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ABSTRACT

Effective supervision of student teachers has become a growing concern for teacher educators due to the increased emphasis placed on field experience in teacher preparation programs. Lacking an effective means of providing intervention, feedback, and reinforcement during the process, supervisors, both cooperating teachers and university based supervisors, have relied on the delayed and frequently awkward retrospective approach of post-observation conferencing. Therefore, an investigation was initiated to address the need to develop a more systematic method of offering corrective and constructive feedback during the supervision of student teachers. The study investigated the use of a mechanical device, the bug-in-the-ear (BIE) device, with 22 elementary education student teachers and their cooperating teachers. The BIE is a small, wireless one-way communication instrument, similar to that used in broadcast journalism, which allows the supervisor to communicate privately with the trainee. The supervisor is able to view the situation and simultaneously direct the trainee to attend to specific behaviors using short concise cues or prompts. The results of the study suggested that cooperating teachers and their student teachers enjoyed using the BIE, that the BIE was considered an effective and appropriate means of communicating with the student teacher during the teaching process, and that student teachers could attend to the two sets of verbal stimuli simultaneously. The student teachers also pointed out some technical difficulties, such as unwanted noise, that need to be worked out. (Contains 23 references.) (ND)

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The Bug-in-the-ear Device: An Alternative Student Teaching Supervision Strategy

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The Bug-in-the-ear Device:
An Alternative Student Teaching Supervision Strategy

The supervision of preservice teacher education students has gained considerable attention recently due to the increasing emphasis placed on field experiences in the professional development of teachers by departments and colleges of education and by state certification agencies. It is commonly believed that people can learn to teach, or at least teach better, and that field experiences afford such opportunities. In order to improve practice, teacher education students listen to what others, primarily their cooperating teacher, say about their teaching. The potential for constructive and helpful feedback during clinical field experiences is great, yet, the learning process is often restricted by the inability of the supervisor to provide immediate and simultaneous reinforcement and/or intervention to the teacher education student. Traditional supervision strategies rely on after-the-fact discussions of what occurred and suggestions on how it might be improved given the same conditions and circumstances. Unfortunately, in teaching, the same set of conditions and circumstances are rarely seen. This common model of supervision, therefore, lacks an effective means of providing feedback and reinforcement or intervention during the ongoing process when the greatest potential for learning by the prospective teacher occurs.

Supervision Practices

An attempt to employ developing technology in supervision has been the use of the mechanical third ear device, the bug-in-the-ear or BIE (Giebelhaus & Cruz, 1994). The BIE device is a small, inexpensive, wireless one-way communication instrument[1], similar to that used in broadcast journalism, which allows the supervisor to privately communicate with the trainee. Located away from the trainee, the supervisor is able to view the situation and simultaneously direct the trainee to attend to specific behaviors using short concise cues or prompts. This strategy has been applied in a variety of clinical training settings where communication during supervision is an issue, including medicine, psychology, counseling, dentistry, and teaching (Baum and Lane, 1976; Boylston and Tuma, 1972; Bubenzer, et al., 1986; Domoto, Weinstein and Getz, 1979; Giebelhaus and Cruz, 1993; Hunt, 1980; van der Mars, 1984, 1988; Ward, 1960).

Field experiences in teacher education programs, especially student teaching, have long been considered the most influential aspect in the education of prospective teachers, providing the greatest potential opportunity for learning and thus contributing to the future success of teachers (Lanier and Little, 1986; Edmundson, 1990). If recent reform proposals and state legislation trends requiring more hours of field experience for state teacher certification are valid indicators, it can be assumed that extended field experiences in preservice teacher education will assume an even larger portion of the

[1] The wireless device utilized in this study was the **Realistic FM Wireless Video Camera Microphone System** by Tandy Corporation (Cat. No. 32-1226). The device, which costs approximately $60.00 U.S., consists of a light-weight, pocket-sized, battery operated receiver and transmitter.

total preparation program (Metcalf, 1991). Although the relative merits of extended field experiences continues to be debated, one thing remains clear: if preservice teachers spend a larger porportion of their professional development program involved in clinical experiences, the significance of the supervision processes utilized during those experiences increases (Metcalf, 1991).

The responsibility for supervision of preservice teachers has increasingly been placed with field-based supervisors or cooperating teachers. Recent reform initiatives such as the Holmes Group Proposal (1986) have focused attention on the importance of the cooperating teacher in the student teaching process. The inherent influence of the cooperating teacher on the professional development of teachers is well documented (Friebus, 1977; Hersh, Hill and Leighton, 1982; Karmos and Jacko, 1977), yet according to a 1990 American Association of Colleges for Teacher Education (AACTE) survey, training for cooperating teachers in the supervision processes appears to be a rarity (Lewis, 1990).

Purpose of the Study

Given the increased emphasis placed on field experiences in preservice teacher education and the lack of routine formal training for cooperating teachers in the supervision processes, the significance of discovering an effective means of communicating to provide constructive and helpful feedback during the learning process takes on even greater importance. It is clear that one major limitation to the successful development of teaching skills by student teachers is communication during the supervision process (Hoover, O'Shea, and Carroll, 1988; Griffin, et al., 1983; Zeichner, 1980). Although there have been at least four previous investigations using the BIE technology with preservice teachers (van der Mars, 1984, 1988; O'Pry and Pease, 1987; and Giebelhaus and Cruz, 1992), this study was initiated as the first in teacher education where a wireless communication system was utilized systematically to examined the effect and effectiveness of the BIE intervention strategy with student teachers during the ongoing teaching/learning process using a true experimental design. Specifically, the purpose of the study was to determine if student teachers in their last practicum experience before state certification could attend to two sets of verbal stimuli simultaneously and effect immediate changes in their teaching behavior based on the prompts or cues given by their cooperating teacher/supervisor. As such, it lays a foundation in the area of student teaching supervision communication and feedback by providing a framework for future inquiry.

Data Collection and Analysis

This study investigated the use of the BIE device with twenty-two elementary education student teachers and their cooperating teachers in a naturalistic setting during autumn quarter, 1992. The study, conducted at a large mid-western university, involved student teachers placed in three school districts representing urban and suburban areas and included seventeen schools (fourteen elementary and three middle schools). The investigation took nine weeks to complete.

Treatment groups in the investigation were student teachers in their last practicum

experience before state certification who received audio-cuing or prompting via the BIE device from their cooperating teacher (experimental) and those who did not (control). The target skill or dependent variable, was fourteen discrete teacher clarity behaviors (Figure 1) documented in the literature as observable and measurable (Hines, 1981; Hamilton,

Insert
Figure 1

1988; Metcalf, 1989) and found to be easily cued or prompted in short, concise statements. Data collected included both descriptive and empirical evidence.

The focus for this presentation is the descriptive data gathered from three sources. The cooperating teachers utilized two self-reporting instruments to gather evidence of the effect and effectiveness of the BIE device. The first instrument used by experimental group subjects only, a modified version of Metcalf's (1989) Teaching Skills Observation Instrument (partially illustrated in Figure 2), allowed the

Insert
Figure 2

cooperating teacher to record the frequency and types of prompts given to the student teacher during each observation where the BIE was employed. In addition, notations were made regarding the effect each prompt had on the student teacher; that is, whether or not the student teacher responded to the prompt by attending to the behavior. The second source of data was the Cooperating Teachers Reflective Log. This instrument is a focused journal which was kept by all cooperating teacher subjects to record data regarding the type, subject and frequency of feedback given to the student teachers, as well as reaction to the supervision process. These logs contained both open-ended questions and Likert scaled items as partially illustrated below in Figure 3. Finally, to collect data regarding the perceived effect and

Insert
Figure 3

effectiveness of the BIE with student teachers in the experimental group, a survey instrument was utilized which included both open-ended questions and Likert scaled items. Using a format similar to the Cooperating Teachers Reflective Log, the Student Teacher Response Form focused on the perception of student teachers with such items as:

Discuss some specific strengths of using the BIE device ...
Discuss concerns or shortcomings regarding the use of the BIE ...
What do you consider the biggest benefit of using the BIE ...

Analysis of the data from these instruments revealed serveral important details. The data presented on Table 1 suggests that, although each of the cooperating teachers used the device for the minimum number of times (seven), two teachers (07 and 09) cued more heavily on skills outside the target area, such as classroom management. The large variation in number of cues given within the target skill area suggests that some

Insert Table 1

teachers were more comfortable using the device and, thus, cued their student teacher on the specific clarity skill target behaviors more and more consistently. Student teachers who were cued on the target clarity skills behaviors did, however, effect immediate change in their teaching behaviors. The range for immediate response to the clarity skill cues given was 83% to 100%, with the overall average rate of response at eighty-eight percent. Regardless of the comfort level of the cooperating teacher with the technology, however, the overall effectiveness of the technology was rated high by the cooperating teachers (Table 2). The cooperating teachers rated highest the

Insert Table 2

ability for the student teachers to easily adapt to the BIE technology. Cooperating teachers also reported that the device could effectively assist in providing appropriate feedback while student teachers were engaged in teaching. In addition, student teachers generally reported the use of the BIE device as contributing to a supportive, reassuring, non-threatening supervision-observation atmosphere while providing useful feedback for further discussion. This study, therefore, offered evidence in support of the hypothesis that student teachers who receive audio-cuing during the teaching process can attend to two sets of verbal stimuli and do effect immediate change in their teaching behaviors.

Discussion

The intent of this investigation was to examine the effect and effectiveness of the bug-in-the-ear (BIE) intervention strategy with student teachers in their last practicum experience before state certification. This study utilized previous research in teacher clarity skills and extended the research efforts in the application of the wireless communication system with student teachers initiated by van der Mars (1984). As a result, it provides an important foundation for future research in the area of supervision communication and feedback during the field experiences of preservice teachers.

The findings of this research support the conclusion that student teachers can and do affect immediate change in teaching behaviors during the teaching process while receiving cues or prompts via the BIE device. Using a revised version of the original Teaching Skills Observation Instrument (Metcalf, 1989) modified to include only the fourteen selected discrete clarity skills, cooperating teachers noted the kinds and frequency of cues given to student teachers while teaching. All of the fourteen discrete

cues were addressed during the study by at least four of the cooperating teachers. The cue most frequently given was "Explain" referring to the need to explain unfamiliar words. The cue given least often was "Practice Time", referring to providing opportunities for students to practice. These results seem to support the use of teacher clarity skills as an appropriate dependent variable for this investigation, not only because were they observable, but these discrete clarity skills were successfully cued and responded to by the student teacher. Further, on the basis of the frequency to which these discrete teacher clarity skills were prompted by the cooperating teachers, there appears to be a need to address the skills during student teaching as part of the learning/practice process.

The data collected from the Cooperating Teacher Reflective Log and the Student Teacher Response Form supported the notion gleaned from previous research (Giebelhaus and Cruz, 1992) that the BIE intervention strategy had a positive impact on both the cooperating teacher and the student teacher. Although both the student teachers and cooperating teachers communicated a favorable review regarding the effect of the intervention strategy, some technical problems occurred. These problems included such annoyances as a buzzing sound in certain areas of some classrooms, the longevity of the batteries used to operate the transistorized device, and the earphone which slipped out of the ear of some of the student teachers. As one teacher commented, "The BIE must be used enough to get past the mechanics..." Another cooperating teacher suggested, "The cooperating teacher needs to use it (the BIE) also to learn how it operates, the noises in it, and the words most easily understood ..." This study seemed to demonstrate that using the BIE intervention strategy, although generally a positive experience, required some patience with the technological aspects. More time with the BIE device would likely solve this dilemma.

In addition, those student teacher and cooperating teacher dyads who employed the BIE device discovered that the BIE allowed opportunities to give appropriate feedback during the teaching process. Comments from cooperating teachers to support this conclusion included, "The BIE is helpful to direct attention to specific circumstances going on in the classroom..." In addition, the impact of its use extended to the post-observation conference experience where more detailed discussion of cued situations were considered. Cooperating teachers remarks which would support this conclusion included, "The BIE does give focus to the conference ... we talked mainly about the cued areas (examples) used in her demonstration..." It is widely noted that the post-observation conference stage of the supervision process is considered to be an opportunity to provide feedback and guidance to improve the instruction by the student teacher (Hopkins and Moore, 1993). This study demonstrated that the BIE intervention could provide a means of giving appropriate feedback during teaching and add focus to the post-observation conference, both leading to the growth and development of teaching skills in student teachers.

Further, the more often and more consistently the BIE was employed during the teaching process, the better each member of the dyad felt about using it. Comments from cooperating teachers to support this statement include, "We're getting more use to the BIE, cues given and responses required...", "(The student teacher) feels she has more confidence when using the BIE ...", and "He seems to need less cues as he

progresses..." However, if the cooperating teacher employed the BIE device reluctantly or less frequently, the student teacher may be less positive regarding its use. For example, one student teacher suggested that although she believed the BIE could be helpful to her during student teaching, "...my cooperating teacher was not comfortable using the BIE, therefore, neither was I." Thus, with regard to the BIE technology, the cooperating teachers' attitudes and beliefs have a decisive influence on the successful implementation.

Finally, several cooperating teachers and student teachers suggested that this intervention strategy is most appropriate when the lesson is more difficult or in situations where the student teacher is "treading on new ground". It is noted in the literature that student teachers have a clear preference for the more directive approach to supervision earlier in the student teaching experience (Copeland and Atkinson, 1978; Copeland, 1980, 1983). This study suggests that BIE intervention, a directive approach to supervision, assists students by providing a "safety net" which adds to a sense of security and confidence.

Conclusions

Effective supervision of student teachers has become a growing concern for teacher educators due to the increased emphasis placed on field experience in teacher preparation programs. Lacking an effective means of providing intervention, feedback, and reinforcement during the ongoing process, supervisors, both cooperating teachers and university based supervisors, have relied on the delayed and frequently awkward retrospective approach of post-observation conferencing. This investigation was initiated to address the need to provide a more systematic method of offering corrective and constructive feedback during the supervision of student teachers. The results of the study suggest that cooperating teachers and their student teachers enjoyed using the BIE, that the BIE was considered an effective and appropriate means of communicating with the student teacher during the teaching process, and that student teachers could attend to two sets of verbal stimuli simultaneously. As a pioneer study in the field, this study has established a foundation for supervision research using the BIE technology and should, therefore, be considered a framework for future experimental inquiry in the field of teacher education student teaching supervision.

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Student Teacher Behavior	Audio-cue/notations
1. Informs student of the lesson objectives in advance	"give objective"(GO)
2. Points out what is important for the students to learn	"highlight important points" (IP)
3. Repeats things that are important	"repeat ____" (R-)
4. Writes important things on the board or chart	"use board" (UB)
5. Summarizes material presented to the class	"summarize" (SUM)
6. Makes use of verbal, written or practical examples	"give example"(E.G.)
7. Works through examples on the board and demonstrates the procedure to be used	"demonstrate" (DEM)
8. Tells students the meaning of word/words with which the students are unfamiliar	"explain" (EXP)
9. Repeats things students do not seem to understand	"re-explain or rephrase" (RR)
10. After explaining some aspect of the instructional content, the teacher pauses to allow students to think about it	"pause" (P)
11. Asks questions to check students' understanding	"ask questions" (?)
12. Allows time for students to ask questions	"wait time" (WT)
13. Provides opportunities for students to practice or work examples	"practice time" (PT)
14. Examines student work	"check work" (CW)

Figure 1: Teacher Clarity Behaviors

The following observation notations should be utilized as often as appropriate:

EG * CUED

EG * CUED AND THEN USES SKILL

* EG Place a tally mark next to any cue, cue/response, or skill when used more than once within the time frame

Student Teacher Skill	Minutes	Observation Record						
Informs student of lesson objectives in advance (GO)	1-5	GO EXP	IP RR	R- P	UB ?	SUM WT	EG PT	DEM CW
Points out what is important for students to learn (IP)	6-10	GO EXP	IP RR	R- P	UB ?	SUM WT	EG PT	DEM CW
Repeats important points for students to learn (R-)	11-15	GO EXP	IP RR	R- P	UB ?	SUM WT	EG PT	DEM CW
Writes important things on board (UB)	16-20	GO	IP	R-	UB	SUM	EG	DEM

Figure 2: Teaching Skills Observation Instrument

Briefly describe the post-observation conference as to the type of feedback and reactions.

not at all		moderately well		very well	
1	2	3	4	5	The student teacher is adapting to the BIE device ...
1	2	3	4	5	The pre-determined cues worked ...
1	2	3	4	5	The BIE can be used to provide appropriate feedback during the lesson ...
1	2	3	4	5	The BIE gives focus to the conference ...

What benefits/difficulties, if any, did you have using the BIE today?

Figure 3: Cooperating Teachers Reflective Log

Table 1
Overall Frequency of Cues Given By Cooperating Teacher

Subject	Number of Clarity Cues	Cued, Then Responded	Response Rate
01	95	80	84.2%
02	26	26	100%
03	63	54	85.7%
04	21	19	90.5%
05	13	12	92.3%
06	36	36	100%
07*	1	1	100%
08	55	46	83.6%
09*	6	5	83%
Overall	316	279	88.3%

TABLE 2
Overall BIE Effectiveness Ratings By Cooperating Teacher

Subject	Student Teacher Adapts to BIE	Cues Worked	Appropriate Feedback	Provided Focus	Overall Mean
01	4.8	4.57	4.4	4.7	4.61
02	2.66	2.16	2.66	3.8	2.82
03	4.8	3.8	4.3	4.0	4.23
04	4.75	4.75	4.75	4.02	4.5
05	2.2	2.1	2.5	1.5	2.08
06	5.0	5.0	5.0	5.0	5.0
07	5.0	5.0	5.0	5.0	5.0
08	4.28	3.42	4.14	3.57	3.85
09	4.8	3.8	5.0	3.0	4.15
Overall	4.25	3.84	4.19	3.84	4.03