a renewed interest in cognitive psychology. Within this movement, the first priority of teacher education was training student teachers to become practicing members of a scholarly discipline. Subject matter competence therefore became an important prerequisite for methods courses. The training of teachers under this philosophy was generally oriented to educating the academically talented pupils rather than the disadvantaged. For this point of view to be successful, the practice teaching experience had to provide the opportunity to practice the discipline in the field under the auspices of a teacher-scholar.

Slightly after the beginning of the scholastic movement, personalistic reformers returned the focus in education to the uniqueness and dignity of the individual child. Two of the most notable proponents of this view of schooling are Carl Rogers (1969) and Roland Glaser (1968). This conception of teaching and learning as personal and idiosyncratic de-emphasizes the importance of curriculum goals, objectives, and common pupil learning outcomes. The major function of the teacher is to provide an environment supportive of learner choice. Thus identifying a common set of teacher competencies keyed to subject matter is not a priority. It is important that the

training of student teachers be a process where the personal characteristics of effective teachers are emphasized rather than a set of teacher competencies. Teacher education became an opportunity to provide the student teacher with a helping relationship. That, in turn, modeled what the teacher's relationship with pupils should be like. In this way, practice teaching becomes the vehicle for self-actualizing the student teacher.

The most recent conceptions of schooling and teacher education have concentrated on improving the efficiency of learning by identifying behavioural competencies or teacher effectiveness skills through research on teaching (Gage & Winne, 1975). This orientation is based on the premise that teaching can be viewed as a series of such observable behaviours. Through appropriate training procedures, student teachers can achieve expertise in these behavioural repertoires. Much research has been conducted and many teacher training systems have been developed to analyze teaching into sets of behaviours and modify those behaviours. The training of student teachers is heavily dependent upon the systematic practice of teaching through simulation activities such as microteaching. Familiarity with the performance of these skills is a prerequisite for improving these skills during actual practice teaching.

The implications of the views of education teacher training in general and the function of the student teaching practicum in

particular are varied. Each perspective has its unique viewpoint on the role of the teacher and the learner, and the importance of the practicum in the training of teachers. The orientation adopted in this study is primarily competency based.

Teacher effectiveness views teaching as a series of observable behaviours that can be learned and subsequently modified through some form of systematic practice. This differs rather markedly from other persepectives. Teachers in the progressive view require broadly-based competencies as opposed to a more specific repertoire of skills. The man-as-scholar, approach emphasizes the subject-matter competency of the practitioner teacher. Finally, personalistic reformers see teaching as the act of facilitating children in their learning.

This study consists of two parts; a pilot study and the main study. The pilot study had two objectives. First, data were gathered during an extended practicum using a small sample of student teachers to field test selected measures of teacher effectiveness. The pilot testing provided feedback necessary for the revision and adaptation of those measures. Second, the data gathered during the pilot study were used in an exploratory fashion. It permitted tentative descriptions of the effects of teaching practice on pre-sevice teacher effectiveness.

A number of features distinguish this study from most other related research. This study belongs to the group described by Cooley (1978) as explanatory observational studies. Rather than

resorting to the more common empirical-analytical procedure of pretest and posttest measures, the measures used in this study were obtained at a number of intervals during an extended practice teaching experience. Also, this study was conducted in classrooms under as close to normal conditions as possible in order to satisfy, at least in part, the conditions for what Bronfenbrenner (1976) calls a "natural experiment". Doyle (1978a) recommended this alternative research paradigm because it gives priority to the complexity of the classroom environment, and the fact that pupils, i.e., student teachers in this study, are active agents in their own learning. It is his further opinion (1978b) that detailed and long-term descriptive studies of classrooms have improved significantly our knowledge about the processes and events that occur in classrooms. The choice of a natural or ecologically-oriented research setting was made with the knowledge that potential problems exist with this type of setting. A more detailed analysis of these issues will be made in the next chapter. The period for data collection in this study is rather unique in that it was a full semester of approximately three months. This is considerably longer than most other studies on the effects of the practicum.

For the purposes of this study, two research questions were identified. There exist, at present, some reasonably valid measures of a number of the teacher effectiveness variables that have been identified as reliable predictors of pupil's learning

in the classroom (Medley, 1978). Is it possible to determine the rate, and extent, that a student teacher acquires facility in demonstrating those behaviours during practice teaching? Furthermore, this study attempted to identify some of the factors affecting student teacher performance, such as the nature and quality of feedback received, amount of teaching workload, and the frequency and nature of the supervisory visits. The second major research question was whether these data might explain the observed changes in student teacher performance during the practicum.

II. Related Research

Early research on teacher effectiveness attempted to identify teacher characteristics that could distinguish levels of effectiveness in teachers. Much of that research relied heavily upon subjective rating scales (Dunkin & Biddle, 1974; Flanders & Simon, 1969). These ratings characterized teachers perceived as effective, but the research failed to show a link between teacher characteristics (presage variables) and pupil achievement (product variables). Specifically, Fattu (1962) found that many of the criterion measures were ratings by self, peer, and supervisor which consequently correlated poorly with measures of a teacher's performance reflecting what pupils learned. Medley (1978) summarized the deficiencies of this type of research as, "what a student in a preservice teacher education program needs to learn is not what he should <u>be</u> but what he must <u>do</u> in order to be effective" (p.13).

More recently, researchers have begun to look at effectiveness as the degree to which teachers possess and employ appropriately an inventory of skills or competencies which influence pupil learning experiences and, in turn, have a positive effect on pupil learning (Medley, 1977, 1979).

Berliner (1976) identified methodological and statistical problems that had to be solved before clear empirical

relationships could be identified between teacher behaviours and pupil achievement. It has been argued that in addition to problems of a methodological nature, most, if not all, of the variation in pupil achievement is accounted for by sources other than teacher variables such as pupil ability and socioeconomic status. The point he made was that, other variables being controlled, differences in teacher behaviours have not accounted for significant differences in pupil achievement. In contrast however, others (Gage, 1978; Walberg, Schiller & Haertel, 1979) maintain that educational researchers have made significant progress in identifying the components of effective teaching, that is, teacher variables which affect pupil achievement in cognitive and affective domains. Gage (1978), in his review of recent research on teaching, analyzed the results of four major studies. From this examination, he developed a set of inferences as to how teachers of the early grades should perform in order to maximize achievement.

While the definitive account regarding the relationship between teacher variables and pupil achievement has yet to be written, high quality research is assisting greatly in this endeavor. Recently, Schalock (1979), in a review of the research on teacher selection, identified a number of relatively reliable and objective predictors of teacher effectiveness that have been tested empirically. Table I presents a breakdown of teacher variables that have been identified in the major reviews of the

teacher effectiveness literature as having a significant relationship with student achievement product variables. Those most frequently mentioned are the amount of time that pupils are engaged in learning, teacher awareness of pupil individual differences in both social and academic arenas, teacher clarity of presentation, classroom management (including discipline and teacher preparation), the degree of teacher control over instruction, and the affective responses of teachers to pupils often referred to as teacher "warmth".

Over the past decade, educators have begun to question the absolute importance of the practice teaching component of teacher education (Gallegos, 1972; Stiles, 1971). Some, such as Gage (1972) believe practice teaching is not sufficient to guarantee success as a teacher, but should be considered as one component, albeit a most important one, in an effective teacher education program. Glaser (1965), in his work on training research and education, analyzed the components of instructional systems required to teach complex skills. From his work educators have attempted to apply the principles of instructional psychology to the training of teachers in order to develop alternatives to the practicum for influencing the behaviours of preservice teachers. Three of the more popular alternatives are microteaching, minicourses and interaction analysis. Microteaching is scaled-down teaching conducted under controlled conditions.

Table I

Important Teacher Variables

Identified by Reviews of Teacher Effectiveness Literature

Process Variables	Reviewer										
	Ryans (1960)	Flanders & Simon (1969)	Gage (1972)	Rosenshine & Furst (1973)	Dunkin & Biddle (1974)	Berliner & Tikunoff (1976)	Gage (1978)	Borich (1979)	Brophy (1979)	Cruickshank & Kennedy (1979)	Medley (1979)
Pupil opportunity to learn				X		X	X	X	X	X	X
Teacher awareness of pupil individual differences				X		X	X			X	
Teacher clarity of presentation				X		X		X			
Classroom Management	X			X	X	X			X	X	X
Degree of teacher control over instruction		X	X			X	X	X	X	X	X
Affective responses of teachers to pupils	X		X			X					

Minicourses developed as a self-administratable form of microteaching. Interaction analysis, developed by Flanders (1970), allowed teachers to observe and analyze their own teaching behaviour.

As a result of these alternatives, educators have recommended that considerable effort be directed to studying the relationships between the components of teacher education and the acquisition of teacher behaviours. Turner (1975) reviewed a number of studies that attempted to identify which features of teacher training had a significant effect on subsequent in-service teaching success. He found that much of this research had little success in identifying aspects of teacher education that might optimize teaching success. These conclusions were corroborated by Gage and Winne (1975) in a review of performance-based teacher education. They concluded that overall, little evidence was available as to the effectiveness of one teacher training procedure over another.

These reviews identified a number of studies which were notable for their empirical rigor. Borg (1972) used a carefully structured teacher training procedure based upon microteaching. Students were taught and achieved high competency in a series of skills related to questioning strategies. Follow-up observations at three years were made to determine whether the frequency of use of the skills held up well over the three year period. Of the nine skills that were included in the training procedure,

five were still being actively used by the teachers and four were not. In a similar study, Kocylowski (1970), analyzed a group of skills related to the teaching of a lesson, pupil participation and attention, and teacher-pupil rapport. He found that two years after a microteaching experience, skill performance had decreased on four out of six skills. Koran, Koran and McDonald (1972) undertook a study of the prerequisite information needed by students if microteaching is to be effective. They found that preceeding the microteaching with material explaining the use of higher-order questions was as effective in increasing the students' use of such questions in the following microteaching as was observing a teacher employ the strategy.

Others, such as Coleman (1973) and Gage (1978) noted that a sizeable body of research has demonstrated that teaching behaviours which improve teacher effectiveness can be influenced by teacher education programs. It is the opinion of some (e.g., McDonald, 1978) that the most promising components of teacher effectiveness should constitute the core curriculum of teacher education programs and should form the major criteria upon which student teachers are evaluated.

The balance of this review is an examination of the most promising components of teacher effectiveness. Beside the demand for experimental rigor, the final selection of the variables to be used in this study was made on a number of other criteria.

First, selection was based on the clarity and precision of the variable's description and operational definition. It was felt that the operational definition of a particular variable should be understandable and unambiguous. A precise description generally met the second criterion; namely, a psychometrically sound, objective measure of the variable that could be used in a classroom with minimal disruption. The final requirement was for maximum discreteness among the chosen variables. While teaching is a complex set of skills, the researcher tried in this selection to reduce the chance that two variables might, in part, represent common or closely related teaching behaviours.

Opportunity to Learn

It is well recognized in the teacher effectiveness literature that not only the amount of time available for learning, but in particular the quality of the time spent are strong associates of pupil achievement (Centra & Potter, 1980). Using observations made in 166 grade one and three classrooms, Stallings and Kaskowitz (1974) found that the amount of time spent on reading and mathematics correlated reliably with pupil achievement. Good and Beckerman (1978), using grade six pupils from a wide range of family backgrounds, found consistently less involvement in learning activities across subject matter amongst low achievers compared with high achievers. Their description of

involvement was taken from the work of Kounin (1970) on classroom management and was based on whether the pupil was engaged in the assigned task. Evertson and Brophy (1974) determined that for a sample of grade two and three teachers, whose classes' gain scores on the Metropolitan Achievement Test showed consistency within subtests and across a three-year period, had a significantly greater amount of pupil involvement in the learning tasks. The results of Cooley and Leinhardt's Instructional Dimensions Study (1978, 1980) established that for grade three mathematics and reading, the percentage of time that pupils were "on-task," i.e., actively engaged in the learning activity, correlated reliably with pupil achievement gains whereas the amount of time available for learning did not. Using elementary school classrooms, Karweit and Slavin (1981) determined that pupil engagement in learning positively affected mathematics achievement while allocated time did not. Both total engaged time and rate of engagement correlated reliably with scores on a standardized mathematics test for grades two and three. No similar reliable correlation existed for grades four and five.

In the Beginning Teacher Evaluation Study, Fisher, Filby, Marliave, Cahen, Dishaw, Moore, and Berliner (1978) found that grade two and five pupil achievement in reading and mathematics was positively correlated to increases in the measure they called Academic Learning Time . Academic Learning Time consists

of three components: time allocation, engagement rate, and error rate. Time allocation is the actual time the teacher has set aside for the lesson. Engagement rate is the proportion of the lesson pupils were actively engaged in learning. Error rate is the ratio of incorrect pupil responses to correct pupil responses made during an instructional task. Martin, Veldman, and Anderson (1980), in their study involving 15 grade one classes, found that achievement in reading was statistically reliably higher ($p<.05$) when pupils answered more questions correctly. This result held whether the unit of data analysis was the class, the particular reading group, or the individual pupil.

Thus, in Academic Learning Time we have teacher behaviours which are relatively easy to identify in the classroom and which can be measured accurately and objectively. It has also been demonstrated empirically to be positively linked with pupil achievement.

Awareness of Individual Differences

That effective teachers have the ability to organize and maintain a classroom learning environment which provides for a maximum amount of time to be spent on productive learning activities has been supported by a number of educators (e.g., Brophy, 1979; Medley, 1977; Powell, 1979).

Good, Biddle and Brophy (1975) listed teacher awareness of classroom events as a component of effective teaching. They characterized lack of awareness in teachers who expressed preferential treatment to high achieving pupils, had few contacts with some pupils, and who made inaccurate judgements about the attitudes and achievement of some of their pupils. The idea that pupils learn more when the teacher is aware of and provides for the learning requirements of individual pupils is central to a number of educational innovations such as mastery learning (Bloom, 1976). Bloom maintains that pupil cognitive entry behaviours can account for up to 50% of the variance in pupil achievement. A pupil who is assigned to a task by a teacher unaware that the pupil lacks the necessary cognitive entry behaviours may have a much reduced chance of being successful at that task.

Empirical evidence as to the importance of teacher awareness of student individual differences in teacher effectiveness has been demonstrated by Shavelson and Dempsey-Atwood (1976). They examined studies where teacher variables correlated with pupil achievement gains. Observer ratings were made, at five-minute intervals, of instances where the teacher individualized instruction or used pupil ability grouping for instruction. One of their findings was that a teacher's ability to diagnose the academic requirements of pupils i.e., teacher individualization, is a stable variable

over time and correlated reliably ($p<.05$) with pupil achievement gains. In Fisher et al.'s work (1978), it was found that teacher awareness of the individual characteristics of pupils was a promising predictor of teaching effectiveness. When teachers of grade two and five reading and mathematics showed a high degree of proficieny in identifying individual learning differences, pupil achievement was significantly higher. Data on this variable were obtained by a measure of test-item prediction. For items on a particular classroom test, teachers were asked to predict whether a pupil would correctly or incorrectly complete a given item. This was then compared to the pupil's performance on the item. Teachers whose percentage of correct prediction was high were judged to be more aware of the individual learning characteristics of their pupils.

Item prediction measures reflect only one aspect of teacher awareness of pupil characteristics i.e., cognitive achievement, and may be improved if the items are selected from affective as well as cognitive domains. A strong advantage to item prediction is the ease with which it can be employed in the classroom and the objectivity of the scoring procedure.

Clarity

Teacher clarity was described by Rosenshine and Furst (1971) as a teacher behaviour that appears promising as a teacher effectiveness variable. Using pupil ratings, one of the teacher behaviours that Gage (1972) found closely related to pupil comprehension scores was the teacher's clarity of presentation. Bush and Kennedy (1977) used ratings by junior secondary students to develop a set of teacher behaviours that discriminated between clear and unclear teaching. Fifty-four teacher behaviours were factor analyzed to yield five clarity factors. The factors identified were explaining through examples, using multiple teaching strategies, task orientation, verbal fluency, and organizing seat work. Descriminant analysis was used to determine which behaviours most definitely separated clear and unclear teaching. In a follow-up replication study, Kennedy, Cruikshank, Bush, and Meyers (1978), using grade nine students' ratings, tested empirically the clarity components described earlier. From their results they postulated that the construct called teacher clarity consisted of a number of factors modified somewhat from the earlier study. A high level of clarity exists if the following three teacher behaviours are present: the teacher determines if the pupils have understood the task or content and is prepared to modify activities to accomodate them, the teacher provides the pupils with the

opportunity to think about, respond to, and bring together into an understandable state what is being learned. Third, teachers whose clarity in their teaching is high frequently work examples for the class, review previous work, and preview future or up-coming work. From their work, a set of 22 teacher behavioural statements in a format suitable for pupil rating was developed. These statements were behaviours identified in the earlier work of Bush and Kennedy (1977) that had descriminated well between student perceptions of clear and unclear teaching. Additional support that these factors define the construct called teacher clarity is provided by Mintzes (1979). In this study, he had university students, given a brief definition of clarity, rate the clarity of their instructors and rate the frequency with which the instructors performed certain specific observable teaching behaviours. The behaviours which correlated most significantly ($p<.05$) with the clarity rating fell within the three factors discussed above.

Pupil ratings of teacher behaviour frequently have been used as a criterion measure in research on teaching at all levels, though it appears most prevalent at the secondary and post-secondary level (Rotem & Glasman, 1979; Veldman & Peck, 1963). Levin (1979), in his review of current teacher evaluation practices, found that of six approaches to teacher evaluation, ratings by pupils (of such behaviours as teacher clarity) were probably the most reliable and valid method. Though used

extensively, rating scales must be employed with caution. Dunkin and Biddle (1974) summarized the difficulties encountered where rating scales have been used in research on teaching. Two of these are pertinent to this discussion. First, some rating scales require the observer to make high-inference judgements, for which he/she has received only minimal instructions or training. Second, the items in rating scales often have not had their construct validity demonstrated. That is, there has been no systematic attempt to ensure that the items are, in fact, measures of the particular product variable.

Teacher clarity, a composite of behaviours affecting pupil achievement, seems to lend itself to measurement by pupil ratings. The reliability of the ratings can be increased by using statements which are easily interpreted by the pupils and having the time between the lesson and the completion of the scale as short as possible.

Classroom Management

The importance of classroom management for pupil learning has been recognized widely (Brophy, 1979; Dunkin & Biddle, 1974; Medley, 1979; Rosenshine & Furst, 1973). Classroom management is generally agreed to consist of three teaching skills: discipline, planning for learning, and organization of activities and routines. Brophy (1979), in his review of teacher

effectiveness research, states that effective teachers have the ability to organize and maintain a classroom learning environment that reduces to a minimum the time lost due to transitions from activity to activity, periods of confusion within the classroom, and disruptions that require disciplinary action. Research on classroom management has shown that pupil involvement in the learning task and pupil achievement are affected by management strategies. Shavelson and Dempsey-Atwood's (1976) review found that direct control of undesireable pupil behaviour by the teacher was a stable (over time) teacher variable which correlated reliably with pupil achievement gains. Also, Cooley and Leinhardt (1978) found that effective classroom management was one of the techniques that appeared to be most highly related to gains in pupil achievement in grades one and three reading and mathematics. Evertson, Anderson, Anderson, and Brophy (1980) studied the teaching performance of 68 junior secondary English and mathematics teachers. In mathematics, but not in English, statistically reliable correlations ($p<.01$) were recorded between pupil achievement and effective teacher organization, control, and management of pupil misbehaviours. Observers recorded the teachers' consistency of enforcing classroom rules, time spent dealing with pupil misbehaviour, and the speed of teacher response to pupil management problems.

Kounin (1970), in his work on discipline and classroom management, identified what he believed to be the essential components of classroom management: withitness, overlapping, group alerting and learner accountability, and smoothness and momentum. Withitness was defined as a teacher knowing what is going on in the classroom and communicating this to the pupils by her/his actual behaviour. Teachers who appear able to deal concurrently and successfully with two events in a classroom exhibit overlappingness. Group alerting refers to teacher activities that maintain the attention of all pupils in the learning activity and generally keep pupils "on their toes". Learner accountability involves teacher behaviours that hold pupils accountable and responsible for their task performance. A teacher whose behaviours are characterized by an absence of interference with the flow or the pacing of the lesson exhibits smoothness and momentum, respectively. He found that these components correlated reliably and negatively with pupil deviancy and positively with pupil work involvement.

Using a Kounin-based training program in classroom management with nine intermediate elementary teachers, Borg and Ascione (1979) found statistically reliable ($p<.05$) improvements between pre-post observations for certain teacher behaviours. Those behaviours and the corresponding Kounin categories were: withitness (loud desists), group alerting (questioning technique), and learner accountability (work showing and peer

involvement).

Some researchers have encountered difficulties in replicating Kounin's work. Recently, Kalaidzis (1980) tested Kounin's teaching variables using 20 minute videotapes of 15 English and social studies teachers in recitation lessons with their grade eight pupils. Correlations between Kounin's teacher variables and pupil work involvement and deviancy yielded corroborating results for only learner accountability and group alerting. Learner accountability and group alerting correlated reliably ($p<.05$) with a decrease in student off-task behaviour. Withitness, on the other hand, correlated negatively with both freedom from deviancy and work involvement which differed sharpely from Kounin's work. Inconsistencies in Kounin's theoretical and operational definitions of the withitness variable have been suggested as a possible source of the discrepancies in this replication (Kalaidzis & Martin, 1981).

There appears little doubt that classroom management, as a teacher effectiveness variable, has an important effect on pupil achievement. The choice among the components of classroom management to be used in this study is based upon a number of conditions. The components must be predicated on clear operational definitions that have been tested empirically and can be objectively observed in the classroom.

Degree of Teacher Control Over Instruction

The teaching acts that relate to teacher control over instruction, often called direct instruction, have been advocated and articulated by a number of researchers (e.g., Brophy, 1979; Cruikshank & Kennedy, 1979; Good et al., 1975). Many claims for the support of this group of teacher behaviours for improving pupil achievement gains are based upon growing empirical evidence (Brophy, 1979). Others such as Walberg, Schiller, and Haertel (1979) believe that due to the small number of studies, the results are inconclusive and should be interpreted cautiously. Direct instruction is a composite of teacher behaviours as is the case with classroom management. In direct instruction, the teacher controls the timing and sequencing of instruction, chooses the materials, and monitors pupil performance. Rosenshine (1979) stated five components of direct instruction: an academic focus, use of large groups rather than small groups for instruction, use of sequenced and structured materials, teacher selection of classroom activities, and structured teacher-pupil interaction.

An extensive review of the research by Peterson (1979) compared the effects of direct and open instruction on pupil achievement. Open instruction is described as a learning environment where the pupils take a greater role in selecting and monitoring their learning activities. She concluded that

pupils who receive direct instruction perform slightly better on achievement tests but more poorly on creative and problem solving tasks than pupils in an open classroom setting. For affective learning outcomes, direct instruction appears to be inferior to open instruction in improving pupil attitudes toward school and teachers, as well as in promoting pupil independence of thought. No difference between either method of instruction was found for pupil self-concept, locus-of-control and anxiety.

Affective Responses of Teachers

The final teacher process variable listed in Table I is the degree to which the affective responses of teachers to pupils reflects the construct called "warmth". Ryans (1960) introduced the variable he called "warmth". In his study, which made extensive use of rating scales, he identified three independent characteristics of teachers: warmth, responsible classroom behaviour, and imagination. He claimed they correlated reliably with other teacher process variables. This process variable, while having a certain intuitive appeal as a process variable responsible for positively affecting pupil achievement, has failed, in the opinion of a number of reviews of teacher effectiveness literature, to produce consistently significant results when tested empirically in classrooms (Dunkin & Biddle, 1974; Flanders & Simon, 1969; Walber et al., 1979). Some recent

support for this variable has been provided by Evertson et al. (1980). In this study, described previously, statistically significant correlations ($p<.01$) were recorded between both pupil achievement in mathematics and attitude towards mathematics for the observed teacher variables; respect between pupils and teachers, teacher enthusiasm, praise, and teacher receptiveness to pupil input. Brophy (1981), in his review of the research on teacher praise, concluded that teacher praise fails to correlate with pupil cognitive learning outcomes. As a teacher behaviour he concluded that praise, in contrast to some such as the amount of time spent on learning activities and structuring in the classroom, has little or no affect upon pupil achievement in a typical everyday classroom.

The use of teacher "warmth" and control over instruction as measures of teacher effectiveness lacks the empirical support afforded to most of the other variables reviewed in this chapter. It may be argued that a full description of classroom events requires that data must be collected, even if some of those data prove to have questionable utility. This must, however, be balanced against the preeminent requirement for this study; minimum interference in activities of the student teacher in the classroom. I chose the teacher effectiveness variables for this study while attempting to reconcile the requirements of full description of classroom events with the preservation of the classroom as a naturalistic setting as well as maintaining

good research methodology.

It was decided not to include direct instruction or the degree of teacher control as effectiveness variables to be used in this study. The empirical evidence cited earlier appears to be inconclusive as to their effect on pupil achievement. Aspects of direct instruction are covered to a large extent by engaged time and some of the components of classroom management i.e., group alerting and learner accountability.

Methodological Concerns

As mentioned earlier, natural or observational studies require an extra measure of concern for validity in their design and analysis compared to experimental paradigms. Cook and Campbell (1979) identified four classes of threats to the validity about claims of causal relationships between observed effects that may occur in research: internal, statistical conclusion, construct, and external.

Threats to internal validity may be characterized by what Ellsworth (1977) identified as the presence of rival competing hypotheses. In this study, competing hypotheses would be rival explanations as to how changes in the measures of student teacher effectiveness were due to events other than the extended practicum. It is Cooley's (1978) opinion that this threat is present due to a lack of understanding about the phenomena being

studied.

Cook and Campbell (1979) have identified a number of potential threats to internal validity e.g., history, maturation, instrumentation, testing, statistical regression, selection, and mortality. There are a number of reasons why it is unlikely that the first five are of serious concern in this study. Kazdin (1981) argued that where repeated assessment is used with multiple participants as it is unlikely that a single historical event or maturational process could account for change. Also, the complexity of events in the classroom would probably preclude any observed effect being due to an event that is not of interest in the study. Further, multiple observations were used rather than a pretest-posttest research design which, in the opinion of Kazdin (1981), yields patterns in the data which would show changes that might be symptomatic of the presence of threats to internal validity. Finally, except for the student log, the student teachers were only incidentally aware of what observations about their teaching were being made. It is unlikely that enhanced performance due to test familiarity would have been present.

Potential threats to internal validity in this study come mainly in the area of selecting subjects (i.e., student teacher selection), and subject mortality. Subject selection was not random but was based upon travelling considerations for the researcher. In order to observe as large a group of students as

possible, selection was limited to two adjacent school districts. Mortality of subjects in a study with a small sample size is a serious concern. Any loss of participants in a study such as this must be examined to determine whether the losses are representative of the sample or reflect some unique characteristics.

The presence of confounding or intervening variables provide a threat to the construct validity of a study. Ellsworth (1977) claims that the choice of research setting is a major factor in guaranteeing this type of validity. The concern for construct validity in this study is twofold. First the chosen variables, taken individually, must represent unique, though perhaps unequal, contributions to the construct called student teacher effectiveness. Second as a group, the sum of the contributions must describe adequately the construct. Construct validity seems to be related to what Bronfenbrenner (1976) calls "ecological validity", i.e., the requirement that the research setting be an accurate reflection of the "real world". It is his opinion that the "integrity" of the setting must be preserved. That is, the classroom where the student teacher spends the practicum must be an accurate reflection of normal classroom conditions. If the preceeding two conditions have been satisfied, we may be reasonably confident that changes in student teacher effectiveness during the practicum would have occurred in the same way had the observer and other intrusions

(e.g., the log) not been present.

Finally, threats to external validity affect the generalizability of findings to other student teachers and practica. Gage (1978) feels that expecting large-scale generalizations from a single study of this type is unrealistic. In his opinion it would be better to use successive replications to reveal the generality over different student teachers. For the purposes of this study, the original findings obtained during the pilot-testing have been reported separately. Data from the main study may be considered as the first replication. Since random assignment is usually absent in this type of study, Cooley (1978) believes that careful attention to ensuring that the sample is representative of the population sampled will reduce the threat.

Summary

In summary, recent empirical evidence suggests that a number of teacher behaviours do have a significant positive effect upon pupil achievement. The most promising to date are: providing the pupil with the opportunity to learn, awareness of pupil individual differences, clarity of teacher presentation, effective classroom management, direct instruction, and teacher "warmth". This study attempted to determine, under the assumptions that measures of the most promising teacher

effectiveness variables are reliable predictors of pupil learning performance in the classroom, at what rate and to what extent during a practicum does a student teacher acquire facility in demonstrating the teaching behaviours that support those measures? That is, to what levels and at what rate are the components of the construct called teacher effectiveness developed in student teachers' performance? Finally, this study attempted to identify some of the factors affecting student teacher performance or development, and explain why the observed changes in student teacher performance occur during the practicum.

This study is rather unique in that it uses in-depth observation to determine how the skills of teaching are acquired during a practice teaching experience. Also, it attempts to identify the characteristics of the practicum that enhance or retard this acquisition. The next chapter details how the data were obtained from the extensive observation scheme and accompanying record of classroom events.

III. Method

Participants and Setting

The pilot study was carried out in the fall of 1980 using intermediate elementary student teachers. The pilot-study contained three observations (weeks 2, 6, and 12). It had two main objectives. First, the feedback provided by the student teachers would assist me in making revisions to the observational instruments and questionnaires. Second, the observations made during the pilot study would serve as a training procedure for the main study.

The three semester (12 month) Professional Development Program (P.D.P.) of teacher preparation at Simon Fraser University contains two extended practica. The first (EDUCATION 401) is a half-semester (six weeks) of initial observation and teaching experience taken in the first half of the first semester. The second (EDUCATION 405) is a full semester of classroom experience taken during the second semester. During these practica, the student teacher is assigned to the classroom of a cooperating teacher (School Associate) appointed by the University in consultation with school authorities. The student

teacher is regularly visited in the classroom by a representative of the Faculty of Education (Faculty Associate). Faculty Associates are experienced, practicing classroom teachers who have obtained leave from their employing school districts. For this study, the 405 practicum was chosen because of its length (13 weeks) of almost completely uninterrupted opportunity for the student to observe and teach. This practicum is also the students' final preservice classroom experience.

At the beginning of the 405 practicum, all student teachers have a basic familiarity with the routines and procedures of the school system gained from their 6-week intitial classroom experience. As well, an introductory knowledge of teaching was received during the 7 weeks preceeding the extended practicum. This half-semester at the university consisted of seminars and workshops in preparation for the coming extended practicum. These classes focus on curriculum areas (e.g., science, language arts) and teaching methodologies. The seminars and workshops chosen by the student teachers in this study were not the same or even necessarily similar across participants. A great deal of individual choice is permitted and even encouraged within certain limitations. All intermediate elementary student teachers are strongly advised to include workshops in language arts and mathematics, however. Thus, it is reasonable to characterize the student teachers as having somewhat idiosyncratic profiles of teaching competencies.

There are two main options available to student teachers in the Program, the Campus Program and the Interior Program. Students are admitted to the campus program in September and January. The interior program is designed to serve communities in the interior of the Province, generally in districts where a regional college is located. The only intake for this program is in September. The campus enrollment for the 405 practicum that began in January, 1981 was approximately 200 students. They were divided into 15 groups based upon the student teachers' geographical placements in school districts. All students were placed within 100 kilometres of the university campus. To provide the largest sample for the main study that could be visited by one observer, two school school districts closest to the campus (Burnaby and Coquitlam) were selected. Due to the range of subjects taught by the students, and the general acceptance of classroom observers by pupils, it was decided to select participants from intermediate elementary placements (grades 4 - 7). Pupils in the primary grades were excluded as they could not complete the teacher clarity instrument. Student placements in secondary school were not included as rotating period timetables would make the scheduling of observation visits difficult to arrange. Twenty-two students met these requirements.

Involvement of some students in another research project reduced the potential sample to 16. A letter containing a brief

overview of the research and a request for voluntary participation was sent to each of the 16 students. They were given a detailed description of the proposed research. Copies of these are included in Appendix B. The students were told that data on generally accepted teacher-effectiveness variables such as clarity of presentation and classroom management would be collected in the classroom during their teaching. No information was given about the specific instruments to be used.

After the students had received the letter and had a week to read the proposal, a follow-up telephone call was made. Voluntary consent to participate was received from 14 students. Letters requesting voluntary participation were sent to the School Associates and principals in the students' placement schools. Consent was obtained from all of the students' principals and ten of the School Associates. Copies of letters and consent forms are given in Appendix B. This resulted in a beginning sample size of ten student teachers (seven in Burnaby and three in Coquitlam). These students came from four of the 15 groups mentioned previously.

The distribution of grade levels represented in the ten sample classrooms were: grade 3-4(1), grade 5(2), grade 5-6(1), grade 6(4), grade 6-7(1), grade 7(1). The class size ranged from 18 to 33 with a mean of 24. The pupils represented a wide range of socio-economic backgrounds. The schools, with one exception, generally drew pupils from low to middle income families. The

exception had a significant number of pupils where parents were upper middle class non-professionals. There was a range of minority cultural groups represented in each class. In only one school was the proportion of minority children high (approximatley 60%) compared to the other schools. However, this high proportion was not reflected in the classroom being observed. Where possible, the same class period and same subject was used for each observation. It was decided that the curriculum areas of the lessons to be observed would be language arts and mathematics. Two reasons underlaid this choice. First, it was felt cross-comparisons for content and lesson format might be possible. Second, these two subject areas were thought to represent relatively more and less flexible teaching situations, respectively. Thus, a greater degree of representativeness of the student teachers' use of teaching skills would be obtained by sampling these two curricular areas. In each classroom involved, pupils were given an explanatory letter and consent form to be taken home to their parents. Seventy-two parents out of 240 (30%) refused consent for their children to participate or did not return the consent forms. Two student teachers asked to be removed from the study after the first observation during the second week of the practicum. The reasons given were the increased tension that resulted from having an observer in the classroom. In one case some pressure to withdraw from the study was exerted by the School Associate.

One student withdrew from the practicum during the ninth week. Thus, seven student teachers remained in the study throughout the observation period. Mortality of subjects in the study was 30%; two after week 2 and one after week 9. Only one of the students withdrew from the practicum, the others only withdrew from the study. For the Program the withdrawal rate was about 12%.

Little evidence has been found that the student teachers who participated were not representative of student teachers generally in the Program. The students in the study had a range of cumulative grade point averages between 2.4 and 3.7 which was representative of the students in the Program. The rate of withdrawal from the practicum as a whole was approximately the same for the sample in this study. One exception to the general representativeness of the sample was marital status. In the study, five out of the seven students were married (71%) which is much higher than that for all students in the Program.

Instrumentation

Table II is a summary of the teacher effectiveness variables and the corresponding measures of those behaviours chosen for the main study. All measures were completed in the classrooms by the observer and pupils, or student teachers. Though many of the measures used in the pilot study were also

used in the main study, significant differences do exist. For example, during pilot-testing, a random sample of five pupils in each classroom was used to measure engagement rate at two-minute intervals. In an elementary classroom with learning centers or work areas, where pupils did not always remain in their desks, the observer had considerable difficulty observing the five target pupils. Thus the measure was changed to observing all pupils every two minutes. Except as noted, all instruments used were the same as those in the pilot study. All measures of teacher effectiveness, with the exception of engagement rate, were made during the first 30 minutes of the observation lesson in order to make comparisons between individual student teachers possible. Engagement rate, because of its relation to allocated time must be observed during the entire lesson. The pilot study is appended on page 150.

Table II

Teacher Effectiveness Variables and Corresponding Measures

Teacher Effectiveness Variable	Measure
Academic Learning Time	Engagement Rate Error Rate
Awareness of Individual Differences	Item Prediction
Teacher Clarity	Pupil Report on Clarity
Classroom Management	Desist Statement Quality Learner Accountability Group Alerting

Academic Learning Time For the main study, all the components of Academic Learning Time (engagement rate and error rate) described in the Beginning Teacher Evaluation Study were used. Engagement rate is the proportion of the time allocated to a particular lesson in which pupils are actually engaged in the learning task. From the time the student teacher began the lesson until its end, the observer noted every two minutes, the number of pupils who were not engaged in the learning activity. In addition, the amount of class time time allocated to the lesson (total allocation) was recorded from the classroom timetable or teacher's lesson plan. The amount of time actually used for a particular lesson (total instruction) was obtained by

taking the difference between the time the student actually began the instructional portion of the lesson, so that "settling down" time was not included and when the student indicated to the pupils to put away their books or otherwise signalled that the lesson was at an end. Samples of engaged and not-engaged activities recorded by the observer are given in Table B (p. 136). Distinguishing engaged and not-engaged activities was often quite difficult. Signs of daydreaming or lack of attention were operationalized as the pupil not facing the teacher, aimless drawing, continued rearranging of objects or clothing, and playing with rings, keys, and buttons. Whether pupil-pupil conversations were engaged or not was fairly simple to determine when the conversation was audible to the observer. However, when it was not, pupil facial expressions such as frowning, giggling, and smirking were used to help the observer decide.

Total allocation and total instruction are required for calculating engagement rate. Engagement rate is the proportion of allocated time for which the pupils were engaged in learning. Error rate refers to the proportion of incorrect pupil responses to total pupil responses. As a result of difficulties with observing target pupils experienced in the pilot study, it was decided that all pupils would be observed at two-minute intervals. At the beginning of the lesson and continuing at two-minute intervals, the observer recorded the number of pupils who were not engaged in the learning activity. To permit the

calculation of the error rate, the observer recorded, for each pupil response to a teacher-initiated question, whether the pupil provided a response which the student teacher judged correct or incorrect. Error rate is the percentage of questions asked by the student teacher that the pupils were unable to answer correctly. Appendix C contains the observation record and the sheet for calculating the components of Academic Learning Time.

Awareness of Individual Differences To measure the student teacher's awareness of pupils' individual differences another measure used in the Beginning Teacher Evaluation Study, success at item prediction, was used. On each observation week, the student teacher was presented with a 12-item test and asked to predict the success (right or wrong) for multiple-choice items, or ranking for five-point Likert-type scale items, for each of the preselected sample of pupils on each item. The test was constructed with items from four domains: vocabulary, spelling, whole number operations, and pupil self-concept. Items from the first three domains were chosen from standardized test forms commonly used with intermediate elementary children. After the student teacher had made her/his predictions, the tests were distributed to five randomly pre-selected pupils for their completion. The pupils were given as much time as they required to complete the test. From this a discrepancy score was calculated for each of the five pupils. The discrepancy score is

the absolute value of the difference between the score the pupil received on an item and the score the student teacher predicted for the pupil. Student teacher success in item prediction was expressed in the Item Prediction Success Score. This score is the difference between the total discrepancy score for the five pupils, expressed as a ratio out of 60 (the maximum total discrepancy score possible), and one. Different test items, but equal in total test length and domains sampled, were used for each of the of the five observation weeks.

The measurement of student awareness of pupil individual differences was the same as in the pilot study, with one exception. To provide additional data as to whether there was improvement in item prediction between week 2 and week 12, the same 12-item test and the same five pupils were chosen for these observation weeks. The student teachers were not made aware of this similarity.

Teacher Clarity A measure of teacher clarity was included in the main study. A suitable instrument was not obtained in time to be included in the pilot study. To measure the four factors involved in student teacher clarity (i.e., assessment of pupil learning, provision for pupil opportunity to reflect on what was taught, use of examples, and use of reviews and organization of material taught), a sample of the 29 behavioural statements used by Kennedy et al. (1978) was used with a Likert-type scale. The clarity statements were characterized as being either structural

(a teacher behaviour not requiring an overt pupil behaviour) or functional (requiring an overt pupil behaviour). Selection was made in order to balance, where possible, the number of statements in each cell and to avoid repetitions. Table III shows a matrix distribution, of the selected statements by clarity factors and type of pupil behaviour required. The statements were reworded from the original Kennedy et al. wording to make the vocabulary more readily understandable to intermediate elementary pupils, and to make them specific to the lesson just observed. The statements were also reworded to fit the stem, "Our student teacher". The pupils in the classroom were asked to rate the student teacher on each statement. The pupils were carefully instructed by the observer on how to respond to the statements. It was emphasized that the results of the questionnaire would in no way affect the student teacher's grades. The Teacher Clarity Score was obtained for each pupil by assigning values (3, 2, 1, or 0) to the rating of each statement. From this, the Teacher Clarity Mean Score was the mean of all the overall pupil ratings for a given student teacher. The Teacher Clarity Ratio is a comparison of the Teacher Clarity Mean Score to 60 (the maximum rating score possible). The instrument and instructions for calculating the Teacher Clarity Ratio are given in Appendix C.

Table III

Distribution of Teacher Clarity Statements

By Factor and Pupil Behaviours Required

		Clarity Factors			
		Assesses Learning	Provides Opportunity	Uses Example	Reviews & Organizes
Teacher Behaviour	Functional	2	4	0	0
	Structural	4	2	6	2

Classroom Management To measure the presence of classroom management skills, a number of the factors identified by Kounin (1970) were used. The occurence of these behaviours was coded over the beginning 30 minute portion of the lesson.

One major change to the measurement of classroom management was made in the main study. In addition to the number of desist incidents, the observer recorded the nature of the desist incidents by indicating whether the student teacher's response to a deviancy included identifying the deviant pupil, a "stop" (i.e., the deviant behaviour is identified), and a "begin" (i.e., an acceptable alternative behaviour is suggested). This was done to describe more fully the nature of the desist

incident rather than simply recording the frequency of their occurrence. Table IV contains sample desist statements categorized by the number of components contained in the statement. Examples of non-verbal desist statements were also recorded. For example, a student might use eye contact with a pupil to establish the identity of the deviant, quietly remove the baseball cards the pupil had been playing with (the "stop"), and point silently to the open mathematics text and notebook (the "begin"). The quality of the incidents is the proportion of student teacher desist statements that included the deviant, a "stop", and a "begin".

Table IV

Examples of Desist Statements

Categorized by Number of Components

Components	Example
Deviant + Stop + Begin	"John, stop talking & pay attention"
Deviant + Stop	"John, stop talking"
Deviant + Begin	"John, do your work" "Turn around, John" "John, to work"
Stop + Begin	"Stop talking and get to work"
Deviant	"John, is there a problem?" "John"
Stop	"Stop talking" "Sssh" "(To class) You're too noisy"
Begin	"Get to Work" "Quiet" "Everybody, back to your work"

The recording of group alerting techniques consisted of observing the student teachers' questioning technique. An example of positive questioning technique (QT+) occurred when the student teacher asked a question, paused for two or more seconds, and then asked an individual pupil to respond. The important elements that must be included to be recorded as an

instance of postive questioning are that the teacher frames the question. After a few seconds pass (the pause), the teacher calls upon a pupil to respond. If those elements were included, it was recorded as an example of positive questioning. Positive questioning technique required a single response rather than choral response, unless specified otherwise by the student teacher. The Positive Questioning Ratio was a comparison between the questions coded QT+ and the sum of all teacher-initiated questions.

The frequency of alerting cues (AC) were also recorded. These consisted of incidents where the student teacher warned either individual groups of non-responders that they might be called upon to answer, or asked pupils to respond who did not have their hand up or did not appear prepared. Some examples of ways teachers use alerting cues might be the following: "I want everyone to think about this as I might ask any one of you to give the answer", or "Let's all be thinking of the answer."

For learner accountability, the observer recorded the incidents where the student teacher asked a question which focused on the pupils' work plans or work progress. Called goal directed prompts (GDP), such questions usually focus on the individual or are in the form of the teacher's enquiry about whether the class understood the nature of the learning task at hand. Some examples are teacher questions such as: "What is the first thing you do in your work books?" or "How would you start

on this new activity?" In work showing (WS), the student asked the pupils to show or demonstrate skills or knowledge to the student teacher or other pupils. Work showing includes a number of strategies such as having pupils hold up work for the teacher to check, pupils answering in unison to a teacher question, and the teacher circulating around the room checking the pupils' work. In peer involvement (PI), the student teacher attempted to involve pupils in the work of their peers. Peer involvement occurs when the teacher brings another pupil into a recitation such as, "Bob, you and John work the problem together and be ready to help each other out", or involves a group in the performance of an individual pupil with a statement such as "I see some of you agree and some of you don't agree with what Sally says. What do you think of Sally's answer, Lester?"

One of the problems encountered during the observations of classroom management during the pilot study was the interconnections between some of the categories in the group alerting and learner accountability factors. Teacher questions, depending on their structure and intent, could fall within a number of the subgroups (e.g., alerting cues, questioning techniques, goal directed prompts, and work showing). To help remove some of the ambiguities, a chart was constructed to explore all the response options that might occur in the coding during the observations. Examples of questions that would be coded under more than one group were prepared, similar to those

in Table V.

Table V

Examples of Teacher Questions

Requiring Multiple Coding

Coding Groups To Be Used			Example
QT^+	AC	WS	What is the answer to the next question? (Pause) John? (Hand not up or inattentive)
QT^+	WS		What is the answer to the next question? (Pause) John? (With hand up)
QT^+	GDP		How many questions have you completed? (Pause) John? (Hand is up)
QT^+	AC	GDP	How many questions have you completed (Pause) John? (Hand not up or inattentive)
QT^-	WS		John, what is the answer to the next question? (Hand may or may not be up)
QT^-	GDP		How many questions have you completed John? (Hand may or may not be up)

Key: QT+ = incident of positive questioning; QT- = incident lacking positive questioning; AC = incident of an alerting cue; WS = incident of work showing; GDP = incident of a goal directed prompt

Summary Table VI contains a list of each student teacher variable used in the main study. For each variable, the operational definition and the score used for each variable has

been included.

Table VI

Summary of Teacher Variables, Their Operational Definitions and Scores Used in the Study

Variable	Definition	Score
Academic Learning Time	Contains two components: engagement rate: Portion of allocated time that pupils are actively engaged in learning. Error rate: Portion of incorrect pupil responses to teacher-initiated questions.	Engagement rate Error rate
Awareness of Individual Differences	A comparison of a teacher prediction of pupil success on test items to actual pupil performance on the items.	Item-Prediction Success Score
Teacher Clarity	Teacher's ability to assess pupil learning, provision of opportunities for pupil reflection on what was learned, use of examples use of reviews of material taught, and organization of lesson materials.	Teacher Clarity Ratio

Table VI continued...

Variable	Definition	Score
Classroom Management	Desist Incident Quality: Proportion of teacher desist statements that contain the deviant, the unacceptable behaviour and a suggestion of an alternative behaviour.	Desist incident frequency and quality
	Group alerting: Teacher keeps pupils alert by using a positive questioning technique and alerting non-performing pupils that they may be called upon.	Alerting cue frequency
	Learner Accountability: Teacher holds pupils responsible for their work progress.	Frequency of Goal Directed Prompts
		Frequency of Work Showing
		Frequency of Peer Involvement

Student Log As in the pilot study, each student kept a week-long teaching log during each observation week. The log was a record of the student's teaching assignment, and supervision by the School Associate and Faculty Associate. Information about the teaching assignment included the grade levels taught, number of lessons taught during the observation weeks, the number of hours during the observation weeks spent teaching in each curriculum area such as reading, written language, mathematics, science etc., and other non-teaching duties. Total teaching load is the proportion of available instruction time during the week that the student teacher actually taught in a classroom. The student teacher also recorded information about the supervision of her/his teaching by the School Associate and Faculty Associate. This involved recording the number of lessons observed and the portion of the student teacher's teaching for which the School Associate was present in the classroom.

Further, information was gathered about how observation data were recorded by the School Associate and which aspects of the supervisory cycle were completed. The supervision model used for student teachers in the Professional Development Program is based upon the process called Instructional Supervision by Copeland and Boyan (1974). As practiced in the Program the model consists of three main stages. Stage one involves a supervisor/student teacher conference that preceeds the lesson. It is an opportunity to establish the focus for the observation

and the method to be used to obtain objective data during the observation of the lesson. This stage in the supervisory cycle establishes the tone or pattern for the remaining steps. The next stage is the observation of the lesson by the supervisor and the systematic collecting of data on the specific focus previously agreed upon. Finally, a postconference is held where the supervisor provides feedback about the lesson and helps the student identify needed change suggesting ways that the changes might be effected.

A rating instrument of 30 items, developed by Hohman (1971), to identify the role expectations of supervising teachers was adapted for this study. Seventeen items were selected to define a scale that would gauge the degree to which the respondents felt that the student teacher should be autonomous from the School Associate during the practicum. During the five observation weeks, both the student teacher and the School Associate completed the instrument. A practice teaching discrepancy score was calculated by examining the degree of difference between the ratings of the School Associate and the student teacher (on a 4-point scale) on each item as a ratio out of 68 (the maximum discrepancy score possible). The degree of agreement between the student teacher's and the School Associate's attitude towards the practicum was expressed by the Practice Teaching Agreement Score. This score was the difference between the practice teaching discrepancy score and one.

It was decided that during the main study the student teacher would be asked to gauge the degree of teaching difficulty they were experiencing at that point in the practicum. To do this in each observation week, the student teacher was asked to complete a 20-item questionnaire whose items were selected from an instrument developed by Middleton and Cohen (1979) for use in evaluating the level of preparation of students in a teacher education program. The selected items concerned teaching skills that students often mention as problem teaching areas such as discipline, assessing and evaluating pupil learning, and lesson planning. The students rated the degree of difficulty they were experiencing with each item at that point in the practicum. The ratings were scored from 1 (no difficulty) tc 5 (extreme difficulty) to yield an Areas of Difficulty Score. Low scores indicate that the student perceived he/she was experiencing little difficulty at that point in the practicum. The instrument can be found in the student log in Appendix D. Table VII is a summary of the classroom variables and the instruments selected to measure them. This group of measures was completed by the student and the School Associate during each of the observation weeks.

Table VII

Classroom Variables and Corresponding Measurement Instruments

Classroom Variable	Instrument
Level of Teaching Skill Preparation	Areas of Difficulty (Student Log)
Student Teacher-School Associate Relations	Practice Teaching Agreement Scale
Supervision	Student Log
Teaching Assignment	Student Log

Procedures

The design for the main study was a multiple baseline design across behaviours. This quasi-experimental design, the features of which are discussed in a number of references (e.g., Anton, 1978; Gottman, McFall & Barnett, 1969) is particularly useful when examining the components of a complex set of skills (e.g., Hersen & Bellack, 1976). The 13-week practicum contained five observations (weeks 2, 4, 6, 9, and 12). The observations began on the second week of the practicum since the student teachers generally spend the first week observing in the

classroom and do little direct teaching. Each student teacher was observed teaching one lesson on each of the five observation weeks.

The student teachers were asked to keep a log of teaching activities during each observation week. Also, the School Associate and the student teacher independently completed the 17-item Practice Teaching Agreement questionnaire. The student teacher was asked to complete the Item Prediction sheet and assign the corresponding tests to the pre-determined pupils at a convenient time during the observation week. All other teacher effectiveness measurements were made during the visit of the observer to the classroom. Recognizing that the quality of data is dependent on the care and attention taken during the observation, I (the observer) developed a set of instructions that detailed how each effectiveness behaviour was to be coded. In excess of twelve hours of practice in the techniques required for the observation was undertaken by me during the pilot-testing in the semester preceeding the main study. I arrived sufficiently in advance of the particular lesson to be observed and located myself in a position with a good view of the student teacher and pupils while remaining as unobtrusive as possible. I attempted to sit at the side of the room about midway between the front and rear of the classroom, though this was often not possible. At the end of the observation of the lesson, I gave the clarity instrument to the pupils. When this

was completed the observation routine was at an end.

IV. Results and Interpretation

The results of this study are reported in four sections; the general setting within which the student teachers worked, the effectiveness variables, the classroom variables, and patterns between teacher effectiveness variables and classroom variables. The second and third sections are further subdivided to include the results of the individual variables measured in the study and an analysis of trends for the variables across practicum observation weeks.

Due to the in-depth nature of the observations made in this study, it was decided to provide data on individual students as well as group data to permit intra-student as well as inter-student comparisons. It was felt this would be consonant with the near "case-study character" of the data analysis. Also the rather idiosyncratic data profiles for individual student teachers indicates some caution when aggregating the findings.

To address the question of significant change in a variable for the group of student teachers across the practicum, a method of data analysis recommended by Kazdin (1978) and Anton (1978) for single-case experimental design was selected. The method, trend or progress estimation using median slope, was developed and tested by White (1972, 1973, 1974). It involves plotting the

data means of data for the group across observation weeks on a semilog chart. This type of chart was chosen by White as it makes the data most linear and is readily interpretable by personnel without an extensive background in mathematics. An advantage of linear data is that the function may be easily described visually and its slope tested for statistical significance. After the data have been plotted on a semilog chart, a method of estimating the "line-of-progress" or "celeration" line based on the median slope is used (see White, 1974). To describe the rate of progress or average change of the celeration line, the "slope" (steepness) of the line-of-progress on the semilog chart is calculated. This technique produces a straight line which most evenly splits the data points. This number describes the mean gain or loss that has occurred weekly. For example, a "slope" of x1.60 indicates that the mean score on a given week will be 1.60 times greater than for the preceeding week. Conversely, a slope written ÷ 1.60 would indicate the mean score had decreased 1.60 times from the preceeding week. The term "slope" as it is used here is not a regression slope. To avoid confusion, the use of the symbols + and - to indicate direction have not been used.

White (1973) describes a method for establishing the probability that the "slope" of the celeration line is reliably different from horizontal i.e., no change over the practicum. Applying Fisher's Exact Probability Test (see pp. 96-104 of

Seigel, 1956) will determine if the data points are significantly different from a distribution that would yield a line of no progress i.e., horizontal. The lack of power of this nonparametric test tends to increase the chance of type II error, that is, no trend of the celeration line when in fact one does exist. To compensate for the low power, a p-level of .15 or better will be considered reliable in this study. Almost all tests of the celeration lines resulting from the data in this chapter were not reliably different ($p > .15$) from a horizontal line with a "slope" of 1.00.

All data are reported to only one decimal place due to the small sample size. With the exception of error rate which has its scale reversed, a higher score represents a higher level of occurrence of the particular variable. The individual student data as well as some descriptive statistics are displayed in a figure for each variable. In the figures, means (denoted by ——) and medians (denoted by ---) for the group as well as individual student results (labelled a to g) are provided. The same letter has been used to refer to a particular student throughout the chapter. Semilog charts are not used in the figures to make visual interpretation easier for the reader. Semilog charts tend to reduce the variablity of the data points to that of a straight line. To describe trends in the teacher variable data, I have chosen to use the terms "improvement" and "deterioration" to describe the direction of change between observation weeks.

The criterion level performance change between successive observation weeks was set at 10%. To be considered "improvement", the mean score of a particular teacher variable had to have increased 10% or more over the preceeding observation. Similarly, a "deterioration" represented a decrease of 10% or more. This allows comparisons between error rate, with its reversed scales and the other variables which might become confusing if terms such as increase and decrease were used.

General Setting

The classrooms to which the students in this study were assigned could be described as representative. All pupils sat at desks in rows, though some of the classes had learning centres set up around the periphery of the room. The teaching and organizational styles of the School Associates were varied with some being characterized as somewhat authoritarian (in the case of student c and d) and others more permissive (student b and e). No examples of conflict between the School Associate and the student teacher were ever noticed during the observations, though in the latter half of the practicum the School Associate was often not present during the observation. The classes were taught for the most part by the School Associate, with platooning generally limited to art, music and physical education. One class went to another teacher for french. Most of the student teachers' teaching experience outside the assigned class occurred in classes that ordinarily would be taught by the School Associate during platooning.

Teacher Effectiveness Variables

Opportunity to Learn Engagement rate and error rate were used as the measure of pupil opportunity to learn. The data are contained in Figure 1. Mean engagement rate appears to have been quite constantly high across the practicum. No change for the student teachers as a group occurred in their ability to engage pupils in the learning task though the range in engagement rate increased considerably between week 2 and 4. With the exception of students a and d, the engagement rates of individual students such as b, f, and g showed considerable fluctuation below and above the means. The School Associates for students a and d showed what the observer described as rather rigid classroom control. Pupils were required to obtain permission when they needed to leave their seats. These School Associates permitted only very limited amounts of pupil-pupil interaction. Generally, the interaction was between teacher and pupil. Taken as a group, little change in engagement rate occurred over the practicum, though the engagement rates for individual students showed a great deal of variation. As a general trend within lessons, engagement rate was highest early in the lesson when the student teacher was introducing the material and was lowest towards the end of the seatwork when the more able pupils completed their work and moved on to other tasks while the attention of the less able pupils began to wander.

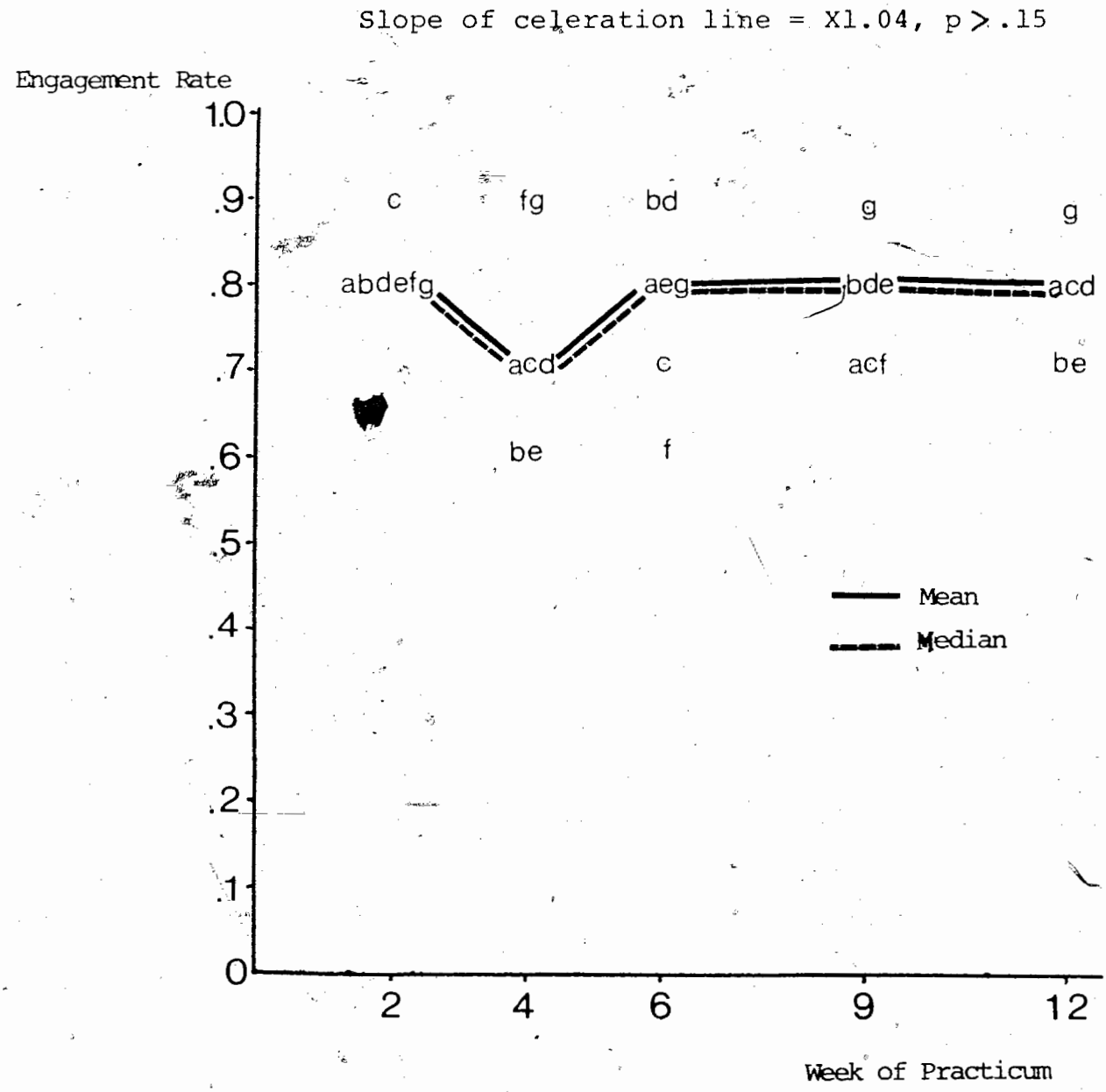

Figure 1: Engagement rate during practicum observation weeks.

The second component of Academic Learning Time observed in this study was pupil error rate. From Figure 2 it appears that the mean error rate and range of scores is unstable across the practicum. Between weeks 2 and 4 there was considerable deterioration in error rate. Between week 2 and 12, the ability of this group of student teachers to ask questions for which they received correct pupil responses appears to have deteriorated. Figure 2 presents the error rate performance for each student teacher across the practicum. The error rate for some students is missing on certain observation weeks. This resulted where the student asked less than two questions requiring a pupil response in the observed portion of the lesson. The number of students using two questions or less during the observed lessons increased across the practicum. From Figure 2, students a and c appear to have a rather consistent error rate across the practicum. The rather rigid classroom control exhibited by these School Associates may have resulted in only pupils who had the correct answers feeling confident enough to respond. For the rest, where error rates were calculated on at least four occasions (i.e., b, d, e, and g), all at some point in the practicum had error rates above and below the mean error rate. An error rate of zero for student c in week 2 resulted when the student asked only two questions and received correct pupil responses for both. This resulted from almost the entire period being devoted to seat work with little

interaction between the student teacher and the pupils. Similarly, the error rate of 1.00 for student e and g was based upon two questions both with incorrect responses. A possible explanation for the detericration in error rate could be that the student teachers wished to challenge pupils by asking questions that could not be answered easily.

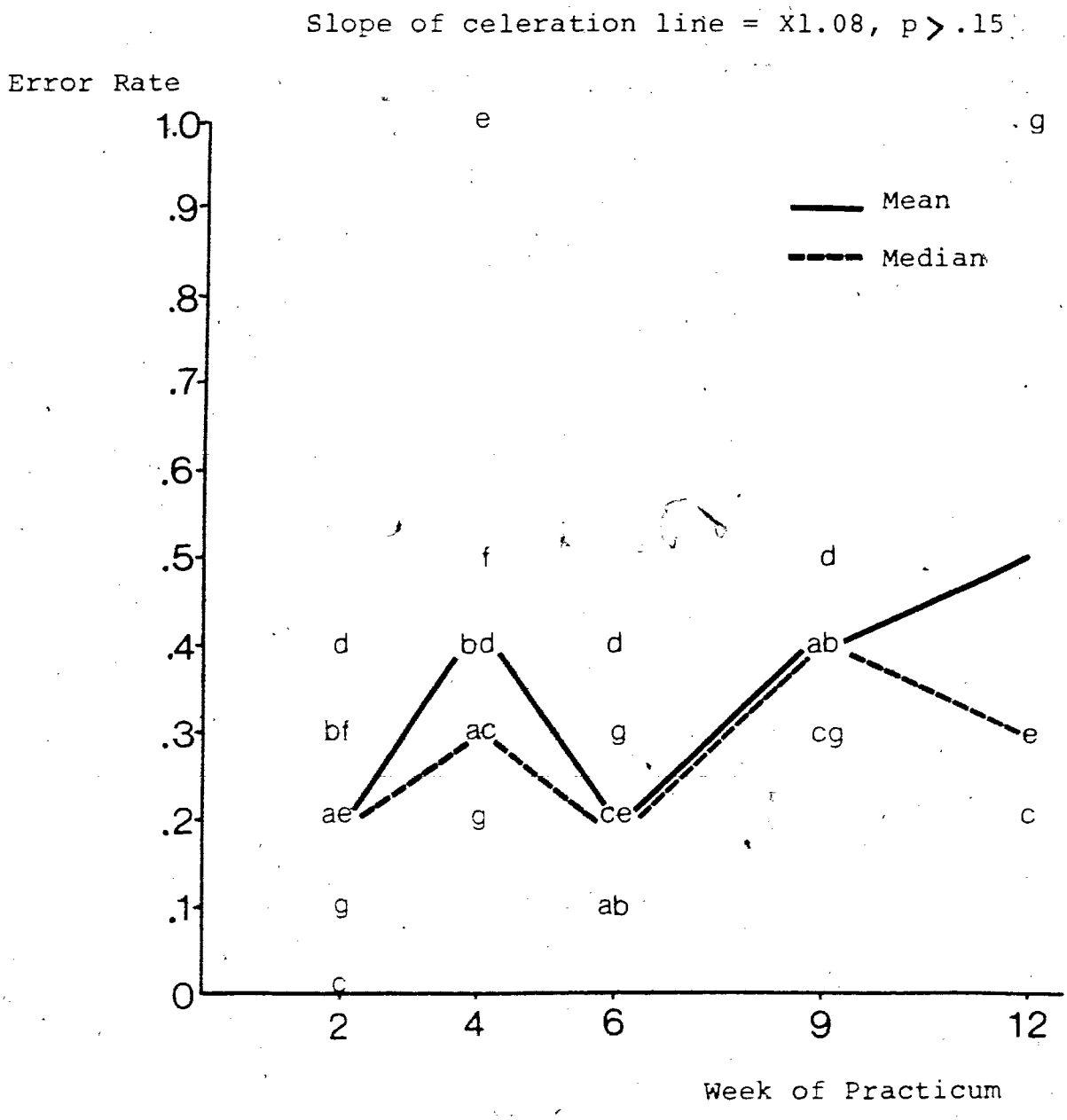

Figure 2: Error rate during practicum observation weeks.

Awareness of Individual Differences Student teacher awareness of pupil individual differences was gauged by test-item prediction. The Item-Prediction Success Score was a measure of how successfully the student predicted pupil success or failure on the individual test items. Figure 3 contains the results for this variable over the five observation weeks. The mean success at item prediction, amongst the students as a group, appears to have improved little over the practicum. The success at item prediction for individual students shows little change across the practicum for some (e.g., a,b,c, and d) and great change for others (e.g., e and g). Two features distinguish students e and g from the rest of the sample. Their classes, both grade seven, were the largest in the study. To clarify the interpretation of the Item-Prediction Success Score, a score of .6 for students a, b, c, and d in week 2 means that across the five pupils in each class who wrote the test, those student teachers predicted correctly the outcome of 60% of the items.

One hypothesis was that item prediction would respond to the simple exposure of the student teacher to pupils in the classroom setting and would show general improvement independent of the progress of the other variables. Though the results of the test of significance of the celeration line appears to indicate otherwise, individual student teacher improvement in item prediction between week 2 and 12 increased 10% or more for five of the six students. Data for the seventh student was incomplete. The lack of sensitivity of the significance test of the celeration line coupled with the wide fluctuations in item prediction success for individual students may have masked any meaningful progress over the practicum. Perhaps the student teachers were not aware that awareness of individual differences was a desirable teaching skill. Or, the gauge of student teachers' awareness of their pupils' individual differences may have failed to reflect dimensions that the student teachers viewed as most important. For example, pupils' interpersonal efficacy may have been the aspect of individual differences student teachers attended to.

Slope of celeration line = X1.04, p > .15

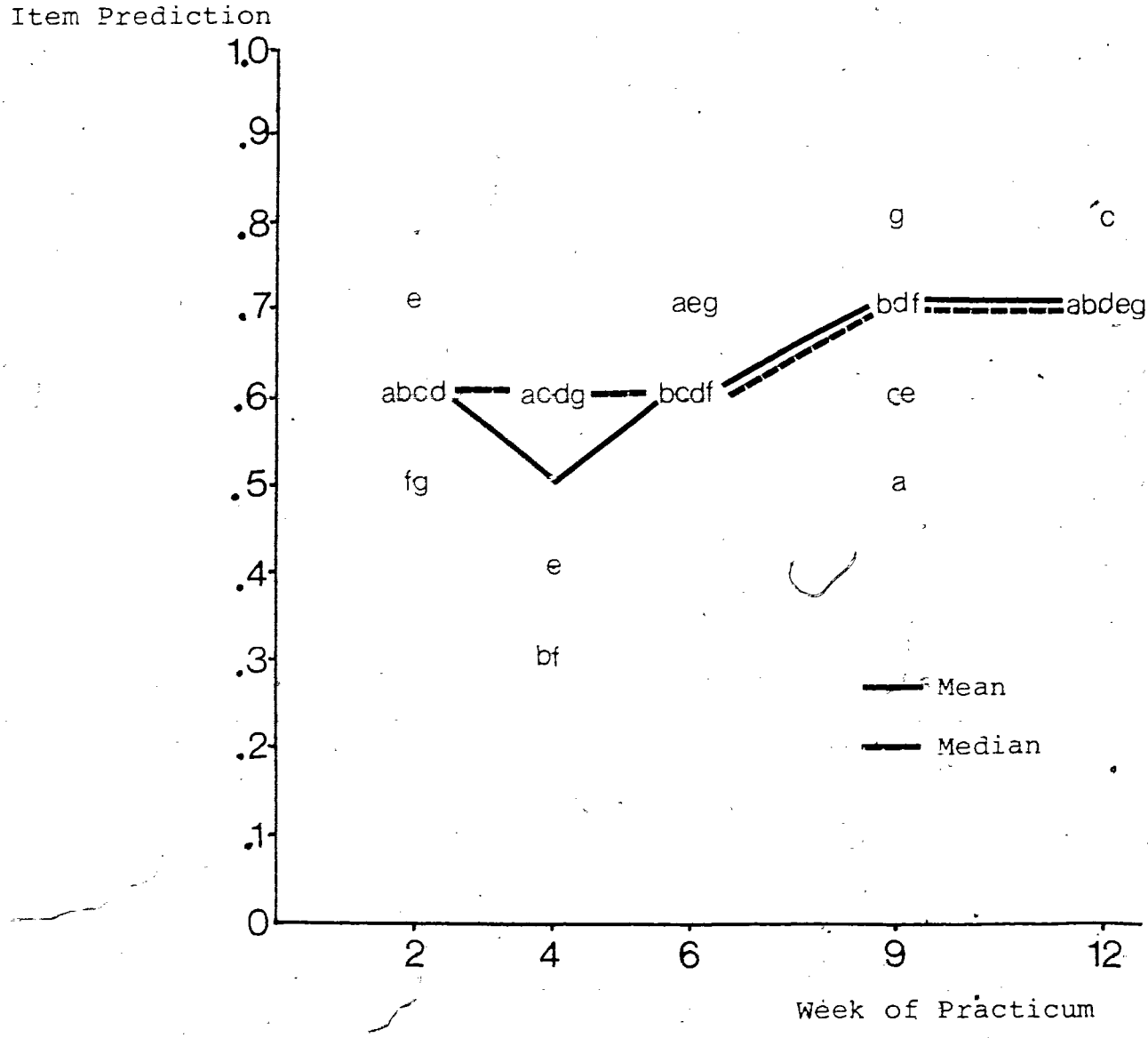

Figure 3: Test-item prediction during practicum observation weeks.

To provide additional information about whether a change of 10% over the practicum can be accepted as important, the 12-item test as well as the five pupils for whom each student teacher predicted scores were the same for weeks 1 and 12. A t-test for dependent samples was performed on the students' Item-Prediction Success Scores for the two weeks. A t value of .828 indicated that no statistically reliable ($p>.10$) change occurred in their item-prediction performance over 12 weeks with identical pupils and items. This evidence along with the non-significance of the test of the celeration line argues against the observed increase in item prediction success being considered as an important increase in the awareness of student teachers of pupil individual differences over the practicum.

Teacher Clarity Teacher clarity of presentation was measured by a 20-item rating scale. The Teacher Clarity Ratio was the mean score based on the pupils completing the instrument within each student's class, expressed as a ratio of the maximum clarity score i.e., 60. Data gathered on teacher clarity over the observations are given in Figure 4. Little change in either means or median is apparent, though the range of scores appears to widen across the practicum. By following the teacher clarity of individual students across the practicum, as in Figure 4, little change is evident. Students such as a, d, e, f, and g tended to keep their positions within the group across the observation weeks. Student c withdrew from the Program in week

13 of the practicum due to what were essentially classroom management problems. The student teachers in the study, then, did not show any reliable change in their clarity of presentation, as perceived by each student's pupils, over the practicum. The frequency of two of the clarity factors, the use of examples and reviewing material taught, were rated very low by the pupils. It appears that the clarity the student teachers exhibited in teaching more commonly included the other two components of the variables i.e., assessing learning and providing opportunities to reflect on what had been learned.

Classroom Management Six of the measures of classroom management used in the pilot study were used in this study. One additional measure, desist incident quality, was added. Figure 5 contains the data and descriptive statistics for desist incident frequency. The number of desist statements made by the students, as a group, appears to have changed little from weeks 2 and 12. The number of such statements did show a substantial increase took place over weeks 4 and 6. Examining the frequency of desist statements for individual students in Figure 5, most showed an increase in the number of desist statements used (a deterioration) from weeks 2 and 4. This might be expected as the student begins to assume a greater responsibility for class control from the School Associate. For most students, a deterioration took place in week 6 with an improvement in week 9. The results for week 12 are mixed with an improvement for

some students and a deterioration for others. From these results it appears that the problems with classroom control, as reflected in increasing number of desist statements, continued to the mid-point in the practicum. In the last half of the practicum, classroom control appears to have improved.

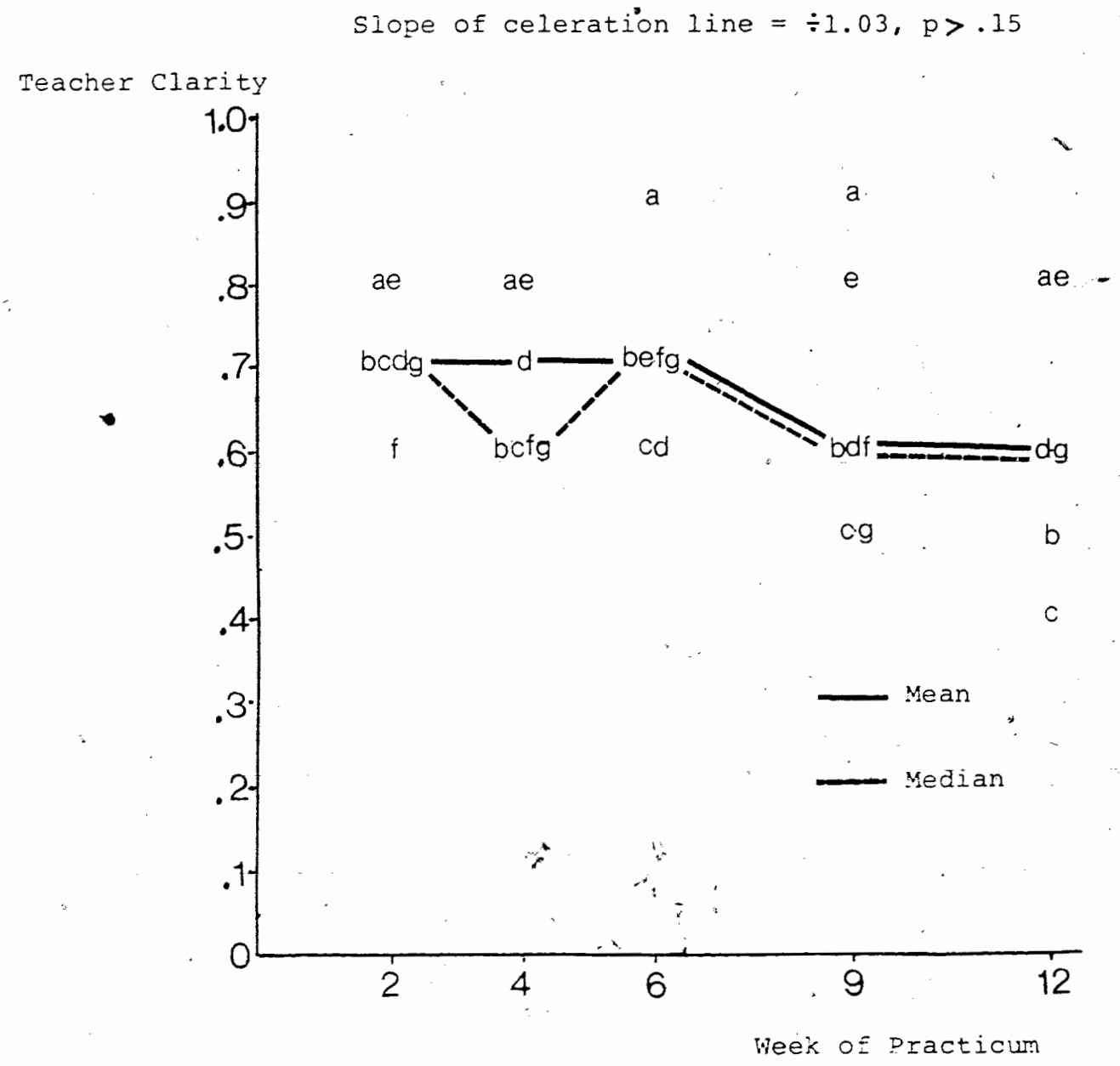

Figure 4: Teacher clarity during practicum observation weeks.

In contrast to the lack of change in desist incident frequency discussed above, Figure 6 shows a considerable decrease in the quality of the desist statements between weeks 2 and 12 for the students as a group. During the observation weeks subsequent to week 2, students appeared to rely more heavily upon desist statements which contained only a "stop" or a "begin" such as "Sit down", "Class, stop talking", and "It's getting rather noisy in here". The test of the slope of the celeration line was, however, not significantly different from horizontal. The individual results in Figure 6 indicate that student's desist incident quality within the group tended to remain constant across the practicum. That is, a student remained at or above the mean, or similarly at or below the mean for the practicum. This would tend to confirm that students whose desist statements lacked the three elements did not learn to include them as the practicum progressed.

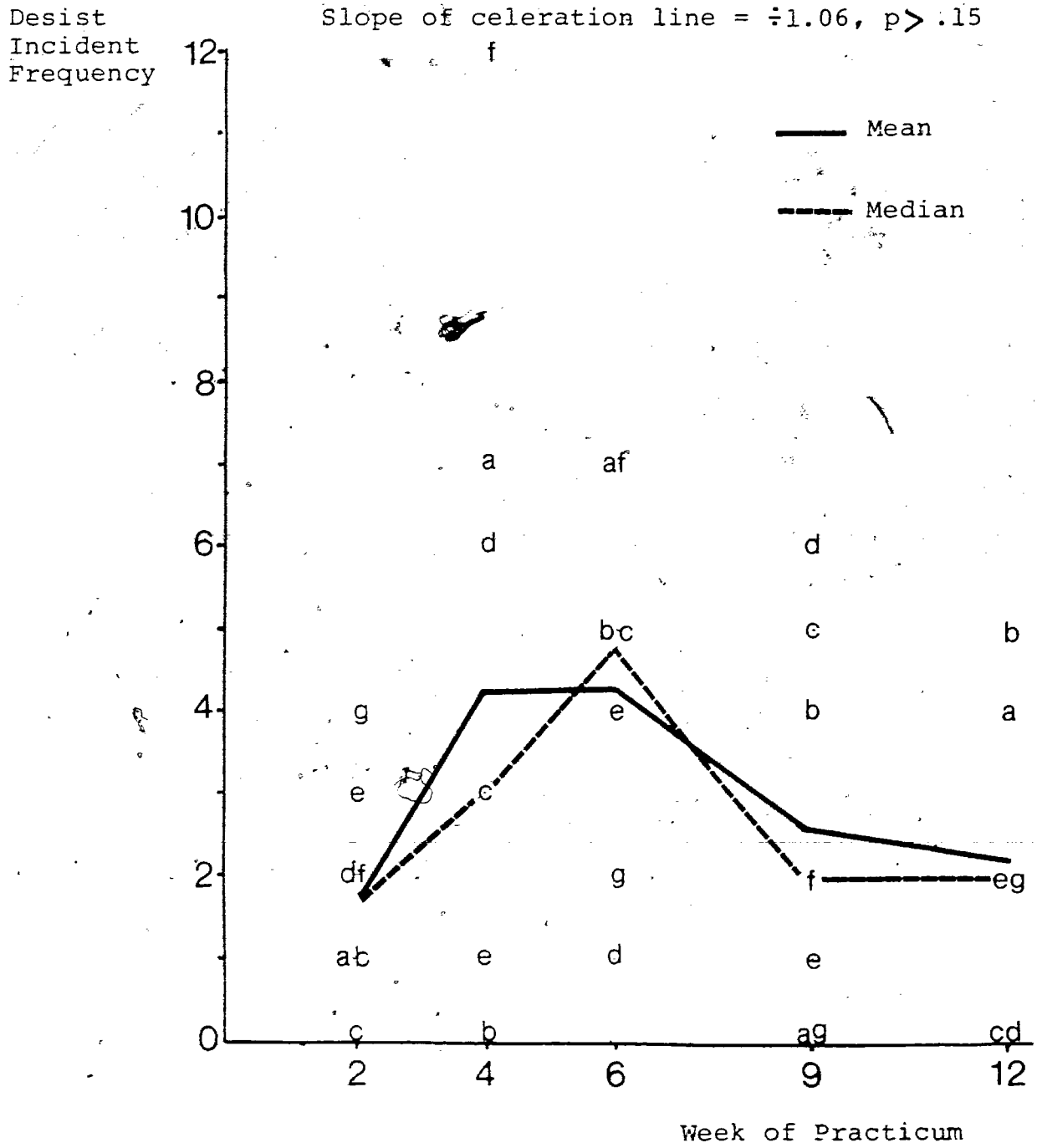

Figure 5: Desist incident frequency during practicum observation weeks.

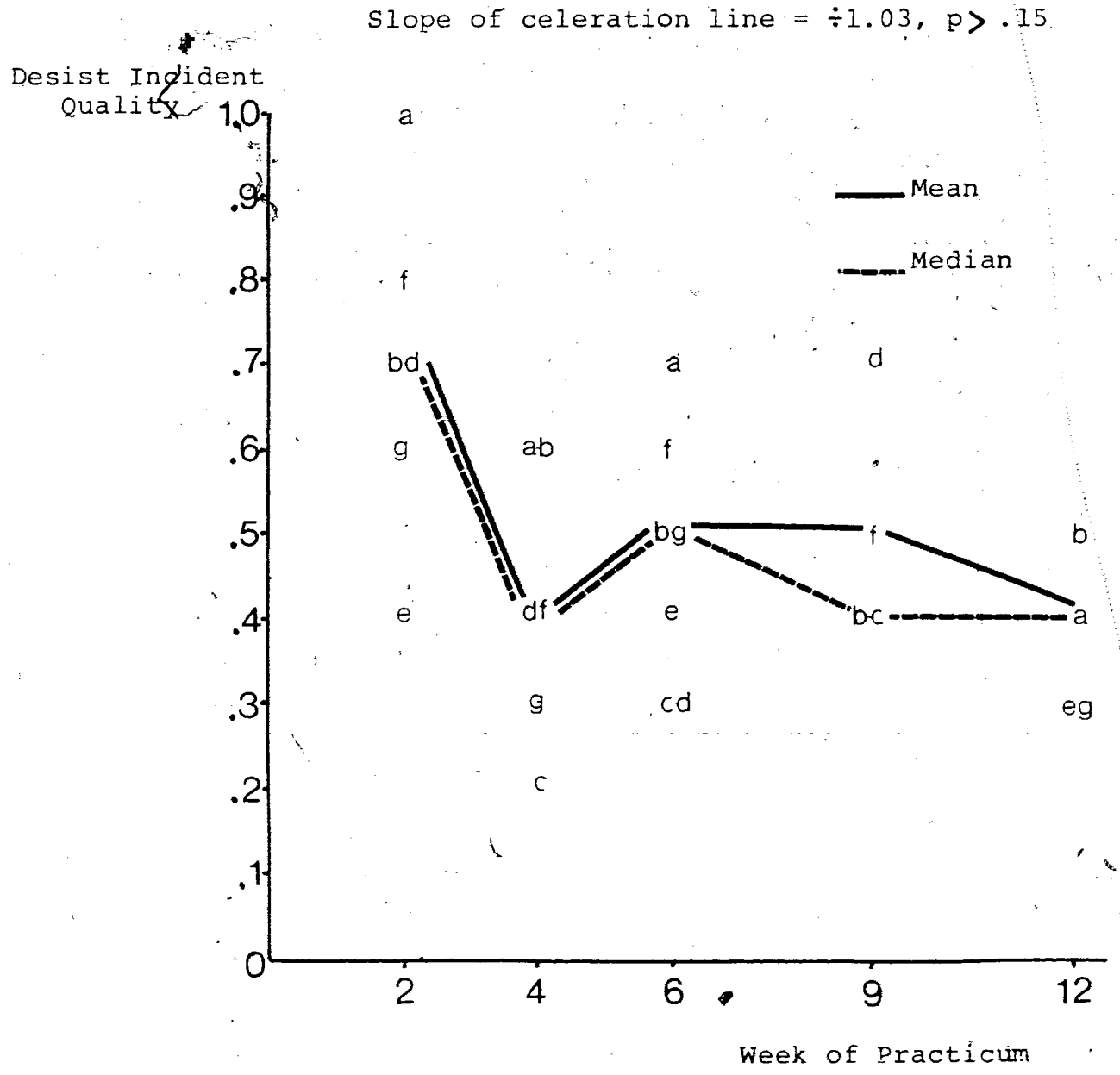

Figure 6: Desist incident quality during practicum observation weeks.

A comparison of the desist incident quality across the practicum was made for students with a high frequency of desist statements. It was found that most students whose frequency of desist statements was high also exhibited high desist incident quality. In this study, the use of desist statements where the student teacher named the deviant, and indicated both the unacceptable behaviours and an acceptable alternative was not associated with reduced use of desist statements.

Two measures of teacher alerting behaviour used in this study were positive questioning and alerting cues. From Figure 7, the results show that the quality of teacher initiated questions as measured by the mean Positive Questioning Ratio shows little change over the practicum. The range, however, varies widely among the students in the sample. By following individual students across Figure 7, we can see how the positive questioning skill of student teachers fluctuated above and below the means across the observation weeks. Yet, as we have seen from Figure 7, means were relatively constant across the practicum. This unexplained movement seems to suggest that the students were not aware of what constituted positive questioning, namely, asking a question, pausing, choosing a responder, and waiting a reasonable period for a response. A rather common occurence, recorded as negative questioning, was where the student permitted pupils to chorally respond to questions even though a single responder had been named. Missing

data for this variable occurred when students failed to ask more than two questions during the observation period.

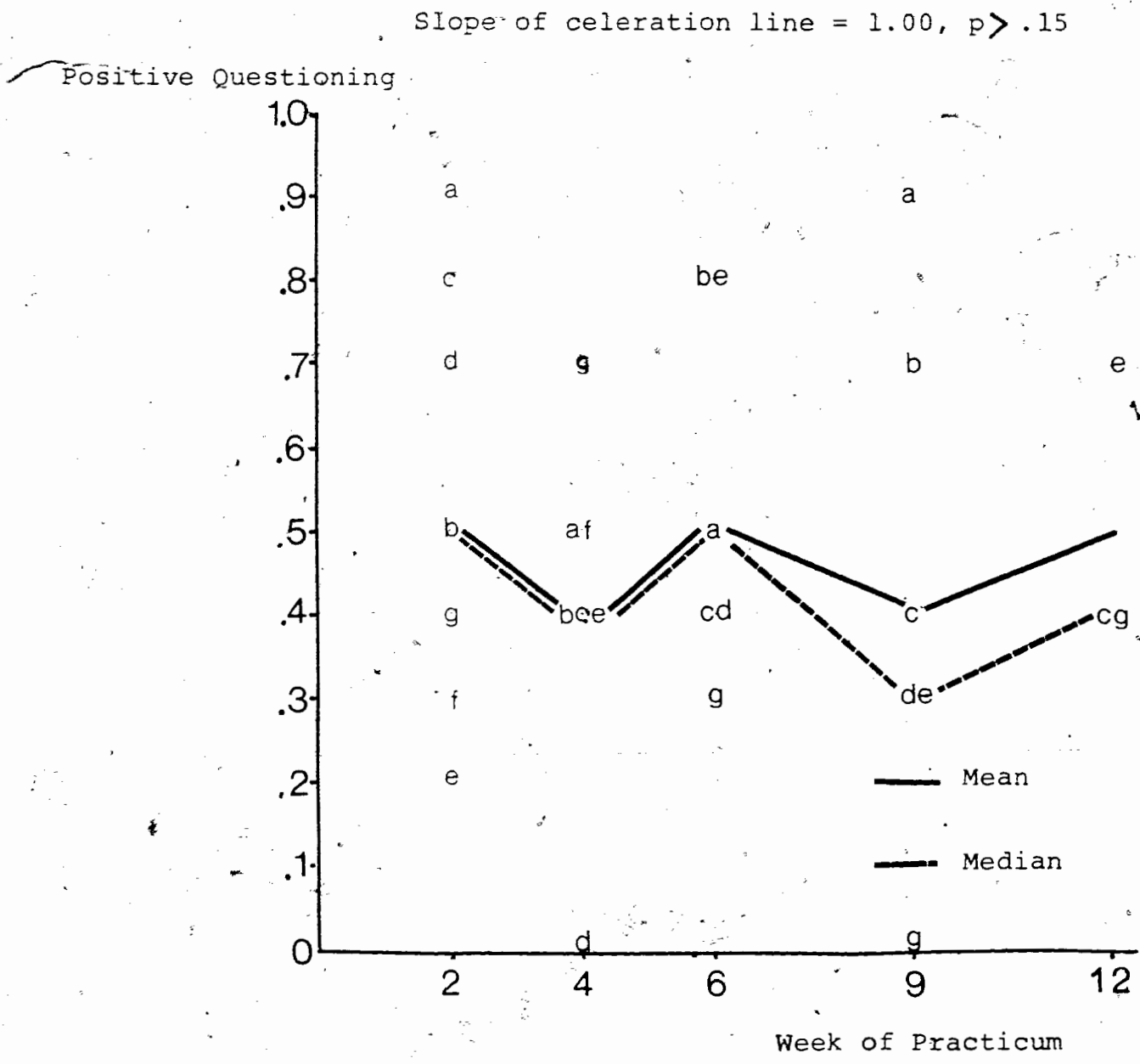

Figure 7: Positive questioning during practicum observation weeks.

While the mean use of alerting cues was low, there was, however, a considerable decrease in their use across the practicum as shown in Figure 8. The test of the celeration line confirmed that the line was statistically reliably ($p<.15$) non-horizontal. Observations of individual students show the same fluctuations above and below the means across the practicum that was found for positive questioning.

The final component of classroom management studied was learner accountability. The three measures used were the frequency of work showing, goal-directed prompts, and peer involvement. With the exception of work showing, the incidents where learner accountability was practiced were few. The mean frequency of work showing given in Figure 9 declined steadily across the practicum. While the overall decrease in the incidence of work showing at the group level was not statistically reliable. Generally, its use by students can be seen in Figure 9 to have deteriorated rather considerably.

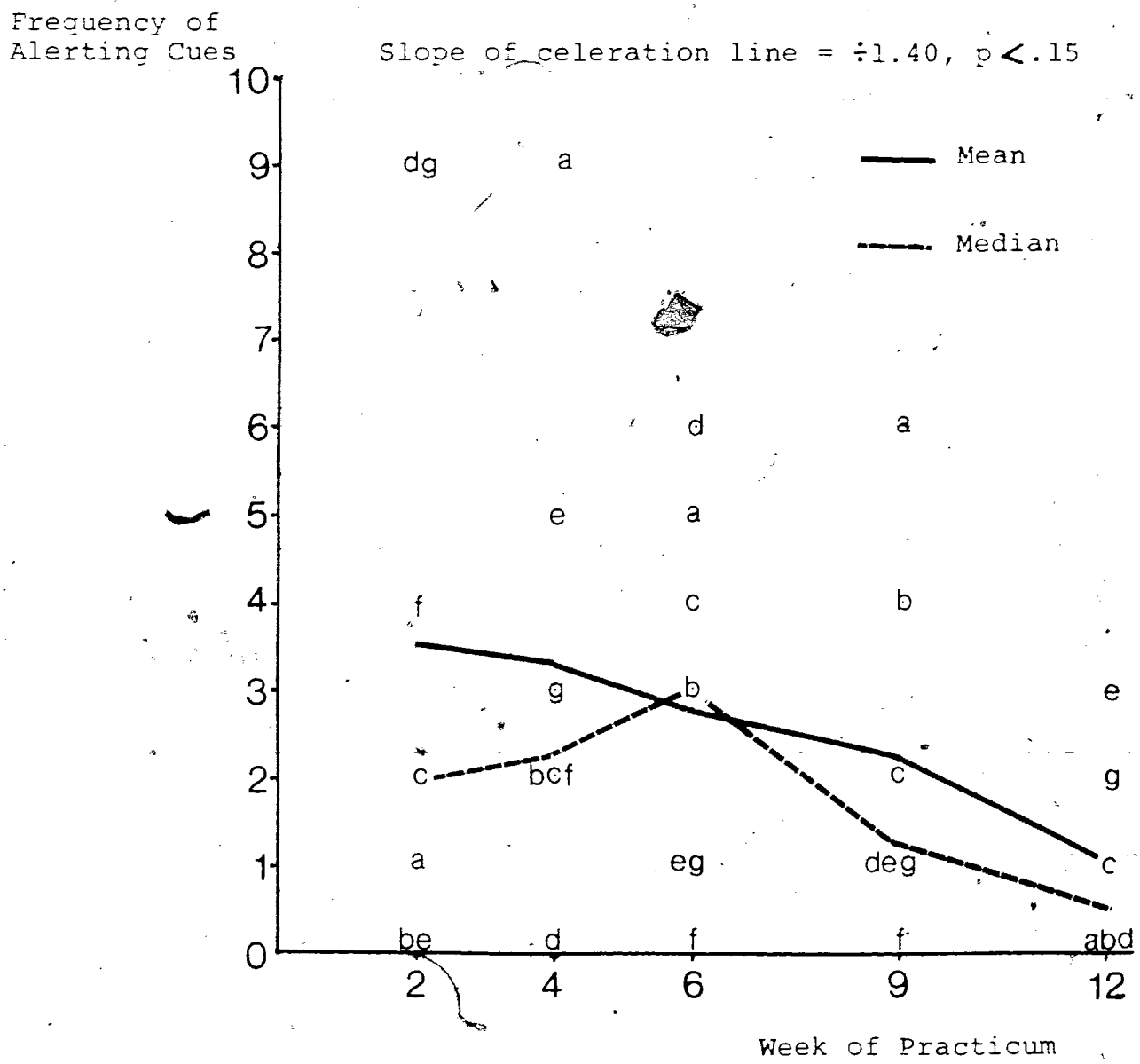

Figure 8: Alerting cues during practicum observation weeks.

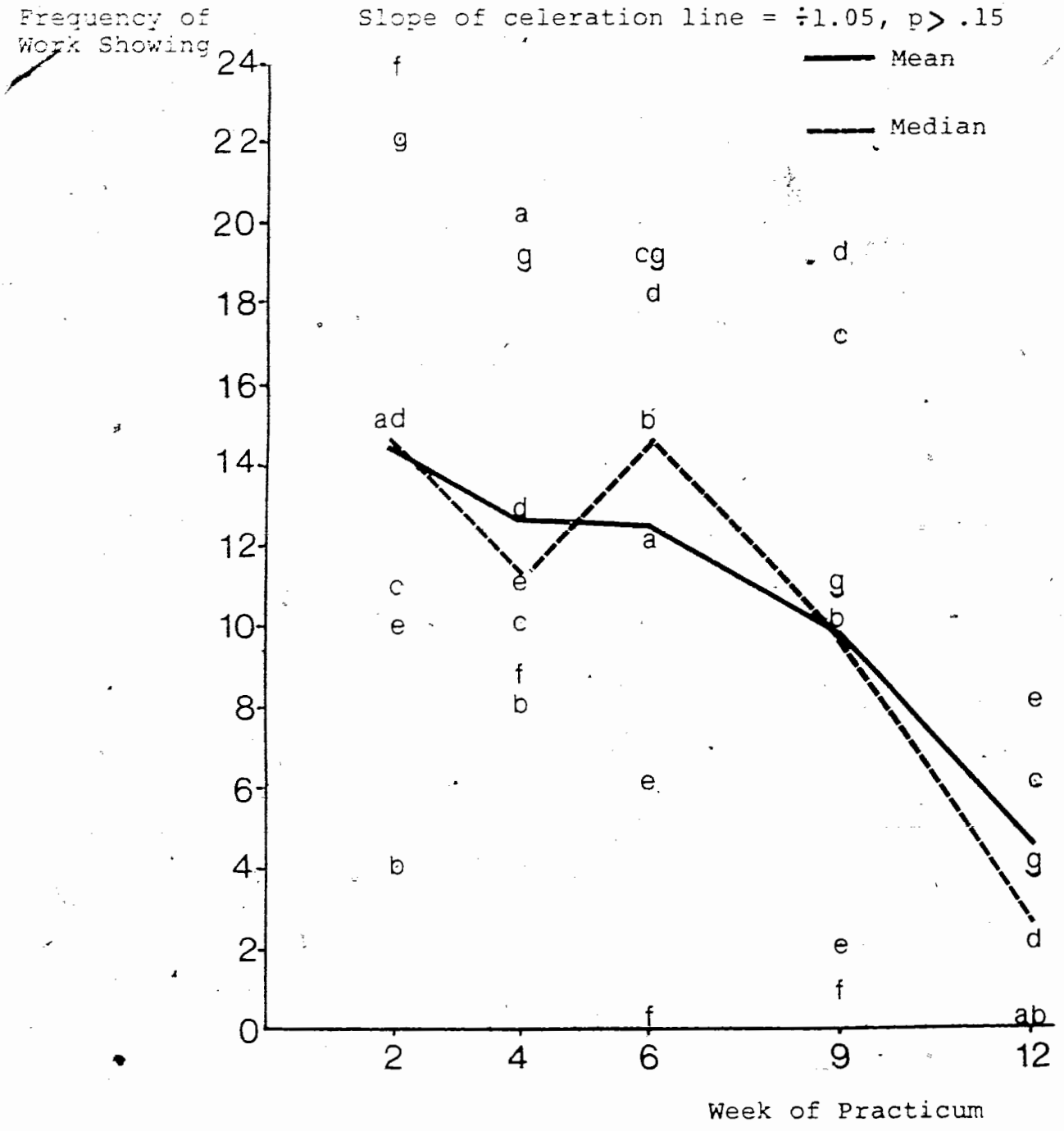

Figure 9: Work showing during practicum observation weeks.

For goal directed prompts and peer involvement, the frequencies of their use is so low so as to make any inferences very tenuous. While the changes in the mean frequencies for goal directed prompts appears very small (see Figure 10), peer involvement (see Figure 11) between weeks 2 and 12 seems to have declined.

For goal directed prompts in Figure 10, students a, b, d, e, and g were rather consistent in maintaining their positions above or below the mean across the practicum. Though as mentioned before, the number of incidents is low, it still appears that students e and g found few occasions for checking on the work plans or work progress of their pupils. Students d and f made more frequenct use of the technique. It is rather interesting that lowest use of goal directed prompts (students e and g) was in grade 7 classrooms, while use amongst students in grade 4 and 5 classrooms (students d and f) was highest. Perhaps the student teachers saw this facet of learner accountability as more appropriate for younger children.

Little can be said about the individual results for peer involvement in Figure 11 except to note that for most of the student teachers involving pupils in the work progress of their peers was not a teaching skill they practiced.

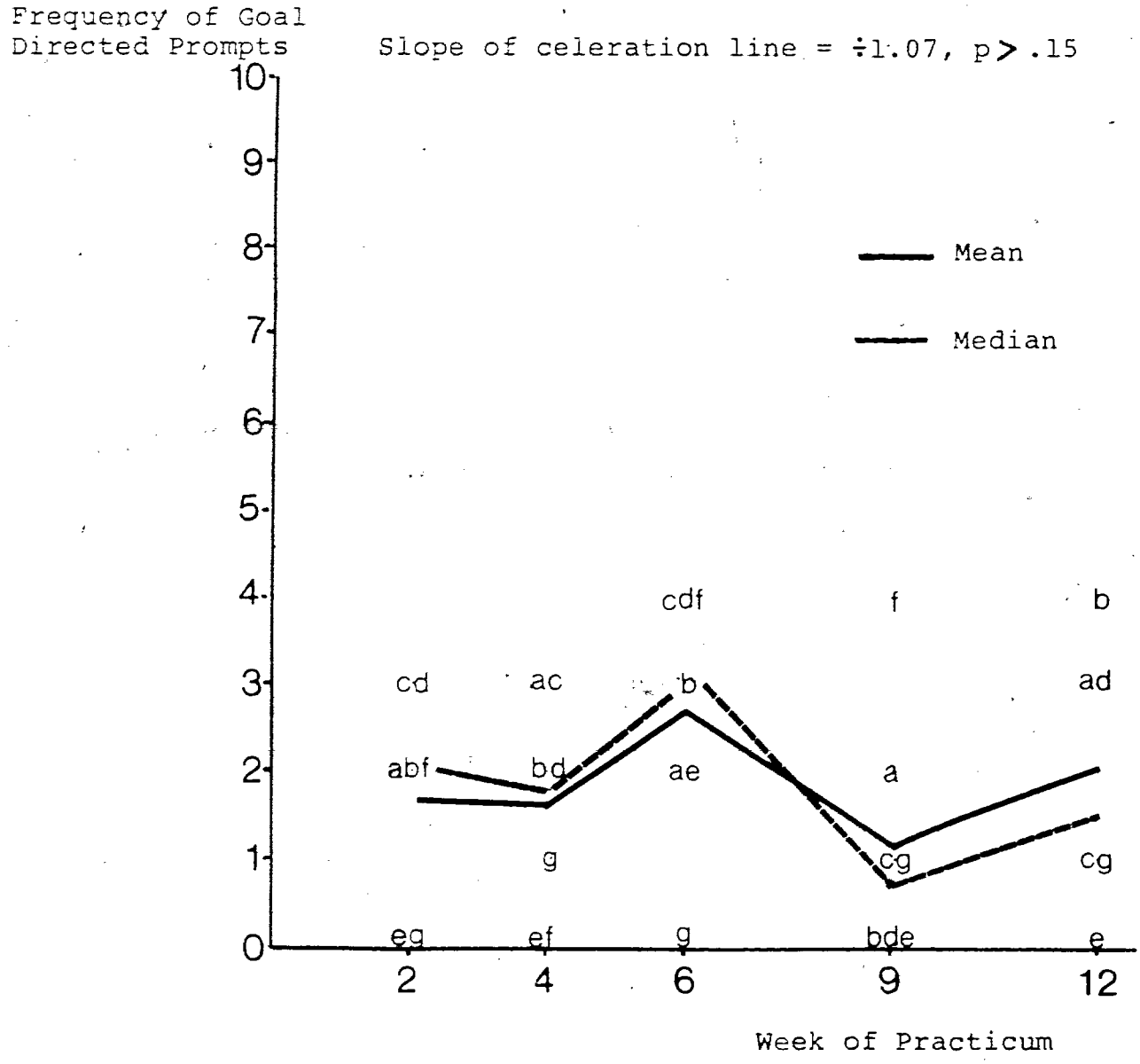

Figure 10: Goal directed prompts during practicum observation weeks.

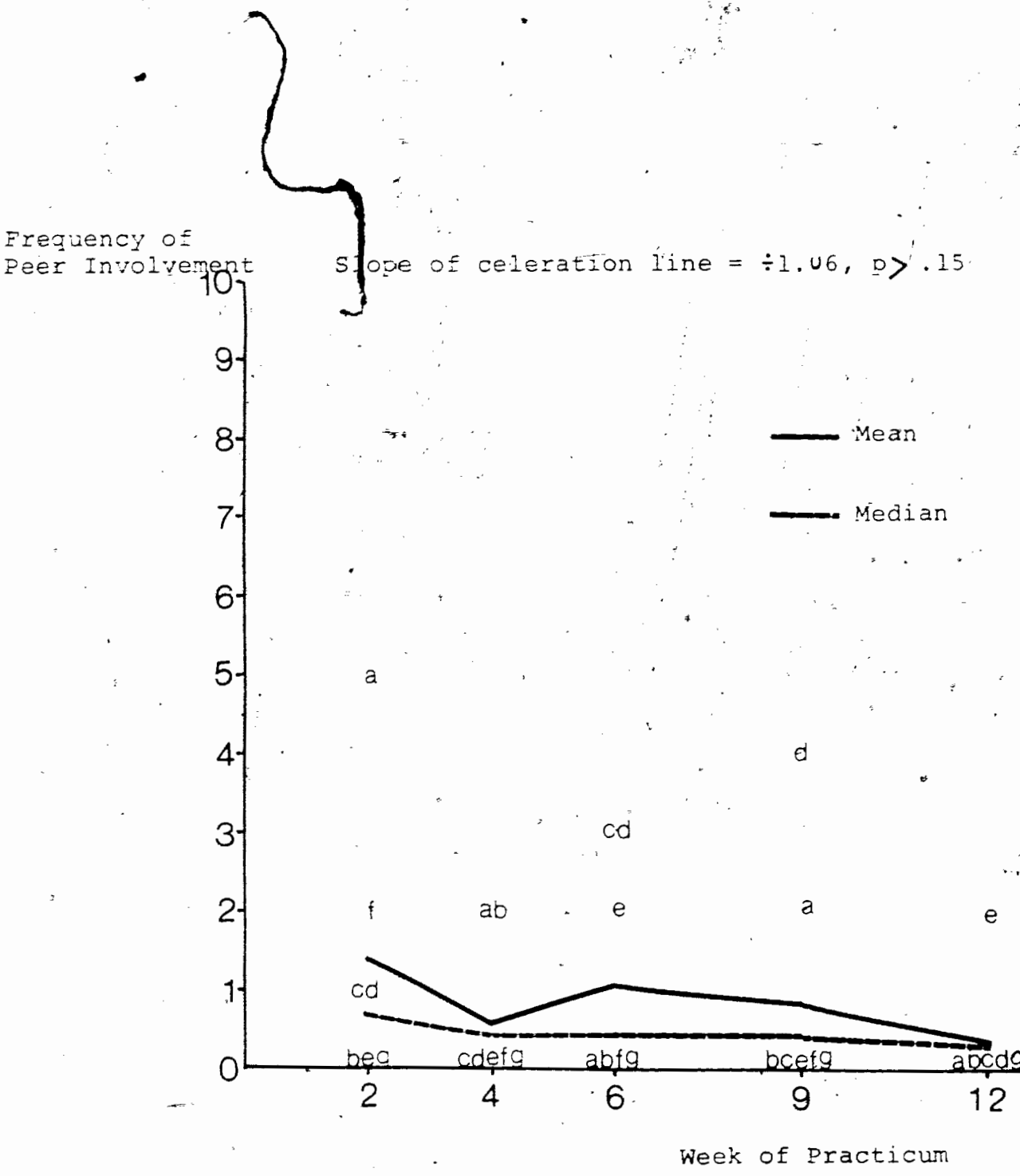

Figure 11: Peer involvement during practicum observation weeks.

To summarize the results for the teacher effectiveness variables, the mean scores for each observation week have been arranged in Figure 12. Across weeks 2 and 6, the trend for engagement rate, desist incident quality, item prediction, positive questioning, and error rate was a deterioration between week 2 and 4, with week 4 being the lowest point in the practicum. A similar trend was found for work showing but it was not included in the Figure as it was a frequency count, not a proportion. Goal directed prompts and peer involvement were similarly not included. As a group, the five variables showed a general improvement between weeks 4 and 6, in most cases returning to the levels of week 2. Across week 2, 4, and 6 teacher clarity was constant. Teacher clarity, positive questioning, and error rate deteriorated between weeks 6 and 9, while engagement rate and desist incident quality remained constant with only item prediction showing improvement. Work showing also deteriorated between week 6 and 9. Between weeks 9 and 12, engagement rate, item prediction, and teacher clarity showed no change. Desist incident quality, work showing, and error rate deteriorated, while positive questioning increased during the same period.

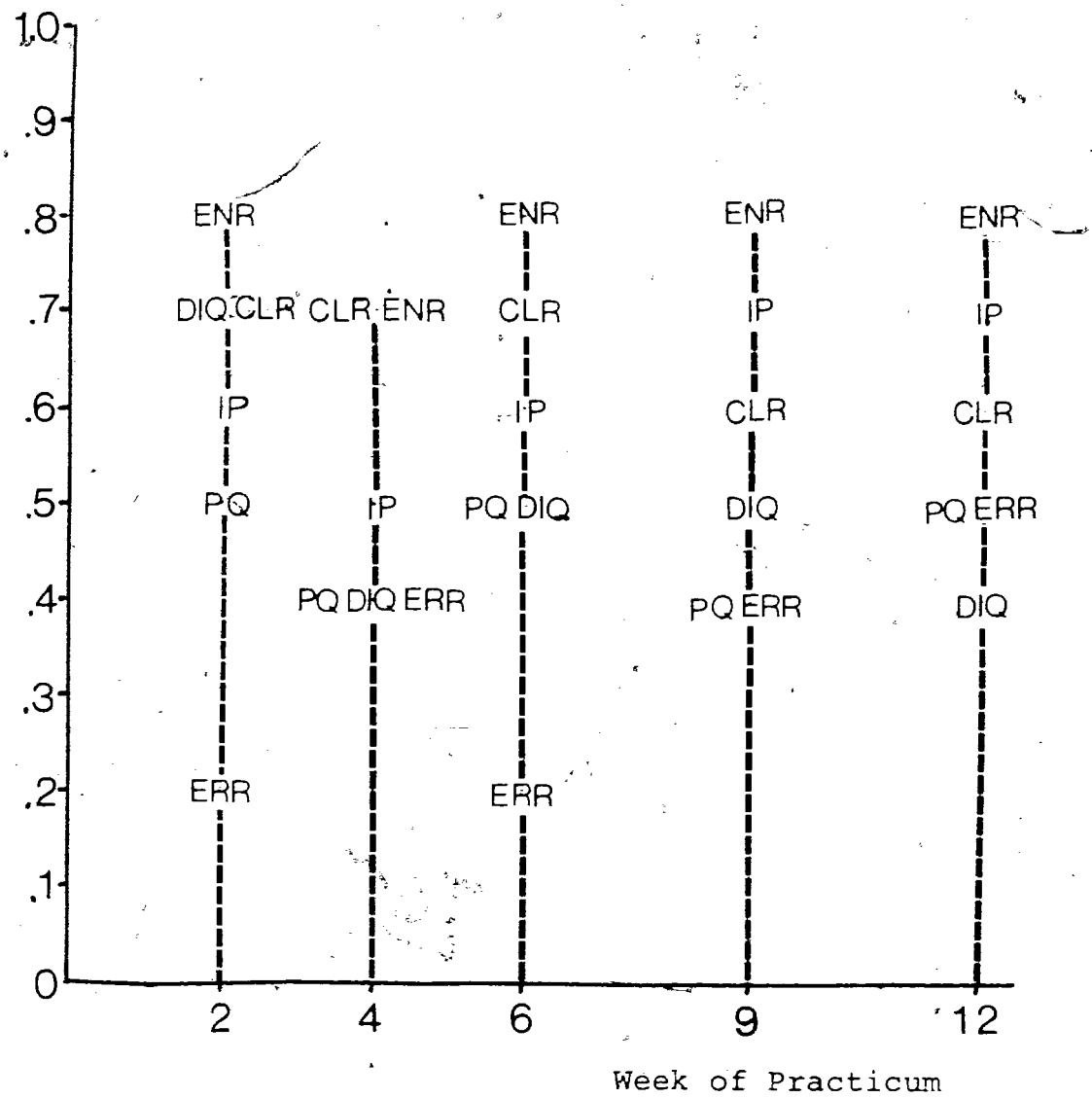

Figure 12: Mean scores for teacher effectiveness variables during practicum observation weeks.

NOTE: ENR = engagement rate, ERR = error rate, CLAR = teacher clarity, DIQ = desist incident quality, IP = item prediction, PQ = positive questioning

Comparing skill levels for weeks 2 and 12, with the exception of item prediction, the variables either deteriorated or did not change. The results for the variables as a group across the practicum are quite consistent. There appears to have been no overall improvement in the performance of the teaching skills observed in this study over the extended practice teaching experience.

Classroom Variables

Similar to the teacher variables, two terms are used to describe change in mean scores between successive observation weeks. The criterion level of change was set at 10%. An "increase" represents a mean upward change in the occurrence of a particular variable of 10% or above. Conversely, a "decrease" is a corresponding negative change of 10% or more.

The student teacher log contained two categories of information about the practicum; the teaching assignment and student supervision. Data from the log showed that all students in weeks 2 and 4 taught only the grade levels in the class to which they were assigned. In weeks 9 and 12, however, most students taught at least one other grade level.

The proportion of lessons taught by the students out of the total of 35 lessons, given in Figure 13, reached a peak during

week 6 and remained at about the same level for the remainder of the practicum. During the last quarter of the practicum, though the students taught a mean of 80% of the week's lessons, the minimum shows that some were teaching as few as one-half the lessons. All students, with the exception of b increased the proportion of lessons they taught between weeks 2 and 4 by 10% or more and a majority (4/7) by 30%. Student b had to contend with considerable platooning of the class. This meant an increase in teaching load involving other classes and/or other teachers. Some students seem to have increased gradually their lesson preparation over the first half of the practicum, such as a, c, and g while others started at a low level and made large increases at week 6, such as b, e, and f. One student (d) started at a rather high level (60%) and continued to increase over the practicum.

It is perhaps appropriate at this point to discuss the format and pacing of the observed lessons across the practicum. In the first half of the practicum, the lessons had a varied format. In general, they consisted of an introduction which evidenced a high level of pupil interest, plus a variety of activities in the active teaching phase. This was followed by a short, but intensive period of seat work. The pacing was brisk and the classroom had an atmosphere of expectancy about what was to come. Later in the practicum, the lesson format became rather predictable. Often the lesson introduction was simply a

reference to pages in the text to be learned. The student then worked some examples on the chalk board. The majority of the remainder of the period was devoted to seat work during which the student circulated around the room assisting pupils with difficulty and maintaining classroom control.

Total teaching load was operationalized as the proportion of the instructional week of 1425 minutes that the student spent teaching. While closely related to lessons taught, the correspondance is not perfect, as in general, the morning periods are longer than afternoon periods. Only in the case of one student (f), who had considerable previous pre-practicum experience as a teacher aide, did the total teaching load reach 100% during the practicum. From Figure 14, it appears the spread of teaching load was smaller during the middle of the practicum than at either end. The School Associates were less consistent about the teaching load assigned to students at the beginning and end of the practicum.

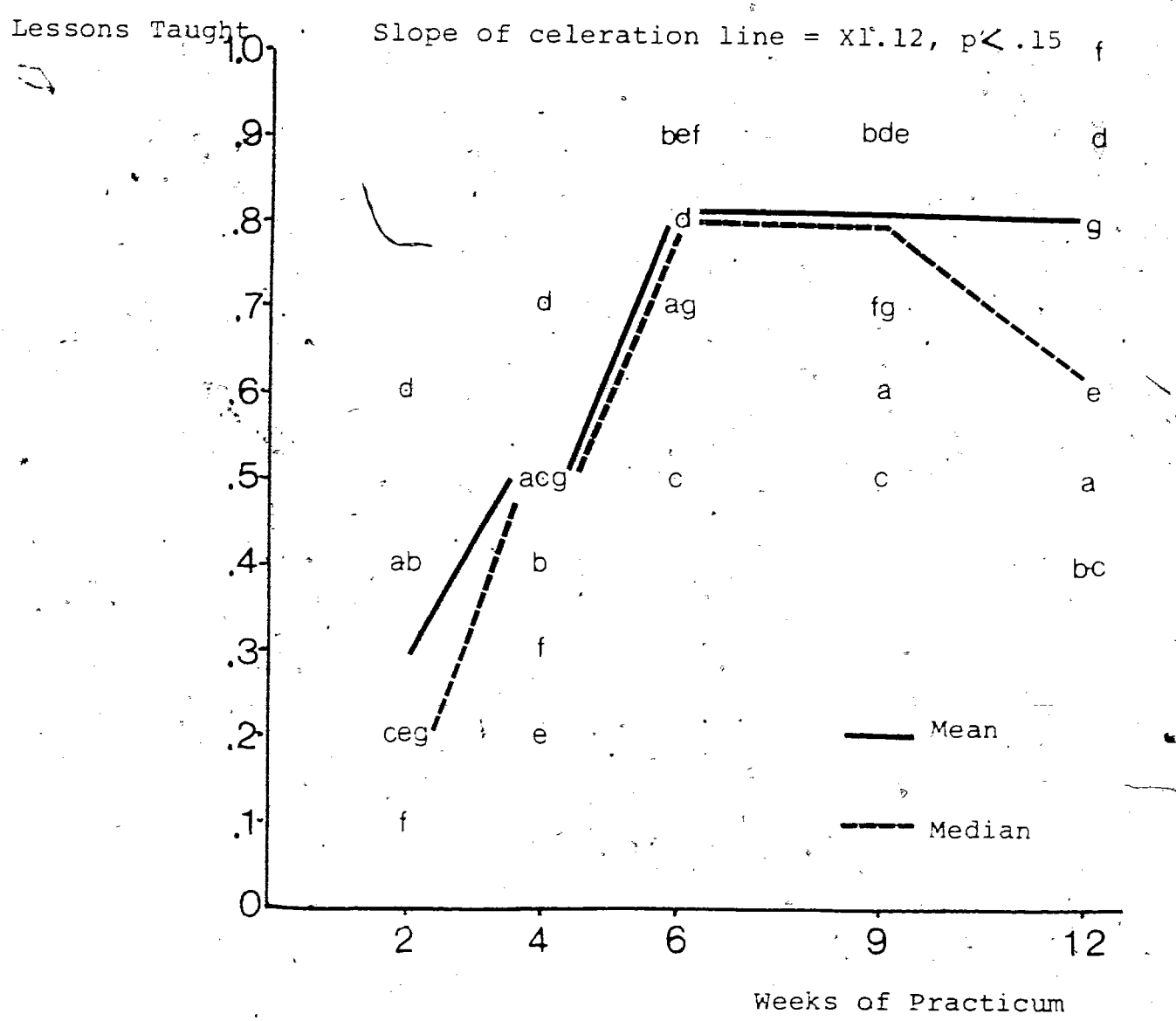

Figure 13: Lessons taught during practicum observation weeks.

Similarly, it appears some students gradually increased their teaching load during the first half of the practicum (e.g., c, d, and g), while others made large increases in their teaching load between weeks 4 and 6 (a, b, e, and f).

Figure 15 contains the data on non-teaching duties such as before and after the school day, recess, and lunch hour. This has been expressed as the proportion of time the student spent on non-teaching actvities out of a normal non-teaching time of five hours per week. The amount of non-teaching duties assigned to student teachers varied considerably. Some had no non-teaching duties, though of a potential of five hours a week the mean was about one hour per week (.2x5). School Associates differ widely in their assignment of other non-teaching duties to student teachers. Figure 15 gives the individual results for such duties. Some students, such as a, f, and g had little or no non-teaching duties across the practicum, while for some (e and g) they were a significant and consistent requirement. A large part of this duty was the coaching and supervising of team sports and games at noon hour and after school. Still other students (b,c) were given such duties only during the first half of the practicum. The most common type of non-teaching duty was in the classroom before classes in the morning and at recess.

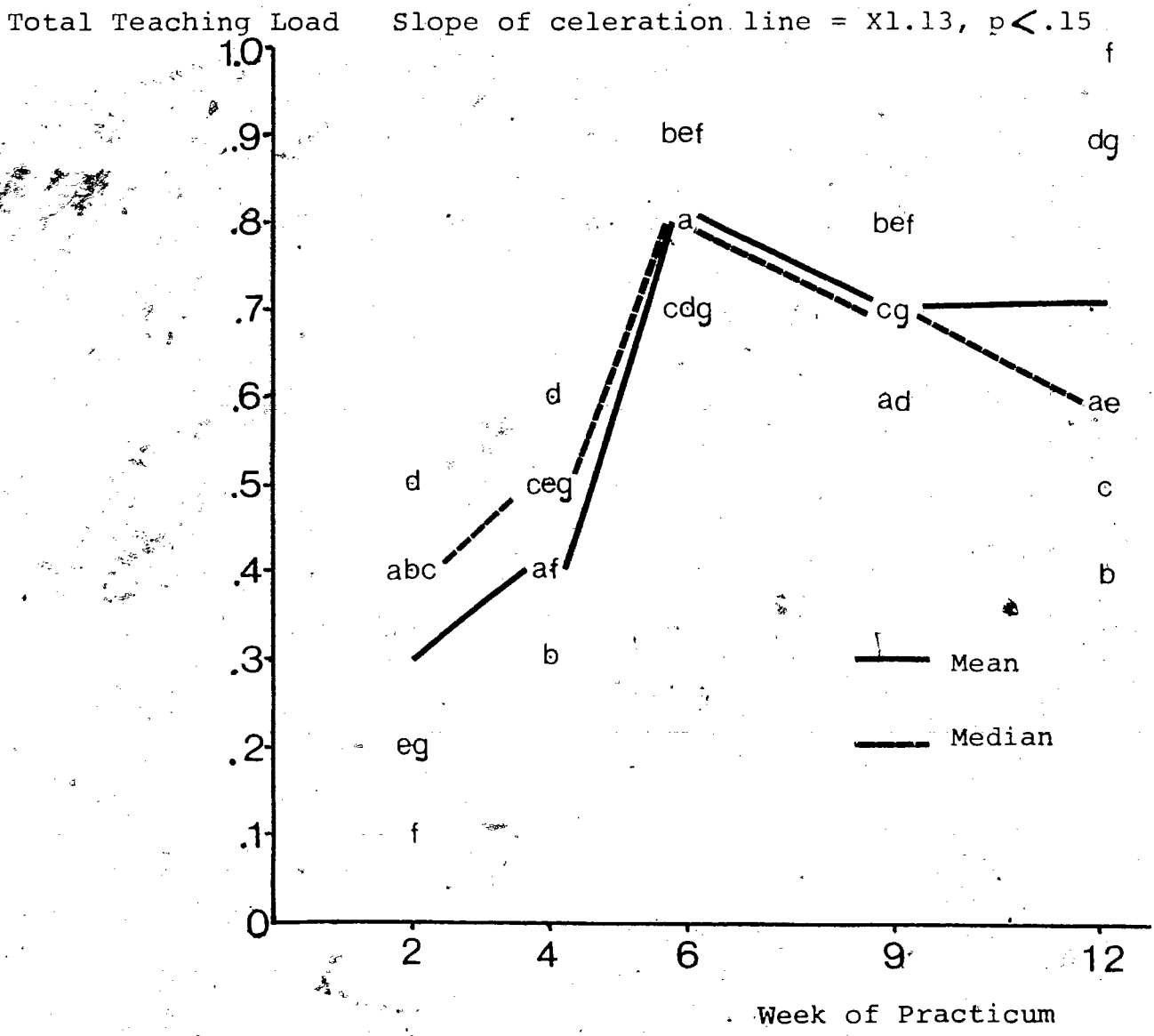

Figure 14: Total teaching load during practicum observation weeks.

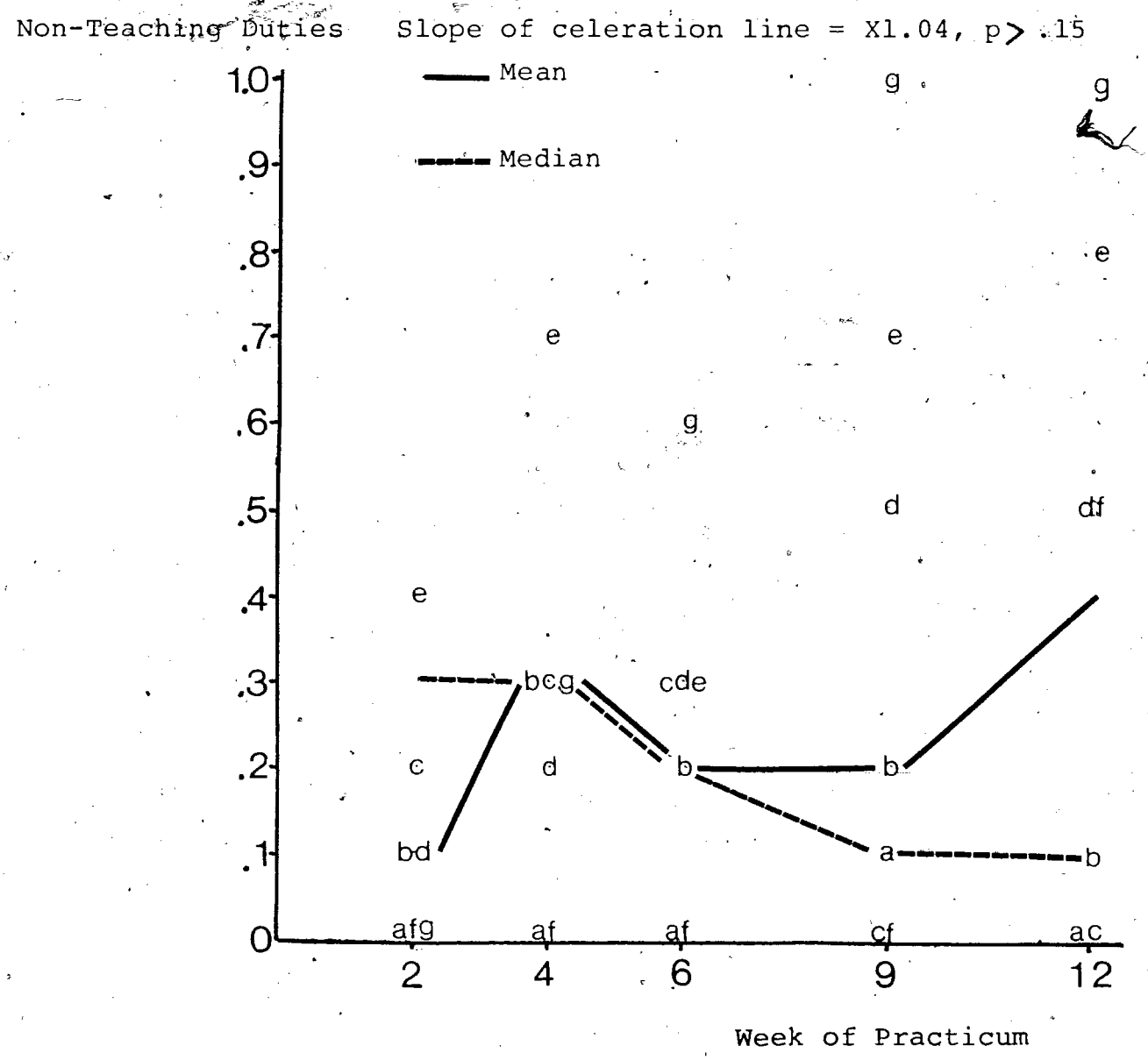

Figure 15: Other non-teaching duties during practicum observation weeks.

The Areas of Difficulty Score is a measure of the degree of difficulty the student felt at that point in the practicum. Figure 16 contains the results obtained from the student logs. The mean scores were very consistent across the practicum. The range in scores across the practicum indicates that there was a greater diversity of opinion about the degree of difficulty the students were having at both ends of the practicum. The Areas of Difficulty scores for individual students is given in Figure 16. Data for student d in week 12 is missing. Perhaps expectedly, as their teaching load increased, students generally indicated an increase in teaching difficulties between weeks 2 and 4. Only one student (c) registered a general increase across the practicum.

As mentioned previously, student teacher supervision is an important part of the practice teaching experience. Much of the student log was devoted to gathering information about this activity. The data in Figure 17 is the proportion of lessons taught by the student that were observed by the School Associate. The number of lessons observed decreased over the practicum. The test of the slope of the celeration line confirmed that a statistically reliable ($p<.15$) decrease had occurred.

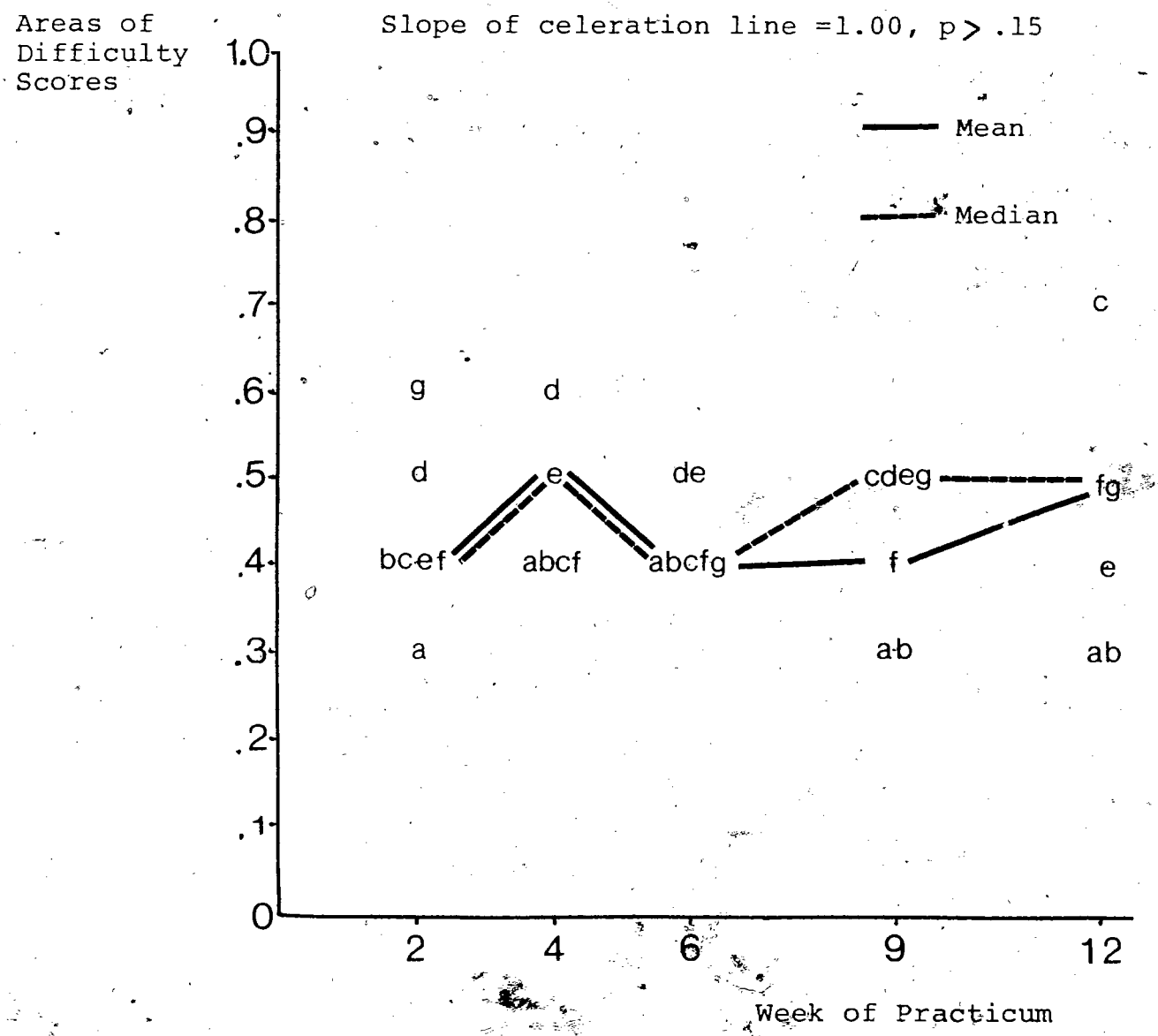

Figure 16: Areas of Difficulty scores during practicum observation weeks.

Some students received consistently high levels of supervision (a,c) while others received minimal supervision over much of the practicum (b, f, g). During weeks 9 and 12, observation by School Associates was at a very low level for almost all students in the study.

School Associates may be present in the classroom while the student is teaching, though not in the role of observer. They may be teaching a small group, marking, preparing lessons or acting in other ways as an informal presence in the classroom. As outlined in Figure 18, the proportion of the students' teaching for which the School Associate was present in the classroom also decreased over the practicum but in contrast to formal observation, increased again in week 12. Contrary to the case for lessons observed, the test of the slope of the celeration line for the time the School Associate was present during the students' teaching was not a statistically reliable ($p>.15$) decrease had occurred. A statistically reliable decrease did occur, however, over weeks 2 to 9. Comparing individuals in Figure 18, a group of students had their School Associates present for a major part of their teaching (c, e) while others did a large part of their teaching without the School Associate present (d, g). The lowest level of School Associate presence was found in week 9. In the case of student a, the rather large increase in lessons observed by the School Associate between weeks 6 and 9 was a response to the student's request for help

with classroom management problems. Interestingly, Figure 18 shows this increase in observation was not accompanied by a corresponding increase in time the School Associate was present in the classroom.

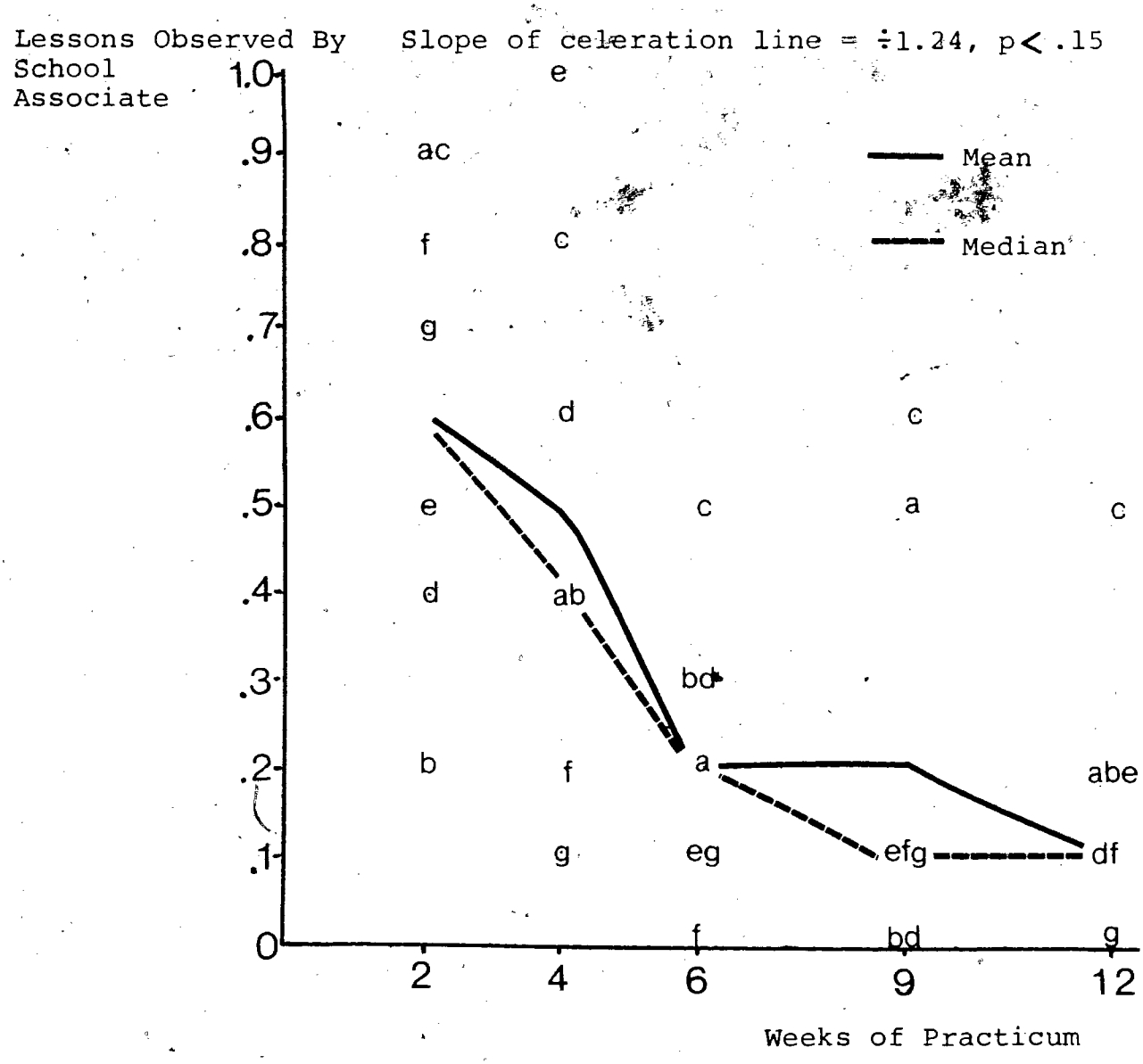

Figure 17: Lessons observed by the School Associate during practicum observation weeks.

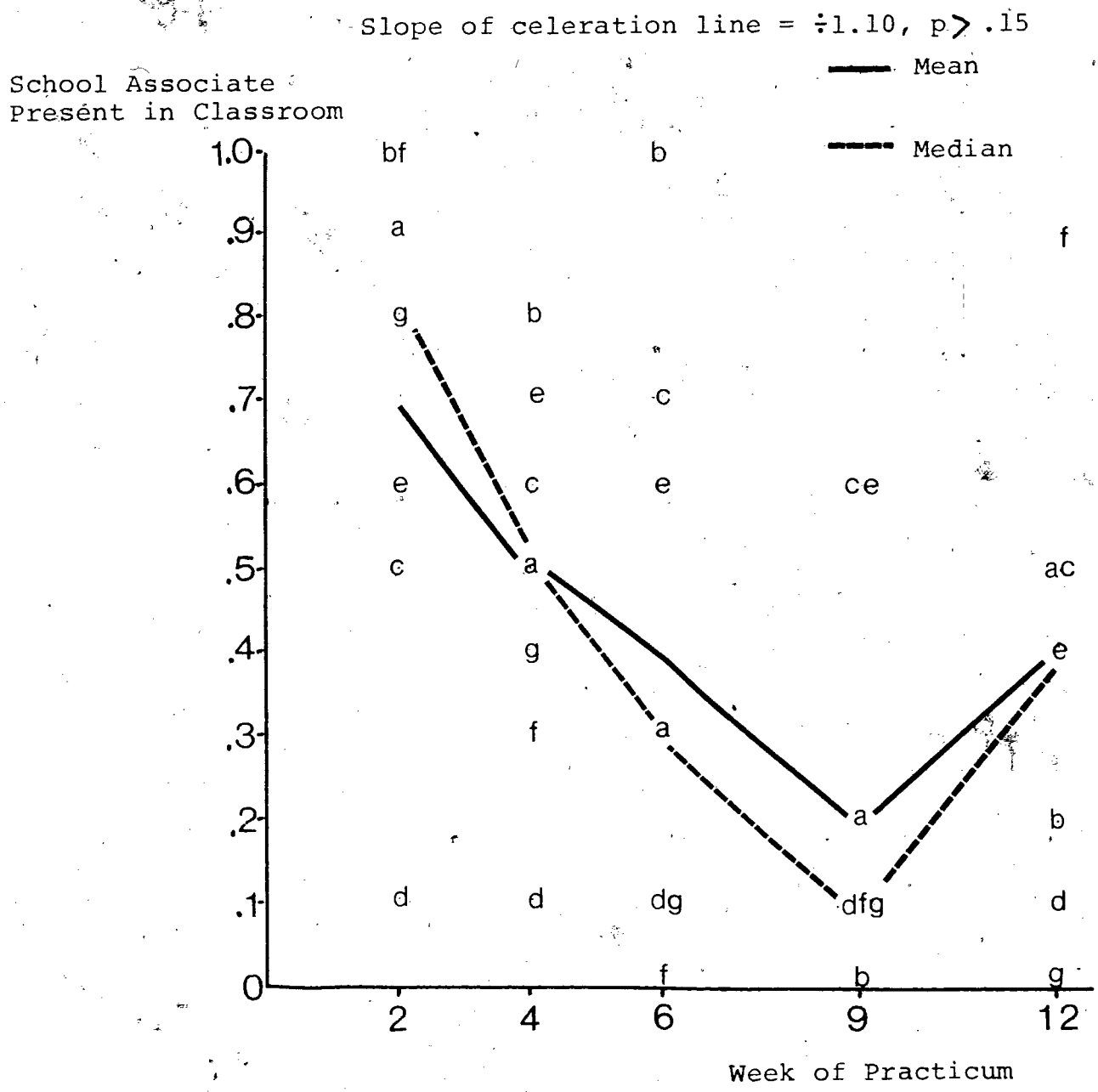

Figure 18: Presence of School Associate during student teaching during practicum observation weeks.

Using the clinical supervision model discussed earlier, School Associates are encouraged to include a preconference and a postconference when observing the student's teaching. Table VIII provides a gauge as to how completely the School Associates implemented the supervisory model. The phases implemented for individual students across the practicum is given. The range across the practicum is wide with some School Associates employing the model fully and others not at all. Some students, such as c and e, were exposed to all phases of the supervisory cycle. On the other hand, others such as a, d, and g were observed with little benefit of the conferences. The preconference was the phase most frequently omitted. An interesting situation occurred with student f in week 6. The School Associate and the student met in a postconference to discuss a lesson that the School Associate had not observed. The use of the supervisory model deteriorated over the practicum.

When the School Associates observed students' lessons, they most often took brief notes during the observation. These notes formed the basis for the postconference, when it occurred. Although it was much less frequently employed, frequency counts was another method of gathering data during the observation. School Associates used frequency counts for recording the incidents of teaching behaviours such as the number of times the student picked certain pupils to respond to questions, or time-on-task measurements.

Table VIII

Implementation of Phases of the Supervisory Cycle

Cycle Implemented	Observation Week				
	2	4	6	9	12
No phases			c	bdf	bdg
Observation only	ad	adg	adg	ag	a
Conferences only			f		
Observation + Preconference		f			
Observation + Postconference	bg	b	b		c
Complete cycle	cef	ce	e	ce	ef

Feedback is provided to the student by the School Associate and Faculty Associate about the students' teaching progress. This is done formally during the postconference and informally during casual conversation. The quality of School Associate feedback, given in Figure 19, was rated highly by the students, though the range during weeks 6 and 9 was wide.

A rather interesting comparison emerges from Figure 19 and Figure 18 and Table VIII. There appears to be little relationship between School Associate supervision, presence in the classroom, and quality of feedback. It appears that student teachers did not equate high levels of School Associate supervision, School Associate presence in the classroom, and full implementation of the supervisory cycle with effective feedback. The only consistent pattern was found in the case of student g, where low levels of supervison, School Associate presence in the classroom, and implementation of the supervisory cycle was accompanied by a high rating for feedback quality. The amount of supervision was not reflected in the students' ratings of the quality of feedback they received. Equally, their ratings of feedback quality did not reflect the degree of implmentation of the supervisory cycle.

As a gauge of the relationship between the School Associate and the student teacher, the Practice Teaching Agreement Score was consistently high across the practicum. The group statistics and individual scores in Figure 20 show little change across the

five observation weeks.

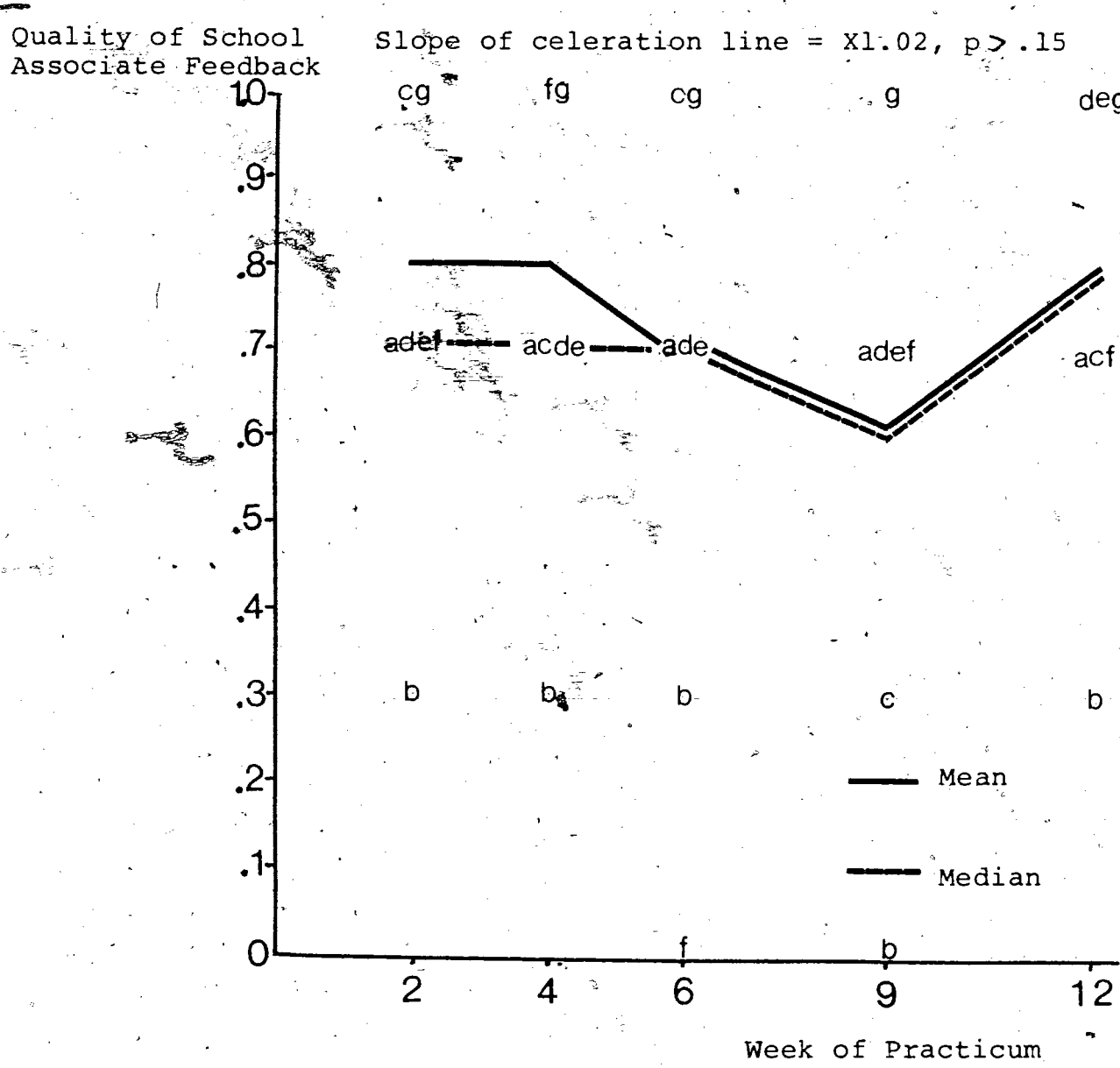

Figure 19: Quality of School Associate feedback during practicum observation weeks.

This seems to suggest that as far as student teacher responsibility and autonomy within the classroom was concerned, the relationship between student and School Associate was harmonious. During the observation, no stress in student teacher-School Associate relations was noted, nor was any expressed by either party. Additionally, most of the School Associates indicated they agreed voluntarily to supervise a student and made positive and supportive comments about the students to the observer during the practicum. At the beginning of the practicum, the School Associate associated with student teacher d was very critical of the Professional Development Program and the level of preparation his student teachers received. His attitude became more positive as the practicum progressed. This was due to what he perceived to be the competence of the student and the interest and support shown by the Faculty Associate.

By way of a summary of the classroom variable measured in the study, Figure 21 compares the mean values for most of the classroom variables across the practicum. Two components of classroom management; teacher alerting and learner accountability were not included as they were recorded as frequency counts rather than ratios.

This study employed five measures to describe the supervision of the student teacher. They were total teaching load, time the School Associate was present while the student

teacher was teaching, amount of time the student teacher taught without supervision, number of lessons the School Associate observed, and parts of the supervisory cycle implemented. Figure 22 is a graph comparing the first three variables above. On the scale 100% is the total time in a school week available for instruction. Each bar represents the student's total teaching load for that particular observation week. The bars have been divided into the two components; student teacher teaching in the presence of the School Associate or alone.

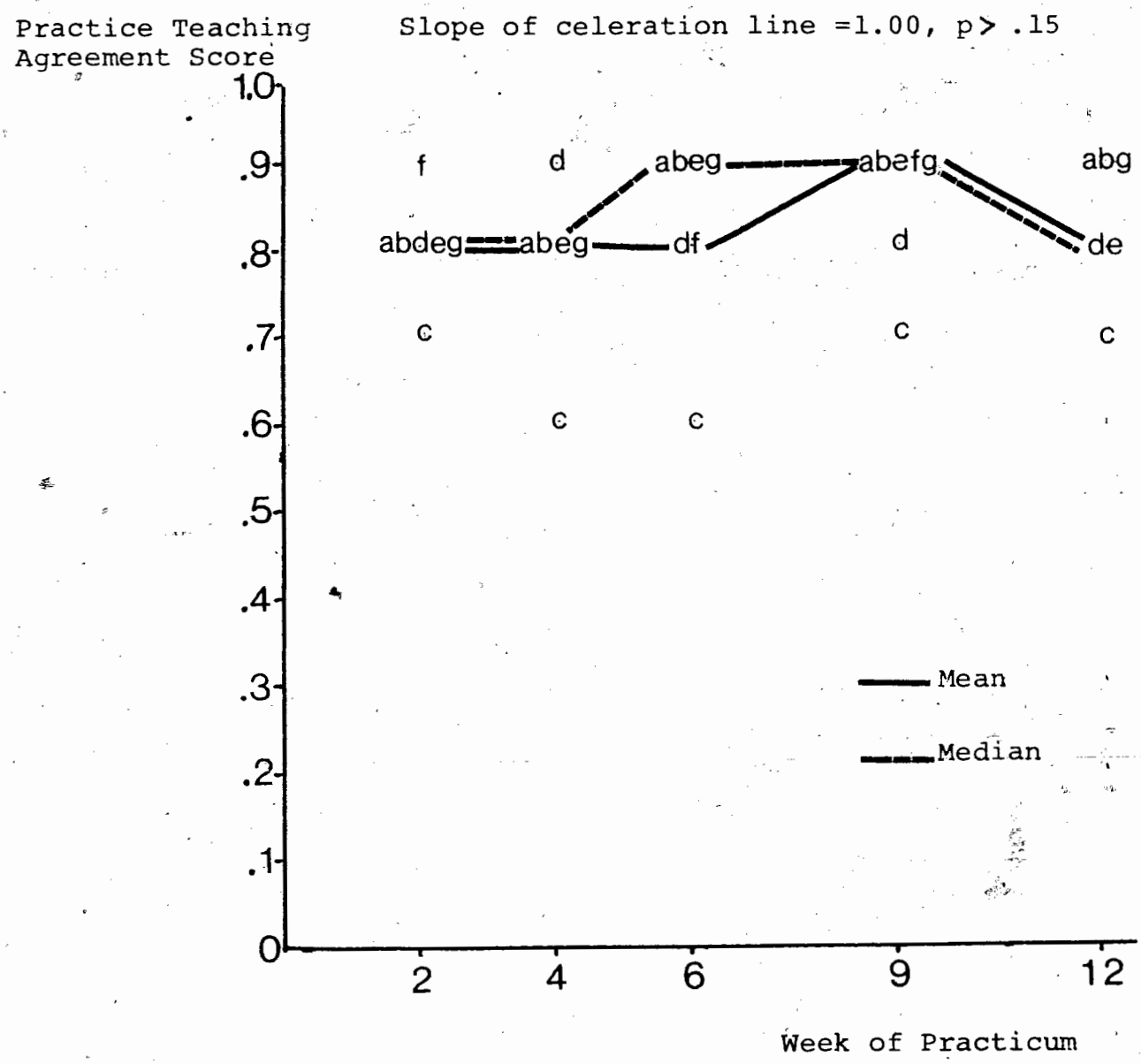

Figure 20: Practice Teaching Agreement Scores during practicum observation weeks.

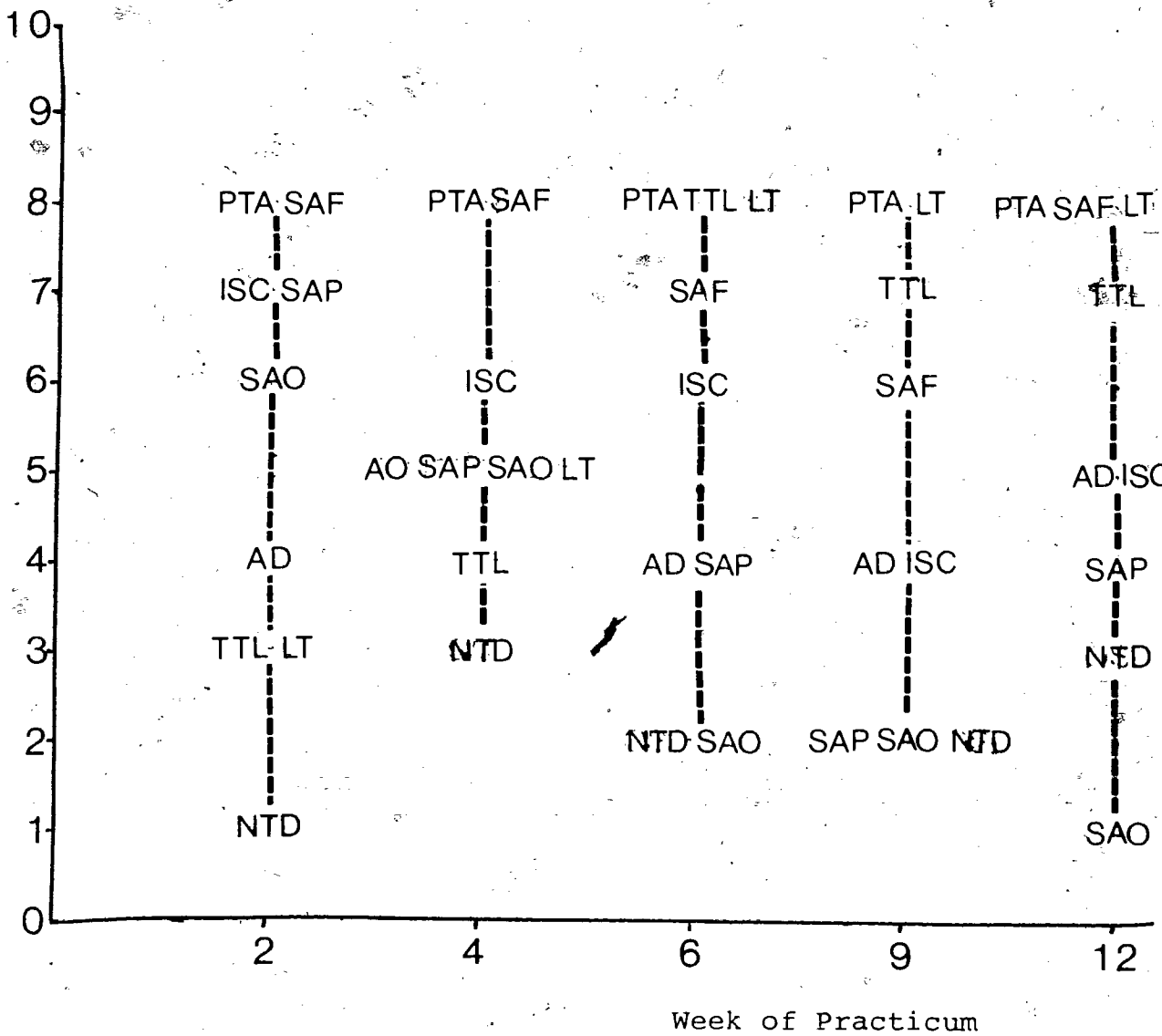

Figure 21: Mean scores for classroom variables during practicum observation weeks.

NOTE: AD = Areas of Difficulty scores, ISC = implementation of supervisory cycle, LT = lessons taught, NTD = non-teaching duties, PTA = Practice Teaching Agreement scores, SAF = S.A. feedback, SAO = S.A. observations, SAP = S.A. present, TTL = total teaching load

Three situations are represented here; one School Associate who represents minimum supervision, one who represents maximum supervision, and the means for all School Associates in the sample. The top two graphs in the Figure illustrate the great variation in student teachers' unsupervised teaching time.

Taking the student teachers as a group across weeks 2 to 4, when the students' teaching load increased (see Figure 14), the School Associates were present in the classroom about the same amount of time for both weeks. The result was an increase in the amount of unsupervised teaching time. Over weeks 4 to 6, as the students' teaching load generally reached its peak, the School Associate spent relatively less time in the classroom. This resulted in a still further increase in the time the student taught unsupervised in the classroom. A change occurred over weeks 6 to 9 with a slight decrease in total teaching load, though the School Associate spent a still smaller portion of time in the classroom. This had the effect of increasing the portion of the student teachers' teaching load that was unsupervised. During the final weeks 9 to 12, the total teaching load showed a slight overall increase with the School Associate spending a larger portion of time present in the classroom. This resulted in a reduction in the time the student teacher was teaching in an unsupervised situation.

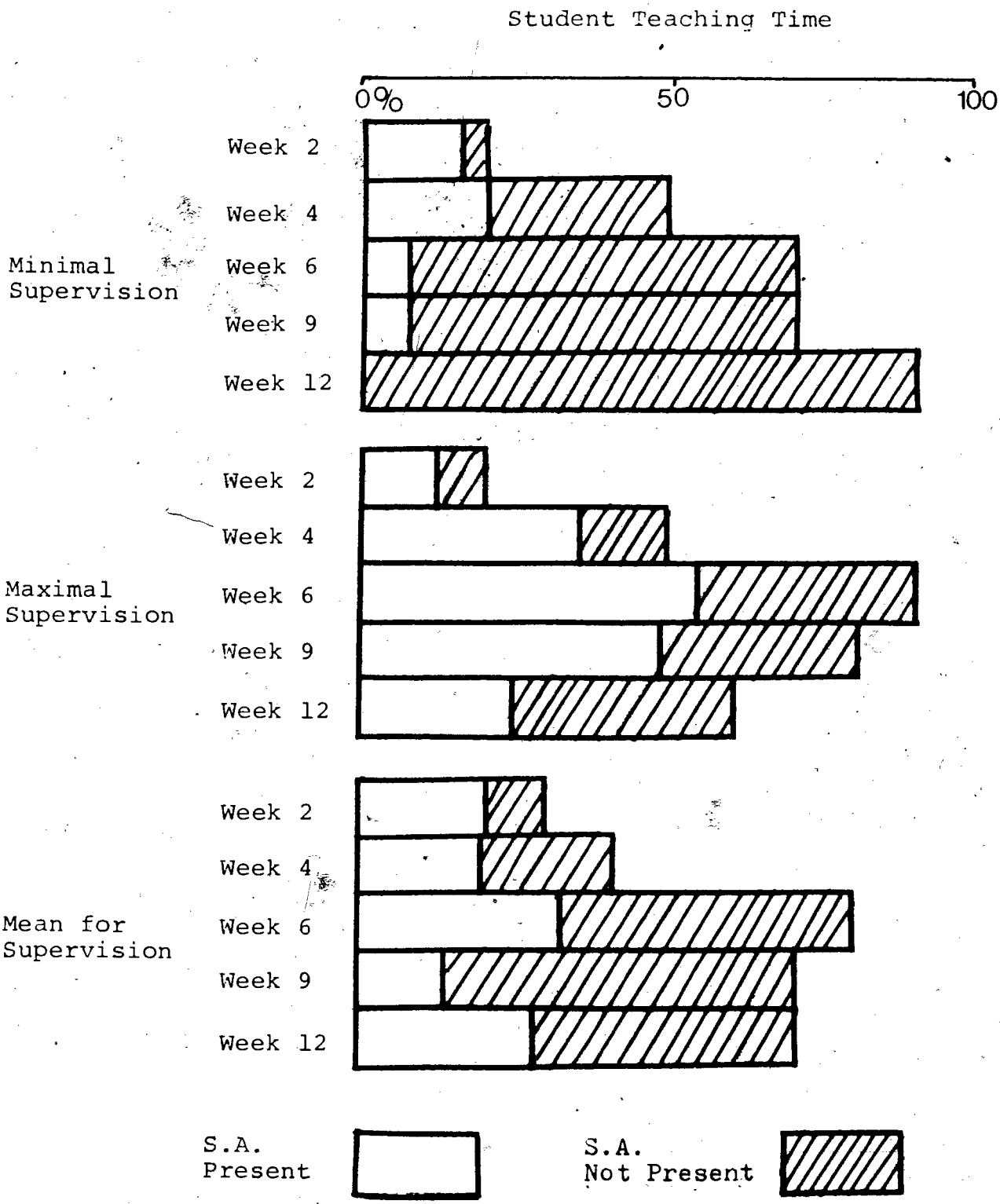

Figure 22: School Associate supervision of student teachers during practicum observation weeks.

Figure 23 contains the results for both School Associates observation of the students' lessons and the degree of implementation of the supervisory cycle. Beginning at the left of the Figure, we have the mean lessons taught by the student teachers represented by 100%. Moving toward the right there is a successive breakdown by observation of the School Associate and implementation of the supervisory cycle. For example, during week 4, School Associates were present in the classroom for half of the students' lessons (50%). Further, for the lessons taught that week the School Associate was not present for 50%, present but not observing for 25%, and observing 25%. Finally, for the lessons taught by the students, the full supervisory cycle was implemented only 11% of the time, part of the supervisory cycle, 3%, observation only 11%. In week 4, feedback to the student teacher through a preconference and/or postconference was only received for 14% of the lessons (11+3). Corresponding figures for weeks 2, 6, 9, and 12 are 35%, 4%, 2%, and 3% respectively. After week 6, School Associates provided formal feedback to student teachers for less than 5% of their lessons. Additionally, considering the time the School Associate was present in the classroom, we see that after week 4 the ratio of not observing to observing increases dramatically.

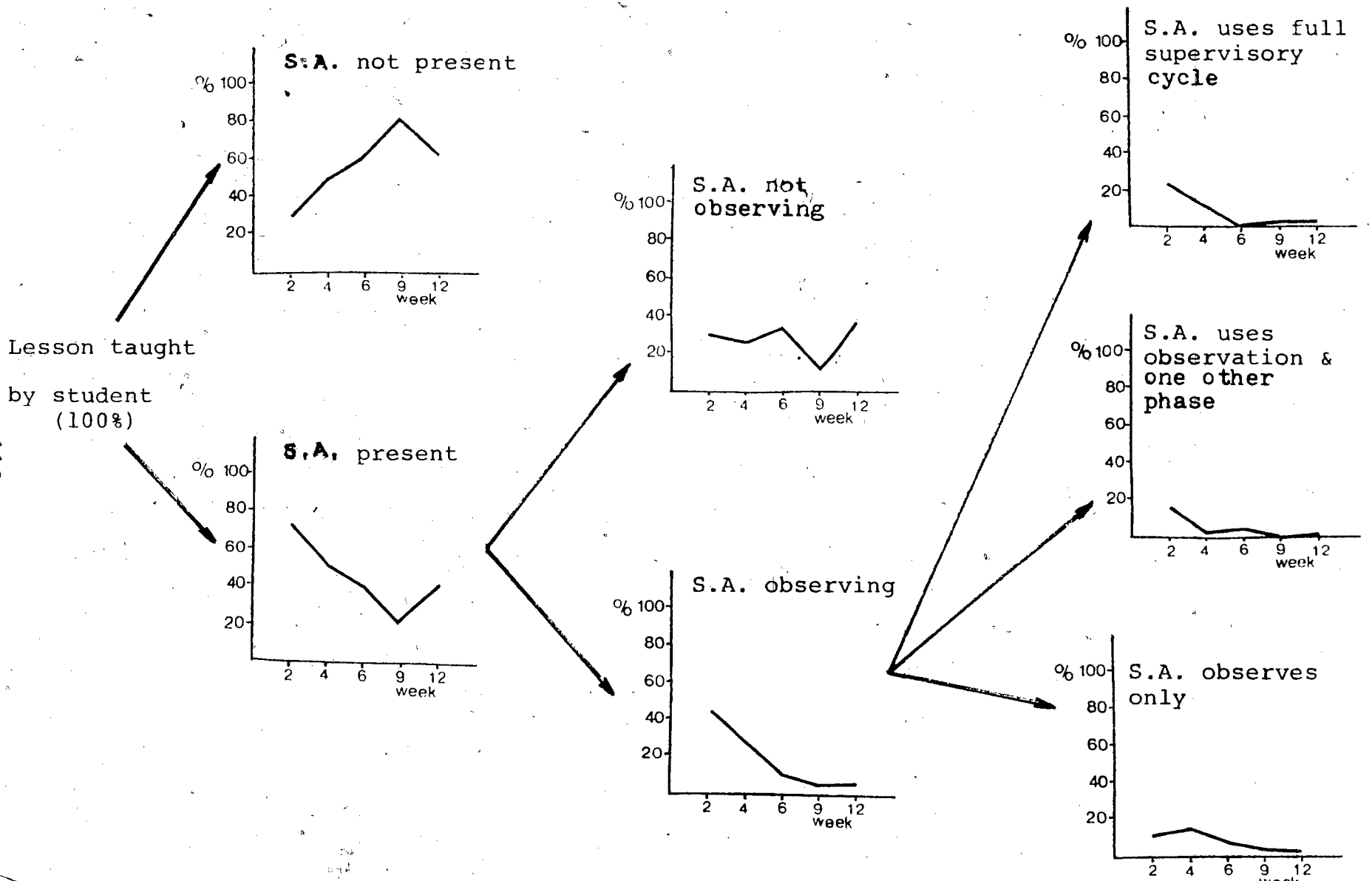

Figure 23: A comparison of lessons observed by School Associate and implementation of the supervisory cycle.

Interaction Between Teacher Variables and Classroom Variables

Few patterns were found between teacher effectiveness and classroom variables. Table IX gives a comparison of the teacher effectiveness and classroom variables across the practicum. Again the terms "improvement", "deterioration", "increase", and "decrease" are used to describe change between successive observation weeks of 10% or more. A variable has been omitted for a given pair of observation weeks when either the 10% level had not been met or the change for individual students was inconsistent, with no clear trend indicated.

Table IX

Changes in Teacher Effectiveness Variables

And Classroom Variables Over the Practicum

	Teacher Variable				Classroom Variable			
		IM	O	DT		IN	O	DE
Week 2 - 4	ENR			X	LT	X		
	ERR			X	TTL	X		
	DIF			X	NTD	X		
	DIQ			X	SAP			X
	CLR		X					
Week 4 - 6	ENR	X			LT	X		
	ERR	X			TTL	X		
	DIF		X		SAO			X
	DIQ	X			SAP			X
	CLR		X					
	IP	X						
	PQR	X						
Week 6 - 9	ENR			X	LT		X	
	ERR			X	TTL			X
	DIF	X			NTD	X		
	CLR			X	SAP			X
	PQR			X				
Week 9 - 12	DIF		X		SAP	X		
	CLR		X		SAF	X		

NOTE: ENR = engagement rate, ERR = error rate, CLR = teacher clarity, DIQ = desist incident quality, IP = item

prediction, LT = lessons taught, TTL = total teaching load, SAO = S.A. observations, SAP = S.A. present, SAF = S.A. feedback, NTD = non-teaching duties Also IM = improvement, DT = deterioration, O = no change, IN = increase, DE = decrease

Across weeks 2 to 6 the student teachers' teaching loads increased, the School Associate spent less time in the classroom and observed a smaller number of the students' lessons. This was accompanied by a general deterioration over the teacher variables. While the trend for the classroom variables continued through weeks 4 and 6, performance in the teacher variables generally improved. Desist incident frequency appears to be the only teacher variable that changes consistently with classroom variables. Charges in total teaching load, and School Associates presence in the classroom are matched by changes in the use of desist statements.

Further analysis was employed to determine whether changes during week 6 to 9 and 9 to 12, for School Associate presence in the classroom and the number of lessons observed, could help explain the variety of change amongst the teacher effectiveness variables. To do this, teacher effectiveness variables for students who had a substantial increase (>10%) in the amount of unsupervised time accompanying a major change (>10%) in School Associate observation were compared. The presence of both conditions was accompanied by a deterioration in the teacher

effectiveness variables. Also, increases in the observations by School Associates while at the same time increasing the students' unsupervised teaching time was accompanied by a deterioration in the teacher effectiveness variables. No similar patterns could be found over weeks 6 to 9 and 9 to 12.

V. Discussion

This study had two major purposes. The first was to observe and measure how student teachers, over an extended practicum, demonstrated teacher behaviours that research shows are associated with effective teaching. The second was to develop an understanding of classroom events that might affect student teaching performance in general, and their use of a set of teaching behaviours in particular.

This chapter discusses the results obtained for the variables that were observed; behaviours associated with teacher effectiveness and indices describing the classroom as an environment for practice teaching. The aim is to evaluate the association between features of the environment that characterize the extended practicum and the levels of student teaching perfcrmance.

It is important at this point to discuss limitations as to the generalizability of this study. Although the participants do not appear unrepresentative of the population of student teachers in this training sequence, the results from such an extremely small sample surely must be treated with caution. The students in this study were selected from only one of three training sequences within the Professional Development Program.

That is, they completed their two practica over two consecutive semesters. These practica were separated by a half-semester of on-campus education seminars. The students' total training and professional preparation, preceding the practicum used in this study was short; only one semester. This differs considerably from the other campus-based program where the two practica are separated by a full semester of professionally related coursework. The third sequence, for students that are beyond commuting distance to the campus, also involves two practica over two consecutive semesters. The supervision and evaluation of the students in all three sequences was mainly the responsibility of the cooperating teacher with on average, biweekly visits from the faculty representative. Any generalization, then, must be made with full consideration for the nature of the students' preparation for teaching and supervision during teaching.

Teacher Effectiveness Variables

On almost all teacher effectiveness variables observed in this study no change in mean performance levels was found across the practicum, although the performance of individual students showed considerable variation. Three tentative explanations for this absence of change at the group level can be proposed. The student teachers may have begun the practicum applying the

teaching skills at levels believed acceptable by School Associates for student teachers. Therefore, further improvement in performance was unlikely because the School Associates made few attempts, such as specifically focussed supervision activities, to alter the student teachers' performance. Another possible explanation, not necessarily independent of the preceeding one, is that the practicum's major function is to provide an opportunity for students to practice teaching skills. As Gage (1977) would argue, if no further training in the performance of those skills occurred during the practicum, no change would be expected. Finally, though this practicum is long, it still may not be of sufficient length to produce significant behavioural changes in the skills observed in this study. Perhaps the time required extends beyond the student teaching experience into the beginning teaching experience.

For the variables of engagement rate, teacher clarity, and awareness of individual differences, performance was high at the beginning of the practicum and continued at a high level across the twelve weeks. For example, measures of mean engagement rate over the practicum were between .7 and .8 which is nearly equivalent to the results of studies discussed earlier (Cooley & Leinhardt, 1980; Fisher et al., 1978; Good & Beckerman, 1978; Karweit & Slavin, 1981). The initial and sustained high levels of performance seem to suggest that for these variables the students were familiar with these teaching skills and were able

to apply them at at appropriate levels across the practicum.

Another next group of teaching variables, namely, error rate, work showing and desist incident quality, were ones where the students' performance at the beginning of the practicum was acceptably high and subsequently deteriorated over time. Error rate, for example, was low in week 2 and increased in the following weeks. It seems unlikely that the students would "forget" how to perform these teaching skills as the practicum progressed. More likely, these beginning performance levels were due to the reduced teaching load, which allowed the students to employ these teaching behaviours while control of classroom routines still remained largely with the School Associate. During these initial weeks of the practicum, the School Associates' presence in the classroom was most frequent. Also, with the light teaching load, students were teaching part of a lesson or single lessons interspersed with the School Associates' teaching. Later, with the rapid increase in teaching load and an assumption of greater responsibility for classroom routines and discipline, the use of these skills apparently succumbed to the classroom pressures of increased planning, marking of pupil work, and extracurricular tuition.

The remaining group of variables, i.e.,alerting cues, positive questioning, goal directed prompts, and peer involvement, are classroom management skills. The performance levels of these skills were generally relatively low across the

practicum. Could it be that the students were unaware of these skills and perhaps did not see them practised by their School Associates? Conversations with the students in the study revealed that they all expressed reservations about their effectiveness in handling discipline in the classroom. They tended to see their difficulties as unique and, rather than seeking help from the School Associate or Faculty Associate, most students elected to draw upon their individual experiences. This general concern with classroom management in the practicum has been corroborated by others who have examined features of this particular extended sequence (e.g., Kaufman, Shapson & Rosettis, 1976; Tattersall, 1979).

This study does not support the contention that the practicum component of this teacher education program provides an environment where teaching skills that research has linked with improved pupil achievement can be practised in a way that leads to improved use of the skills. This study took the perspective that there exists a set of teaching behaviours that positively affect pupil achievement i.e., a competency orientation to the training of teachers. There appears to a be a definite lack of emphasis on these teaching skills in the Professional Development Program. Thus, student teachers' development of a set of common teacher competencies could not be expected. Rather, the Program may emphasize socializing the student teacher into the classroom. Perhaps extended practice

teaching in a classroom under the supervision of an experienced teacher is an effective means of training teachers who are well aware of the uniqueness and dignity of each pupil, or who are facilitators rather than directors of student learning. In other words, the Program may be better cast as operating from models of teaching and teacher education more in tune with those linked to Dewey or to Rogers. Thus although certain teacher educators emphasize that teaching practice must be carefully defined and consist of well-planned and sequenced classroom activities (Burns et al., 1969; Schalock, 1979). This may not characterize the Professional Development Program at Simon Fraser University. Perhaps, this explains the less than expected changes in levels of teacher competencies observed in this research.

Classroom Variables

The information gathered on the nature of classroom events falls into two categories; the teaching assignment, and the supervision of and feedback about the students' teaching. The Professional Development Program, in which the students in this study were enrolled, describes the first five weeks of the full semester practicum as the "phasing-in" stage and weeks 6 to 12 as the "immersion" stage. Lessons taught, teaching load, and non-teaching duties reached a maximum during week 6, with week 2 being the minimum. The students' teaching assignments increased

over the first half of the practicum and continued at or near those levels for the second half. At the group level, this is consonant with Program guidlines.[1] However, extreme variability found amongst individual students for these measures of teaching assignment was particularly noticeable during the first half of the practicum. There was little consistency in how rapidly a student teacher assumed the duties of a regular classroom teacher. This appears to conflict with the requirement for effective practice teaching outlined by Pearl et. al. (1969), that is, the initiation into teaching practice should be well-planned and logically sequenced.

It may be that a reduction in the intra-student variability concerning the teaching assignment variables would result in a reduction in the variation among students for some of the teacher effectiveness variables. For example, the large variation among individual students for some of the classroom management variables may be a result of performance of classroom management skills being particulary sensitive to changes in teaching load.

Supervision and feedback are important elements of the practicum experience in the Professional Development Program. The guidelines suggest that a "reasonable schedule for regular conferences" be established and that the School Associate

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[1] References to Program guidelines and objectives are contained in the Education 401 and 405 Handbook given to all student teachers and School Associates.

practice "systematic supervision" throughout the practicum. The results of this study indicate a discrepancy between what is expected and what occurs. Both the number of lessons observed and the time the School Associate was present in the classroom declined dramatically over the practicum. In the "immersion" stage (weeks 6 to 12), School Associates observed only about 17% of the students' lessons over the last six weeks and were present in the classroom for just slightly more than 30% of the students' teaching (including lessons observed). During weeks 6 to 12, students were hardly experiencing the type of "systematic supervision" the Program expects. It appears that one of the most important conditions for effective use of the practicum as postulated in the review by Schalock (1979), namely, the careful supervision and assessment of the practice teaching experience, is not being met.

The observation of a student's teaching is expected to take the form of a three phase cycle of supervision. The results of this study indicate that School Associates only infrequently employ all phases, particularly after week 2. In about half of the lessons that the School Associate supervised during weeks 4 to 9, only observation of the lesson occurs. This falls short of the Program goal of "regular conferences" because if they were regular, then the preconference and postconference would occur frequently and consistently over the practicum. The intended purpose of the preconference and postconference is to provide a

focus for observation and feedback to the student teacher about her/his teaching. Russell (1979), in his interviews with student teachers, found that student teachers wanted feedback that was given immediately at the end of the observed lesson. For a great percentage of their teaching time, the students in this study did not receive this type of feedback. The fact that this study showed the postconference phase of the supervisory cycle was often omitted, appears to be in conflict with the students' generally high ratings of School Associate feedback. However, it may be that student teachers may perceive feedback they receive at other times as more important. Perhaps, the comments of School Associates provided in a less formal atmosphere have greater impact upon the student.

In an attempt to develop greater consonance between Program objectives and the realities of the practicum as it presently exists, the Professional Development Program has introduced changes in three areas; student placements, School Associate selection, and School Associate inservice. Many of these recommendations have come from extensive interviews with School Associates (Terry, Holborn, & Gardner, 1980).

The Program has attempted to work closely with school district personnel in matching student curriculum requirements to district resources. During selection, School Associates are encouraged to volunteer to work with a student teacher rather than to accept a student under pressure. Once a School Associate

has been selected more intensive workshops in supervision are provided to increase the School Associates' awareness of their supervisory responsibilities. Following a successful tenure as a School Associate, the cooperating teachers is now awarded a tuition fee voucher that entitles her/him to between three and five semester hours of free tuition, depending on the length of supervision completed. The effectiveness of these measures in improving the quality of student in-class supervision has not yet been demonstrated due to the short implementation period. It seems imperative that high quality supervision by exceptionally competent School Associates is the essential ingredient in developing the skills of teaching over an extended practicum where the modelling of those skills for the student rests with the School Associate.

In spite of the near total absence of improvement in the students' use of teaching behaviours observed in this study, it would seem rather incautious to conclude that the student teachers did not improve their performance in any of the skills of teaching during the practice teaching experience. This study considered only observable behaviours that are present during interactive teaching. School Associates and Faculty Associates who are responsible for the supervision of the students during the practicum may not be working within the competency-based teacher effectiveness framework. In this case, one would hardly expect significant change in teaching behaviours within this

framework. However, classroom teaching is not the only activity of teachers. The previous work of Gregory and Allen (1978) indicated that an increase in student professional self-concept does occur during the last half of the practicum. Tattersall (1979), using the same practicum, found a decline in teacher anxiety in the latter half of the practicum. These results tend to indicate that students are experiencing positive feelings about their professional competence in the latter half of the practicum. Do student teachers channel their energies into the development of organizational skills? Perhaps student teachers attach greater importance and significance to these skills as the skills of competent teachers.

Student teachers probably spend a great deal of time and effort during an extended practicum learning a number of teaching skills that are not based on direct interaction with students in classrooms. Some of these organizational skills may include developing subject matter competence, lesson and unit planning, and assessing pupil learning. Perhaps it is these skills which respond most positively to practice in the classroom. In fact, an area warranting investigation is whether students' improvement in a practicum are in these pre-active and post-active areas of teaching rather than interactive teaching behaviours. Another issue worthy of investigation is whether it is also possible that, though individual teaching skills showed no improvement, perhaps the students' ability to orchestrate

these skills changed. Does the students' ability to arrange or combine teaching skills for maximum effect improve of decline over the practicum?

Another important consideration is whether important teacher behaviours exist outside the teacher effectiveness paradigm. Teacher effectiveness variables are necessary but not sufficient for good teaching. Features from other paradigms such as subject-matter competence, supporting learner choice, and respect for pupil dignity, also may be important, though research has yet document these variables as essential to good teaching.

Initially, student teachers began the practicum with a wide range of competencies in a variety of teaching skills. In the first quarter of the practicum, they were able to teach a class which was strongly influenced by the organizational, instructional, and disciplinary structures of the School Associate. The School Associate's frequent presence in the classroom helped maintain that learning environment.

After the initial familiarization, the School Associate began to reduce her/his presence in the classroom. The frequency of student teacher's lessons observed also declined with a simultaneous dramatic increase in teaching time. It was during this time, about week 4, that the frequency of most teaching skills reached a minimum. Later, as the student adjusted to the rapidly increasing teaching load and decreasing supervision,

energies were directed to trying to maintain the general classroom atmosphere that existed before the practicum began or creating an atmosphere more consonant with the student's teaching style. It is interesting to note that the students' level of skill performance generally improved at this time.

In the final quarter of the practicum, the heavy teaching load and low level of School Associate supervision and observation began to demonstrate a decrease in the quality of the learning environment. It was noted during the observation visits for this study that students were having difficulties with classroom management and subsequently were relying on more traditional lesson formats such as a lecture to the whole class followed by related seat work exercises. This has several implications for the Professional Development Program concerning the effectiveness of the extended practicum in the training of student teachers.

The Program objectives for the extended practicum include an expectation that upon completion the student teacher should be able to: (1) plan, teach and evaluate an extended sequence of teaching/learning; (2) operate the exterded sequence without excessive supervision; and (3) evaluate and then modify his/her own teaching performance. While some emphasis is placed on planning instructional material, greater importance is placed on teaching and evaluating teaching performance. The essential sequence in this design appears to be that the students will

have adequate opportunity to plan a sequence, evaluate their teaching performance, and finally modify that performance. This study has not addressed the first component, namely, the planning and preparing of the sequence. Regarding the second, the low levels of supervision found in this study cannot be judged adequate, but rather insufficient for an appropriate level of feedback regarding teaching performance. The results of this study do not support the third contention that student evaluation and modification of their teaching performance regularly occurred. The levels of performance for the teacher effectiveness variables did not indicate a general trend across students over the last two observation weeks. This indicates that no systematic attempts to evaluate and modify teaching performance were present. To conclude, this study has demonstrated that practice teaching with low levels of supervision fails to provide the appropriate levels of feedback to enable the student to modify her/his teaching performance. It has raised the question about the areas in which student teachers concentrate their energies; organizational skills or teaching skills? Finally, what skills may be most effectively developed by student teachers during such a practicum?

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Appendix A

The Pilot Study

Participants and Setting

The teacher preparation program at Simon Fraser University contains two extended practica. The first (EDUCATION 401) is a half-semester (six weeks) of initial observation and teaching experience in a British Columbia school. The second (EDUCATION 405) is a full semester of classroom experience taken during the second semester. During these practica, the student teacher is assigned to the classroom of a cooperating teacher (School Associate) appointed by the University in consultation with school authorities. The student teacher is regularly visited in the classroom by a representative of the Faculty of Education (Faculty Associate). For this study, the 405 practicum was chosen because of its length (13 weeks) of almost completely uninterrupted opportunity for the student to observe and teach. It is also the students' final preservice classroom experience. At the beginning of the 405 practicum, all student teachers had a basic familiarity with the routines and procedures of the school system as well as an introductory knowledge of teaching skills. Most had completed the major part of their professional coursework.

The pilot-study was carried out in the fall of 1980 using four intermediate elementary student teachers assigned to schools consented in metropolitan Vancouver, British Columbia. The practicum contained three observations for the pilot-study (weeks 2, 6, and 12). They were informed as to the nature of the study and agreed to provide me with information that would assist in developing the observation scheme and other measurement instruments. They and their pupils provided the researcher with valuable feedback that resulted in a number of revisions to the observational instruments and questionnaires used in this study.

The student teachers received brief descriptions of the proposed research. It was the researcher's opinion that an important component of all teaching practica is the interaction that takes place between the student and the cooperating teacher. By fully disclosing all the specific details of the observation scheme to be used, it was felt that students might experience conflict between the expectations of the School Associate and the nature of the data collected by the observer. One student in the pilot study indicated some frustration over a dimension of classroom management used in the observation. The observer was recording features of desist incidents; specifically, whether the student named the offending pupil or not. The student, on the other hand, had been instructed by the School Associate that it was school policy not to identify the

offender but rather to address the desist statement to the entire class.

Instrumentation

Table A is a summary of the teacher effectiveness variables and the corresponding measures of those behaviours chosen for the pilot study. All the measures were completed in the classroom by the observer, pupils, or student teachers.

Table A

Teacher Effectiveness Behaviours and Corresponding Measures

Teacher Effectiveness Variable	Measure
Academic Learning Time	Engagement Rate
Awareness of Individual Differences	Item-Prediction
Classroom Management	Desist Incident Frequency
	Learner Accountability
	Group Alerting

Academic Learning Time Of the components of Academic Learning Time described in the Beginning Teacher Evaluation Study, only engagement rate was used in the pilot study. Engagement rate is

the proportion of the time allocated to a particular lesson in which pupils are actually engaged in the learning task. From the time the student teacher began the lesson until the end, the observer noted at the two minute point, the number of pupils who were not engaged in the learning activity. In addition, the amount of class time time allocated to the lesson (total allocation) was recorded from the classroom timetable or teacher's lesson plan. The amount of time actually used for a particular lesson (total instruction) was obtained by taking the difference between the time the student actually began to teach the lesson, "settling down" time was not included, and when the student indicated to the pupils to put away their books or used some other signal that the lesson was at an end. Total allocation and total instruction are required for calculating engagement rate. Engagement rate is the proportion of allocated time for which the pupils were engaged in learning. Table B contains examples of pupil activities that would be judged as engaged or not engaged.

Table B

Examples of Engaged and Not Engaged Activities Used in Observing Engaged Time

Engaged Activity	Not-Engaged Activity
Listening to the teacher	Looking out the window
Reading	Getting something out of desk
Talking to neighbour about the class activity	Sharpening a pencil
Writing answers	Talking to a neighbour about an unrelated matter
	Waitng for teacher's help

Awareness of Individual Differences To measure the student teacher's awareness of pupils' individual differences another measure used in the Beginning Teacher Evaluation Study, success at item prediction, was used. On each observation week, the student teacher was presented with a 12-item test and asked to predict the success (right or wrong) for the multiple-choice items, or ranking for the five-point Likert-type scale items, for each pupil on each item. The test was constructed with items from four domains: vocabulary, spelling, whole number operations, and pupil self-concept. The items were chosen from standardized test forms commonly used with intermediate

elementary children. After the student teacher had made her/his predictions, the tests were distributed to the randomly pre-selected pupils for their completion. The pupils were given as much time as they required to complete the test. From this a discrepancy score was calculated for each of the five pupils. The discrepancy score is the absolute value of the difference between the score received on an item and the score the student teacher predicted for the pupil. Student teacher success in item prediction was expressed in the Item Prediction Success Score. This score is the difference between the total discrepancy score for the five pupils, expressed as a ratio out of 60 (the maximum total discreparcy score possible), and one. Different tests, but equal in length and domains sampled, were used for each of the of the three observation weeks.

Classroom Management In this study, we observed the student teachers' ability to manage effectively pupil deviancy and to maintain a high level of pupil involvement in the learning tasks. To measure the presence of classroom management skills, a number of the factors identified by Kounin (1970) were used. The occurrence of these behaviours was coded concurrently over the beginning 30 minute portion of the lesson. The observer recorded the frequency of the desist incidents. The recording of group alerting techniques consisted of observing the student teachers' questioning technique. An example of positive questioning technique (QT+) occurred when the student teacher asked a

question, paused for two or more seconds, and then asked an individual pupil to respond. In this case, if the other two elements were included, it was recorded as an example of positive questioning. Positive questioning technique required a single response not a choral response unless specified by the student teacher. The Positive Questioning Ratio was a comparison between the questions coded QT+ and the sum of all teacher initiated questions.

Alerting cues (AC) were also recorded. These consisted of incidents where the student teacher warned non-responders that they might be called upon to answer, or asked pupils who did not have their hand up or did not appear prepared to respond.

For learner accountability, the observer recorded the incidents where the student teacher asked a question which focussed on the pupils' work plans or work progress. Called goal directed prompts (GDP), the question might focus on the individual or be the teacher's enquiry about whether the class understood the nature of the learning task at hand. In work showing (WS), the student asked the pupils to show or demonstrate skills or knowledge to the student teacher or other pupils. In peer involvement (PI), the student teacher attempted to involve pupils in the work of their peers.

From these observations of classroom management came a number of measures. The frequency of the desist incidents is the numerical sum from the observation form. A Positive Questioning

Ratio was used to show the degree to which the student used positive questioning. The ratio is the proportion of all the teacher initiated questions that were coded as positive questioning technique. Finally, the measures of goal directed prompts, work showing, and peer involvement are the sum of the occurrences of each as recorded during the observation. Student Log To provide additional information on events affecting the student teacher in the classroom, the student kept a week-long teaching log during the observation weeks. The log contained information about the teaching assignment such as grades taught, number of lessons taught, amount of time spent teaching, other supervision duties, and total teaching load. Total teaching load is the proportion of available instruction time during the week that the student teacher taught. The student teacher also recorded information about the supervision of her/his teaching by the School Associate and Faculty Associate. This involved recording the number of lessons observed, the portion of the student teacher's teaching for which the School Associate was present in the classroom. Further, information was gathered about how observation data were recorded by the School Associate and what aspects of the supervisory cycle were completed.

A rating instrument of 30 items, developed by Hohman (1971), to identify the role expectations of supervising teachers, was adapted for this study. Seventeen items were selected to define a scale that would gauge the degree to which

the respondents felt that the student teacher should be autonomous from the School Associate during the practicum. During the three observation weeks, both the student teacher and the School Associate completed the instrument. A practice teaching discrepancy score was calculated by examining the degree of difference between the ratings of the School Associate and the student teacher (on a 4-point scale) on each item as a ratio out of 68 (the maximum discrepancy score possible). The degree of agreement between the student teacher's and the School Associate's attitude towards the practicum was expressed by the Practice Teaching Agreement Score. This score was the difference between the practice teaching discrepancy score and one.

Table C is a summary of the classroom variables and the instruments selected to measure them. This group of measures were completed by the student and the School Associate during each of the observation weeks.

Table C

Classroom Variables and Corresponding Measurement Instruments

Classroom Variable	Instrument
Student Teacher-School Associate Relations	Practice Teaching Agreement Scale
Supervision	Student Log
Teaching Assignment	Student Log

Results

The following is a description of the student teachers' teaching assignment as recorded in the log. All students in the pilot study gained experience in teaching at more than one grade level, though none experienced more thar two grades. During the practicum, the number of lessons taught increased dramatically, though the teaching time did not. This may be a result of the student beginning to teach more of the shorter lessons that generally occur during afternoons. The total teaching load

increased over the practicum, but fell considerably short of a full teaching load in the last quarter of the practicum. The apparent decrease during week 6 is probably not a meaningful difference from week 2. Table D contains the data on the teaching assignments.

Table D

Data on Teaching Assignment From Student Logs

		Observation Week 2	6	12
Number of grades taught	S.T. 1[1]	2	2	2
	S.T. 2	1		
	S.T. 3	1	1	1
	S.T. 4	1		3
	Mean	1.3	2.0	1.7
Numbers of lessons taught	S.T. 1	12	22	54
	S.T. 2	11		
	S.T. 3	9	11	22
	S.T. 4	7		30
	Mean	12.0	16.5	35.3
Teaching time (hours)	S.T. 1	8.7	4.8	18.3
	S.T. 2	8.3		
	S.T. 3	7.2	6.8	12.1
	S.T. 4	15.5		11.5
	Mean	7.1	5.8	14.0
Total teaching load	S.T. 1	.4	.2	.8
	S.T. 2	.4		
	S.T. 3	.3	.3	.5
	S.T. 4	.7		.5
	Mean	.3	.3	.6
Supervision duties (hours)	S.T. 1	.8	.8	1.8
	S.T. 2			
	S.T. 3		4.3	4.2
	S.T. 4			3.2
	Mean	.8	2.6	3.1

Note: S.T. = student teacher

[1]The raw data for each student teacher as well as group means are included in the table.

School Associates are responsible for much of the supervision of student teachers. Little variation in the number of lessons observed over the practicum was found with the mean being less than one lesson each day. In the early part of the practicum, School Associates were present in the classroom for more than half of the student's teaching time. This decreased over the practicum, to a low in week 12 of less than one-fifth of the students' teaching. The supervisory model recommended for use in P.D.P. consists of three phases: preconference, observation, and postconference. The data from the student logs suggest that at the beginning of the practicum, all three phases are generally implemented. Later in the practicum, this falls to two, most commonly the observation and postconference. The most common form for recording observation data is brief notes. Few School Associates used other methods such as frequency counts or tape recordings. On the whole, the student teachers appeared to be satisfied with the nature and quality of the feedback they received from the cooperating teacher. Table E displays the data on supervision.

Table E

Data on Supervision From Student Logs

		Observation Week 2	6	12
Number of S.T. lessons observed by S.A.	S.T. 1	6	3	5
	S.T. 2	0		
	S.T. 3	3	2	1
	S.T. 4	1		0
	Mean	3.0	2.5	3.0
Proportion of S.T. teaching with S.A. in classroom	S.T. 1	1.0	.8	.1
	S.T. 2	0		
	S.T. 3	.6	.2	.2
	S.T. 4	.7		.2
	Mean	.6	.5	.2
Phases of supervisory cycle implemented[1]	S.T. 1	3	2	3
	S.T. 2	2		
	S.T. 3	2	2	2
	S.T. 4	3		0
	Mean	2.5	2.0	1.7
Quality of feedback[2]	S.T. 1	3	3	3
	S.T. 2	4		
	S.T. 3	4	4	4
	S.T. 4	3		3
	Mean	3.5	3.0	3.0

Note: S.T. = student teacher, S.A. = School Associate

[1]Maximum of three phases

[2]Scale used: 4=very satisfactory, 3=satisfactory
2=unsatisfactory, 1=very unsatisfactory

The Practice Teaching Agreement Score was used to gauge how the attitudes of student and cooperating teacher, towards practice teaching, compare over the practicum. Over the three observation weeks, no significant differences were found between the responses of the School Associates and student teachers. Similarly, no meaningful differences over the practicum were found for the mean Item-Prediction Success Scores and mean engagement rates, though some individual students appeared to have made significant changes in their skill levels.

For the measures of classroom management, with the exception of goal directed prompts, no significant differences over the practicum were found. For goal directed prompts the mean for week 6 is well above that for week 12. With the extremely small sample size, we may cautiously infer the students were checking on pupil work progress more frequently at the middle of the practicum than at the end. Table F contains the mean scores for the rest of the teacher effectiveness measures used during the pilot-testing.

Table F

Data for Teacher Effectiveness Measures Over the Practicum

		Observation Week		
		2	6	12
Practice Teaching Agreement Score	S.T. 1	.7	.7	.7
	S.T. 2		.7	
	S.T. 3	.9	.8	.8
	S.T. 4	.8		.8
	Mean	.8	.8	.8
Item Prediction Success Score	S.T. 1		.4	.6
	S.T. 2	.6	.7	
	S.T. 3	.7		.6
	S.T. 4	.8		.7
	Mean	.7	.6	.7
Engagement Rate	S.T. 1	.8	.7	.9
	S.T. 2	.7	.7	.6
	S.T. 3	.6	.8	.7
	S.T. 4	.7	.7	.8
	Mean	.7	.7	.8
Desist Incident Frequency	S.T. 1		9	7
	S.T. 2		4	2
	S.T. 3		5	16
	S.T. 4		20	
	Mean		9.5	8.3
Alerting Cue Frequency	S.T. 1		0	0
	S.T. 2		0	0
	S.T. 3		0	1
	S.T. 4		0	
	Mean		0	.3

Table F continued...

Positive Questioning Ratio	S.T. 1	.6	.8
	S.T. 2	.7	.5
	S.T. 3	.4	.6
	S.T. 4	.4	
	Mean	.6	.6
Goal Directed Prompts	S.T. 1	5	3
	S.T. 2	2	0
	S.T. 3	2	3
	S.T. 4	5	
	Mean	5.3	1.7
Work Showing	S.T. 1	3	8
	S.T. 2	2	0
	S.T. 3	2	3
	S.T. 4	5	
	MEAN	3.0	3.7
Frequency of Peer Involvement	S.T. 1	0	0
	S.T. 2	2	0
	S.T. 3	0	0
	S.T. 4	2	
	Mean	.7	0

Note: Missing data during week 2 was due to extensive revision in method of observing and recording these variables. Comparisons with other observation weeks would be misleading.

Discussion

There were two primary objectives for the data collected during the pilot study. One was to permit the researcher to modify and revise the effectiveness measures to make them more sensitive to events occuring during the practicum. The other was to provide data that would begin to address the questions about the practicum asked earlier.

For the first objective, the pilot study allowed changes in vocabulary and format used on the istruments to make them specific to practice teaching and to have them clearly understood by all the participants in the study i.e., student teachers, cocperating teachers, and pupils.

It was hoped that the pilot study would begin to explain how student teachers learn and practice the skills of teaching during an extended practicum. Though the size of the sample was very small and many revisions to the instruments occurred during the pilot study there appears to have been little or no change in the levels of effectiveness, as measured in this study, over the practicum. This is in spite of the evidence from the students' logs which showed great variation in all aspects of their teaching assignment. Though extreme caution is required in any interpretation from the pilot data, the practicum may not be

the time when the student teacher practices the skills of effective teaching. Perhaps, student teachers concentrate on other skills such as developing subject matter competence, lesson and unit planning, and the skills of communication with peers, principals and parents.

Appendix B

Letters and Consent Forms

SFU

8th December, 1980

Dear Student Teacher:

I am a graduate student working on a doctoral degree in education. My research interest is on the effects practice teaching has on developing, in the student teacher, necessary teaching skills. The research mainly involves observing the student teacher and her/his performance at regular intervals during a practicum. I should like to enlist your voluntary support to be a participant in this study. To help you decide I am including all the essential details of the research. Title of the Study: The Acquisition, by Student Teachers, of Selected Teacher Effectiveness Behaviours Over an Extended Practicum. Proposed starting date of the Study: 5th January, 1981. Proposed duration of the Study: 13 weeks.

1. Purpose of the Study

Practice teaching is an important and universal component of teacher education programs. It is considered by some to be the most important component of such programs. In spite of the perceived importance and function of the practicum, few studies have examined the skill development of student teachers as it actually occurs over time. Teacher effectiveness research has now begun to identify classroom teaching behaviours which strongly influence pupil achievement. A legitimate subject for research is the method by which these behaviours are developed and the extent to which student teachers become proficient in modelling them during their practice teaching. Using measurable features of teacher effectiveness, this study will attempt to gauge the extent to which they are present in a given classroom. During an extended practicum, as the student teacher gains facility in the skills and behaviours associated with teaching, the gains should be reflected in changes in those measures of teacher effectiveness.

2. Research Hypothesis

An examination of a number of reviews of teacher effectiveness literature have identified a number of areas of teacher behaviour

that strongly affect pupil achievement. They are the amount of time that pupils are engaged in learning, teacher awareness of pupil individual differences (both social and academic), teacher clarity of presentation, classroom management, the degree of teacher control over instruction, and the affective responses of teachers to pupils. From this, two research questions can be identified. If the measures of teacher effectiveness are reliable predictors of pupil learning performance in the classroom, then, at what rate and to what extent, during a practicum, does a student teacher acquire facility in demonstrating the teaching behaviours that support those measures? That is, are the components of the construct called teacher effectiveness developed in student teachers' performance to predictable levels during a practicum? Finally, is it possible to identify some of the factors affecting student teacher performance, such as the quality and nature of feedback received, amount of teaching workload, and the frequency and nature of the supervisory visits, with a view to explaining why the observed changes in student teacher performance occur during the practicum?

3. Experimental Design & Procedure

The three semester Professional Development Program (P.D.P.) at Simon Fraser University is characterized by two extended practica. During these practica the student teacher is assigned to a cooperating teacher (School Associate) and is regularly visited in the classroom by a representative of the Faculty of Education (Faculty Associate). For this study, the 405 practicum will be used because of its uninterrupted length (13 weeks) and as it is the final preservice classroom experience. The experimental design selected for this study is a multiple baseline design across behaviours. The 13 week practicum will contain five observations; week 2, 4,6, 9 and 12. During each observation the four teacher effectiveness measures will be administered and supplementary information will be gathered by the student for the entire week. A sample of 10 to 15 intermediate student teachers from Lower Mainland school districts will be used. Student teacher participation will be voluntary. School Associates will be notified that their student teacher is a participant in the study. The letter will give information about the study and will request their voluntary participation. All the teacher effectiveness variables and the corresponding measures of those behaviours are to be completed in the classroom by observers or pupils. In-class observations will be made by the researcher or trained observers. Training in the use of the observation instruments will be given prior to the beginning of the study. Two of the measures (item prediction and teacher clarity) require pupil participation. Pupil anonymity will be preserved on both of the instruments. Though pupil participation is voluntary, they will be encouraged to complete the instruments. Parental permission will be obtained in the form of an open letter from the researcher to be taken home by the pupils in the classroom.

The analysis of the data from this study will be structured to answer a number of questions. First, were there statistically significant changes in the measures of student teacher effectiveness over the practicum? More specifically, did the mean scores on the four measures for the student teachers in the sample change in a statistically significant way over the 12 weeks? Next, looking at the changes in mean scores, what trend in the measures appeared over the practicum? Finally, how important was the effect of the supplementary data gathered on the student teachers' experiences during the practicum in affecting change in the effectiveness measures? A time-series graph will be prepared for each of the four teacher effectiveness measures. The trend lines will then be tested to determine if they are statistically significantly different from zero.

Anonymity will, of course, be respected at all times. It is hoped the results of this research will help in the training of future teachers. I hope you find the explanation to your satisfaction. If you have any questions please contact me at my office (291-4387) or at home (420-6362). To meet the requirements of the University Ethics Committee, would you sign and date the attached consent form to indicate your informed consent to participate in the study.

Sincerely,

W. O. (Bill) Marble

WOB/ta

SFU

SIMON FRASER UNIVERSITY BURNABY BC CANADA V5A 1S6
FACULTY OF EDUCATION 291-4387

8th December, 1980

Dear School Associate:

As you are aware, a student teacher from Simon Fraser University will be assigned to your classroom over the first three months of the new year. During that time the student teacher has volunteered to participate in a research project to be conducted by myself. I am a graduate student working on a doctoral degree in education. My research is on the effects practice teaching has on developing, in the student teacher, necessary teaching skills. The research mainly involves observing the student teacher and her/his performance at regular intervals during a practicum. I should like to enlist your voluntary support in three ways. First, I will need to visit your classroom five times and observe the student teaching the class. A trained observer or myself will locate ourselves as unobtrusively as possible at the back of your classroom in order to keep the disruption of normal routine to a minimum. At the end of the lesson pupils will fill out a short questionnaire rating the clarity of the lesson. Next, five pupils will be selected to perform a simple 12 question quiz to allow me to see how well the student teacher's prediction of pupil performance compares with the pupils' actual performance. Both these measures are for research purposes only. During the weeks of my visit, I would like to have you complete a very short questionnaire, giving your opinions about the practice teaching experience. Anonymity will be respected. It is hoped the results of this research may help in the training of future teachers. I hope you will find this explanation to your satisfaction. If you have any questions please contact me at my office (291-4387) or at home (420-6362). To meet the requirements of the University Ethics Review Committee, would you sign and date the attached consent form to indicate your informed consent to participate in the study.

Sincerely

W. O. (Bill) Marble

WOB/ta

SFU

SCHOOL ASSOCIATE/STUDENT TEACHER

CONSENT FORM

This research procedure has been requested by W. O. Marble, a graduate student at Simon Fraser University. I have read the procedures outlined in the letter to School Associates.

I understand the procedures to be used in this research and also understand that the procedures may be terminated at any time at my request.

I also understand that I may register any concerns I might have about the research with Mr. Marble.

My signature below certifies that I consent to the procedures described in the accompanying letter and which are to be conducted during the period January 5 to April 3, 1981.

DATE _____ NAME _____
(please print)

SIGNATURE _____

(Letter to School Principal)

12th December 1980

As you are aware, a student teacher from Simon Fraser University will be assigned to a teacher in your school for the first three months of the new year. During that time the student teacher has volunteered to participate in a research project to be conducted by myself. I am a graduate student working on a doctoral degree in education. My research is on the effects practice teaching has on developing, in the student teacher, necessary teaching skills. The research mainly involves observing the student teacher and his/her performance at regular intervals during the practicum. I will need to visit your school five times to observe the student teaching the class. The observation will be done as unobtrusively as possible to keep the disruption of normal routine to a minimum. In keeping with your School Districts' policy and the requirements of the University Ethics Review Committee I would like to obtain voluntary participation. A similar request will be made to the teacher, pupils and parents involved.

For your information I have attached copies of letters from Dr. Jared Curtis, and Dr. Stan Shapson. As well I have included a copy of the research proposal which has been approved by Burnaby's Research Review Committee.

Sincerely,

W. O. (Bill) Marble

WOM:mt
Attach.

December 15, 1980

Dear Parent,

As you are perhaps aware, a student teacher from Simon Fraser University will be assigned to your child's class over the first three months of the year. During that time, the student teacher has volunteered to participate in a research project to be conducted by myself. I am a graduate student working on a doctoral degree in education. My research is on the effects practice teaching has on developing, in the student teacher, necessary teaching skills. The research mainly involves observing the student teacher's performance at regular intervals during the practicum. There are two ways in which your chld may be involved. First, after certain lessons the pupils in the class will be asked their opinions about the clarity of the instruction they received from the student teacher. Second, your child may be selected to perform a simple 12 question quiz to allow me to see how well the student teacher's prediction of pupil performance compares with the pupils' actual performance. Both these measures are for research purposes only, and will in no way affect the progress of your child. Anonymity will, of course, be respected at all times. It is hoped the results of this research will help in the training of future teachers. I hope you will find the explanation to your satisfaction. If you have any questions please contact me at my office (291-4387) or at home (420-6362). To meet the requirements of the University Ethics Committee, would you sign and date the attached consent form to indicate your informed consent for your child to participate in the study.

Sincerely,

W. O. (Bill) Marble.

WOM:mt
Attach.

PARENT/GUARDIAN

CONSENT FORM

As the parent/guardian of (name of child) _____
I consent to my child participating in the research outlined in the letter to Parents to be carried out in the school classroom during the period January 5 to April 3, 1981 in a research project to be supervised by Mr. W. O. Marble, a graduate student at Simon Fraser University.

My signature below certifies that I understand the procedures to be used and have explained them fully to my child. In particular, he/she knows that they have the right to withdraw from the study at any time, and that any concerns about the research may be brought to the attention of Mr. Marble.

DATE _____ NAME _____
(please print)

SIGNATURE _____

Appendix C

Observation Instruments

ACADEMIC LEARNING TIME OBSERVATION RECORD

Identity No. _____ Week: _____ Observation, Date: _____

Class (sample) size: _____ Grade: _____

1. Number of minutes allocated for the lesson according to the time timetable of lesson plan.

   TOTAL ALLOCATION = _____(A)

2. Number of minutes of instruction given in total.

   Time lesson began = _____ TOTAL INSTRUCTION = _____(B)

   Time lesson finished= _____

Time Interval		Time Interval	
Start		Minute 30	
Minute 02		32	
04		34	
06		36	
08		38	
10		40	
12		42	
14		44	
16		46	
18		48	
20		50	
22		52	
24		54	
26		56	
28		58	
		60	

PUPIL RESPONSES TO TEACHER INITIATED QUESTIONS:

CORRECT PUPIL RESPONSES =
INCORRECT OR NO PUPIL RESPONSE =

CALCULATION OF ENGAGEMENT RATE:

Identity No.: _____ Week: _____ Observation Date: _____

(1) Number of "unchecked" spaces in observation form = _____

(2) Number of 2-minute intervals = _____

(3) Average number engaged = $\frac{(1)}{(2)}$ = _____ (C)

(4) Number of students in sample = _____ (D)

(5) TOTAL ENGAGEMENT RATE = $\frac{(B) \times (C)}{(A) \times (D)}$ = _____

CALCULATION OF ERROR RATE

Identity No. _____ Week: _____ Observation Date: _____

Number of incorrect pupil-responses = _____ (A)

Total number of pupil responses = _____ (B)

ERROR RATE = $\frac{(A)}{(B)}$ = _____

ITEM PREDICTION

Identity Number _____ Week _____

The 5 pupils listed below will be completing the 12 items on the attached sheets. For each item predict how each pupil will respond on the items. For items 1 - 9, put a ✓ or a X in the appropriate spaces below. for whether you predict the pupil will get the item right or wrong. For items 10-12, predict which word the pupil will check and write the word in the appropriate spaces below. Check your predictions carefully before you ask the pupils to complete the items.

Next, have the pupils complete the items (be sure to have them put their names on the quiz). Place this sheet plus the five unmarked quizzes into the envelope provided.

ITEM PREDICTION

PUPIL'S NAME	QUESTION NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12

Name _____

Please do your best on the 12 questions on this paper. It will have no effect on your grades, it is only for university research purposes.

Find the word that means the same as the underlined word. Place the number of the word in the space at the right:

1. They planned <u>otherwise</u>

   (1) wisely (2) ahead (3) with others (4) differently 1( )

2. His <u>firm</u> voice

   (1) loud (2) soft (3) angry (4) steady 2( )

3. A small <u>fragment</u>

   (1) crack (2) description (3) piece (4) layer 3( )

Find the spelling mistake. Place the number of the mistake in the space at the right:

4. (1) drops (2) fine (3) goat (4) clozed 4( )

5. (1) kindergarten (2) policeman (3) Canadain (4) alligator 5( )

6. (1) mind (2) bare (3) neat (4) rased 6( )

Work out the answers to the following problems:

7. $\begin{array}{r} 56 \\ \times\ 6 \\ \hline \end{array}$

8. $\begin{array}{r} 58 \\ \times\ 35 \\ \hline \end{array}$

9. $23\overline{)8000}$

For each of the next 3 statements, check under the word that tells how <u>you feel you compare with the other students in the class</u>. For example, suppose you think your singing is very good <u>compared to others in the class</u>, your answer would look like this:

	Great	Very Good	Good	O.K.	Bad
How well you sing	___	✓	___	___	___
10. How smart you are	___	___	___	___	___
11. How good you are at games	___	___	___	___	___
12. How other kids like to play with you	___	___	___	___	___

Name _____

Please do your best on the 12 questions on this paper. It will have no effect on your grades, it is only for university research purposes.

Find the word that means the same as the underlined word. Place the number of the word in the space at the right:

1. A hasty decision

   (1) wrong (2) hurried (3) hard (4) thoughtful 1( )

2. An exact statement

   (1) lengthy (2) accurate (3) careless (4) acceptable 2( )

3. Apply for the job

   (1) ask (2) look (3) prepare (4) dress 3( )

Find the spelling mistake. Place the number of the mistake in the space at the right:

4. (1) jam (2) ice cream (3) brik (4) angry 4( )

5. (1) chief (2) tenth (3) fether (4) agent 5( )

6. (1) lasy (2) turn (3) cover (4) idle 6( )

Work out the answers to the following problems:

7. $\begin{array}{r} 24 \\ \times\ 13 \\ \hline \end{array}$

8. $8\overline{)75}$

9. $8\overline{)1670}$

For each of the next 3 statements, check under the word that tells how you feel you compare with other students in the class. For example, suppose you think your singing is very good compared to others in the class, your answer would look like this:

How well you sing	Great	Very Good ✓	Good	O.K.	Bad
10. Have good ideas in class	___	___	___	___	___
11. How good you are at sports	___	___	___	___	___
12. How popular you are	___	___	___	___	___

Name _____

Please do your best on the 12 questions on this paper. It will have no effect on your grades, it is only for university research purposes.

Find the word that means the same as the underlined word. Place the number of the word in the space at the right:

1. Decided the outcome
   (1) believed (2) changed (3) settled (4) lost 1.( )
2. Excuse the mistake
   (1) repeat (2) correct (3) answer (4) overlook 2.( )
3. A frisky horse
   (1) wild (2) fast (3) spirited (4) frightened 3.( )

Find the spelling mistake. Place the number of the mistake in the space at the right:

4. (1) lace (2) learn (3) seet (4) else 4.( )
5. (1) neither (2) asking (3) printing (4) liveing 5.( )
6. (1) tonsils (2) skale (3) bowl (4) palm 6.( )

Work out the answers to the following problems:

7. 910 X 7

8. 79 X 34

9. 147) 892

For each of the next 3 statements, check under the word that tells how you feel you compare with the other students in your class. For example, suppose you think your singing is good compared to others in your class, your answer would look like this:

		I feel....				
		Great	Very Good	Good	O.K.	Badly
	How well you sing	___	___	✓	___	___
10.	How good your marks on tests are	___	___	___	___	___
11.	How healthy you look	___	___	___	___	___
12.	How many friends you have	___	___	___	___	___

Name _____

Please do your best on the 12 questions on this paper. It will have no effect on your grades, it is only for university research purposes.

Find the word that means the same as the underlined word. Place the number of the word in the space at the right:

1. The animal's <u>fleece</u>
   (1) wool (2) hide (3) fur (4) mane 1.( )

2. A <u>former</u> teacher
   (1) strict (2) proper (3) previous (4) well-liked 2.( )

3. <u>Evidence</u> of light
   (1) sign (2) notice (3) pictures (4) outcome 3.( )

Find the spelling mistake. Place the number of the mistake in the space at the right:

4. (1) hatch (2) gardin (3) yard (4) after 4.( )

5. (1) bass (2) metrs (3) fear (4) damp 5.( )

6. (1) atic (2) drag (3) error (4) hare 6.( )

Work out the answers to the following problems:

7. $\begin{array}{r} 80 \\ \times\ 27 \\ \hline \end{array}$

8. $6\overline{)84}$

9. $245\overline{)2940}$

For each of the next 3 statements, check under the word that tells how <u>you feel you compare with other students in the class</u>. For example, suppose you think your your singing is very good <u>compared to others in the class</u>, your answer would look like this:

	Great	Very Good	Good	O.K.	Bad
How well you sing	___	✓	___	___	___
10. How smart you are	___	___	___	___	___
11. How good looking you are	___	___	___	___	___
12. How well other kids listen to you	___	___	___	___	___

CALCULATION OF ITEM PREDICTION SUCCESS SCORE

Identity Number _____ Week _____

Discrepancy score for pupil #1 =

Discrepancy score for pupil #2 =

Discrepancy score for pupil #3 =

Discrepancy score for pupil #4 =

Discrepancy score for pupil #5 = _____

Total discrepancy score = _____

$$\frac{\text{Total discrepancy score}}{60} = \_\_\_\_\_ \text{ (A)}$$

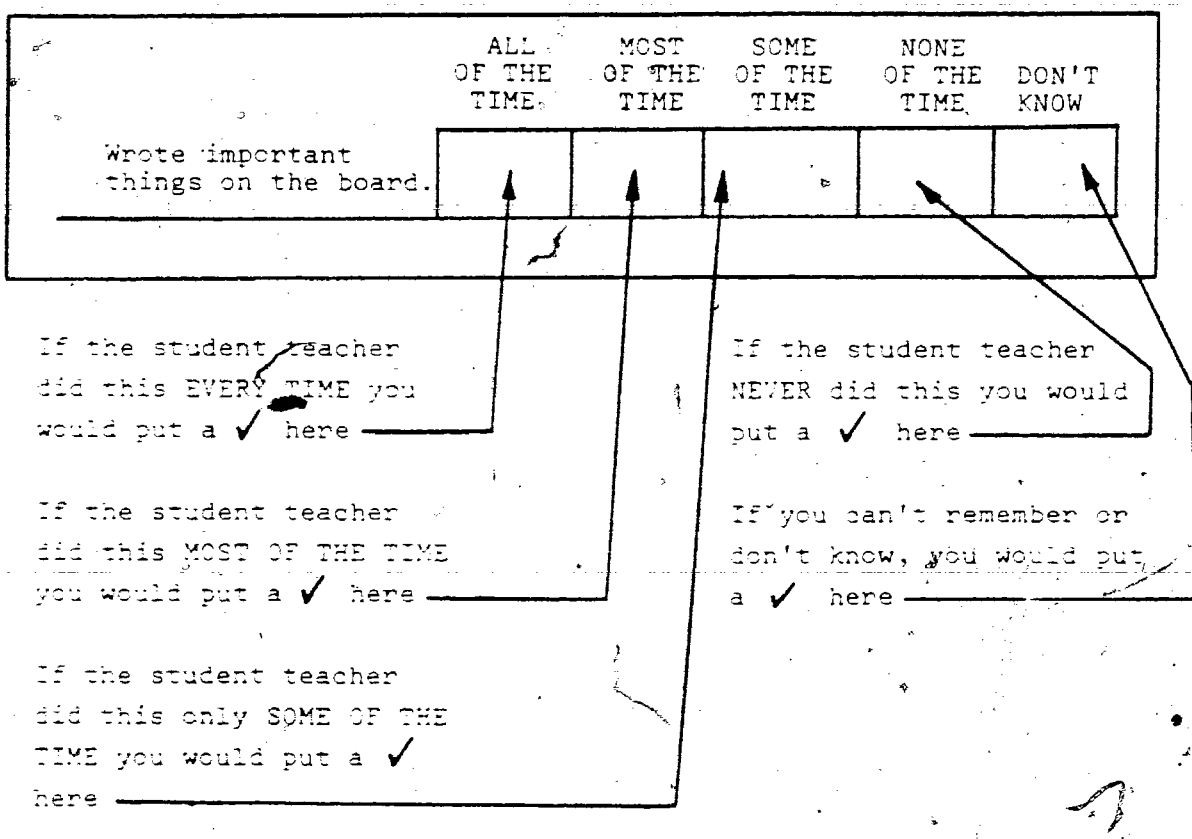
Item Prediction Success Score = 1 - (A) = _____

PUPIL QUESTIONNAIRE

This is a questionnaire on how you feel about the lesson your student teacher just taught. This information will not be used to grade your student teacher but is for university research purposes only.

As you read each question, put a ✓ under ONE of the five columns at the right of each question.

Here is an example:



OUR STUDENT TEACHER:	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	NONE OF THE TIME	DON'T KNOW
[illegible]					
[illegible] tried to find out when we didn't understand and then repeated it.					
[illegible] went through the new work step-by-step.					
[illegible] described the work we had to do and how to do it.					
[illegible] asked us if we knew what we were to do and how we were to do it.					
[illegible] prepared us for what we were going in the next lesson.					
[illegible] gave enough details when teaching.					
[illegible] repeated things that were hard to understand.					
[illegible] stopped to give us a chance to think about what was being taught.					
[illegible] gave us enough time for practice.					

OUR STUDENT TEACHER:	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	NONE OF THE TIME	DON'T KNOW
[illegible] showed us examples of how to [illegible] the classwork and homework.					
[illegible] answered our questions.					
[illegible] went over difficult problems on the board.					
[illegible] stayed on each part of the work until we understood.					
[illegible] explained something and then worked an example.					
[illegible] gave us a chance to ask questions.					
[illegible] showed us how to do the work.					
[illegible] went over difficult points.					
[illegible] asked us questions to find out if we understood the work.					
[illegible] explained things simply.					

CALCULATION OF TEACHER CLARITY SCORE

Identity Number _____ Week _____

For each pupil responding:

Strike out all statements where pupil code "D.K." ..... (A)

Statements remaining = 20 - (A) ..... (B)

Score remaining statements as follows: A=3, M=2, S=1, N=0

Sum these valuse to obtain a Total Score ..... (C)

Calculate Teacher Clarity Score = $\frac{(C) \times 20}{(B)}$

	(A)	(B)	(C)	Teacher Clarity Score
Pupil #1				
#2				
#3				
#4				
#5				
#6				
#7				
#8				
#9				
#10				
#11				
#12				
#13				
#14				
#15				
#16				
#17				
#18				
#19				
#20				
#21				
#22				
#23				
#24				
#25				
#26				
#27				
#28				
#29				
#30				
#31				
#32				
TOTAL TEACHER CLARITY SCORE =				(D)

TEACHER CLARITY MEAN SCORE = $\frac{(D)}{\text{Number of pupils}}$ = _____ (E)

TEACHER CLARITY RATIO = $\frac{(E)}{60}$ = _____

CLASSROOM MANAGEMENT OBSERVATION FORM

Identity No. _____ Week: _____ Observation Date: _____

Time observation began =

Time observation ended = _____

Elapsed time = (30 m.)

DESIST INCIDENTS

DI 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

DEVIANT	STOP	BEGIN
frequency		

GROUP ALERTING

ALERTING CUES

AC+ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

QUESTIONNING TECHNIQUE

QT+ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

QT- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

LEARNER ACCOUNTABILITY

GOAL DIRECTED PROMPTS

GDP+ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

WORK SHOWING

WS+ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

PEER INVOLVEMENT

PI+ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

CALCULATION OF CLASSROOM MANAGEMENT SCORES

Identity No._____ Week: _____ Observation Date:_____

DESIST INCIDENT FREQUENCY = Total number of desist incidents = _____

Frequency of "DEVIANT" + "STOP" + "BEGIN" = _____(A)

Desist Incident Frequency X 3 = _____(B)

DESIST INCIDENT QUALITY $= \frac{(A)}{(B)}$ = _____

NET ALERTING CUE SCORES $= \#AC^{+} - \#AC^{-}$ = _____

POSITIVE QUESTIONING RATIO $= \frac{QT^{+}}{QT^{+} + QT^{-}}$ = _____

FREQUENCY OF GDP^{+} = _____

FREQUENCY OF WS^{+} = _____

FREQUENCY OF PI^{+} = _____

Appendix D

Student Log

STUDENT TEACHER LOG

WEEK _____

IDENTITY _____

Teaching Assignment:

	Grades Taught	Number of Lessons	Teaching Time (min)
Reading			
Language			
Spelling			
Writing			
Mathematics			
Science			
Social Studies			
Physical Education			
Art			
Music			
Others (specify): _____ _____			

Other Duties: Give total time (min.) spent for each duty for the week.

SUPERVISION	TOTAL TIME (min.)
Before class in the morning	_____
During recess	_____
During noon-hour	_____
After school	_____

NOTE: Include any activity involving students (e.g., coaching or refereeing under the appropriate time of day.

Where there any changes to regular school hours this week? NO ____ YES ____

If YES, how many hours less? _____

Observation of your teaching:

How many lessons were observed (full or part) by your S.A.? _____

For what percentage of your teaching time was the S.A. present in the classroom? _____

What parts of the supervisory cycle were usually completed by the S.A.? (check those that apply)

Pre-Conference _____

Observation _____

Post-Conference _____

How was the observation data about your lessons generally recorded by the S.A. (check those that apply)?

Brief notes _____ Frequency counts _____

Tape recorder _____ Others (specify);

_____ _____

In general, how would you describe the feedback about your teaching that you have been receiving from your S.A. to date?

VERY SATISFACTORY _____

SATISFACTORY _____

UNSATISFACTORY _____

VERY UNSATISFACTORY _____

How many lessons were observed (full or part) by you F.A.? _____

In general, how would you describe the feedback about your teaching that you have been receiving from your F.A. to date?

VERY SATISFACTORY _____

SATISFACTORY _____

UNSATISFACTORY _____

VERY UNSATISFACTORY _____

During the week were there any disruptions during any of your lessons (e.g., firedrill, assembly, nurse etc.)?

NO _____ YES _____

If yes, please describe the disruption(s): _____

_____

The following areas involve acquired skills in methods and curriculum that are potential problem areas for student teachers. Circle the number that best represents the degree of difficulty you are presently experiencing during the practicum (leave blank any items that do not apply):

	No Difficulty		Moderate Difficulty		Extreme Difficulty
Managing the classroom	1	2	3	4	5
Individualizing instruction	1	2	3	4	5
Understanding the legal responsibilities of teachers	1	2	3	4	5
Teaching culturally different students	1	2	3	4	5
Utilizing school and community resources	1	2	3	4	5
Teaching exceptional children	1	2	3	4	5
Designing units of instruction	1	2	3	4	5
Applying the results of educational research	1	2	3	4	5
Assisting exceptional pupils to gain acceptance in the classroom	1	2	3	4	5
Assessing pupils' instructional levels and learning needs	1	2	3	4	5
Using alternate teaching strategies with pupils having learning problems	1	2	3	4	5
Applying classroom management techniques that insure positive interaction and facilitate learning for children	1	2	3	4	5
Evaluating pupil progress and using this data to revise your teaching	1	2	3	4	5
Utilizing appropriate questionning techniques	1	2	3	4	5
Designing and using teacher-made tests	1	2	3	4	5
Developing and/or using instructional media (e.g., audio-visual aids)	1	2	3	4	5
Identifying goals and objectives appropriate to pupil needs	1	2	3	4	5

Planning to meet long-term and short-term goals	1	2	3	4	5
Planning appropriate learning activities and experiences	1	2	3	4	5
Building self-awareness and self-concept in pupils	1	2	3	4	5

STUDENT TEACHER LOG ANALYSIS

Identity _____ Week _____

Teaching Assignment:

Grades taught 1___ 2___ 3___

Number of lessons _____

Teaching time _____(min.) = _____h.

Supervision _____(min.) = _____h.

School hours Regular _____ Shortened by _____h.

Observation:

Lessons by S.A. _____

Observations by S.A. _____

Supervisory Cycle Score 3 _____ 2 _____ 1 _____ 0 _____

Observation Data Notes _____

F.C. _____

T.R. _____

_____ _____

S.A. Feedback Quality 4 _____ 3 _____ 2 _____ 1 _____

Lessons by F.A. _____

F.A. Feedback Quality 4 _____ 3 _____ 2 _____ 1 _____

S.T. Areas of Difficulty Score = _____

PRACTICE TEACHING QUESTIONNAIRE

This scale has been prepared to allow you to indicate how you feel toward the practice teaching experience. Please answer every item. For each statement draw a circle around the letter which represents your own reactions, in the area to the right of each question.

SA - if you strongly agree
A - if you agree
U - if you are undecided
D - if you disagree
SD - if you strongly disagree

Remember, the only correct statement is the one which actually represents how you feel. Do not hesitate to answer frankly and honestly.

1.	A student teacher should be permitted to take over the class any time he/she is prepared.	SA	A	U	D	SD
2.	A student teacher should not be left alone in the class.	SA	A	U	D	SD
3.	The student teacher should be permitted to teach during the first week of his/her practicum. If prepared to do so.	SA	A	U	D	SD
4.	Conferences between the student teacher and supervising teacher should be initiated by the student teacher.	SA	A	U	D	SD
5.	A student teacher should conform to suggestions of her/his supervising teacher.	SA	A	U	D	SD
6.	The supervising teacher should permit the student teacher to operate freely so he can express her/himself as a teacher.	SA	A	U	D	SD
7.	The supervising teacher should explain the best way to solve any problem that might arise during the student teaching experience.	SA	A	U	D	SD
8.	Much time should be spent in conference discussing the methods and communication to and from pupils.	SA	A	U	D	SD
9.	The student teacher should not criticize the supervising teacher.	SA	A	U	D	SD

10.	The student teacher should not critize the school facilities.	SA	A	U	D	SD
11.	Not more than 10% of the time during the entire experience should be used by a student teacher to check attendance and other "clerical" tasks.	SA	A	U	D	SD
12.	The student teacher must be given the opportunity to plan and execute his ideas even if they disagree with the supervising teacher's ideas.	SA	A	U	D	SD
13.	The student teacher should take the initiative to seek out the available material to supplement his teaching.	SA	A	U	D	SD
14.	The student teacher should be introduced to the class as "your other teacher" or "my assistant teacher" rather than as a "student teacher".	SA	A	U	D	SD
15.	The student teacher should assume responsibilities gradually under the guidance of the supervising teacher.	SA	A	U	D	SD
16.	Hopefully, the student teacher will assume the supervising teacher's entire schedule during the school experience.	SA	A	U	D	SD
17.	Student teachers having assume the teaching load should be on their own but informed as to where the supervising teacher can be reached if needed.	SA	A	U	D	SD

CALCULATION OF PRACTICE TEACHING AGREEMENT SCORE

Identity Number _____ Week _____

Scoring: 5=SA, 4=A, 3=U, 2=D, 1=SD

	SCORE		DISCREPANCY SCORE
	SCHOOL ASSOCIATE	STUDENT TEACHER	
ITEM #1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
TOTALS			(A) =

PRACTICE TEACHING DISCREPANCY SCORE = $\frac{(A)}{68}$ = _____ (B)

PRACTICE TEACHING AGREEMENT SCORE = 1 - (B)= _____