DEVELOPMENT OF A COMPUTER-BASED INTERACTIVE TEACHING SIMULATION PROGRAM FOR PHYSICAL EDUCATION

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DEVELOPMENT OF A COMPUTER-BASED INTERACTIVE TEACHING SIMULATION FOR PHYSICAL EDUCATION

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ABSTRACT

Development of a Computer-Based Interactive

Teaching Simulation for Physical Education

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The purposes of this study were to develop a computer-based interactive teaching simulation exercise and to explore its potential use in the development as well as assessment of the preservice student's interactive teaching skills in the area of physical education.

The project was conducted in two phases. Phase one, was employed to design the simulation exercise. In order to complete the design, the following tasks were completed: (1) the teaching skills that were considered important for effective teaching were identified; (2) the teaching situations that required the participants to apply the identified teaching skills were selected; (3) a computer based interactive teaching simulation exercise was designed.

Phase two was devoted to the evaluation of the designed simulation exercise. Eighteen physical education majors (training group) and twelve public school teachers (experienced group) were administered the designed instrument according to a standard procedure. Each subject was administered the instrument after which the observed results were coded and the data analyzed. The derived results demonstrated that the

experienced group differed from the training group in performing the simulated tasks. The subjects in the experienced group had a significantly higher rating score than the subjects in the training group ($P<.01$). When asked to make a decision regarding whether to handle the situations as presented to them or not, the subjects from the experienced group made decisions that were different from the subjects in the training group. In addition, the actions employed by the subjects from the two groups also differed. The experienced group chose actions that were rated the highest rating score (3 on a scale of 1-3) and used "effective" teaching actions more frequently than the training group ($P<.01$).

A reliability estimate for the total test score was calculated using Cronbach's alpha. A coefficient of 0.58 was obtained. This value was judged to be moderate, yet comparable to similar studies.

On the basis of the above results, the present study suggests that the simulation exercise which was developed here is useful in the development and assessment of the selected physical education teaching skills.

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CHAPTER 1

INTRODUCTION AND STATEMENT OF THE PROBLEM

A. Introduction

Interactive teaching includes many crucial pedagogical teaching skills, such as instruction and demonstration, monitor, feedback, and classroom management (Shulman, 1987). Students in teacher education not only must learn how to perform these skills, but be able to select and apply them appropriately with different students and classroom situations. Extensive and varied practice to ensure that these skills transfer across varying teaching situations is essential for the development of an effective teaching repertoire (Strang, Badt & Kauffman, 1987).

Teaching pedagogical skills at least early in training involves the use of textbook and lecture formats. Although initial training is traditionally conducted in this fashion, these methods may fail to convey the complex teaching context that makes these teaching skills and principles meaningful. Because of this, or because knowledge and skills are taught out of context, the learners often do not see the point of what they are learning and have no idea how to apply much of what they have learned (Collins, 1994).

Evaluation of the pedagogical skills usually involves the use of the multiple-choice format. Although this format can be used to measure declarative teacher knowledge (i.e., knowing what...) and procedural

knowledge (i.e., having the skill or knowing what to do) , it is less adequate in assessing the conditional knowledge (i.e., knowing not only what and how, but also when and why to do what...). The reasons for this limitation are: (1) this format fails to convey the interactive, dynamic, and diverse nature of factors in the teaching situation; (2) it only looks at the pieces of information and knowledge that a teacher could recognize or reproduce rather than how individual uses stored knowledge to teach (Cohen, 1989; Barnes, 1988). Furthermore, when used alone, this format is limited in its ability to predict teaching performance and to identify the most competent teachers in some groups (Ayers, 1989; Copeland, 1989; and Quirk, Witten, & Weinberg, 1973).

A potential solution to the problems involved in teaching and assessing pedagogical skills is to use a simulation technique. The use of simulation technique allows for the presentation of complex teaching situations that facilitate the student's learning new teaching skills and draws forth the teaching knowledges and skills available to them (Cruickshank, 1988; Smith, 1986; and Skeel, 1989).

B. The Problem

In the teacher preparation component of education, simulation technique as an instructional tool, has been studied and used to teach the various pedagogical skills, such as the skill and knowledge needed in the classroom management, discipline, and task presentation (Cruickshank, 1988; Smith, 1987). As an assessment tool, simulation method has also been used to assess skill domains in preactive (McNergney, 1983) and interactive teaching (Hays, 1988; Shannon, 1993).

To date, however, this technique has not been studied extensively in the area of preparation of physical educators. No study was reported regarding the use of this technique to evaluate students' teaching skills. Few simulations were available specifically to the students in physical education for improving their teaching techniques. A need to explore how to apply this technique in physical education exists.

C. Purpose Of The Study

This study aimed to develop a computer-based simulation of interactive teaching. Its potential use in teaching as well as assessment of the students' interactive teaching skills in the teacher preparation component of physical education was also explored.

D. Limitations

The limitations of this study were:

1. The small sample size decreased the power of the investigation.
2. The subjective scores of open-ended response contributed to the error variance of the performance score.

E. Definition Of Terms

1. Teacher decision making. A process that involves the application of professional judgment in deciding when, where, how and why to use the other components of teaching (Kauchak, 1993).

2. Teaching Interactive decision. The decision made by the teacher while a lesson is in progress (Butefish, 1990).

3. Teacher performance. The behavior of a teacher while teaching a class (Medley, 1982).

4. Teaching skills. The set of knowledges, abilities and beliefs a teacher possesses and brings to the teaching situation (Medley, 1982).

5. Declarative knowledge. Knowledge that is composed of factual information regarding concepts and their interrelationships (Ennis, 1994).

6. Procedural knowledge. Knowledge about how to perform or use the information (Ennis, 1994).

7. Conditional Knowledge. Knowledge of when to use declarative or

procedural knowledge (Ennis, 1994);

8. Simulation. A controlled representation of real situation that calls on participants to respond and provides some form of feedback to those responses (Thurman, 1994).

CHAPTER 2

REVIEW OF LITERATURE

This chapter presents a review of selected literature that relates to the topic of simulation, with focus on the use of simulation in teacher education. The following sections have been included: A. Definition of the simulation; B. Use of simulation in the teacher preparation component of education; C. Use of simulation in the teacher preparation component of physical education.

A. Definition

A common definition of simulation is to "duplicate the essential characteristics of a task or situation" (Thurman, 1994; Smith, 1986). However, many writers believe that simulations do more than merely present manipulated "realities". For example, Rice (1966) wrote that simulation called upon the learner "to respond through decision." Cruickshank (1966) indicted that simulation "provided users with problem-solving experiences related to their present and future work." Desrochers (1993) mentioned that simulation "allows students to make a decision and then observe the effect of that decision in a particular setting." Although many writers define simulation in slightly different terms (Smith, 1986;

Thurman, 1994; Desrochers, 1993), the following common elements are evident: (1) simulations are controlled representations of real situations; (2) they call on participants to respond, and (3) they provide some form of feedback to those responses.

B. Use of simulation in the teacher preparation component of education.

The use of simulation is not new. As early as 1960s, pioneers such as Kersh, Paul Twelker, and their associates at the Teaching Research Division of the Oregon State System of Higher Education began to develop special simulation material for preservice teachers. Since then, many others have developed and used varieties of simulations for training and evaluating various teaching skills (Cruckshank, 1988; Smith, 1987). In this section of the review, the studies involving the use of simulation as an instructional tool and as an assessment tool are presented separately.

1. Simulation as an instructional tool

Traditionally, teaching skills were taught mainly through the lecture format. One of the problems with this format was that students were usually bombarded with pedagogical principles, yet they were given little opportunity to exercise or apply those principles in realistic situations (Twelker, 1970). Recognizing this and some other related problems, many

educators and researchers promoted and used simulation as a way of bridging the gap between theoretical courses and actual teaching experience. For example, Twelker (1970), developed and employed a two-phased simulation to train preservice students in management skills. In the first phase, students were taught the principles of classroom management, while in the second phase, they were provided with the opportunity to exercise those principles in a simulated environment.

Similar to Twelker, Kersh (1961) engaged students in simulated teaching situations, and trained them to respond to the situations in ways which were prescribed for them. Cruickshank and Broadbent (1967) developed a teaching simulation based on the problems reported by inservice teachers. By completing the simulation, students became acquainted with these bothersome problems and thus were better prepared to solve similar teachers' problems that might occur in the actual classroom.

Putnam (1983) devised and used computer simulation to study and train teachers in diagnostic and prescriptive decision-making skills needed to teach arithmetic. During simulation, the "teacher" was required to present "simulated students" with the learning task(s), such as column addition for a mathematics course, and then proceed with the next teaching move according to the responses of the simulated student.

Kauffman, et al. (1985), had preservice students at the University of Virginia engage in a simulation designed to provide an opportunity to teach

a list of spelling words to a simulated class of students. According to the authors, in this simulation the teacher "does most of those things he/she does during a lesson (such as, the teacher may ask students questions, tell them how to perform, listen to their answers, and comment on their work)." By this interaction with simulated students, the "teacher" practiced five teaching skills: feedback, pacing, involvement, wait-time, and discipline.

There are some other examples that could be found in the literature regarding the use of simulation to develop various teaching skills of the preservice students. These examples are summarized in Appendix F.

While in the past few decades, many teacher preparation educators promoted and used simulation to develop the teaching skills of the preservice student, a small number of researchers focused their studies on the effectiveness of the technique. From these studies the reliable positive training effects were derived (Twelker, 1965; Buehning & Schieman, 1983).

Twelker (1965, 1970) and Kersh (1965) reported that trainees who were exposed to teaching simulation were able to learn "correct" classroom management techniques and exhibited these techniques later on post-tests.

Using a variation of the Kersh's materials, Girod (1969) reported that his subjects increasingly were able to discriminate cues necessary to identify simulated problems. In a field test of Kersh's materials at Michigan State University, Vlcek(1966) reported that students who underwent teaching simulation training were better able to solve simulated problems, as opposed

to students having no such training.

Employing Kersh's materials, Twelker (1965) found that students were able to learn and apply correct responses to new situations presented via simulation. Twelker (1968) compared simulation training to student teaching in the actual classroom. He found that student teachers who had undergone simulation training spent significantly greater amounts of time in the behaviors promoted in the simuation (such as dealing with childern's needs, care-taking, accepting feelings, and other constructive behaviors) than those who had not received simulation training.

Using the materials developed by Twelker (1970), Forgan (1969) reported the directed classroom teaching benefits derived from simulation training. Forgan found that student teachers who had undergone simulation training were more effective in the classroom. They used effective strategies to counter pupils' disruption more frequently. They provided more opportunity for pupil leadership, were more supportive of pupils, and were reported to have fewer discipline problems by their classroom supervisors.

Not only was simulation able to improve teaching skills, some authors found it could also change student attitudes toward simulation instruction and toward self. Cruickshank (1966) reported that his students indicated greater satisfaction and ability to cope with teaching problems. Similarly, Broadbent (1967) reported that students who had completed his simulation

program rated it favorably, and "learned about themselves, their methods of reacting to attacking problems and their relationships to students."

Buehning and Schieman(1983) concluded that through their simulation for music teachers, "we produced a simulation that was both highly motivating for the participants and instructionally meaningful".

In summary, many teacher educators have developed simulations to train preservice teacher's teaching skills. The available evidence regarding the effectiveness of the technique confirms that use of simulation can improve and/or develop the skills of the preservice teachers.

2. Simulation as an assessment tool.

Traditionally, simulation was mainly used as an instructional tool. However, recently, a few attempts have been made to use this technique as an alternative means of teacher assessment. According to Cruickshank (1993) and Shannon (1993), there are two reasons for such a change.

First, there is a need for alternative means of teacher assessment. The traditional paper-pencil assessment format has dominated the teacher assessments. However, it has been found that this format fails to provide the validity evidence of the test. In addition, this format is also limited in its ability to measure the teacher's general subject and pedagogical knowledge. In other words, it is less adequate to measure or determine whether teachers are able to utilize that knowledge in life-like and real situations.

Secondly, simulation method seems to be able to meet the current needs of the assessment (Cruickshank, 1993) since it can produce work samples or examples of how teachers teach and think.

Gerlach and Millward (1989) reported using two types of simulations to assess preservice teacher's teaching skills. One type of simulation they developed was classroom-oriented. Another was not strictly classroom-oriented. Classroom-oriented simulation presented preservice teachers with classroom situations that were familiar to sophomore education majors. The non strictly classroom-oriented simulation was designed to elicit behaviors necessary both in and out of the classroom to produce effective teaching. The intention of the simulations was to measure such behavior dimensions as initiative, innovative decision making, leadership, sensitivity, problem analysis, and communication skills.

Preactive teaching simulation developed by McNergeny, et al. (1983), was another type of simulation exercise designed for the use of assessing teaching skills, especially the preactive (planning) teaching skill. Included in this simulation were thirty scenarios or problems that teachers might have to address as they planned instruction for a class. Each problem was followed by a set of potential decisions. During the simulation, the "teacher" first read the problem presented on computer screen, then he or she was required to select one of the potential decisions at the end of the problem. Once a decision was selected the next problem appeared on the

screen. According to the authors, this simulation has been administered to 72 students for the purpose of item analysis. The validity of this test had not been conducted.

Hays (1988) also developed a simulation for use in evaluating the teacher's interactive teaching competencies. In the simulation the participant first read the descriptive classroom situation, then was required to select one of the four possible teaching actions in a given time. According to Shannon(1993), this simulation was administered to groups of students. The data collected from the tests suggested that this approach could identify the skill differences between different groups.

Comparatively, of all the tests reported, the simulation method developed by Hays was considered to be one of the more promising formats used to assess teacher's interactive competencies (Shannon, 1993). This is because: (1) the test provides preliminary evidence of construct validity; and (2) the simulation model not only focuses on simulating the classroom situations as many other models do, but also simulates the limited time allowed for making decisions in interactive teaching by asking participants to respond (selection of possible actions) to the situation within a limited time. Obviously, a test constructed in this manner is more realistic in terms of time used in making interactive decisions because it gives almost no delay time and requires the examinee to make a quick judgment, as one must do in an actual setting.

Although Hays's simulation shows certain advantages, it also has some weaknesses. One of them is that it still uses the multiple-choice format, which asks participants to select the response rather than to generate a response. Since selecting a response, as criticized by Barnes (1988), is not the same as generating a response, it is inappropriate to assume that one who has the ability to select a decision would also have the ability to generate a decision.

In summary, the use of simulation as an assessment tool is still in its infancy. More studies need to be conducted to improve the simulation in terms of the format and to establish validity and reliability of the instrument.

C. Use of simulation in the teacher preparation component of physical education.

Few studies were found regarding use of this approach to training student teacher in physical education. Among the few that did, one work was done by Boyle (1988). He developed a computer simulation that allowed students to become acquainted with the problems they may encounter in the field. This simulation was not classroom-oriented but focused more on interpersonnel relationship.

Another study was conducted by O'Sullivan and his associates (1986). They developed a computer-augmented training system to help

physical education student teachers improve their "withit-ness" skills in a simulated setting.

No report was found involving the use of simulation to evaluate student's teaching skills in the physical education area. It appears that the use of simulation in physical education is relatively rare. More studies are needed to explore possible applications in this area.

CHAPTER 3

METHOD AND PROCEDURES

The study was conducted in two phases. Phase one was devoted to the design of the computer simulation exercises, while phase two focused on the evaluation of the designed simulation exercises and exploration of its potential use in preparation of physical educators.

A. Designing the computer-based simulation exercises

The following six steps were used in this part of the study: (1) to determine the knowledge and skills to be targeted in the designed simulation exercises; (2) to select the typical interactive classroom situations to be used; (3) to design the scenario for each selected situation; (4) to determine the presentation format of the scenario; (5) to design computer-based simulation lesson exercises; and (6) to conduct the pilot study. The selection of the six steps in this study was based on the review of literature, from which it was determined that similar projects had been successfully developed by using these steps (Gerlach & Millward, 1989).

1. Determination of the knowledges and skills to be targeted

The main purpose of the study was to develop an interactive teaching simulation that could provide the context for applying and/or evaluating knowledges and skills needed to perform effective teaching. The first thing to do in designing an interactive teaching simulation , therefore, was to

identify the skills and knowledges considered important to successful teaching. Through a review of research on teaching (Reynolds, 1992; Evertson & Harris, 1992; Shavelson & Stern, 1981; Graham, 1993 and Rink, 1993), five skill or knowledge areas were identified (Table 1.1, on the following pages):

Area one: Knowing when and how to teach classroom rules or procedures;

Area two: Knowing when and how to manage student's behavior;

Area three: Knowing how to check for students' understanding;

Area four: Knowing how to effectively perform the organizational tasks;

Area five: Knowing how to monitor students' practice effectively.

It must be noted that there were some other skills and knowledges, such as observational and demonstration skills, which were also important for effective teaching, but they were not included in the present study because of the difficulty in creating the appropriate simulated context.

Table 1.1 Teaching Skills And The Selected Situations

Selected Skill Areas	Subordinate Skills And Or Effective Teacher Behaviors	Selected Situations & Situational Tasks
1. Establishing the classroom procedures (behavioral protocols)	a) Maintaining (acknowledging) good behaviors	
	Effective teachers take time to teach classroom procedures. When students follow the procedures, they reinforce (acknowledge) the good behaviors.	Handles the situation in which students are getting better in following the procedure (S211)*.
	b) Consistency in following the established classroom procedures.	
	Once the procedures have been established, effective teachers use the same standards from one day to the next. When students do not follow the procedure, they insist (demand) students redo it;	Handles the situations in which students are not following the procedures (S111, and S234-f).
2. Managing student's behavior	a) Handling the late arrivals.	
	"How to handle the late arrivals" is one of the many class events that a teacher must consider when establishing a management system.	Handles the situation in which a few students come to classroom late (S112)
	Effective teachers have higher expectations of their students. They require their students come to class on time.	

* : See Appendix A for more information about the selected situations; S211 stands for situation 211.

(continued on next page)

Selected Skill Areas	Subordinate Skills And Or Effective Teacher Behaviors	Selected Situations & Situational Tasks
2. Managing student's behavior (cont'd)	b) Responds to inappropriate behaviors.	
	Knowing how to handle minor misbehavior: effective teachers usually handle minor misbehavior unobtrusively with the techniques such as physical proximity or eye contact. They also know ignoring the inappropriate misbehavior when (1) it is of short duration & not likely to persist or spread out; (2) it is only a minor deviation; or (3) reacting to it would interrupt the class or call undue attention to the behavior.	Handles the situation in which students exhibited the minor misbehavior (S122)
	Knowing how to handle the seriously misbehavior: Whenever the behavior of student could harm another student or whenever some behaviors are seriously disrupting the class activity a teacher should take action to suppress the misbehavior immediately.	Handles the situation in which students exhibited the serious misbehavior (S135-b and S135-c).
3. Task presentation	a) Checking for students' understanding	
	At the culmination of an instruction and demonstration episode, effective teachers test students to be sure that they understand the instruction (by asking them to demonstration/state the component of the skills).	Handles the situation which requires the teacher to decide whether and how to check for students' understanding (S231).

(continued on next page)

Selected Skill Areas	Subordinate Skills And or Effective Teacher Behaviors	Selected Situations & Situational Tasks
4. Organizational skills	a) Efficiency in use of class time	
	If the students do not know what to do when teacher tells them to perform a management task, or it takes too long to do it teacher should have them to practice it so they will not waste time on other occasions.	Handles the situation in which students do not perform the management task properly. (S121)
	b) Gives clear organizational instruction	
	When the organizational instruction is done with clarity, the students understand the task and can proceed it quickly. Effective teachers give clear direction and tell what they expect of the students.	Gives instructions to have students (1) form the group (S132-a); (2) set up the stations (S132-b); (3) practice the drill (S134); (4) spread out (S221); and (5) distribute the equipment (S232).

(continued on next page)

Selected Skill Areas	Subordinate Skills And Or Effective Teacher Behaviors	Selected Situations & Situational Tasks
5. Monitoring student' learning	a) Prioritizes teaching and learning problem.	
	When the students are sent to practice the drill, the first thing the effective teachers are likely to do is to observe students and see that: (1) the environment is safe; (2) the students are engaged in the task as it is designed; and (3) students have to interprete the task correctly.	Handles the situation in which students do not respond to the task properly (S135-a).
	b) Changing teaching plan and modifying the teaching task.	
	To be effective, teachers must recognize the need for change and be able to make the adjustment when the teaching situation is beginning to deteriorate.	Handles the situations which require teacher to decide whether or not and how to change the teaching plan in order to meet the need of the students (S135 and S237).
	Effective teachers are able to modify the tasks so as to make sure students are able to succeed at high rates.	
	c) Gives feedback to students.	
	Typical feedback provided by effective teachers can be categorized as specific, congruent, simple; and general, positive, or neutral.	Gives feedback to the students who have the skill errors (S234-b and S234-d).
	Physical education would be more effective if teachers narrow the number of cues and keep the feedback related to those cues.	

2. Selection of the teaching situations.

Three criteria were developed regarding the situations to be selected:

(1) they were most often encountered in the actual classroom;

(2) they were poorly handled by preservice teachers; and

(3) they required the use of the knowledges and skills identified previously (Table 1.1).

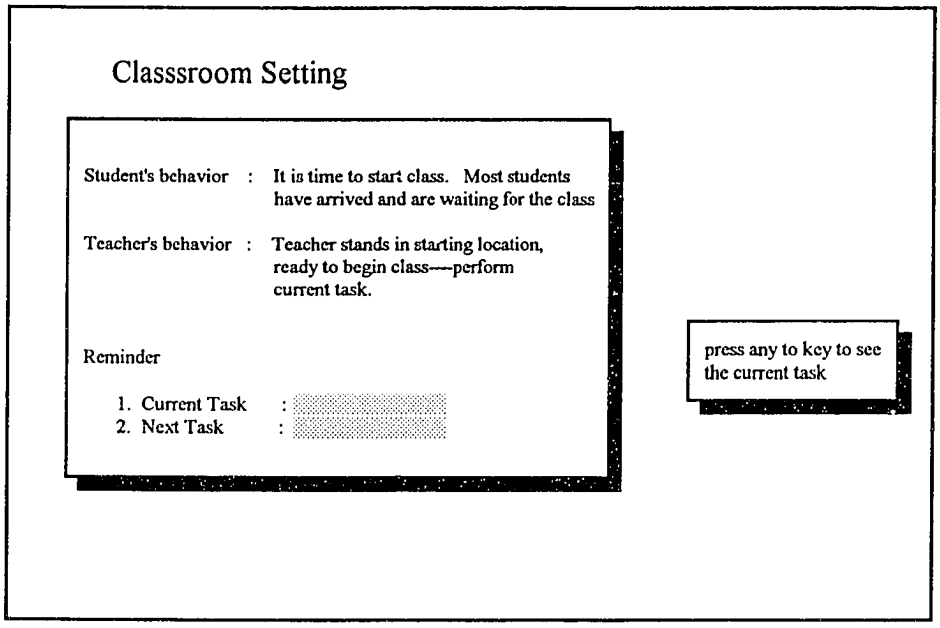
According to these criteria, a pool of teaching situations was selected from actual physical education activity classes (Table 1.1 and Appendix A).

3. Designing the scenario

The selected teaching situations were presented through the written scenarios. To realistically interpret the selected situations, each scenario was designed according to the following four-unit format.

Unit one, called "the classroom setting," was used to present the background information about the teaching incident, such as the teacher and students' behaviors (the behaviors exhibited right before the incident occurred), the current teaching task to be performed, and the next planned tasks (the task to be performed after finishing the current task). Figure 1, which follows on the next page, illustrates the above description.

Unit two was called "the teaching incident." Included in the unit were two sub-units: one described the teacher's behavior exhibited in the incident; the another presented the observed students' behaviors (Figure 2).



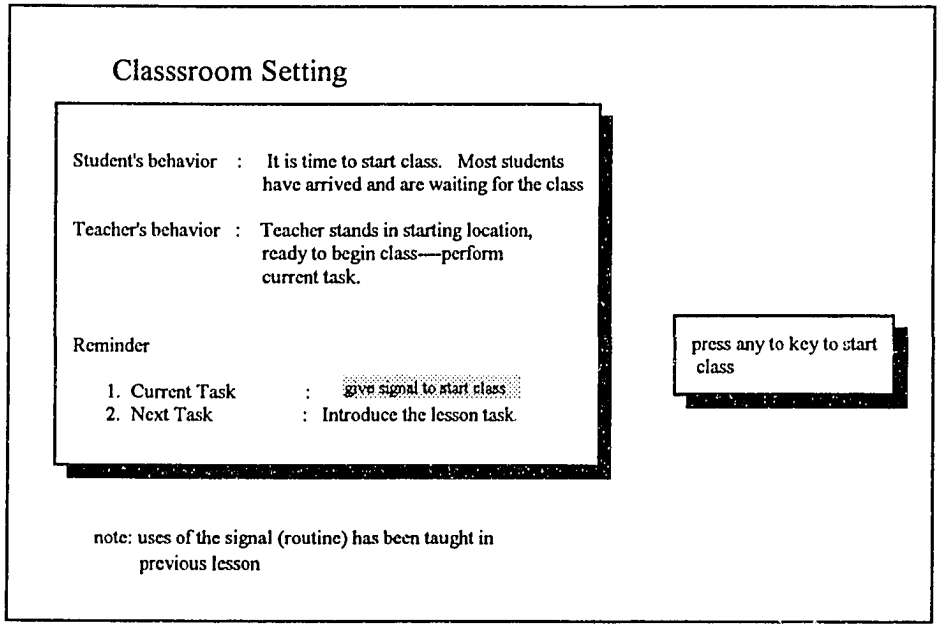


FIGURE 1. CLASSROOM SETTING

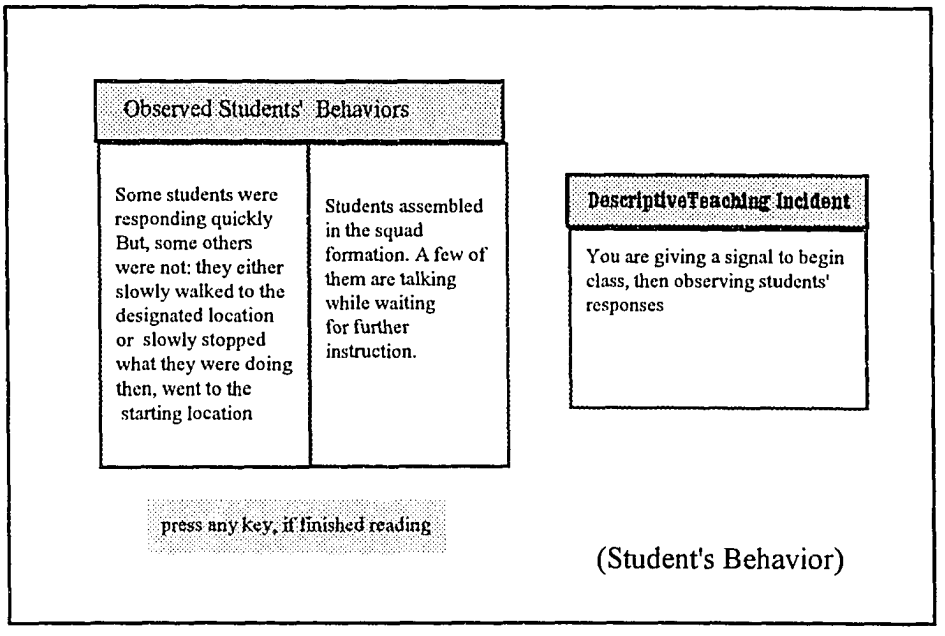


FIGURE 2.2 TEACHING INCIDENT.

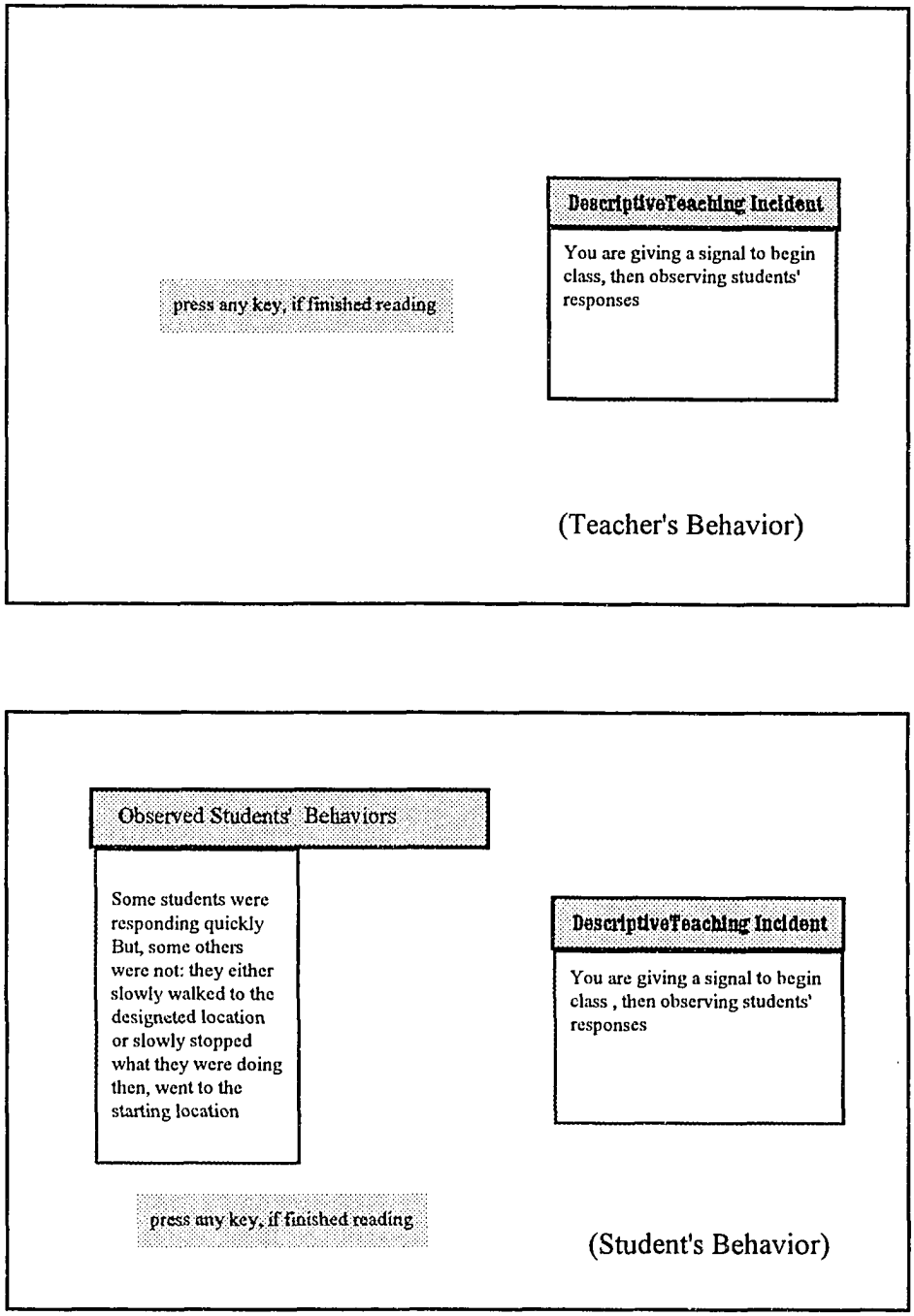


FIGURE 2.1 TEACHING INCIDENT.

Unit three, called "the action taken by teacher," was used to present the situational teaching task to be performed. The situational task required the participant to act as a "teacher" in performing a given teaching task in one of the two formats.

In format one, the subject was directly asked to respond (by typing) immediately after he/she finished reading the situation. For example, the subject (teacher) was asked to give the student feedback after observing (by reading) the student's performance.

In format two, the subject was asked to make a decision regarding the teaching situation provided. In this format, the teacher had the choice of selecing number "1" or "2". A selection of number "1" meant that the subject wanted to "move on to the next teaching task." A selection of number "2" meant that the subject wanted to "take another action." If the subject decided to take another action, then, the individual would be further asked to type in that action to be used with the student(s) (Figure 3).

In unit four, "the input", the participant typed in the action he/she would take as a response to the observed students' behaviors. The participant was expected to respond directly to the simulated student (e.g., "talking to the student") or to describe his/her nonverbal teaching action in a way as it would be done in the actual classroom (Figure 4). Figures 3 and 4 follow.

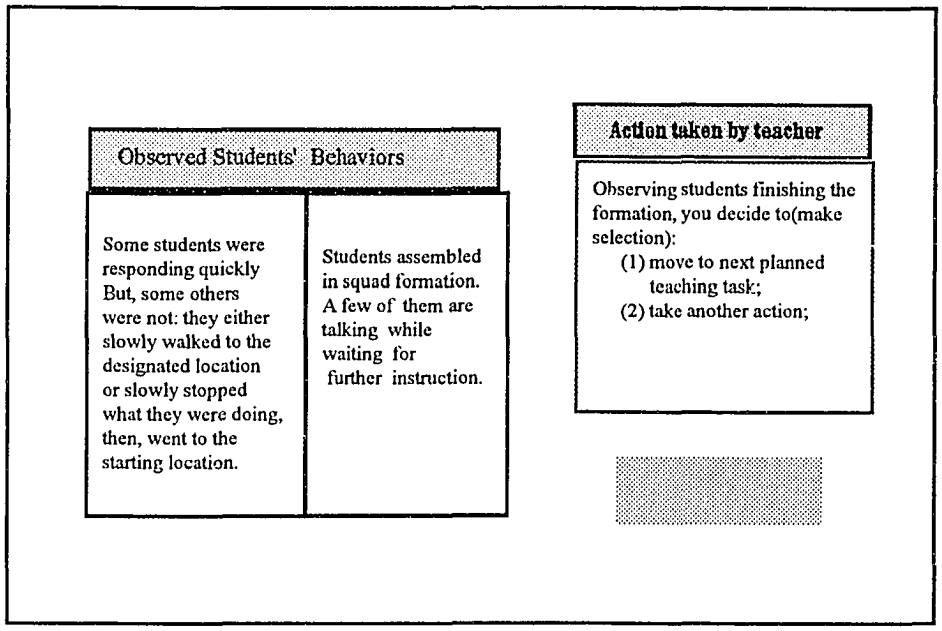


FIGURE 3.1 ACTION TAKEN BY "TEACHER" :make selection by pressing either "1" or "2"

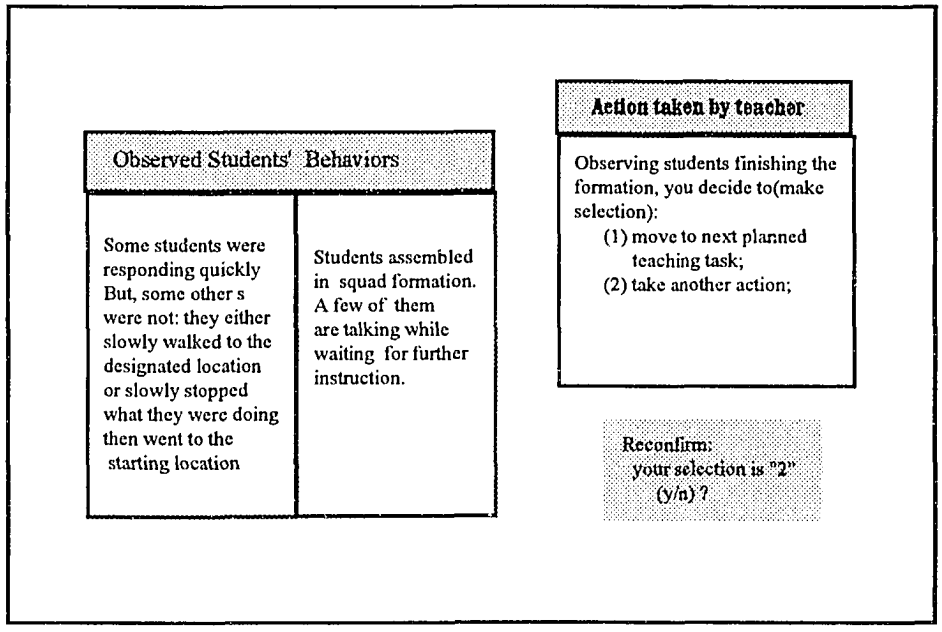
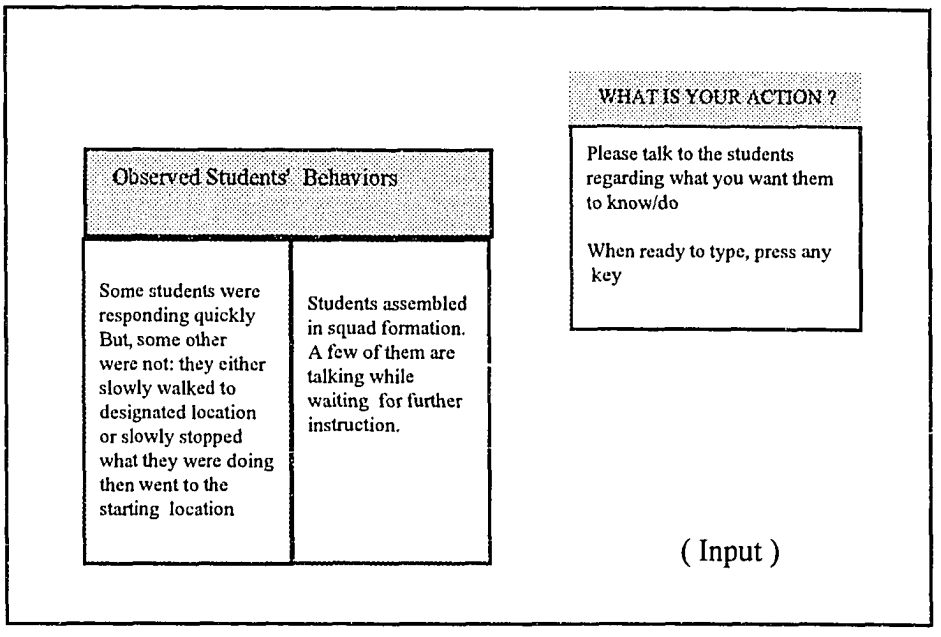


FIGURE 3.2. TEACHER MAKES DECISION: if the "teacher presses "1", the current situation ends; otherwise, continues to take further action.



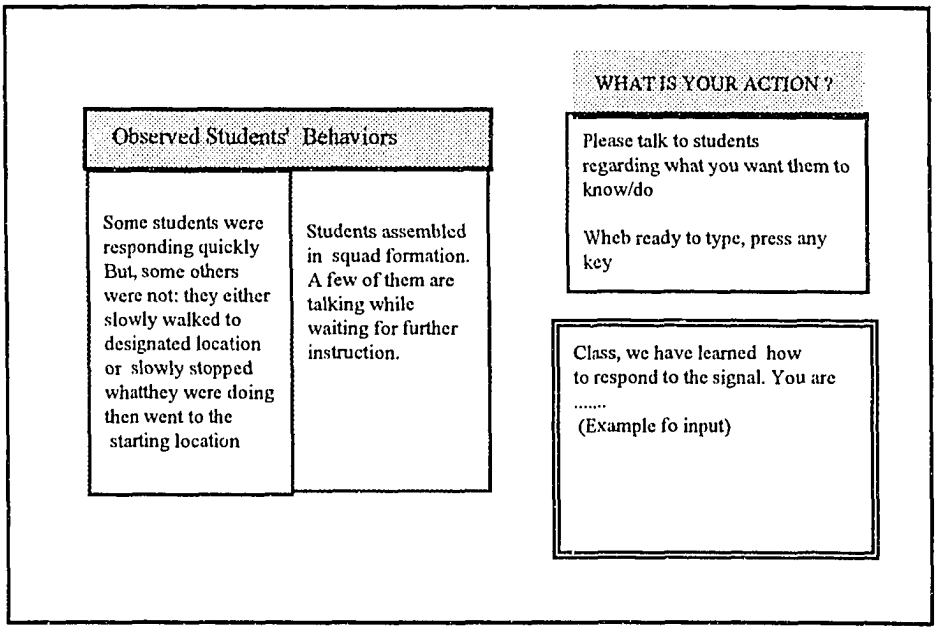


FIGURE 4. "TEACHER" RESPONDS TO THE SITUATION IN DETAILS if press "2".

4. Determination of the presentation format of scenario

To afford the participant a setting similar to an actual classroom, decisions were made concerning the structure of the simulated lesson and the format for presentation of the scenario.

(a) SIMULATION LESSON STRUCTURE. The interactive simulation lesson followed the structure of an actual physical education activity class. That is, the simulated lesson was divided into the start-up procedure (procedure for the beginning of class), followed by warm-up, skill learning unit, and finally, the class-ending procedure. The written scenarios were arranged in each unit in Table 2.1 and Table 2.2, which can be found on the next two pages.

Table 2.1 Simulated Lesson Units And The Encountered Situations (lesson 1)

Units and Planned Tasks	Encountered Situations & Situational Tasks
1. Performing Start -Up Procedure	
a. (The teacher) gives the signal to begin the class.	a) S111: Students do not properly perform the class procedure (takes action?)
b. Overviews the lesson	b) S112: A few students come to class late (takes action ?).
2. Leading Warm-Up Exercises	
a. (The teacher) has students scatter	a) S121: Students do not perform the task properly (takes action ?).
b. Leads warm up exercises.	b) S122: One student does not attentively perform the exercise (takes action ?).
3. Organizing Skill Learning	
3.1 Organizing student learning	
a) Gives the skill instruction	
b) Has students form the four groups	a) S132-a: Gives the instruction to group students.
c) Has students set up stations	a) S132-b: Gives the instruction to set up four stations.
d) Gives "drill" instruction	a) S134: Gives the instruction on how to perform the drill.
3.2 Guiding student learing	
a) Observes students practice	a)* S135-a: A few students do not respond to the task properly b) S135-b: A few students have skill errors and some have misbehaviors c) S135-c: One student broke a class rule. Another one is troubling the student in front of him d) S135-d: Two students skip their turns. Another two are practicing the undescribed skill. e) S135-e: Students learn at different pace; some students master the skill & are losing interests in further practice; Some need more practice.
4. Class Closure	
a) Performs class-ending procedure	

* (take action to handle each encountered situation)

Table 2. 2 Simulated Lesson Units And The Encountered Situations (lesson 2)

Units and Planned Tasks	Encountered Situations & Situational Tasks
1. Performing Start -Up Procedure	
a. (The teacher) gives the signal to begin the class.	a) S211: Students are getting better in performing the class procedure (takes action?)
b. Overviews the lesson	
2. Leading Warm-Up Exercises	
a. Has students scatter.	a) S221: Gives instruction to have students spread out.
b. Leads warm-up exercises.	
3. Organizing Skill Learning	
3.1 Organizing student learning	
a) Gives the skill instruction	a) S231: Checks for student's understanding.
b) Distributes the volleyballs	a) S232: Gives the instruction to distribute the balls.
d) Gives the "drill" instruction	
3.2 Guiding student learing	
a) Observes students practice	a) S234-b: Gives feedback to students. b) S234-d: Gives feedback to students.
b) Stops class & gives group feedback	c) S234-f: One student does not follow the" stopping signal" (take action to handle the situation).
c) Continues to practice	a) S237-a: Gives feedback to students.
d) Practices drill 2	a) S237-b: The drill is too hard for most of the students (take action to handle the situation)
4. Class Closure	
a) Performs class-ending procedure	

(b) FORMAT FOR PRESENTATION OF THE SCENARIO. To better simulate the interactive teaching decision process, it was decided that the situational information would be presented in chronological order. That is, for each scenario, the participant would first encounter the information about the classroom setting, then the teaching incident, where the teacher's behavior would be presented first and the student's behavior next. After this, the participant would be asked to take a teaching action in the action taken unit and then to input his/her action in the "input" unit, if required (Figure 5, on the next page).

In order to make this project as similar as possible to an actual physical activity class, where the teacher must make a decison immediately, it was decided that, in the "action taken by teacher" unit, the participant would be required to respond to each situation in an allotted time of 60 seconds. If the individual failed to respond in the given time, the next teaching situation would appear on the monitor and there would be no opportunity to return to the previous situation.

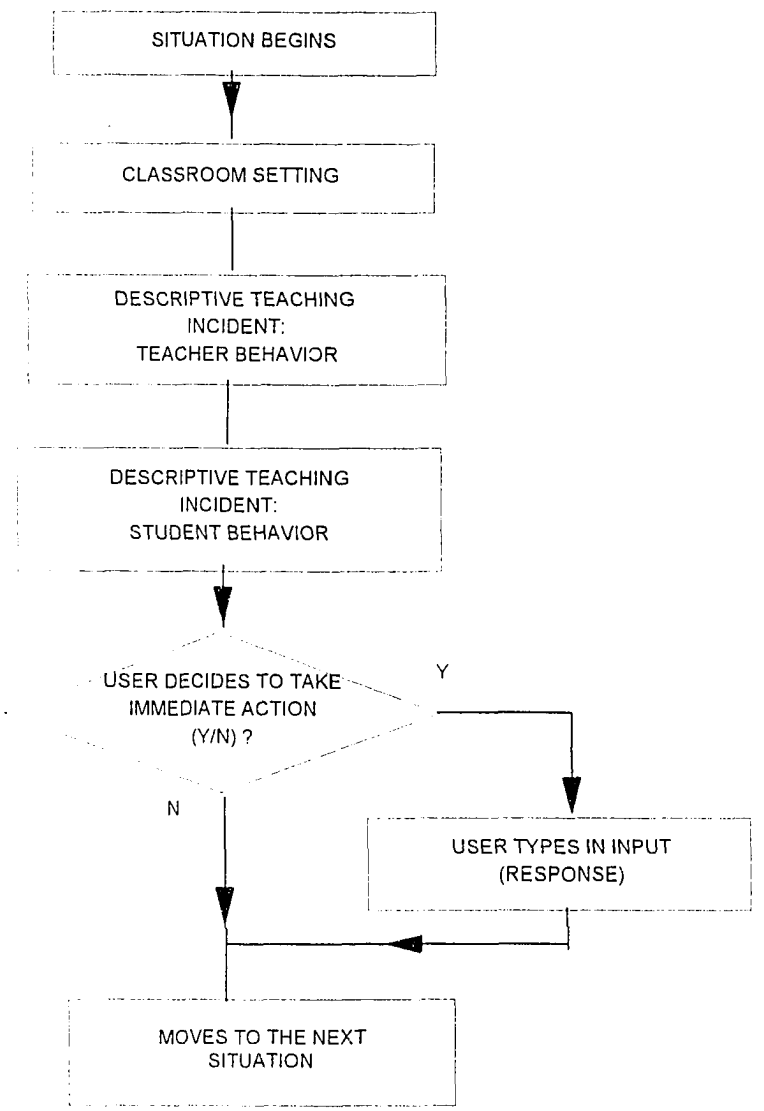


FIGURE 5. MODEL USED TO PRESENT THE SITUATION (SCENARIO)

5. Designing computer-based simulation lesson exercises

On the basis of the above decisions and the available situations, the simulation exercise script was developed. Included in the script were two interactive simulation lessons, one simulated a tumbling lesson and another simulated a volleyball lesson (Tables 2.1 and 2.2, pages 30 and 31). The main reason for selecting these two lessons was that they provided the opportunity for the arrangement of all selected situations.

In addition to the two simulated lessons, additional simulation lesson plans were also included and presented immediately before the corresponding simulated lessons. The simulated lessons plans were provided in order to let the participant become familiar with what he/she was going to do in the lessons. Finally, after the script was developed, the material was transferred to a flow chart form, then translated into PASCAL code (Appendix G), which runs on an IBM compatible computer.

6. Conducting pilot study.

The pilot study was conducted in two phases. In the first phase of pilot study, two experienced teachers were asked to read and review each written scenario. The scenarios that were considered not clear were rewritten or deleted.

After modification of the scenarios, the second phase of the pilot study was conducted. Two experienced physical education teachers and

four physical education majors were invited to complete the computer-based simulation exercises. During and after the exercises, the participants were encouraged to comment on the clarity of instructions and the content of the exercises. Using this information, spelling errors were corrected and the wording was revised. The data, such as participant's response to each situation and the time needed to make decisions were collected. The information derived was again used to analyze: (1) if the written situations were easily understood; and (2) if the response time allotted for each situation was adequate.

B. Evaluation of the simulation exercises

An experimental study was conducted to determine if the designed interactive teaching simulation met the purpose for which it was intended. The internal consistency technique was used in assessing the reliability of the instrument. The known group difference method was used to determine if the instrument could identify the skill differences between the two experienced and preservice teachers (construct validity).

1. Subjects.

The subjects were thirty experienced teachers and physical education majors. They were classified into "training (preservice)" and "experienced" groups. The training group comprised eighteen junior and senior students ranging in age from 21 to 34 years. Most of them had completed or were

currently enrolled in teaching method courses. None of them had any prior formal teaching experience. The experienced group consisted of twelve physical educators ranging in age from 25 to 58 years. They were currently employed in schools and had an average of 11.1 years of teaching experience (Appendix E). All subjects were informed of the purpose of the study and signed the voluntary informed consent form (Appendix B).

2. Procedures

Subjects performed the simulation exercises in a laboratory setting, seated in front of a computer monitor. Instructions placed on the monitor directed them to perform the exercises in the following manner:

(a) read the introduction, which gave an overview of the simulation exercises;

(b) become familiar with the format by reading the directions and practicing the examples of the simulation exercises. If the subjects were unclear about anything at this point, they were instructed to stop and ask the experimenter questions; and

(c) perform the formal exercises, which started as soon as a participant finished the practice session (Appendix C).

3. Data analysis

a. TREATMENT OF THE RAW DATA

The participant's response to each situation was analyzed using two

steps. The first step was used to determine if the participant was able to make a teaching decision in the allotted time. The following categorical system was used:

(1) the participant made no decision or generated no teaching action in the allotted time;

(2) the participant made a decision or took an action which did not target the situational problem;

(3) the participant made a decision or took an action that ignored the situational problem; and

(4) the participant made a decision or took an action which targeted the situational problem.

The second step focused on analyzing the manner in which subject handled the situational problem or performed the teaching tasks. This was done according to the previously developed coding guide (Appendix D). The participant's response was first categorized in terms of "type of action" employed then, the response was scored in terms of the appropriateness of the action (response) used. The resulting score ranged from 0 to 3.

The system used for categorizing the response for each situation was developed on the basis of the purpose of designed situations and the pilot study. The standards or guidelines used to make judgements of the appropriateness of the action (response) was based on the knowledge or skill areas identified previously (Table 1.1).

The rating score assigned to each actions taken was based on the following criteria:

(1) the proposed response was rated as "inappropriate" if no response was made (a score of "0" was assigned);

(2) The proposed response was rated as " less appropriate" if it was not recommended from the professional standard point of view (a score of "1" was assigned);

(3) The proposed response was rated as "appropriate" if it was acceptable, but not as good as the one which was highly recommended from the professional standard (a score of "2" was assigned);

(4) The proposed response was rated as "very appropriate" if it was highly recommended from the standard point of view and a score of "3" was assigned (Appendix D).

b. ANALYSIS OF THE DATA

The coded responses were analyzed according to the following categories:

(1) Decision-making time: Analysis of average decision-making time used in each situation (Table 4.2);

(2) Decision analysis: Analysis of frequencies and percentages of different teaching decisions made by both groups in the handling of each situation (Tables 5.1 and 5.2);

Table 4.1 Situational Tasks Presented in Simulation Exercises

Situation No.	Situational Tasks
Simulation Exercise One	
S111:	Performs class routine; Responds to misbehavior
S112:	Handles late arrivals
S121:	Spreads out students; Responds to misbehavior
S122:	Leads warm-ups; Handles minor misbehavior
S132-a:	Gives instruction for grouping students
S132-b:	Gives instruction for setting up stations
S134:	Gives instruction for practicing the drill
S135-a:	Identifies and prioritizes the problems
S135-b	Handles the misbehavior
S135-c:	Handles the misbehavior (sensitive to dangerous signal)
S135-d:	Handles the misbehavior
S135-e:	Motivates students and meets the need for change
Simulation Exercise Two	
S211:	Maintains good behavior
S221:	Gives directions to have students scatter
S231:	Checks for students' understanding
S232:	Gives instruction to distribute the balls
S234-b:	Gives feedback to students
S234-d:	Gives feedback to students
S234-f:	Gives signal to stop practice; One student does not follow the signal
S237-a:	Gives feedback to students
S237-b:	Changes teaching plan to meet the need of the students

Table 4.2 Decision Making Time Used by Both Groups

situation No.	experienced group M	SD	training group M	SD	Mean for Both Groups
S111	14.17	9.39	14.44	11.23	
S112	6.17	5.90	4.33	2.57	
S121	5.42	3.68	3.78	1.90	
S122	5.42	4.34	4.11	3.27	
S132-a	16.17	13.59	10.11	5.60	
S132-b	13.25	11.31	10.61	8.00	
S134	8.33	6.44	5.21	4.18	
S135-a	4.57	3.55	4.06	3.26	
S135-b	8.17	8.16	9.33	5.58	
S135-c	5.17	2.86	5.61	6.63	
S135-d	5.00	2.87	4.89	4.71	
S135-e	8.50	6.87	8.22	4.82	
S211	4.83	3.41	3.67	2.61	
S221	6.92	3.50	7.89	4.78	
S231	4.50	2.94	3.94	2.07	
S232	5.92	4.01	5.50	4.91	
S234-b	5.08	5.28	8.39	7.84	
S234-d	4.00	4.12	3.39	3.24	
S234-f	5.00	6.24	4.61	4.35	
S237-a	4.42	5.73	3.83	4.38	
S237-b	12.83	12.97	8.89	7.64	
Mean (sec.)	7.33	3.65	6.42	2.10	6.88

Table 5.1 Decisions Employed

Decision	1	2	3	4	
Frequency	9	26	73	513	621
Percentage (%)	1	4	12	83	100

Decision 1: makes no decision in the alloted time;
Decision 2: makes the decision which does target the situation
Decision 3: makes the decision: ignoring the problem
Decision 4: makes the decision: dealing with the problem

Table 5.2 Percentages Of Time That Decisions Were Made

Teaching Tasks (%)	Experienced Group				Training Group			
	1	2	3	4	1	2	3	4
S111**	0	8	50	42	11	6	39	44
S112**	8	0	8	84	0	0	56	44
S121**	0	0	0	100	0	0	28	72
S122**	0	0	25	75	0	0	17	83
S132-a	0	0	*	100	11	11	*	78
S132-b	8	17	*	75	0	50	*	50
S134	0	0	*	100	6	11	*	83
S135-a	0	14	*	86	0	6	*	86
S135-b	0	0	*	100	0	6	*	94
S135-c	0	0	*	100	0	0	*	100
S135-d	0	0	*	100	0	6	*	94
S135-e	0	0	*	100	0	0	*	100
S211**	0	0	66	34	0	0	61	39
S221	8	0	*	92	0	28	*	72
S231**	0	0	67	33	0	0	61	39
S232	0	0	*	100	0	0	*	100
S234-b	0	0	*	100	0	0	*	100
S234-d	0	0	*	100	6	0	*	100
S234-f	0	0	*	100	0	0	*	100
S237-a	0	0	*	100	0	0	*	100
S237-b	0	0	*	100	0	0	*	100

Decision 1: makes no decision in the alloted time
Decision 2: makes the decision that does not target the situational problem
Decision 3: makes the decision, ignoring the problem
Decision 4: makes the decision, dealing with the problem
** Situations requiring the subjects to make a decision about taking an action

(3) Rating scores:

(a) Analysis of group differences in the means of the individual's total rating score (the individual's total rating score is equal to the sum of the rating scores for each situation). A one-way ANOVA was performed to compute the variance of the group means (Table 6.1).

(b) Analysis of group differences in the means of rating score for each situation (the rating score for one situation is equal to the sum of individual's rating score for that situation). Again, a one-way ANOVA was performed to compute the variance of the means (Table 6.2).

(4) Type of teaching action:

(a) Analysis of the frequency and percentage of types of teaching actions taken by both groups in each situation (Table 7.1).

(b) Analysis of group average of the highest scored action for all situations (the highest scored action is the one which was assigned the score of 3). This was done according to the following procedure: For every group in each situation, the frequency of a 3 point score was determined. Then, an average of the frequency was calculated. Finally, the mean of these results was derived for each group (Table 7.2).

Table 6. 1 Individual's Total Rating Score

Exercises	Experienced		Training			
	Mean	SD	Mean	SD	F	P
Exercise 1	19.67	3.42	13.94	3.57	19.10	< 0.001
Exercise 2	15.83	3.41	12.44	2.36	10.42	< 0.003
Exer 1 & Exer 2	34.42	5.52	26.33	3.66	23.40	< 0.000

Table 6.2. The means of group rating scores for each situation

situation No.	experience group M	SD	training group M	SD	F	P
S111	0.750	1.06	0.50	0.71	0.61	0.442
S112	1.830	1.03	1.06	1.26	3.16	0.086
S121	1.500	0.80	1.00	0.77	2.96	0.096
S122	1.670	0.99	1.06	0.64	4.28	0.048*
S132-a	2.170	0.39	1.50	1.04	4.44	0.044*
S132-b	1.500	1.00	0.72	0.83	5.39	0.028
S134	1.830	0.94	1.22	0.81	3.62	0.067
S135-a	1.143	0.90	1.44	0.86	0.61	0.443
S135-b	1.500	0.80	1.11	0.76	1.82	0.188
S135-c	1.500	0.90	1.50	0.99	0.00	1.000
S135-d	2.220	0.44	1.72	0.90	2.47	0.128
S135-e	2.080	0.79	1.11	0.32	21.90	0.000**
S211	1.830	0.58	1.56	0.62	1.54	0.230
S221	1.580	0.90	1.22	0.81	1.31	0.260
S231	1.000	1.48	0.83	1.25	0.11	0.740
S232	1.670	0.65	1.44	0.62	0.90	0.350
S234-b	1.750	0.62	1.22	0.43	7.63	0.010**
S234-d	2.500	0.80	1.22	0.55	27.18	0.000**
S234-f	1.580	1.31	1.33	1.24	0.28	0.600
S237-a	1.820	0.41	1.83	0.38	0.01	0.920
S237-b	1.830	1.03	1.67	0.97	6.20	0.660

*: P< .05
**: P< .01

Table 7.1 Type Of Actions Used By Subjects

Situational Tasks & Types Of Actions	Experienced %	Training %	Assigned Score Pt.
GETTING READY FOR CLASS			
S111: Performs class routine; Responds to misbehavior			
1. Ignores the misbehavior	55	47	0
2. Asks students to be quiet or move quickly	18	40	1
3. Asks students to be quite and move quickly	18	13	2
4. Tells the proper behavior &/ lets students redo it.	9	0	3
S112 : Handles late arrivals			
1. Ignores the inappropriate behaviors	9	56	0
2. Punishes the students who were late	9	0	1
3 Asks students to be on time or why they were late	28	5	2
4. Asks students who were late to stay after class	36	22	3
5. Follows the rules	18	17	3
S121 : Spreads out students; Responds to misbehavior			
1. Ignores the misbehaviors	0	28	0
2. Lets students obtain more space	67	45	1
3. Asks students to move quickly and obtain more space	17	22	2
4. Teaches how to do it and/ or lets students redo it	8	5	3
5. Uses the other types of actions	8	0	*
S122: Leads warm-ups; Handles minor misbehavior			
1. Warns/punishes John**	8	27	1
2. Stops class, tells John to do it correctly	42	50	1
3. Ignores the misbehaviors	25	17	2
4. Uses proximity or nonverbal methods, etc.	25	6	3

* The score depends on the specific response proposed.
** John is the student who behaves improperly.

(continued on next page)

Situational Tasks & Types Of Actions	Experienced %	Training %	Assigned Score Pt.
PERFORMS ORGANIZATIONAL TASKS			
S132-a: Gives instruction for grouping students			
1. Tells incomplete information & lets students group on their own	0	8	1
2. Asks students to group in a specified way	17	21	1
3. Tells complete information & lets students group on their own	33	21	2
4. Tells grouping information & lets students group in a specified way	0	21	3
5. Uses" counting off" or " splitting the lines" methods	50	29	3
S132-b: Gives instruction for setting up stations			
1. Tells incomplete information regarding how to do it (no expectation)	0	0	1
2. Tells the information regarding how to do it (no expectation)	77	100	2
3. Tells how to set up stations & tells the expectation	23	0	3
S134: Gives instruction for practicing the drill			
1. Tells incomplete information regarding how to do the drill	8	33	1
2. Tells complete information regarding how to do the drill	17	33	2
3. Tells incomplete information about drill and expectation	42	27	2
4. Tells complete information about drill and expectation	33	7	3
GUIDES STUDENT PRACTICE			
S135-a: Identifies and prioritizes the problems			
1. Corrects skill errors first	50	53	1
2. Handles the misbehavior first	33	29	2
3. Handles the potential safety problem first	12	18	3
S135-b Handles the misbehavior			
1. Handles the student's behavior as the skill problem	66	71	1
2. Handles the student's behavior as a time-wasting behavior or safety problem, but not handle first.	17	0	2
3. Handles the student's behavior as a time-wasting behavior or safety problem and handles first.	17	12	3
4. Handles the student's behavior as other misbehaviors	0	17	1
S135-c: Handles the misbehavior (sensitive to dangerous signal)			
1. Warns or Punishes the student who broke the rule first	83	94	1
2. Warns or punishes the student who is troubling others first	17	0	3
3. Handles the both misbehaviors at same time.	0	6	3

(continued on next page)

Situational Tasks & Types Of Actions	Experienced %	Training %	Assigned Score Pt.
GUIDES STUDENT PRACTICE			
S135-d: Handles the misbehavior			
1. Only handles one misdeed (e.g., skip tht turns)	67	59	1
2. Handles the students who were practicing undescribed skill first/only	11	35	2
3. Stops the class and handles both misbehaviors.	11	0	3
4. Uses other actions	11	6	*
S135-e: Motivates students and meets the need for change			
1. Reviews and closes the practice	8	39	0
2. Restates instruction, then lets students practice again	0	27	1
3. Lets students practice a more advanced skill	0	6	1
4. Encourages the students to help each other	42	22	2
5. Regroups students and lets students practice the different skills	50	0	3
6: Uses other actions	0	6	*
S211: Maintains good behavior:			
1. Warns or punishes the student who is talking	0	6	0
2. Asks students to be quiet (directly or indirectly)	25	33	1
3. Ignores the situation	67	61	2
4. Uses proximity control or nonverbal methods	8	0	3
5. Acknowledges good behavior	0	0	3
S221: Gives directions for spreading out			
1. Just tells students to spread out	46	39	1
2. Tells students to spread out & reminds them to space themselves	36	61	2
3. Tells students to spread out and reminds them to move quickly & get enough space	18	0	3
S231: Checkes for students' understanding			
1. No further action is taken when no one raises a question	67	61	0
2. Gives another demonstration	0	6	1
3. Encourages students to ask question	0	11	1
4. Asks students the relating question(s) or demonstration	33	22	3

(continued on next page)

Situational Tasks & Types Of Actions	Experienced %	Training %	Assigned Score Pt.
S232: Gives instruction to distribute the balls			
1. Only tells how to get the balls (all together)	67	72	1
2. Tells how to get the balls (all together) & what to do after getting it	17	11	2
3. Tells students how to get the balls (individually)	8	17	2
4. Tells students how to get the balls (individually or walks over) & tells what to do with them after they have the balls	8	0	3
S234-b: Gives feedback to students			
1. Gives incongruent and general feedback	50	78	1
2. Gives incongruent and specific feedback	41	22	1
3. Gives congruent and positive feedback	9	0	3
S234-d: Gives feedback to students			
1. Gives general feedback (encouragement)	0	61	0
2. Gives specific, but not simple feedback	17	28	2
3. Gives specific and simple feedback	58	0	3
4. Modifies the task for the student	8	0	3
5. Changes partners	17	5	1
S234-f: Gives signal to stop practice; One student does not follow the signal			
1. Ignores the student's misbehavior	25	33	0
2. Asks student to stop the misbehavior	33	39	1
3. Punishes the student for not following the procedure	9	0	1
4. Teaches or reminds what is supposed to be done	33	28	3
S237-a: Gives feedback to students			
1. Gives feedback to Nelson who is not the cause of the problem	0	5	0
2. Gives general feedback to Wendy who is major cause of the problem	17	11	1
3. Gives specific feedback to Wendy	58	56	2
4. Teaches Nelson how to handle the situation	17	28	2
5. Gives specific feedback to Wendy & teaches Nelson how to handle the situation	8	0	3
S237-b: Changes teaching plan to meet the need of the students			
1. Keeps the same practice	59	72	1
2. Aborts the drill	33	11	3
3. Modifies the task	8	17	3

(b) Analysis of group average of the highest scored action for all situations (the highest scored action is the one which was assigned the score of 3). This was done according to the following procedure: For every group in each situation, the frequency of a 3 point score was determined. Then, an average of the frequency was calculated. The mean of these results was derived for each group (Table 7.2).

Table 7.2. Group Average of the Highest Scored Action (3pts) For All Situations

Group	Mean	SD	P
Experienced	0.22	0.15	
Training	0.09	0.11	< 0.01

The statistical analysis was conducted at Middle Tennessee State University Computer Laboratory. Minitab was used to process the data.

c. INTERRATER RELIABILITY

The subjects' responses were coded by two independent raters. The interrater reliability was determined for each response by dividing the total number of agreements by the total number of agreements plus disagreements. The resulting score was 0.93 (Table 3, page 49).

Table 3 Interrater Reliability

NA	ND	R
586	44	0.93

NA: Number of Agreements.
ND: Number of Disagreements.
R = NA/ (NA+ND)

CHAPTER 4

RESULTS AND DISCUSSION

The purpose of this study was to develop a computer-based interactive teaching simulation for the use in assessment as well as development of the selected interactive teaching skills in the area of physical education. The results of the study and a discussion of the findings are presented in this chapter.

A. Results

1. Decision-Making Time

The average decision making time used for each situation is presented in Table 4.2, on page 40. The average time used to make a decision for each situation was 6.88 seconds, with the longest time of 16.17 seconds observed in the experienced group for S132-b. The shortest time was 3.39 seconds, which was observed in the training group for S234-d (Appendix A).

2. Decisions Employed

The percentage of time that each decison was made is presented in Table 5.1, found on page 40. The data showed that the majority of

decisions used by subjects were decision number 4--83%, followed by decision number 3--12% (A decison number 4 is made when the subject decides to deal with the situation, and a decision number 3 is made when the subject ignores the situation). Together, these decisons accounted for ninety-five percent of the decisions made.

Table 5.2, on page 41, summarized the percentage of time each decision was made by the two groups for each situation. For the six situations which required the subjects to decide whether to take action or not (S111, S112, S121, S122, S211, and S231), there were three situations (s111, s112 and s121) in which large differences were observed between the two groups when comparing decision number three.

3. The Performance (Rating) Scores

The means of the individual's total rating scores for the two groups were presented in Table 6.1 (page 43). The results indicated that the experienced group had significantly higher mean values than the training group ($P<.01$).

The means of the rating scores for each situation were presented in table 6.2. The table showed that among the 21 situations included in the simulation exercises, there were six situations (s122, s132-a, s132-b, s135-e, s234-b, and s234-d), in which the experienced group had significantly greater rating scores than the training group ($P<.05$ or $<.01$).

4. The Type of Teaching Actions

Table 7.1, on pages 44-47, summarized the identified types of actions as well as the percentages of time that each type of action was used by the two groups in each situation. The results showed that among the twenty one situations there were five situations (s112, s134, s135-e, s221, and s234-f), in which the greatest percentage values for the experienced group were different from that of the taining group. For example, In the situation s135-e, the experienced group had the greatest percentage value in the type 5 action, while the training group responded mostly in the type 1 action. In addition, in 90% of the situations, the experienced group tended to have higher percentage value in the highest scored type of actions (those which were assigned the score of 3). For example, in situation 111 (s111), the highest scored type of action was type 4: "tells the proper behavior, lets students redo it." The experienced group was nine percentage points higher than the training group in this type of action.

The group average of the highest scored action (3 pts.) for all situations is presented in Table 7.2 (page 48). The table showed that the experienced group used the actions which were scored the highest more frequently than the training group for each situation ($P<.01$).

B. Discussion

Since the main purpose of the study was to develop the interactive teaching simulation for physical education, the topic of discussion will focus on the evaluation of the designed simulation in terms of feasibility, validity, reliability and scoring validity. The features of the designed simulation as an assessment and instructional tool will also be discussed.

1. Feasibility

The simulation exercise designed in the present study used the multiple-station format, where the examinee was presented with a series of simulated teaching situations. For each situation, the examinee first encountered the written scenario, then he/she was expected to: (1) make a teaching decision in the allotted time on the basis of the situation; (2) respond to the simulated task or situation in a way as they would in an actual classroom. Since in the simulation, a participant was expected to follow several requirements in limited time, the feasibility of such a format needed to be analyzed.

Data summarized in the results section showed that: (1) in the simulated setting, subjects made on-the-spot decisions in an average of 6.88 seconds (Table 4.2); (2) a majority of the subjects (95%) made the

decisions which targeted the situational tasks (Table 5.1); and (3) most people responded to the simulated situations in the similar way as they would react in an actual setting (e.g., able to talk to the simulation students as required). These results indicated that subjects in the present study were able to follow the pre-defined requirements during the simulation exercises. In other words, they were able to understand the written situations, able to make related on-the-spot decisions, and respond to the situations in the expected manner. These data thus provided the evidence that the designed simulation format was feasible for use in the study and teaching.

Although, on the whole, the participants were able to respond properly to the situations, it was noted that in situation 132-b (Table 5.2, page 41), the subjects did not respond well in terms of the decisions made. For example, fifty percent of the subjects in the training group and seventeen percent of subjects in the experienced group did not target the situational task (use of decision 2). Additionally, eight percent of the subjects in the experienced group failed to respond to the situation in the allotted time (use of decision 1). Since in this one situation there were so many subjects who did not make their responses relevant to the situational task, it implies that this situation might have not been well written. Further modification of this situation is needed.

2.Validity

If the simulation is to be used for evaluation and assessment, it must (1) allow the participants to make decisions and "take" teaching actions in a similar way as in an actual teaching setting; and (2) provide evidence of validity.

The data presented in Table 7.1(pages 44-47) showed that the types of actions employed by the subjects in the present study were very similar to the actions observed in the actual classroom setting. For example, when the subjects were required to handle the late arrivals (see Table 7.1, s112), the types of actions they used included: (1) ignores the inappropriate behavior; (2) punishes the students who were late (e.g, by asking them to run laps); (3) asks students to be on time or why they were late; (4) asks the students who were late to stay after class; and (5) adheres to the rule regarding tardiness by reducing the student's grade (or by asking students who were late to show the " late slip"). From knowledge and observation of experienced and non-experienced teachers' classes, it was noted that the types of actions used to handle the late arrivals in the actual setting were very similar to the ones used in the simulated setting. By reading through the Table 7.1, similar results could also be found in many other situations (e.g, S121 & S122). These observations, therefore, suggested that the interactive simulation developed in this study could provide an adequate simulated setting which allowed the participants to make on-the-spot

decisions and take actions which are similar to the ones in "real life" situations.

The data collected from the group comparisons revealed that in the simulation, the subjects with different skill levels differed from each other in several aspects. First of all, it was found that the subjects in the experienced group had significantly higher individual total rating scores than the subjects in the training group as evidenced by the means displayed in Table 6.1 (page 43). Since the rating score was tied to the appropriateness of the types of actions taken; the more "effective" the action, the better scores one could get (Appendix D). The higher total rating scores in the experienced group indicated that the subjects in this group performed better in the simulation than the training group. This result agrees with the findings from the "effective teaching study." These suggested that effective teachers as well as experienced teachers performed teaching function more effectively than the non-experienced teacher (Reynolds, 1992; Evertson & Harris, 1992; Rink, 1993).

When the differences between the two groups in terms of teaching decisions and type of actions were analyzed, the findings further confirmed the above rating score results (Table 5.2). Among the six situations (S111, S112, S121, S122, S211, and S231) in which the subjects were required to make a decision regarding whether or not to handle the situation, there were three situations (s111, s112 and s121) which showed the large

difference (10% more) between the two groups when comparing decison number 3.

Since a number three decision indicates that the subjects decided to ignore the problem, the different percentage values in this category suggested that a certain number of subjects from the two groups followed different decision paths. In other words, while a few subjects in the training group decided to ignore the teaching incident as presented, more subjects in the experienced group tended to take action or vice versa. For example, in situation S112 (Table 5.2, page 41), when subjects were asked to handle the late arrivals, fifty-six percent of the subjects in the training group decided to ignore it. On the contrary, in the experienced group, only eight percent of the subjects ignored it. Further analysis of the appropriateness of these two decisions indicated that the decisions made by the experienced group in this situation were more appropriate than the ones made by the training group. The reason for this is because, according to Rink (1993), "the teachers have higher expectations of their students and they require them to come to class on time" (Table 1.1, pages 18-21). Therefore, the above results suggested the experienced group differed, at least in this situation from the training group in terms of the decision path. The experienced group path was more appropriate than the one taken by the training group.

Similar results could also be obtained from analyzing the two other

situations. Again, in these two situations (s111 and s121 in Table 5.2) the subjects in the experienced group tended to make more appropriate decisions than the subjects in the training group. Thus, the results of the decision analysis indicated that in the simulation setting, the two groups, at least in some situations differed from each other in the decision making process: the experienced group tended to make more appropriate decisions than the training group. This result agrees with findings which suggested that experienced teachers made teaching decisions more effectively than less experienced teachers in interactive teaching (Byra, Making & Sherman 1993).

In addition to the differences in decision making, the two groups further differed in the type of actions employed. The data presented in the Table 7.1 (pages 44-47) showed that the experienced group tended to have higher percentage values in the highest scored actions (actions with the score of 3) in all situations except in situation 135-a. When there was more than one action taken with a score of 3, the total percentage values were compared. In the present study, the highest scored action was considered as the one which was highly recommended from the professional standard. Therefore, the higher percentage value in this type of action suggested that the experienced group used the "effective" type of actions more frequently than the training group. The data in Table 7.2 further supported this observation and showed by the use of the means of the highest scored

action that in the simulation, the experienced group got the highest score more often than the training group ($P<.01$).

Overall, the results derived from the group comparisons suggested that experienced and training groups performed the simulated teaching functions differently in terms of the individual's rating scores, the teaching decisions, and the types of actions. The group with the higher skill level (experienced group) had better performance rating scores on average and tended to use more effective types of teaching actions and make more appropriate decisions than the group with the low skill level (training group). All these results, thus provided the evidence of construct validity for the designed instrument.

3. Reliability

Reliability estimates for the total test score was calculated using Cronbach's alpha (Baggadley, 1964). A coefficient of 0.58 was obtained (Table 8, next page). This value was judged to be moderate and is comparable to internal consistency estimates that have been found for similar studies (Janikoswki, Berven, Meixelsperger and Roedl, 1989).

Table 8: Reliability of the Performance Score

Si	St	N	α
16.19	36.30	21	0.58

Si : Item variances summed over all items;
St: Variance of scores on test
N: number of items; α: Coefficient α

4. Scoring validity

Few findings were available on how to derive a valid performance score and how it could be meaningfully reported (Vu, Nuviet & Barrows, 1994). Traditionally, most simulation exercises and performance tests used numerical scores to analyze and assess the performance (Shannon, Medley & Hays, 1993). The validity of such scoring system could be questioned. The reason for this is the numerical score obtained in such exercises usually represented several performance skills and the examinee could obtain the same numerical score through different actions or pattern of actions (Vu, Medley & Barrows, 1994). In this way the score is not differentiating between the different pattern of actions.

Realizing the possible problem existing in the numerical scoring method, the present study adopted the "behavioral variables" (such as, the type of actions taken and decisions employed by the participants) into the traditional scoring system. It was expected that by analyzing the type of actions taken and decisions made, the participant's performance could be

evaluated more accurately, and the results would be more meaningful.

In the analysis of the differences between the two groups, it was found that there were no significant differences between the experienced and training groups in fifteen of the twenty one situations (71%) in the rating scores for each situation (Table 6.2, page 43). However, it was noted that the types of actions taken by the subjects in these fifteen situations were different: (1) The experienced group employed actions that were scored higher more often in the most situations (90%); (2) The decisions made by both groups were also different. Among the six situations (S111, S112, S121, S122, S211, and S231) in which the subjects were required to make a decision regarding whether or not to handle the situation, there were three situations (s111, s112, and s121) which showed the largest differences (10% more) between the two groups when comparing decision number 3 and the decisions made by the experienced group tended to be more appropriate than the ones made by the training group. These results revealed that the use of a numerical score alone in some instances is not sufficient to identify the skill differences existing between the different participants. On the other hand, the results of the study supported the use of the behavioral variables: The results indicated that the use of behavioral variables, such as decisions made and actions taken could uncover the skill differences, which might not be identified by use of a numerical score. The results thus suggested that the

data derived from the simulation could be processed more effectively by using the scoring method developed in this study than by using the traditional numerical method.

5. Simulation exercise as an assessment and instructional tool

Since there is evidence of validity and reliability in the designed simulation, the use of designed simulation as an assessment tool is supported. Furthermore, the use of the developed simulation as an assessment tool can also be supported through the following features:

(a) Since the simulation was designed in a manner which requires the participant to generate his/her own action (open-end format) rather than to select an action through multiple choice format, the subject can react to react the situations in an atmosphere similar to the actual setting. The open-end format allows the subject to fully demonstrate his/her skills and knowledge by responding to the situation on the basis of his/her own experience and beliefs.

(b) By using the behavioral scoring method, the researchers could analyze the type of actions and decisions derived from the simulation. By analysis of such variables, an individual's performance could be evaluated or interpreted not only in terms of "good" or "poor" and "strong" or "weak", but also in terms of the "appropriateness" of specific action and decision.

As demonstrated previously, a subject's performance could be judged

in terms of the type of actions taken, and decision made. If an inappropriate decision was identified, then the subject's performance could be judged as "lack of decision making skills" or " lack of the conditional knowledge" (Ennis, 1994) since the subject failed to show that he/she was able to decide when or where to take a specific teaching action. Similarly, if an inappropriate type of teaching action was identified, then, the subject's performance could be judged as "lack of procedural knowledge" (Ennis, 1994) since the subject failed to show that he/she knew how to do a given task properly. Clearly, It was more accurate and meaningful to analyze the performances in this way than to analyze in the numerical scoring system.

In addition to the use of the simulation exercise as an assessment tool, this exercise could also be used as an instructional tool. As reported in chapter three, the simulation exercise developed here targeted those skill areas which are considered as important for "effective" teaching. Usually, these skills are also taught in methodology courses. Therefore, it could be used as a supplement to these courses. For example, after students are introduced to the pedagogical principles, knowledges and strategies, the simulation exercises could be used to let them practice the knowledge and skill learned in the classroom setting. The classroom instructor will have to provide feedback to those students so that some measure of improvement is demonstrated.

The analysis of the data derived from the subjects in the training group indicated that such an application was needed for the student's skill development. In the present study, sixty-seven percent of the subjects in the training group had taken or currently were taking the teaching methodology course(s) (Appendix E). Through the lecture format, they learned how to effectively perform the teaching functions in the typical classroom setting, yet while performing simulation exercises, many of them did not exhibit the skills or show that they were able to use "effective" teaching actions as demonstrated in Table 7.1 (pages 44-47). The group average of the highest scored action for all situations was only .09 for the training group, while it was .22 for the experienced group. These results suggested that the lecture format alone did not ensure that students could apply the knowledges and skills learned in the classroom to the field where practical situations abound. The opportunity for students to practice what they learned in the classroom is much needed.

In addition to allowing students to practice what they learned in the classroom, the simulation exercise that was developed here could also be used for reflective thinking or clinical reasoning. In other words, students could be asked to read a situation and then take time to think of alternatives to the situation. Another way the exercise may be used is to ask student(s) to complete the exercise, and then to give some thought about more effective methods of conducting a class. The process of reflective thinking

would be helpful in improving the preservice teacher's clinical reasoning and as result, the teaching skill (Copeland,1989).

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATION

The results are summarized in this chapter. Appropriate conclusions and recommendations are also made in this chapter.

A. Summary

The purpose of the study was to develop a computer-based interactive teaching simulation for use in assessment and teaching of selected teaching skills. Two phases of the study were conducted. In phase one, the six steps were employed to design the simulation exercises and the following tasks were completed:

(1) the teaching skills which were considered important for successful teaching were identified;

(2) the typical teaching situations which required participants to use the identified teaching skills were selected;

(3) the written scenarios were developed and used to present the selected situation;

(4) the simulation lesson structure and the format used to present the written scenario were determined; and finally

(5) A computer based-simulation exercises with two simulated lessons were designed: one simulated a tumbling lesson and another simulated a

volleyball lesson.

Phase two was devoted to evaluation of the designed simulation exercises. Eighteen physical education majors (as the training group) and twelve experienced teachers (as the experienced group) were recruited to participate in the study. They were administered the designed instrument in a standard procedure and the following results were obtained:

(1) In the simulated setting, subjects were able to understand the written situations and make related on-the-spot decisions in an average of 6.88 seconds (Table 4, pages 39-40); A majority of the subjects (93%) made the decisions which targeted the situational tasks (Table 5.2, page 41);

(2) The experienced group differed from the training group in performing the simulated tasks. Subjects in the experienced group (with higher skill level) had a significantly higher individual total rating score than subjects in the training group ($P<.01$). When required to make a decision regarding whether or not to handle the situation, the subjects from the experienced group took a decision path different from the subjects in the training group. In addition, the type of actions employed by the subjects from the two groups also differed. The experienced group had higher percentage values in the types of action with the highest rating score and used the "effective" type teaching actions more frequently than the training group ($<.003$).

(3) The internal consistency value was judged to be moderate and comparable to the similar studies.

B. Conclusions

With the limitation of the study, and based on the results, the following conclusions were developed:

(1) The designed instrument could allow the participants to make interactive teaching decisions and produce the responses (written behaviors), which related to one's knowledge and skills;

(2) The data produced from the simulation exercises could be scored reliably;

(3) The data produced could be meaningfully analyzed and reported.

Given these characteristics, the simulation developed here is useful in the development and assessment of the selected teaching skills in the physical education. Especially it is useful in developing and assessing participants' ability to determine, on their the own, necessary tasks to be performed in a situation and to carry out those teaching tasks effectively.

C. Recommendations

The recommendations for further research based on the results of this study are presented in the following:

(1) A similar study involving a larger sample size should be conducted

so that the results with greater statistical power and reliability could be determined;

(2) The instrument should be further tested for additional validity evidence, such as predict validity. In addition, the relationship between the teaching behaviors exhibited in the simulation and in the actual classroom should also be investigated.

(3) The effectiveness of the designed simulation in the development of selected teaching skills should be investigated.

(4) The effectiveness of the designed simulations used in connection with group versus individualized instruction should be explored.

APPENDIX A

DESCRIPTIVE TEACHING SITUATIONS

Simulation Exercise 1

S111*	You are giving the signal to start class, then observing students' responses: Some students respond quickly; But, some others do not: They either slowly walk to the designated location or stop what they are doing then slowly go to the starting location. Students assembled in the squad formation. A few of them are talking while waiting for further instructions. (Note: the use of signal (routine) has been taught in the previous lesson)	Observing students finishing the formation you decide to (make selection):

s112	You are telling students the task and the purpose of the lesson. Students are listening. While you are talking, two students (who are one min. late) are walking into the class. Another two students enter the class two minutes late....	Observing these behaviors, you decide to (make selection):

s121	You give directions for students to spread out and observe their responses: While spreading-out, some students are moving fast but, some are not. After spreading-out, Some students stand too close to each other.	Observing students finishing the formation, you decide to (make selection):

* S=situation
111= situation number

S122 : You begin leading warm-up exercises. Students are following directions and exercising. After doing several exercises, you begin to lead sitting stretches. At the moment YOU ARE COUNTING: 2-2-3-4, you notice John"s behavior: John is uninterested in doing exercise; he bends forward slightly , while others are taking three counts to bend fully and recover to a sitting position on the fourth count.	Observing John"s behavior, you decide to:

S131-a. You are GOING TO group students into 4 squads, with 6 or 7 students in each squad. Students are standing in double lines (13 in each line), waiting for the instructions.	Give directions to group students into the 4 squads (talk to students regarding what you want students to know & do):

S132-b You are GOING TO Give the directions for setting up stations (Note: you are going to put four mats in the middle of the GYM); At this time, the students are awaiting your instructions. (NOTE: This is the FIRST time you ask the students to perform such task).	Give instructions for setting up the stations. (Talk to the students regarding what you want them to know & do):

S 134	You are GOING to give instructions on the drill. You plan to let students in each squad stand behind the mats and practice two forward rolls on the mats (in file squad formation). NOTE: This is the first time you ask the students to practice the drill in squad file formation.	Give the directions on the drill & practice. (talk to the students regarding what you want them to know & do):

S135-a:	You are observing students after you ask them to practice. Students are taking turns to practice... . Smith failed to keep his legs extended while rolling and did not tuck them as his hips contacted the mat. A few of the students are not responding to the task adequately (see the examples below): Fishman starts his forward roll too soon before the student in front of him finishes his 1st roll Two students did not return to their lines after finishing their drills.	Observing these behaviors, you decide to :

S135-b	Practice continues. You are observing the students. John failed to roll to the squat position. His back flopped on the mat. He lay there for awhile, then slowly got up and talked to the student behind him. Susan used her hands to assist body in getting into the squat position (This is not recommended procedure).	Observing these behaviors, you decide to:

s135-c Practice continues. You are observing the students.

Ken is throwing a piece of chalk at the student in front of him.

Kurt goes back to his line AFTER ascending the climbing-rope (This is not allowed in the current lesson).

Observing these behaviors, you decide to:

s135-d Practice continues. You are observing the students.

In "Squad A" James is practicing on the mat. while others are waiting for their turns in line.

In "squad B" two students are talking at the back of the line; they did not take their turns.

Jane and Jim left their lines to practice the backward roll.

Observing these behaviors, you decide to:

S135-e Practice continues.
After nearly finishing the 4th set, you notice the following behaviors:

One third of the students have performed the drill well. However, they are losing interest in further practice.

Another one third are having trouble; Some can not roll very smoothly and some cannot roll to the squat position.

The 4th set is now completed.
Give Feedback to the class:

Simulation Exercise 2

NOTE: This class follows the previous class (simulation exercise 1)

S211 You give signal to start class and observe students' responses. Most students moved quickly to the designated location. Jane is whispering to her neighbor, while others are waiting for further instructions (Note: the use of signal (routine) has been taught in the previous lesson)	Observing students' behaviors, you decide to:

S221 You are GOING TO have students scatter into an extended squad formation. Students are in squad formation awaiting your instructions at this moment	Give directions to have students scatter (Talk to the students regarding what you want themto know and do).

S231 You are giving instructions on the skill to be learned with the focus on the: (1) starting movement (2) passing movement (3) follow-through movement Students are listening and watching the demonstration. After you finish the instruction, you ask students: " Do you have any questions?" No one asks any questions.	Seeing no one ask the question, you decide to (make selection): (1) move to next planned teaching task; (2) take other action.

S232 : You are GOING TO distribute the balls to the students (NOTE: You plan to let students in the 1st and 3rd squads go get the balls (which are at the left corner of the court). Students are awaiting your instructions NOTE: No routines for distributing the equipment have been taught	Give directions for distributing the balls.

S234-b. Tom's practice He has a good starting movement. He raised his hands above his forehead, and encircled the ball. However, he erred in the passing movement; He did not maintain contact with the ball NOTE: The FOCUS of the practice is on the STARTING MOVEMENT	Observing this performance, you decide to give feedback to the student.

S234-d Vickie's practice She has a low skill level. She is working hard on the drill. However, she still has several performance errors: She contacts the ball too low and jabs the ball with fingers (illegal contact with the ball).	Observing this performance, you decide to give feedback to the student.

S234-f	Practice continues. You are observing the students. Many students have demonstrated the proper skills in the starting movement. However, a few still have problems, e.g., contacting the ball too low; not encircling the ball. Students finish the 1st set of practices. Observing students finishing this practice set, you give signal to stop (NOTE: The use of the signal for stopping activities [routine] has been taught) Most students stopped practicing, grabbed the balls & stood there awaiting further instruction. Sam did not follow directions. He continued to practice with his partner until the ball dropped to the floor. One student is playing the ball with his hands while standing there awaiting instructions.	Please continue the lesson and talk to your students regarding what you want them to know & do

S237-a	You give instructions for drill 2, then let students practice Students pair-off to practice. Wendy and Nelson were working hard. However, Wendy failed to return the ball correctly to Nelson (The ball is descending away from Nelson). Because of this, Nelson had to run forward to pass the ball. In haste, contact was made too low and he jabbed the ball back to Wendy.	Observing this practice, you decide to give the students feedback.

S237-b	Practice continues. You are moving around and observing students' practice. After a while, you notice these behaviors: Many students had the problem similar to Wendy and Nelson's. They could not pass the ball to the proper position. As a result, the partners had to return the ball while they were running. Observing these problems, you stop practice and demonstrate the concept of controlling the pass (passing the ball up in front of the partner), then allow students to practice. Students have tried hard to pass ball to the proper position. However, they were not successful. All students have finished the first set of practices.	Give feedback to class and organize next teaching/learning task

After giving instructions, you continue the class. After that, you move to the last teaching Unit: Class Closure.

APPENDIX B

Informed-Consent Form

1. Weidong Bai, who is a graduate student at MTSU, has requested my participation in a research study at this institution. The title of the research is "Development of a Computer-Based Interactive Teaching Simulation for Physical Education."

2. I have been informed that the purpose of the research is to develop a simulation approach that may be used to evaluate and train the preservice teacher's interactive teaching competencies.

3. My participation will involve experimental research, in which I will be expected to perform simulation exercises.

4. I understand that there are no foreseeable risks or discomforts to me if I agree to participate in the study.

5. I understand that there are no more feasible alternative procedures available for this study.

6. I understand that the possible benefits of my participation in this research are to obtain information about my own teaching competencies.

7. I understand that the results of the research study may be published but that my name or identity will not be revealed. In order to maintain confidentiality of my records, Weidong Bai will use an identification number to record each subject's data and only he will actually have access to the original data.

8. I have been advised that the research in which I will be participating does not involve more than minimal risk.

9. I have been informed that I will not be compensated for participation.

10. I have been informed that any questions I have concerning the research study or my participation in it, before or after my consent, will be answered by Weidong Bai.

11. I understand that in case of injury, if I have questions about my rights as a subject/participant in this research, or if I feel I have been placed at risk, I can contact the Chair of the Human Subjects Research Review Committee.

12. I have read the above information. The nature, demands, risks, and benefits of the project have been explained to me. I knowingly assume the risks involved, and

understand that I may withdraw my consent and discontinue participation at any time without penalty. In signing this consent form, I am not waiving any legal claims, rights, or remedies.

Subject's signature _____ Date _____

13. I certify that I have explained to the above individual the nature and purpose, the potential benefits, and possible risks associated with participation in this research study, have answered any questions that have been raised, and have witnessed the above signature.

14. These elements of informed consent conform to the Assurance given by Middle Tennessee State University to the Department of Health and Human Services to protect the rights of human subjects.

Signature of investigator _____ Date _____

APPENDIX C

USER'S GUIDE

This guide explains the procedures necessary to enter and execute the simulation program. The following sections are included: A. Accessing the program; B. Use of menu; C. Use of the sub-sections in the menu and D. Printing the data.

A. Accessing and exiting the program.

* The simulation exercises were written in Pascal code and run on the DOS based platform;

* To access the program one needs to follow the procedure below:

(1) Turn on your terminal;

(2) Connect to DOS based platform;

(3) When DOS prompt appears, put the Disk with the program into the appropriate driver, for example, "b", then type in "b" and press "Enter" key. when in the "b" driver, type in the file name: try.exe, then press "Enter" key.

(4) If the message, " PE simulation exercises, HPER, MTSU" appears on the screen after entering the key, It indicates that the access to the program is successful; then a user can enter the program by pressing "1" or exit to the program by pressing "2".

B. Use of the Menu.

* After the program begins, a menu with the following items appears:

Introduction
User's information
Instruction for exercises
Exercise 1
Exercise 2
End of exercises.

User can move the cursor to choose the appropriate section (item) by pressing any key. Press "Enter" key once the section is decided.

C. Use of the sub-section in the menu.

a. Introduction section. The message in this section tells the background information about the upcoming exercise. User can read the message at his/her own pace. To continue to the next page one may press any key.

b. User's information. This section allows user to type in the name. This is optional. If there is a mistype after entering the name, one can retype it.

c. Instruction for exercises. This section allows user to become familiar with the program and to learn what is expected of them during the exercises.

* In order to perform better, user needs to follow the directions and walk through the whole section;

* Sometimes, user may be required to press a certain key to respond to a situation in the example; At this point the user need not overly be concerned with choosing the correct response but with learning how to perform the task.

* Some of the examples in this section can be repeated according to the user's need.

d. Performing simulation exercise 1 and simulation exercise 2.

* In these two sections, participant is expected to act as "teacher" to handle the typical teaching problem or perform some basic teaching function. There are 21 situations in these two exercises;

* Once in the section (either exercise 1 or exercise 2), user can not terminate the execution of the program, unless the whole section is finished or computer is turned off.

* The user's decision-making time or response time is limited. Therefore, user is encouraged to respond to the situation as soon as possible.

* At most 60 seconds are allowed for user to react to each situation. After the first 30 seconds (if no reaction is taken), a warning message will appear on the screen.

* If user does not react to the situations in 60 seconds, the next situation will appear. The user can not go back to the previous situation (note: requirement of the 60 seconds does not mean that a user must type in all messages in 60 seconds. A user may use as much time as necessary to type the response. However, the user can not delay or stop responding for more than one minute).

*After typing in the response, the user need to type in a "$" to exit the input window.

e. End of exercise and data-saving file.

*This section allows user to exit the program by pressing any key.

*Once a key is pressed , user has the option to save data or not.

*The data is saved in the files: "Wordf.$$$" and "Master.$$$". The Wordf.$$$ saves the data obtained in the current session while the Master.$$$ keeps all data collected in the current session as well as in other previous sessions.

D. Printing the data.

The data saved in the files can be printed out in the DOS based platform. The simplest usage is to type in the "edit command" and the file name, then print out the file by typing the "print command".

For example: To print a data file, wordf.$$$, issue the command:

edit wordf.$$$

After the data appears on the screen, issue the print command to print.

APPENDIX D

CODING GUIDE

INTRODUCTION

This guide explains the general coding procedure and the coding specification for each situation. The user may develop his/her own rules on the basis of need.

General Coding Procedure

The responses for each situation are coded in the following procedure.

1) Reading the response and identifying the main teaching action(s) used by the "teacher" (the focus should be placed on what and how the teacher says to the student(s) or what the teacher does);

2) Reading the table listed in the coding specification section and finding one of the response types which is most similar to the identified teaching action.

3) Finding the corresponding type of teaching action (in the same table) and the rating score according to the response type.

The following example illustrates how this procedure works.

Step 1. Reading teacher's response: "Students, please stop talking so everyone can hear me".

Step 2. Identifying the major teaching action(s), that is: "teacher tells students to be quiet".

Step 3. Reading the table below and identifying the response type (in the right side of the table), which is similar to the "major teaching action", that is: " b) just asking students to be quiet (so that other students can hear the teacher's instruction)".

TYPE Of ACTIONS	Assigned Score	Response Type
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Ignores students' inappropriate behaviors;	0	a) deciding to "ignore" (press number 1) or b) just asking students to be quiet (so that other students can hear the teacher's instruction).
4. Asks students to be quiet or move quickly;	1	a) asking students to be quiet or move quickly to perform the task.
5. Asks students to be quiet and move quickly;	2	a) asking students to be quiet and move quickly while performing the task.
6. Teaches the proper behavior(s) and or lets them redo the task.	3	a) reminding/telling students what they are supposed to do (containing the value information, such as how to do it) or letting students redo the task.

Step 4. Categorizing the action type and obtaining the rating score by reading the table (in the left side of the table). The categorized type of action is: type 3, Ignores students' inappropriate behaviors. The rating score is "0".

CODING SPECIFICATION

Coding specification specifies the focus of analyzing and coding the response as well as how the score is assigned to each type of actions for each situation. The coding specification is divided into the two parts: Part 1 is used for coding simulation exercise 1 while part 2 is used for exercise 2.

Part 1 Simulation Exercise 1

Situation 111

Focus of analysis: The teacher's response to students' behaviors.

Coding Focus: The responses are coded according to the following six types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotied time;	0	
2. Does not target the situational problem;	0	
3. Ignores the students inappropriate behaviors;	0	a) deciding to "ignore the situation" or b) just asking students to be quiet (so that other students can hear the teacher's instruction).
4. Asks students to be quiet or move quickly;	1	a) just asking students to be quiet or move quickly while performing the task.
5. Asks students to be quiet and move quickly;	2	a) asking students to be quiet and move quickly while performing the task.
6. Teaches the proper behavior(s) and or lets them redo the task.	3	a) reminding/telling students what they are supposed to do (containing the value information, such as how to do it) or letting students redo the task.

Assigning scores for each type of action:

a) Ignoring the situation (including not targeting the problem) is inappropriate because teacher is not consistent in following established class procedure. Therefore, a score of 0 is assigned to this type of action.

b) The type 6 action is relatively more effective than the other two types of actions (type 4 and type 5) because in this type action, teacher provides the students with the value information, that is, telling the students what should be done to perform the current task. For this reason, the type 6 action is assigned the score of 3.

Situation 112

Focus of analysis: The "teacher's" response to the late arrivals.

Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Ignores students inappropriate behaviors;	0	a) deciding to "ignore the situation" or b) does not say anything about the problem.
4. Punishes the students who were late;	1	a) asking those who are late to run laps, etc.
5. Asks students to be on time or why they are late	2	a) telling students that they should come on time or asking them why they are late.
6 Asks students who are late to stay after the class.	3	a) telling students who are late to stay after class.
7. Follows the rule.	3	a) asking students who are late to show the "late slip",etc. b) reminding students about the rule regarding tardiness and following the rule to handle the problem.

Assigning scores for each type of action:

a) Ignoring the situation (including not targeting the problem) is inappropriate because the misbehavior may spread if not handled. Therefore, a score of 0 is assigned to these types of actions (type 1-3).

b) "Following rule to handle the misbehavior (type 7)" is recommended, therefore a score of 3 is assigned.

c) The use of the type 6 action is done better than that of the type 5 because the use of this method not only allows teacher to handle the situation effectively but also saves class time (teacher takes up class time to handle the situation). Therefore, a score of 3 is assigned to type 6 action and a score of 2 is assigned to the type 5 action.

Situation 121

Focus of analysis: Whether and how the "teacher" handles the situation.

Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Ignores the students' problem;	0	a) deciding to ignore the situation or b) does not say anything about the problem.
4. Asks students to obtain more space;	1	a) just asking students to spread out;
5. Asks students to move quickly and obtain more space;	2	a) asking students to quickly spread out
6 Teaches how to do the task and/ or lets students redo it.	3	a) telling students what they are supposed to do in order to perform the task and or /lets the students redo it.
7. Uses the other types of actions	*	a) the responses are categorized into this type if they do not fit the above 6 types.

* the score depends upon the specific response proposed by the teacher(s)

Assigning scores for each type of action:

a) Ignoring the situation (including not targeting the problem) is inappropriate (because the teacher should tell students how to do the task so that they can do it right next time). Therefore, a score of "0" is assigned to this type of action.

b) The type 6 action is highly recommended in literature because it provides students with the valued information (tells how to do the task and/or the expectation). Therefore, a score of 3 is assigned to this type of action.

Situation 122

Focus of analysis: How the "teacher" handles the misbehavior

Coding Focus: The responses are coded according to the following six types of actions(table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Ignores the students' problems;	2	a) deciding to "ignore the situation" or b) does not say anything about the problem.
4. Warns or punishes John*	1	a) letting John have " time out" or using other methods which overreact to the misbehavior;
5. Tells John to do the task correctly	1	a) telling John to do the task correctly
6 Uses proximity control method or some other method to defuse the problem.	3	a) using nonverbal action to stop student's misbehavior or letting students help teacher do something;

* John is the student who behaves improperly.

Assigning scores for each type of action:

a) Ignoring the situation (including not targeting the problem) may be appropriate because John's behavior may not likely persist. Therefore, a score of "2" is assigned to this type of action
b) The type 6 action is highly recommended because in this action, teacher does not interrupt the class or call undue attention to the misbehavior while handling the misbehavior. Therefore, a score of "3" is assigned to this type of action.

c) The type 4 and 5 actions are examples of overreacting. Therefore, A score of "1" is assigned to each action.

Situation 132-a

Focus of analysis: How the "teacher" gives the instruction to have student form the groups.

Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Tells incomplete information and lets students group on their own;	1	a) just telling students "form the four groups", but not telling how many students in each group and how to form the group.
4. Tells complete information and lets students group on their own;	2	a) telling students "form 4 groups of six " but not telling how to form the group & the expectations.
5. Asks students to group in a specific way	1	a) directing student(s) into a given group (teacher did not tell the information about the group)
6. Tells complete information and lets students group in a specific way	3	a) telling students the information regarding the group & letting students form the group under the teacher's direction (e.g., teacher quickly gives students the numbers and lets them get into the given group).
7. Uses " counting off " or "splitting the lines" methods.	3	a) telling students to count off by four or letting students split down the middle of the lines, etc.

Assigning scores for each type of action:

The type 7 action is the typical method and is recommended in the textbook. The use of this method may also save class time if done properly. Therefore, a score of "3" is assigned to this type of action.

The type 6 action is a little better then the type 3 and 5 actions because in this type action, teacher gives the clear instruction (tells students the group to be formed and how to form it). Therefore, a score of "3" is assigned.

The type 4 action tells the complete information but does not tell how to form the group. It is not very clear. Therefore, a score of 2 is assigned.

Situation 132-b

Focus of analysis: How the "teacher" gives the instruction to set up the learning stations

Coding Focus: The responses are coded according to the following five types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time	0	
2. Does not target the situational problem;	0	
3. Tells incomplete information regarding how to set up the station and lets students do it on their own	1	a) not telling the complete information regarding how to set up stations and only asking student(s) to get the the mat, etc.
4. Tells information regarding how to set up the stations and lets students do it.	2	a) telling students how to set up stations but not telling the expectation.
5. Tells students the complete information and expectation.	3	a) telling students how to set up stations and reminding them what need attention .

Assigning scores for each type of action:

The type 5 action is recommended because in this type action teacher tells the expectation as well as how to set up stations. Therefore, a score of 3 is assigned.

The type 4 action is a little better then the type 3 action because in this type action, teacher gives the clear instruction (tells how to set up stations). Therefore, a score of 2 is assigned.

Situation 134

Focus of analysis: How the "teacher" gives the instruction for practicing the drill.

Coding Focus: The responses are coded according to the following five types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Type
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Tells incomplete information regarding how to do the drill.	1	a) only telling the incomplete information regarding how to do the drill or the workload.
4. Tells complete information regarding how to do the drill.	2	a) telling students how to do the drill and the workload but not telling the expectation.
5. Tell students the complete information and the teacher's expectation.	3	a) telling students how to do the drill and the workload and reminding the teacher's expectation.

Assigning scores for each type of action:

The type 5 action is recommended because the instruction is clear (telling expectation as well as how to do the drill). Therefore, a score of 3 is assigned.

The type 4 action is a little better then the type 3 action because in this type action, teacher gives the clear instruction (tells how to do the drill, but not the expectation). Therefore, a score of 2 is assigned.

Situation 135-a

Focus of analysis: How the "teacher" handles the situation.

Coding Focus: The responses are coded according to the following five types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Corrects skill error first	1	a) handling student's skill error first.
4. Handles the misbehavior first	2	a) telling students go back to their lines after completing the drill first.
5. Handles the potential safety problem first	3	a) telling students not to start the drill until the one in front eaves the mat first.

Assigning scores for each type of action:

The type 5 action is recommended because the safety problem is always the first thing to be addressed. A score of 3, therefore, is assigned to this type action.

The type 4 action is done better then the type 3 action because teacher should not take care of skill problem until he/she is sure that the whole class is responding to the task properly. Therefore, a score of 2 is assigned.

Situation 135-b

Focus of analysis: How the "teacher" handles the situation.

Coding Focus: The responses are coded according to the following six types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Handles the student's behavior as the skill problem.	1	a) giving feedback to the John regarding his skill.
4. Handles the student's behavior as a time-wasting behavior or safety problem, but not handling it first	2	a) giving feedback to another student first (skill problem) then, handling john as the safety problem or time-wasting problem (e.g., lets John leave the mat quickly so that others can practice).
5. Handles the student's behavior as a time wasting behavior or safety problem and handles it first.	3	a) taking care of John first as the safety problem or time-wasting behavior.
6. Handles the student's behavior as other misbehaviors.	1	a) telling John to work on the drill in correct way, etc.

Assigning scores for each type of action:

The type 5 action is recommended because the safety problem is always the first thing to be taken care of (if it is a safety problem). If it is treated as the time-wasting behavior, It also need to be taken care of first because John's behavior takes up other students' learning time. A score of 3, therefore, is assigned to this type action.

The type 4 action is a little better then the type 3 action because teacher identifies the problem (but does not handle in the right time). Therefore, a score of 2 is assigned to this type of action.

Situation 135-c

Focus of analysis: How the "teacher" handles the misbehavior

Coding Focus: The responses are coded according to the following five types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Warns or punishes the students who broke the rule first.	1	a) handling the student who has broken the rule first.
4. Warns or punishes the student who is troubling another student first.	3	a) handling the student who is troubling the others first
5. Stops the class and handles both misbehaviors	3	a) stopping the class and then handling both misbehaviors

Assigning scores for each type of action:

The type 4 and 5 actions are relatively more appropriate in terms of the time because in these actions, teacher stops the misbehavior, then takes appropriate action (if not handled in this fashion, it is likely that the student who is bothered by another student may fight back). Therefore, a score of 3 is assigned to this type of action.

Situation 135-d

Focus of analysis: How the "teacher" handles the misbehavior

Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Only handles the one misdeed	1	a) only handling the students who skip turns or practices the undescribed skill.
4. Handles the students who skip their turns first	1	a) telling the students not to skip their turns, etc.
5. Handles the students who are practicing the undescribed skills first	3	a) telling the students to stop practicing the undescribed skill.
6. Stopping the class & handling both misbehaviors	3	a) telling students not to skip their turns and not to practice undescribed skill(s).
7. Uses other types of actions	*	

Assigning scores for each type of action:

The type 5 and 6 actions are relatively more appropriate because in these actions, the teacher not only handles both misbehaviors but also first stops the misbehavior which is unsafe to the students. Therefore, a score of 3 is assigned to both type 5 and type 6 actions.

Situation 135-e

Focus of analysis: How the "teacher" handles the situation.

Coding Focus: The responses are coded according to the following eight types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response Type
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Reviews and then closes the practice;	0	
4. Restates instructions, then lets the students practice again;	1	a) just reviewing the practice, then ending practice.
5. Lets students practice a more advanced skill;	1	a) giving students another advanced skill to practice
6. Encourages the students to help each other	2	a) telling students to help each other.
7. Regroups students and lets students practice the different skills (drills) ;	3	a) letting students who need more practice stay close to teacher (practicing the same drill) and those who have mastered the skill practice another skill.
8 Uses the other actions	*	a) if the responses do not fit any of the above, categorizing it into this type.

Assigning scores for each type of action:

The type 7 is appropriate because in this type of action, teacher identifies the major problem and changes the plan or teaching task to fit the students' needs (accommodating the students with the different skill level). Therefore, a score of 3 is assigned.

The 6 action is commonly used in actual class. However, it may be not as effective as the type 7 (It is uncertain whether students can help each other). Therefore, a score of 2 is assigned.

In the type 5 action, the teacher does not take care of those students who need practice. This is inappropriate. Therefore, a score of 1 is assigned to this type of action.

Simulation Exercise 2

Situation 211

Focus of analysis: How the "teacher" handles the situation.

Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Warns or punishes the student who is talking	0	a) telling student not to do it again or lets the student have "time out, etc".
4. *Asks students to be quiet (directly or indirectly)*	*1*	a) *asking student to be quiet.*
5. Ignores the situation	2	a) deciding to ignore the situation b) not saying anything about the student's behaviors
6. Uses proximity control or nonverbal methods	3	a) approaching the student or looking at the student, etc.
7 Acknowledges good behavior	3	a) praising the students who perform the task properly

Assigning scores for each type of action:

The type 7 is recommended (because in this type of action, teacher reinforces the good behavior and this action helps establish class procedure). Therefore, a score of 3 is assigned.

The 6 action is recommended because teacher's action does not interrupt the class or call undue attention to student's misbehavior (whispering is minor misbehavior). Therefore, a score o f 3 is assigned.

Situation 221

Focus of analysis: How the "teacher" gives the instruction to have student scatter..

Coding Focus: The responses are coded according to the following five types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Just tells the students to spread out	1	a) asking students to spread out (not tell the expectation)
4. Tells students to spread out and reminds them to space themselves	2	a) asking students to spread out and only reminding to get enough space.
5. Tells students to spread out and reminds to move quickly and get enough space	3	a) asking students to spread out and reminding them to move quickly and get enough space.

Assigning scores for each type of action:

The type 5 is highly recommended because in this type of action, teacher clearly tells the instruction and expectation. Therefore, a score of 3 is assigned.

Situation 231

Focus of analysis: How the "teacher" checks for students' understanding.

Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. No further action is taken when no one raises a question	0	a) deciding to move to next teaching task; b) no further action is taken .
4. Gives another demonstration	1	a) giving another demonstration.
5. Encourages students to ask questions	1	a) telling students to ask questions if they do not understand.
6. Asks students the relating question(s)	3	a) letting students answer the questions or telling what they have learned.
7. Asks students to demonstrate	3	a) letting students demonstrate what they have learned.

Assigning scores for each type of action:

The type 6 and type 7 are recommended because in this type action, teacher lets students demonstrate or state what they know in order to get feedback. Therefore, a score of 3 is assigned.

The type 3 is inappropriate because "no one raises the question" does not mean that students have learned the instruction . A score of 0, therefore, is assigned to this type of action.

Situation 232

Focus of analysis: How the "teacher" gives the organizational instruction.
Coding Focus: The responses are coded according to the following six types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Only tells how to get the balls (all together)	1	a) only telling students to go to get the balls
4. Tells how to get the balls (all together) and what to do after getting the balls	2	a) telling students to go to get the balls & what to do with the balls afterwards .
5. Tells students how to get the balls (individually)	2	a) telling students individually to get the balls(or go to basket where has less people to get the balls).
6. Tells students to walk over (or individually) to get the balls & also tells what to do with them after they have the balls	3	a) telling students (individually) to get the balls and what to do with the balls afterwards.

Assigning scores for each type of action:

The type 6 is recommended because in this type of action, teacher avoids overcrowding as well as tells what to do with the balls. Therefore, a score of 3 is assigned.

Situation 234-b

Focus of analysis: How the "teacher"gives feedback
Coding Focus: The responses are coded according to the following five types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Gives incongruent and general feedback	1	a) giving the feedback which does not mainly focus on the starting skill and does not specify what is wrong or right
4. Gives incongruent and specific feedback	2	a) giving the feedback which does not mainly focus on the starting skill and specify what is wrong or right, etc
5. Gives congruent and positive feedback	3	a) giving the positive feedback which mainly focuses on the starting skill.

Assigning scores for each type of action:

The type 5 is recommended because teacher gives the positive a feedback which focuses on the instructional objective. Therefore, a score of 3 is assigned.

The type 3 action is not recommended because teacher does not provide a lot of useful information to let students know what is wrong or right so that students could improve their skills.

Situation 234-d

Focus of analysis: How the "teacher"gives feedback
Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Gives general feedback (encouragement)	0	a) gives the feedback which just encourages students;
4. Gives specific, but not simple feedback	2	a) gives specific feedback, and lets students focus on more than one skill points;
5. Gives specific and simple feedback	3	a) gives the specific feedback, and lets students focus on one skill point;
6. Modifies the task for the student	3	a) lets student practice an easy skill;
7. Changes partners	1	a) gives student another partner.

Assigning scores for each type of action:

The type 5 and type 6 are recommended because (1) teacher gives the specific and simple feedback which does not overload the student with low level of the skill; (2) teacher changes the task to fit the student's skill level . Therefore, a score of 3 is assigned to each action.

The type 1 action is less effective because the partner is not the main problem of that student. Therefore, a score of 1 is assigned.

The type 4 action may overload the student. Therefore, a score of 2 is assigned.

Situation 234-f

Focus of analysis: How the "teacher" handles the situation.
Coding Focus: The responses are coded according to the following six types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Ignores the student's misbehavior	0	a) not saying anything about student's misbehavior
4. Asks student to stop the misbehavior	1	a) telling the student to stop the misbehavior
5. Punishes the student for not following the procedure	1	a) letting the student have "time out", etc.
6. Teaches or reminds what is supposed to be done.	3	a) telling student what is supposed to be done, etc.

Assigning scores for each type of action:

The type 6 is recommended because teacher is consistent in following the established class procedure and reminds the student what is supposed to be done. Therefore, a score of 3 is assigned.

Situation 237-a

Focus of analysis: How the "teacher"gives the feedback.
Coding Focus: The responses are coded according to the following seven types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response types
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Gives the general feedback to Wendy	1	a) giving the feedback which does not tell what is wrong or right.
4. Gives specific feedback to Wendy who is the major cause of the problem	2	a) giving specific feedback to Wendy
5. Gives feedback to Nelson who is not the cause of the problem	0	a) giving feedback which focuses on Nelson's skill error.
6. Teaches Nelson how to handle the situation	2	a) telling Nelson not to catch the ball if ball is not in the right position.
7. Gives specific feedback to Wendy and teaches Nelson how to handle the situation	3	a) giving specific feedback to Wendy and telling Nelson not to catch the ball if it is not in the right position.

Assigning scores for each type of action:

The type 7 is appropriate because teacher gives specific feedback to the right student and also prevents the student from fostering wrong skill habit by teaching him not to catch the ball. Therefore, a score of 3 is assigned.

Situation 237-b

Focus of analysis: How the "teacher" handles the situation.
Coding Focus: The responses are coded according to the following five types of actions (table).

TYPE Of ACTIONS	Assigned Score	Response type
1. Does not make decision in the allotted time;	0	
2. Does not target the situational problem;	0	
3. Keeps the same practice	1	a) reviewing the practice (or asking students to work hard) then letting students practice the same drill
4. Aborts the drill	3	a) reviewing the practice and then moving to other teaching tasks.
5. Modifies the task	3	a) giving group feedback and letting students work on a easy task.

Assigning scores for each type of action:

The type 4 and 5 are appropriate (because teacher identifies the need for change and make the appropriate change). Therefore, a score of 3 is assigned.

APPENDIX E

Author(s)	Years	Description/Feature of simulation
Patriarca et al.	1980	Providing teachers with an opportunity to diagnose case of learning disabilities and tc compare and discuss results.
Plummer	1981	Providing teachers with practice and reinforcement in applying behavioral learning theory concepts.
Plummer	1982	Giving teacher experience in convincing others of the merits of innovative educational proposals.
Klingman	1983	Helping teachers to be actively involved through simulation in a death-education curriculum.
Lloyd & Idol-Maestas	1983	Assisting special education teachers of mildly disabled to select precise database solutions to learning and behavior problems and preparing them to use curricula- based assessments and to evaluate performance data using two simulations.
Anderson	1984	Giving teachers practice in diagnosing reading problems using a miscue inventory.
Evans	1985	Training preservice teachers in the use of behavior modification skills utilizing interactive video.
Cushner &	1986	Preparing teachers for interaction with those who are culturally different.
Brislin	1986	Using an interactive microcomputer simulation to prepare teachers to work with emotionally or behaviorally handicapped pupils.
Copeland	1987	Training preservice teachers the "with-it-ness" and "overlap skills" utilizing computer simulation.
Strang, & Hoffman et al	1992	Training "teachers" teaching skills using the self-administered simulation.
Brent & Willis	1992	Training preservice teachers the lesson planning skill utilizing simulation. Beacham

APPENDIX F

Subjects' Background Information

Age and Year of Teaching of the Subjects in Experienced Group

Subject No.	Age	Years of Teaching
1	43	20
2	58	10
3	25	2
4	43	5
5	30	9
6	49	10
7	42	20
8	38	7
9	48	24
10	36	13
11	28	4
12	44	10
Mean±SD	40.33 ± 9.51	11.17 ± 6.90

Age, Teaching Experience and the Teaching Method Courses Taken by the Subjects in the Training Group

Subject No.	Age	Method Course	Years of Teaching
1	22	2	0
2	22	1	0
3	23	2	0
4	27	0	0
5	24	1	0
6	21	1	0
7	21	1	0
8	34	0	0
9	21	1	0
10	21	0	0
11	23	0	0
12	25	0	0
13	21	1	0
14	22	0	0
15	21	1	0
16	29	0	0
17	21	1	0
18	24	2	0
Mean±SD	23.44 ± 3.48		

APPENDIX G

SOURCE PROGRAM (PASCAL CODE)

```
{*********************************************************}
 {*  PART ONE:  ROUTINE PROCEDURES FOR THE PROGRAM  *}
 {*********************************************************}

  Procedure LR1_winroutine(col1,row1,col2,row2, wcolor:byte);

    begin
     window(col1, row1, col2, row2);
     textbackground(wcolor);
     clrscr
    end;
    procedure initial_tempword(var tempword:string32);
     var
      I:integer;
     begin
      for I:=1 to wlength do
       tempword[I]:=' ';
     end;

   procedure LR2_store_resptime(resptime1,resptime2:real);

      begin
          write(ogfile,resptime1:2:2,' ',resptime2:2:2);
          write(infile2,resptime1:2:2,' ',resptime2:2:2);

      end;

  procedure LR2_rectang(width,length:integer;col1,row1,rcolor:byte;
colp:integer;dline:boolean);
    {entery must be added in call program}
    var
      I, J,mid: integer;  ch1,ch2,  ang1,ang2,ang3,ang4:char;

    begin
     textcolor(rcolor);
      begin
        ch1:=chr(196); ch2:=chr(179);
        ang1:=chr(218);ang2:=chr(192);ang3:=chr(191);ang4:=chr(217);
       end;
```

```
    for I:= 1 to 2 do
        begin
            gotoxy(col1,row1+width-1);  write(ang2);
        end ;
    for J := 1 to length do
            write(ch1);  write(ang4);
        end;
    for I := 1 to width-2 do
        begin
          gotoxy(col1,row1+I);   write(ch2);
           gotoxy(col1+length+1,row1+I);  write(ch2);
        end ;
    end;

  procedure LR3_rectang_W(var inpcol,inprow:byte;col1,row1,col2,row2,tcolor:byte);

     var
       width,length:integer;  rcol,rrow,rcolor:byte;
     begin
      LR1_winroutine(col1,row1,col2,row2,tcolor);
      width:=row2-(row1-1);    length:=col2-(col1+2);
      rcol:=1;  rrow:=1;
      LR2_rectang(width,length,rcol,rrow,white,1,true);
      inpcol:=rcol+1;  inprow:=rrow+2;
     end;


  procedure LR4_box_w(col1,row1,col2,row2,bcolor:byte);

     var
       inpcol,inprow:byte;
     begin
      LR3_rectang_w(inpcol,inprow,col1,row1,col2,row2,bcolor);
      window(col1+2,row1+2,col2-2,row2-2);
     end;

Procedure LR5_sweep_w(col1,row1,col2,row2,wcolor:byte);

     var
       I,numloop ,  DLtime:integer;
   begin
       if(row2-row1)<10 then
```

```
        dltime:=200
      else
        dltime:=150;  numloop:=row2+1-row1;
      for I:=1 to numloop do
        begin
         LR1_winroutine(col1,row2-I,col2,row2,wcolor);
         delay(dltime);
        end
end;


procedure LR19_L_windows(wcolor:byte;wtype:integer);

  var
    col1,col2,row1,row2:byte;
  begin
    case wtype of
      1:  LR1_winroutine(2,2,40,11,wcolor);   {color could be white}
      2:  LR1_winroutine(2,13,40,24,wcolor);   {color could be white}
      3:  LR1_winroutine(2,6,38,18,wcolor);   {color could be white}
      4:  LR1_winroutine(2,2,40,24,wcolor);
      5:  LR4_box_w(2,2,40,24,white);
    end;
  end;

function  LR21_cal_time : real;

  var Hr,min,sec,sec100:word;
  begin
    gettime(hr,min,sec,sec100);
   LR21_cal_time :=(hr*60*60)+(min*60)+sec+(sec100/100);

  end;

procedure LR22_timeloop(var time1,time2:real;stime1:integer; var
charflag,timeflag:boolean);

  var count:integer;   stand:real;  col,row:byte;
 begin

   time1:=LR21_cal_time+stime1;
    timeflag:=true;  charflag:=true;    count:=1;
   while timeflag and charflag do
```

```
    begin
      time2:=LR21_cal_time;
      if time1> time2 then
        if keypressed then
           charflag :=false
        else  {stay in loop }
      else
        timeflag:=false;
    end;  {end of while}
end;

procedure  LR23_clear_buff;
  var
    loop:boolean;
 begin
  loop:=true;
  while loop do
   begin
     if keypressed then   ch:=readkey
    else
      loop:=false;
   end;
 end;


 procedure LR24_wait_hitKey(adtime:integer);

var
  tempx,tempy:integer;    time1,time2:real;
  charflag,timeflag:boolean;    ch:char;
begin
  LR23_clear_buff;
  tempx:=wherex;  tempy:=wherey;
    write(' Finish reading, press any key');
  LR22_timeloop(time1,time2,stime+adtime,charflag,timeflag);

end;

Procedure LR25_convert_letter(var ch:char);
 begin
  if ch='Y' then  ch:='y';
  if ch='N' then  ch:='n';
end;
```

```
procedure get_ch(var ch:char);
 begin
   repeat
   until (keypressed);
  ch:=readkey;
 end;


procedure LR25_get_ch(var ch:char;var outtime:boolean;gettype:integer);

  var
   time1,time2:real;   charflag,timeflag:boolean; stime5:integer;
  begin
   ch:=' '; stime5:=6;  outtime:=false;
    LR22_timeloop(time1,time2,stime5,charflag,timeflag);
   if charflag=false then
        ch:=readkey
     else
     outtime:=true;
  end;

  Function LR26_ask_question(temptime:real):real;

    var
     time1,time2:real;
    begin
        writeln('pause-- for question.....              ');
        writeln('press ENTER to continue');
        time2:=LR21_cal_time;
         LR26_ask_question:=time2-temptime;
     end;

procedure LR26_test_ch(testType:integer; var ch:char;var qtime:real;var
testdone:boolean;count:integer);

    var
      alphabet:symbols;   temptime:real;
     begin
      temptime:=LR21_cal_time;   testdone:=false;
      case testType of

       1: alphabet:=['1','2'];
```

```
          2: begin
           alphabet:=['y','n'];
           LR25_convert_letter(ch);
          end;
       end;
       if ch in  alphabet then
         testdone:=true
       else
        begin
            if ch='?' then
            begin
             if count<2 then   qtime:= qtime+LR26_ask_question(temptime)
             else
               writeln('no question can be asked');
            end
          else
              writeln('selection is out of range');
        end;
      end;  {ch not in alph}

     end;

  procedure LR26_get_test_ch(var outtime:boolean; var ch:char; var
respTime,qtime:real;testtype:integer);

      var
       testdone:boolean;  starttime,time2 :real;
       gettype ,    count:integer;
      begin

       testdone:=false;  outtime:=false;
       qtime:=0;    count:=1;   starttime:=LR21_cal_time;
       while (testdone=false) and ( outtime=false) do
          begin
            LR25_get_ch(ch,outtime,1);
           if outtime=false then
              LR26_test_ch(testType,ch,qtime,testdone,count)
           else
            ch:=' ';   time2:=LR21_cal_time;
           count:=count+1;
           if count>4 then outtime:=true;
         end;
```

```
        if testdone then
         begin
          resptime:=(time2-starttime-qtime);
          resptime:=(trunc(resptime*1000/1000));
         end
        else
         resptime:=0;
      end;

 procedure LR27_switch_selection(var ch:char);

       begin
        case ch of
         '1'  : ch:='2';
         '2'  : ch:='1';
         'n'  : ch:='y';
         'y'  : ch:='n';
        end;
       end;

     procedure confirm_selection(var ch:char);

       var
        tempch:char;  outtime:boolean;   gettype:integer;
       begin
        gettype:=2;
         writeln('Reconfirm:');
        writeln('Your selection is ',ch,' (y/n)');
         LR25_get_ch(tempch,outtime,gettype);
        if outtime=false then
           LR25_convert_letter(tempch);
       if tempch='n' then
           LR27_switch_selection(ch);
       end;


     procedure LR27_get_confirm_ch(var ch:char; var outtime:boolean;var
resptime,qtime:real;testtype:integer);

     begin
       if testtype=3 then
          LR1_winroutine(46,15,78,20,white)
       else
```

```
        LR1_winroutine(46,15,78,20,blue);
      LR26_get_test_ch(outtime,ch,respTime,qtime,testtype);
      if outtime then
        ch:=' '
      else
        if testtype<>3 then
          confirm_selection(ch);
    end;

 procedure LR28_outtime_routine;
   var
     inpcol,inprow:integer;
   begin
        LR1_winroutine(11,17,58,17,blue);
       write('Reminder: Input should be made in given time.');
     end;

procedure LR35_act_window(col1,row1,col2,row2:byte;I:integer);

 begin
      LR1_winroutine(col1,row1,col2,row1,5);
    case I of
       4: write('Descriptive Teaching Incident');
       5: write('Observed Students'' Behaviors');
       6: write('Finish the current step');
        7: write('*ACTION TAKEN BY TEACHER (you)*');
       8: write('(Students) finish spread_out');
       9: write('Finish skill explanation');
    end;

 end;


procedure LR36_s1step1_hitmess(index:integer);

   begin
      case index of
     1 :  begin
            writeln('    1: move to next planned          teaching task');
           writeln('    2: take other action');
          end;
```

```
   7:  begin
         writeln('take action to handle the      situation.');
          textcolor(red);
         write('Press any key if ready to type');
        end;
    9, 11:  writeln('      1: Ignore the situation        2: take other action');
  end;

procedure LR38_store_selected_ch(ch:char);

  begin
    write(ogfile,ch,' ');   write(infile2,ch,' ');
  end;

  procedure LR40_stand_w;

    var col1,col2,row1,row2,wcolor:byte;
    begin
     LR16_lwindow(blue);
     LR15_rwindow(7);
    end;

  function HR1_Nsubkey(situIndex,step:integer):integer;

  begin
    case step of
    1,2:  HR1_nsubkey:=2;
     4:  HR1_nsubkey:=1;
     3:   HR1_nsubkey:=5
   end;
   end;

procedure initial_string20(var name:string20);

 var    I:integer;
 begin
  for I:=1 to 20 do
     name[I]:=' ';
 end;
```

```
procedure read_instruction(numchar:integer);
   var
        ch:char;  count:integer;    notout:boolean;
 begin
   textcolor(white);  ch:=' ';     notout:=true;  count:=1;
    while not eof(pfile) and (notout) do
     begin
      while not eoln(pfile) do
       begin
        read(pfile,ch);
         if ch='#' then
            notout:=false
         else
            write(ch);
       end;
      writeln(' ');     readln(pfile);
    end;
   end;


   procedure instruction_mess(nRepeat:integer);
       var
             col1,col2,row1,row2,tcolor:byte;   N:integer;
  begin
       N:=1;
       LR1_winroutine(1,1,80,25,white);  textcolor(white);
      repeat
       LR4_box_w(2,3,79,24,black);  read_instruction(80);
       LR24_wait_hitkey(90);
        n:=n+1;
      until n>nrepeat
 end;

 procedure open_dataf(ntype:integer);
    begin
     case ntype of
      1: assign(pfile,'intruf.$$$');    {3}
      2: assign(pfile,'instrf.$$$');
      3: assign(pfile,'gymf.$$$');      {6}
      4: assign(pfile,'ballf.$$$');
    end;
     reset(pfile);
   end;
```

```
procedure copy;
      var ch:char;
 begin
   reset(pfile);
  while not eof(pfile) do
     begin
      read(pfile,ch);  write(tempfile,ch);
     end;
 end;

 procedure close_savef;

  begin
   close(pfile);  close(tempfile);
  end;


 procedure save_data(savetype:integer);

   begin
    assign(tempfile,'tempf.$$$');
    if savetype=1 then   assign(pfile,'master.$$$')
    else
      assign(pfile,'ogmast.$$$');
      rewrite(tempfile);
      copy;                    {copy master to tempf}
    close(pfile);
    if savetype=1 then  assign(pfile,'wordfile.$$$')
    else
      assign(pfile,'orignfil.$$$');
    copy;  {copy test data to tempf}
    close_savef;
    if savetype=1 then  assign(tempfile,'master.$$$')
    else
      assign(tempfile,'ogmast.$$$');
      assign(pfile,'tempf.$$$');
  rewrite(tempfile);
  copy;    {copy back to master}
  rewrite(pfile);    write(pfile);
  close_savef;
 end;
```

```
{*********************************************************************}
{* PART TWO:  PROCEDURE FOR OUTPUT OF THE WRITTEN MESSAGE  *}
{*********************************************************************}

  procedure Situ_task(taskIx:integer);

     begin
      case taskIx of
       111,211:   writeln('Give signal to start class');
       112,212:   writeln('Introduce the lesson task,etc.');

       113:   writeln(' Explain the lesson task to    the students                ');
       121,221:  writeln('  Have students scatter   ');

       122,222:  writeln('Lead warm-up exercises (all    class activities)          ');
       131,231:  writeln('Skill instruction and          demonstration              ');

       132:   write('Group students into 4 squads');
       133:  writeln('Set up 4 stations; Let students stand in file formation       ');

       134:  writeln('Give instructions on the drill  and practice.                 ');

       135: writeln('Allow students to practice the  drill.                         ');
       141,241: writeln('Perform class ending procedure.');
        232:  writeln(' Distribute volleyballs.     ');
       233: writeln('Teach Drill 1:                Describe/demonstrate drill.   ');
       234: writeln('  Teach Drill 1 (six sets):     Organize 1st set of practices ');
       235: writeln('  Teach Drill 1 (six sets):     Organize 2nd set of practices ');
       237:  writeln('  Teach Drill 2: Describe and   organize 1st set of practices ');
       238: writeln('  Teach Drill 2 (three sets):   Organize 2nd set of practices ');
      end;
    end;

  procedure nexttask(taskix:integer);

    begin
     case taskix of

      111,211:  write(' Give signal to start class');
      112,212:  write(' Introduce the lesson task ');
      121,221: write('Direct students to spread out');
      122,222: write(' Lead warm up exercises.');
      131,231: write('Explain and demonstrate skill');
```

```
      132: write('Group students into 4 squads');
      133: write('Set up 4 practice stations;');
      134: write('Give instructions on drill ');
      135: write('Allow Students to practice ');
      232: write('Distribute volleyballs');
       233:  write('Teach Drill 1');
      234:  write('Organize 1st set of practices');
      235:  write('Organize 2nd set of practices');
      237:  write('Organize 4th set of practices');
      238:  write('Organize 2nd set of practices ');
    end;
  end;

procedure question_mess(quesIx:integer);

   begin

     case quesIx of
     2: begin
         writeln('Please talk to student(s)     regarding what you want       student(s) to
              know/do');
          textcolor(red);
          write('If ready to type, press any key');
        end;
     4:  write('Press any key, if ready to type');
    end;
  end;
  procedure ask_quesmess(quesix:integer);

   begin
     LR1_winroutine(46,1,79,20,white);
     LR1_winroutine(45,4,79,11,white);
     LR2_rectang(8,32,1,1,black,1,false);
     window(52,4,76,4);
     write('What is your action?');
     window(47,6,77,10);
     LR23_clear_buff;
     question_mess(quesIx);
  end;
```

```
procedure suppose_w(supindex:integer);

  var
    inpcol,inprow,col1,row1,col2,row2,tcolor:byte;
  begin
   LR4_box_w(10,10,60,18,7);
   textcolor(black);
    case supindex of
      1,3,6,50:begin
             writeln(' Class continues                    ');
             if supindex=50 then
              begin
               LR24_wait_hitkey(600,0);
               clrscr;
               writeln('Note:');
               write('  Have you typed in your message in such a way asif you were
                        talking to  your students ?');
                writeln(' If not,  Please do so next time      ');
              end;
            end;

      2,7,51: begin
               LR28_outtime_routine;
               textbackground(7);
               writeln('  Assume you handled the previous situation.    Now, continue
                        your  lesson');
             end;
      5,11: begin
             LR28_outtime_routine;
             writeln(' Assume you completed the teaching action.       Now, continue
                    your  lesson');
           end;

     end;
       LR24_wait_hitkey(600,0);
  end;
```

```
procedure output_mainstep(step:integer; mcol,mrow:byte);
    begin
      gotoxy(mcol,mrow);
      case step of
       1:  writeln('Unit 1. Class-beginning');
      2:  write('Unit 2. Warm-up Activity');
      3:  write('Unit 3. Skill-Learning ');
      4:  Write('Unit 4. Class Closure')
     end;
    end;

 procedure End_s1step3_sub5(col1,row1,col2,row2,ecolor:byte);

    begin
      LR4_box_w(col1,row1,col2,row2,black);
      writeln('Students continue to practice....');
      writeln('When the drill is completed, you move to the next teaching step,    then
            perform the class-ending procedure');
      LR24_wait_hitkey(50,0);
   end;

 procedure s1s1_mess(index:integer);

   VAR  numsec,messix,nmov,ps1:integer;

  begin
   case index of
    1,50:  begin
             writeln('You are giving the signal to    start class, then observing
                   students"  responses');
              LR24_wait_hitkey(8,0);
           end;

    2:  begin
          writeln('                Some students      respond quickly;        ');
           write('But, some others do not: They either    slowly walked to
     thedesignated  location or stopped what ');
          writeln('    they were doing thenslowly went to the  starting location.');
       end;
    3:  begin
          write('    Students assembled inthe squad formation. A few of them are    ');
          writeln('talking while waitingfor further         instructions.');
       end;
```

```
    4: writeln('Observing students finishing theformation, you decide to       (make
            selection):   ');
    5: begin
         writeln('You are telling students the   task and the purpose of the    lesson');
         LR24_wait_hitkey(6,0);
       end;
    6:  begin
         writeln;
         writeln('Students are listening.');
         writeln('                              While you are talking, two students  ');
         writeln('(who are 1 min. late) walk into class.          ');
         writeln('Another two students enter the class   two minutes late....');
         LR24_wait_hitkey(6,0);
       end;
    7: writeln('Observing these behaviors, you  decide to(make selection):       ');
    9:  begin
         writeln('You continue with class        introduction');
         LR24_wait_hitkey(6,0);
        end;
    10:  writeln('Students are listening to you.');
    11:   writeln('At the completion of the       introduction, you decide to:       ');
  end;    { end of case }
end;

 procedure s1s2_mess(messix:integer);

   var
           adtime:integer;   col1,row1,col2,row2,tcolor:byte;
   begin
     case messix of
                {step2_sub1}
           1:  begin
                 writeln('You give directions for studentsto scatter and observe their
                          responses.');
                 LR24_wait_hitkey(6,0);
               end;
           2:  begin
                 writeln('While spreading-out');
                 write('    Some students are   moving fast, but    some are not.');
                 window(6,22,38,24);
                 LR24_wait_hitkey(6,0);
               end;
```

```
      3: begin
           writeln('After spreading-out');
           write('Some students stand too close to each   other.');
           LR24_wait_hitkey(6,0);
         end;

      4:   writeln('Observing students finishing theformation,you decide to        ');

             {step2 sub2}
      7:  writeln('You begin leading warm-up       exercises.');

       8: begin
            writeln('Students are following directions andexercising.');
            LR24_wait_hitkey(8,0);
          end;

      9:  begin
            writeln('After doing several exercises,  you begin to lead sitting  stretches.');
            writeln('     At the moment YOU ARE COUNTING: 2-2-3-4, you
              notice John"s   behavior. John is uninterested');
            writeln(' in doing  the exercise; he bends forward slightly, while ');
            write('others are     taking three counts to bend    fully and recover to ');
            writeln('a sitting position on the fourth count.');
            LR24_wait_hitkey(13,0);
          end;
        10:  writeln('Observing John"s behavior,      you decide to:                ');
        11:  writeln('You continue leading warm up    exercises.');
        12:  begin
             writeln('Most students are following          directions adequately.');
             LR24_wait_hitkey(5,0);
            end;
         13:   writeln('When the warm-up exercises are  finished, you decide to:    ');
         14:    writeln('students are in the double lines formation');
       end;

end;
```

```
procedure s1s3_mess(messix:integer);

    var   adtime:integer; col1,row1,col2,row2,tcolor:byte;

 begin
  case messix of
   1,80:  writeln('You are reviewing and  demonstrating the key technique of the
                  forward roll');
   81:begin
        writeln('Most students are listening to you; But, two students are not paying
            attention');
      LR24_wait_hitkey(5,0);
     end;
   2:   writeln('Students are listening and watching  the demonstration');
   4: begin
      writeln('You are 'GOING TO  group students into 4 squads, with 6 or 7
                  students in each squad.    ');
      LR24_wait_hitkey(5,0);
     end;
   5: begin
        writeln(' Students are standing in double lines (13 in each line); waiting for the
            instructions');
       LR24_wait_hitkey(5,0);
     end;

   6: begin
      writeln('Give directions to group      students into 4 squads.          ');
      writeln('(talk to students regarding whatyou want them to know & do)  ');
    end;

   7: begin
     write('You are GOING TO give the      directions for setting up      stations.');
      LR24_wait_hitkey(8,0);
      LR4_box_w(2,2,40,24,black);
       writeln('NOTE:                        ');
       write('You plan to let each squad get a   large mat and set up station in the');
       writeln('middle of the Gym, then line up    behind the mat.');
       LR23_clear_buff;
     end;
   8,13: writeln('At this time, the students are    awaiting your instructions.');
```

```
 9: begin
      writeln('Give instructions for setting upthe stations.                ');
      write('(talk to the students regarding what you want them to know & do) ');
    end;

 12: begin
      write('You are GOING TO give          instructions on the drill');
       LR4_box_w(2,2,40,24,black);
       writeln('NOTE:                    ');
       writeln('1. Students will take turns to  practice two forward rolls, then return
                 to the end of their  lines ');
      writeln('2. Each squad will practice six       sets of the drill');
      writeln('3. The focus of the learning is on    the roll skills');
      LR24_wait_hitkey(2000,0);
    end;
 14:  begin
      Writeln('Give the directions on the drill& practice.             ');
      write('(talk to the students regarding what you want them to know & do) ');
     end;

 16:  begin
       write('                Students are taking  turns to practice...     ');
       write('Smith failed to keep his legs extended    while rolling and didnot tuck
                 them as  his hips contacted the   mat.');
     end;
17:begin
     write('   A few of the studentsare not responding tothe task adequately  (see the
                examples    below):');
   end;
 18:  begin
       write('   Fishman starts his    forward roll too soon (before the student in');
       writeln('front of him finishes his 1st roll);        ');
       write('two students did not  return to their lines after finshing their  drills.');
     end;
  15:  writeln('You are observing students   after you ask them to practice');

 27,34,40,47:
      begin
        writeln('Practice continues.        You are observing the practice ');
         LR24_wait_hitkey(1,0);
      end;
```

```
29:  begin
       write(' John failed to roll  to the squat positionHis back flopped on  the mat.
                  He lay there');
       writeln('for awhile, then slowly got up and  talked to the studentbehind him.');
     end;
28: begin
     write(' Susan used her handsto assist body in getting into the squat position  ');
     writeln('(This is not a     recommended        procedure)');
   end;
 19,25,30,37,44,82:
       writeln('Observing these behaviors, you  decide to ');
 36:   writeln('  Ken is throwing a   piece of chalk at   the student in front of him.');

  35: begin
       writeln(' Kurt goes back to his line AFTER  ascending the climbing-rope');
       writeln('(This is not allowedin the current     lesson).');
       delay(3000);
     end;

 41:  begin
       write('  In Squad A James is  practicing on the matwhile others are    ');
       writeln('waiting for their   turns in line');
      end;

  42:  begin
       write('     In squad B two      students are talking at the back of the  ');
        writeln('line; they did not   take their turns');
     end;
 43:  write('Jane and Jim left     their lines to       practice the backward roll');

  53: begin
       writeln('Practice continues.');
       writeln('After nearly finishing the 4th  set, you notice the following  students"
        behaviors:');
      LR24_wait_hitkey(10,0);
   end;
54: begin
     write( 'One third of the students have  performed the drill well,  However,they ');
     writeln('are losing interest in further practice.');
     delay(1000);
   end;
```

```
      55: begin
            write(' Another one third arehaving trouble; Some can not roll very
                  smoothly an ');
            writeln('some cannot roll to the squatposition.          ');
          end;
      56: begin
          writeln('The 4th set is now completed.  Give Feedback to the class ');
          write('Talk to the students regarding  what you want them to know & do ');
         end;
   end;
end;

  Procedure Transition_mess(situix:integer);

   var
    col,row:byte;

   begin
    case situix of
    111,211:  begin
       write('It is time to start class.Most students have arrivedand are waiting for the
             class');
       writeln('Teacher stands in startinglocation, ready to begin  class--perform current
                   task.');
             end;
    112,212,221,231,232,233,234,235,236,237 :begin
           write('Students remain in squad  formation.');
            write('You stand in front, ready to perform the current    planned task.');
         end;
    113:  begin
            write('It is during the middle ofclass, students are in    squad formation.');
             write('You stand in front, ready to perform the current    planned task.');
         end;
    122,222: begin
           write('Students are in extended  formation.');
           write('You stand in front, ready to perform the current    planned task.');
         end;
    121,131,132 : begin
           write('Students remain in the    same formation as before');
           write('You stand in front, ready to perform the current    planned task.');
         end;
```

```
    133: begin
           write('Students stand in squad   formation');
           write('You stand in front, ready to perform the current    planned task.');
         end;
    134,135: begin
        if situix=134 then
           write('Students stand in squad   file formation.')
        else
           write('Students are ready to     practice the drill.');
           write('You stand in front, ready to perform the current    planned task.');
        end;
    end;
end;

   Procedure NOTE_mess(tempIx:integer);

      begin
        LR1_winroutine(2,22,62,25,3);
       case tempix of
        111: begin
               writeln('NOTE:  The use of the signal(routine) has been taught  in the
               previous calss.');
             end;
 211: write('NOTE: This class follows the previous class(simulation  exercise 1)');
 113: begin
        writeln('NOTE:');
        writeln('  CURRENT TASK: the task to be performed at the present time');
        write(' NEXT TASK:the task to be performed after finishing the  current task');
      end;
 133,132: write('NOTE: This is the FIRST time you ask the students to perform this
                    task');
 134:begin
       write('NOTE: The students are going to practice drill in squad          ');
       write('file formation for the first time');
     end;
 232:write('NOTE: No any procedures for distributing the equipment  have been
   taught');
 234: write('NOTE: The FOCUS of the practice is on the STARTING MOVEMENT');
 end;
 delay(1500);
end;
```

```
procedure s2s1_mess(index:integer);
    VAR
            numsec,messix,nmov,ps1:integer;
   begin
     case index of
       1: begin
            writeln('You are giving the signal to  start class and observing  students"
                 responses');
           LR24_wait_hitkey(5,0);
          end;
       2: writeln('Most students moved quickly to the     designated location.');
       3: write('  Jane is whispering toher neighbor while  others are waiting   for
            further  instructions');
        4:  writeln('Observing students" behaviors,   you decide to:       ');
     end;
  end;
procedure s2s2_mess(messix:integer);

    var  adtime:integer;  col1,row1,col2,row2,tcolor:byte;

    begin
      case messix of
            1:begin
              write('You are GOING TO  'have students  scatter into an extended
                 squad  formation.');
             LR24_wait_hitkey(90,0);
            end;

     2: writeln('Students are in squad formation awaiting your instructions at this
                 moment');
     3: begin
         writeln('Give directions to have studentsscatter.                    ');
         writeln('Talk to the students regarding  what you want them to know & do');
         delay(800);
        end;
     4:  writeln('You are observing students" responses after giving instructions');
     5:  write('  Students are moving into the formation  quickly. Each has sufficient
           room  for warm up exercises.');
     6:  writeln('              Students are awaitingyour instructions');

     7:  writeln('Observing the students finishingthe formation,you decide to     ');
  end;
end;
```

```
procedure s2s3_mess(messix:integer);

    var
     adtime:integer;   col1,row1,col2,row2,tcolor:byte;

 begin
  case messix of
   150:  begin
         write('This is during the middle of theclass. Your planned task is to  give
               instructions on how to perform overhand pass  (volleyball)');
          LR24_wait_hitkey(15,0);
        end;

   1:  begin
        writeln('You are giving instructions on  the skill to be learned with thefocus on
                 the: ');
        writeln(' (1) starting movement  (2) passing movement  (3) follow-through
                  movement');
        LR24_wait_hitkey(15,0);
        LR1_winroutine(2,6,40,19,black);
      end;

   2  : writeln('Students are listening and  watching the demonstration.');

   5:  begin
         write('You are GOING TO distribute the balls to the students');
         delay(800);
         LR1_winroutine(2,8,40,17,black);
         writeln('NOTE:    You plan to let students in the 1st and3rd squads go get the
             balls (which are ');
         writeln('at the left corner of the court).          ');
         LR24_wait_hitkey(60,0);
       end;
  6 : writeln('Students are awaiting your          instructions');

   7:  begin
        writeln('Give directions for distributingthe balls.                  ');
        write('Talk to the students regarding  what you want them to know & do ');
     end;
  9:  writeln('You are observing students"    responses.');
```

```
10: writeln(' Most students moved quickly to get the balls and returned to their
    squads');


11: begin
      write('A few took their timeand tried to pick thebetter shaped balls. As a result,
          the students behind');
      write(' them had to wait.');
    end;

12: write('Finally, all students are back in their squads awaiting further instructions');
13: writeln('Observing students back in theirsquads, you decide to:                ');
15: begin
      writeln('You are giving directions for  practicing drill 1');
      LR4_box_w(2,2,40,24,black);
      writeln('NOTE:   Drill 1                    ');
      writeln('   --toss ball to self and pass to partner.                    ');
      write(' a. Partners face each other (4-8 feet apart); b. One student tosses
      writeln('ball to  self and pass head high to the other; c. Partner catches the ');
      writeln('ball then tosses & pass it back  to the other individual.');
      LR24_wait_hitkey(3000,0);
      write('Students will practice six sets. For each two sets, the students will be ');
      writeln('instructed to focus on the different parts of the skill       ');
      writeln('(1) The focus of the 1st two sets  is on starting movement;          ');
      writeln('(2) The 2nd two sets emphasize passing movement;                ');
      writeln('(3) The last two sets emphasize  follow-through movement.      ');
      LR24_wait_hitkey(3000,0);}
      LR1_winroutine(2,2,40,24,white);
    end;

16: writeln('Students are listening & watching your demonstration,  then practicing
        the  drill');
17: begin
      writeln('Parker & Hough were  working well; they  demonstrated good
       skills in the starting movement');
      writeln('-----------------');
      write('Walter raised his hands above his forehead but, he did not encircle the
              ball.');
    end;
18: begin
      write('  Several students show no evidence of  focusing on the      ');
      write('starting movement  while practicing.');
    end;
```

```
19: writeln('Observing these behaviors,      you decide to                ');
22:  begin
        writeln('Tom"s practice');
        write('He has a good    starting movement.  He raised his hands above his
        forehead, and encircled the   ball.');
     end;
 23: begin
        writeln('   However, he erred in the passing movement');
        writeln('He did not maintain  contact with the ball');
     end;
 24,28,32,36,58:
    begin
       writeln('Observing this performance,  youdecide to give feedback to  the
              student ');
       writeln('Talk to the student regarding   his/her practice.       ');
    end;

21,  25,29,33,37,38,59,63 :
     writeln('Class is proceeding. You continue observing the students" practice.');

 34: begin
        writeln('Vickie"s practice');
        writeln('    She has a low skill level.She is working hard on the drill.');
     end;
 35: begin
        write('    However, she still   has several         performance errors:  ');
        write('She contacts the balltoo low and jabs the ball with fingers    (illegal
        contact withthe ball).');
     end;
 39:  writeln('   Many students have  demonstrated the proper skills in thestarting
                 movement.  ');
 40: begin
      write('However, a few still have problems, e.g., contacting the ball  too low;');
       writeln('not encircling the ball.  Students finish the  1st set of practices.');
    end;
 43:  begin
        writeln('Observing students finishing this practice set, you give signal to
                 stop');
        textcolor(black);
        writeln('(NOTE: The use of the signal forstopping activities [routine]   has
           been taught)');
     end;
```

```
44: write(' Most students stoppedpracticing, grabbed the balls & stood there
      awaiting further instruction');
45: begin
      write(' Sam did not follow directions. He continued to practice');
      writeln('with his partner until the ball dropped to the floor.');
    end;
46: begin
      write(' One student is playing the ball with his hands while standing there
            awaiting instructions.');
    end;
47 :begin
      writeln('Please continue the lesson and talk to your students regarding what you
         want them to know & do ');
   end;

 75: begin
      writeln('You give instructions for the drill 2, then let students practice ');
      LR4_box_w(2,2,40,24,black);
      writeln('NOTE: Drill 2 ');
      writeln(' --pass ball back and forth. ');
      write(' a. Partners face each other (4-8 feet apart); b. Partners pass ball ');
      write('back and forth, keeping the ball above the height of net. ');
      writeln('Students will practice 3 sets of the drill ');
      LR24_wait_hitkey(3000,0);
     end;
76: writeln(' Students pair-off to practice.');
77: begin
      write('Wendy and Nelson wereworking hard. HoweverWendy failed to ');
      writeln('return the ball correctly to Nelson (The ball is decending away from
            Nelson.)');
    end;
78: begin
      write('Because of this,Nelsonhad to run forward to pass the ball. In haste, ');
      write('contact was made too low and he jabbed the ball back to Wendy.');
    end;
79: begin
      writeln('Observing this practice, you decide to give feedback. ');
      writeln('Talk to your student(s) regarding his/her practice. ');
      writeln('Ready to type, press any key');
   end;
```

```
80: begin
      writeln('Practice continues. You are moving around and  observing students'");
      writeln(' practice.  After a while, you notice the  students" behaviors:');
    end;
81:  writeln('  Many students had  the problem similar to Wendy and  Nelson"s');
82: begin
      write('  They could not pass  the ball to the     proper position.  As ');
      writeln('a result, The  partners had to return the ball whilethey were running.');
    end;
83: begin
      write('Observing these problems,  you  stop practice & demonstrate the concept
           of controlling the pass (passing the ball up in front ofthe partner),');
      writeln(' then you allow  students to practice.');
    end;
84: begin
      write('  Students have tried hard to pass ball tothe proper position.');
      writeln('However, they were  not successful.');
    end;
85: writeln(' All students have   finished the first  set of practices.');
86: begin
      writeln('Give group feedback and organizenext teaching/learning task    ');
      writeln('Talk to your students regarding what you want them to know/do.  ');
      writeln('Ready to type, press any key');
    end;
91: begin    {for select 2}
      write('After giving instructons, you continue class and move to the last teaching ');
      writeln('Unit: Close class');
    end;
  end;
end;

 procedure output_s2mess(step,messix:integer);

    begin
      case step of
      1:  s2s1_mess(messix);
      2:  s2s2_mess(messix);
      3:  s2s3_mess(messix);
    end;
   end;
```

```
procedure output_s1mess(step,messix:integer);

 begin
  case step of
   1: s1s1_mess(messix);
   2: s1s2_mess(messix);
   3: s1s3_mess(messix);
  end;
 end;

procedure output_situmess(situindex,step,messix:integer);

 begin
  case situindex of
   1: output_s1mess(step,messix);
   2: output_s2mess(step,messix);
  end;
 end;
```

```
{*****************************************************************}
{* PART THREE: PROCEDURES (LEVEL2)                               *}
{*****************************************************************}

  procedure outtime_message(suptype:integer);

    var
     supindex:integer;
    begin
     supindex:=select_supposeIx(suptype);
     suppose_w(supindex+1);
    end;
procedure monitor_input(ch:char);

    begin
     if ch=chr(8) then  write(OGfile,chr(17))
     else
      if ch=chr(32) then    write(OGfile,' ')
      else
       if ch=chr(13) then  writeln(OGfile,chr(21))
       else   write(OGfile,ch)
    end;


  procedure input_w(var inpcol,inprow,btrow:byte;col1,row1,col2,row2,tcolor:byte);

    var
     width,length:integer;     rcol,rrow:byte;
    begin
        LR1_winroutine(col1,row1,col2,row2,tcolor);
        width:=12;     length:=35;   rcol:=1; rrow:=1;
        LR2_rectang(width,length,rcol,rrow,white,10,true);
         inpcol:=rcol+1;   inprow:=rrow+2; textcolor(blue);
    end;


  procedure change_line(var tempword,tempword2:string32;var
I,R,Space,Ilimit:integer;col,row:byte);

    begin
     I:=0;
     initial_tempword(tempword2);
     while I<(Ilimit-space) do
```

```
        begin
         gotoxy(col+I+1,row+R);  write(tempword[space+I+1]);
         tempword2[I+1]:=tempword[space+I+1];   tempword[space+I+1]:=' ';
         I:=I+1;
        end;
       I:=I+1;
       if (I>30) or (I=0) then
         I:=1;
         space:=0;
      end;

    procedure store_tempword(var tempword,tempword2:string32);
       begin
        writeln(infile2,tempword);   writeln(ogfile);
        initial_tempword(tempword);   tempword:=tempword2;
      end;


     procedure store_update_tempword(var tempword:string32;var I,R,Space:integer;
          col,row,Ilimit,Rlimit:integer);
         var
          tempword2:string32;
        begin
         initial_tempword(tempword2);
         store_tempword(tempword,tempword2);  I:=1;
         update_r(R,col,row,Ilimit,Rlimit);    Space:=0;

        end;

    procedure process_full_line(var I,R,Space:integer;var tempword:string32;
col,row:byte;Ilimit,Rlimit:integer);

      var
       tempword2:string32;
      begin
       if space<I then
        begin
          change_line(tempword,tempword2,I,R,Space,Ilimit,col,row);
          store_tempword(tempword,tempword2);
        end;
      end;
```

```
  procedure move_back_one_ch(ch:char;var I:integer;var tempword:string32;
R,col,row:byte);
     begin
      if I>1 then
       begin
        I:=I-1;  gotoxy(col+I,row+r);  write(' ');
        tempword[I]:=' ';
       end;
    end;

 procedure move_foreward(var Space,I,R:integer;col,row:byte;Ilimit,Rlimit:integer;
       var tempword:string32);

     var     tempword2:string32;
    begin
       space:=I;
       if I<Ilimit then  I:=I+1
       else
         store_update_tempword(tempword,I,R,Space,col,row,Ilimit,Rlimit);
    end;

 procedure Get_store_letter(ch:char;var I,R,space:integer;var tempword:string32;
       Ilimit,Rlimit:integer;col,row:byte);

    begin
      write(ch);   tempword[I]:=ch;  I:=I+1;
       if I>Ilimit then
        begin
         if space=0 then
store_update_tempword(tempword,I,R,Space,col,row,Ilimit,Rlimit)
          else
            process_full_line(I,R,space,tempword,col,row,Ilimit,Rlimit);
        end;
    end;


    Procedure Get_process_one_ch(ch:char;var I,R,Space:integer;var tempword:
      string32;  col,row:byte;  Ilimit,Rlimit:integer;var notend:boolean);

      var
       tempword2:string32;  tcol,trow:byte;  tcol2,trow2:byte;
      begin
       ch:=readkey;
```

```
if ch='$' then
  begin
   trow:=wherey;    tcol:=4;   tempword[I]:=ch;
   if I>1 then
     store_tempword(tempword,tempword2);
     trow2:=wherey;  tcol2:=4;
    LR23_clear_buff;
    write(' End input ? (y/n)');
     get_ch(ch);
     if ch<>'y' then
        if ch<>'Y' then
            begin
               writeln('(continue to type in)');
               I:=1; R:=R+1;
            end
        else
            notend:=false
   else
       notend:=false;
   end
else
 begin
  if ord(ch)=0 then
   begin
    ch:=readkey;
    case ch of
      chr(75):  ch:=chr(8);    chr(77):  ch:=chr(32);
      chr(72),chr(80):  ch:='^';
    end;
   end;
    else
   if ch=chr(8)then
      move_back_one_ch(ch,I,tempword,r,col,row)
   else
     if ch=chr(32) then
       move_foreward(space,I,R,col,row,Ilimit,Rlimit,tempword)
     else
       if ch= chr(13) then
         store_update_tempword(tempword,I,R,space,col,row,Ilimit,Rlimit)
       else
         get_store_letter(ch,I,R,Space,tempword,Ilimit,Rlimit,col,row);
 end;
end;
```

```
procedure pre_input(var ch:char; var outtime:boolean;var resptime,qtime:real;
    testtype,quesix:integer);

 begin
  ask_quesmess(quesix);
 LR27_get_confirm_ch(ch,outtime,resptime,qtime,testtype);
 end;


procedure get_interval_time(resp2:real;numw:integer;var thead,last:recpter);

 var
  P:recpter;

 begin
   resp2:=(trunc(resp2*1000)/1000);
  if resp2>1 then
   begin
    get_tnode(p,resp2,numw);
    insert_at_tlist(thead,last,p);
   end;
end;

procedure confirm_end_input(suptype:integer);

 var
  flag:boolean;
 begin
   flag:=false;  LR4_box_w(10,10,60,18,7);
    write('Finish input ? (y/n)');
   LR23_clear_buff;  get_ch(ch);
    if ch='Y' then    ch:='y';
   if ch<>'y' then

     begin
       writeln('Do not pause for more than 15 sec while typing');
       flag:=true;
     end
   else
       writeln('Do not forget to press $, after completing type');
end;
```

```
    procedure input_process(col1,row1,col2,row2,tcolor:byte;var
Thead:recpter;suptype:integer);

    var
      notend,timeflag,charflag:boolean;      tempword,tempword2:string32;
      inpcol,inprow,btrow:byte;    Ilimit,Rlimit,  numw,supindex, I,R,Space:integer;
      last,p:recpter;   resp2,time1,time2:real;
    begin
           last:=nil;
     initial_tempword(tempword);
      input_W(inpcol,inprow,btrow,col1,row1,col2,row2,7);
     inprow:=inprow-2;    I:=1; R:=1;   space:=0;
     notend:=true;   timeflag:=true;    Ilimit:=32;   Rlimit:=10;    numw:=0;
     while notend and timeflag do
        begin
         gotoxy(inpcol+I,inprow+R);
          LR22_timeloop(time1,time2,15,charflag,timeflag);   resp2:=time1-time2;
         if resp2>0 then
           begin
            resp2:=stime-(time1-time2);
            get_interval_time(resp2,numw,thead,last);
           get_process_one_ch(ch,I,R,space,tempword,inpcol,inprow,
                      Ilimit,Rlimit,notend);
           end;
        numw:=numw+1;
      end;

      supindex:=select_supposeIx(suptype);
      if notend=false then   suppose_w(supindex)
      else
        begin
         if I>1 then  store_tempword(tempword,tempword2);
         LR6_standard_w;    confirm_end_input(supindex);
        end;

   end;

    procedure during_input(col1,row1,col2,row2:byte;var ch:char;var Thead:recpter;var
       ttime:real;resp,time2:
    real;quesix,suptype:integer);

     var
      tcolor:byte;   titleIx,supindex:integer;
```

```
      begin
       if resp<stime then
        begin
          get_output_ch(ch,74,25,77,25,7);
           input_process(44,13,80,25,7,thead,suptype);
          ttime:=(LR21_cal_time-time2);  ttime:=(trunc(ttime*1000)/1000);
        end
      else
         suppose_w(supindex+1);

    end;

   procedure process_step_subsitu(var Thead:recpter;quesIx,suptype:integer; var
resptime,qtime:real);


      var
        testtype:integer;   outtime:boolean;   ch:char;
        col1,row1,col2,row2,tcolor:byte;
      begin
       testtype:=3;
        pre_input(ch,outtime,resptime,qtime,testtype,quesix);
        if outtime then   outtime_message(suptype)
        else
          input_process(44,13,80,25,7,Thead,suptype)
      end;

 procedure HR10_ask_for_action(hitmess,situindex,step,messix,askindex:integer);

    begin
     LR35_act_window(46,2,79,12,askindex);
      output_situmess(situindex,step,messix);
     LR36_s1step1_hitmess(hitmess);
    end;

 procedure HR11_output_RLw_mess(situindex,step,messix,messnum,actindex,
askindex,hitmess:integer);

    var
     I,wposition:integer;    col1,col2,row1,row2,wcolor:byte;
    begin
     I:=1;
     while I<(messnum+1) do
```

```
      begin
       wposition:=(I mod 2);
       case wposition of
        0: LR35_act_window(2,8,40,17,5);
        1: LR35_act_window(46,12,79,22,actindex);
        end;
       output_situmess(situindex,step,messix+I-1);
        I:=I+1;    delay(500);
      end;
  if hitmess<20 then
   begin
  LR1_winroutine(46,12,79,22,white);
  LR23_clear_buff;
  HR10_ask_for_action(hitmess,situindex,step,messix+I-1,askindex);
   end;
end;

procedure HR13_process_select2(var Thead:recpter;ch:char;suptype,quesix:integer;var
      resptime,qtime:real);
 var
  supindex:integer;

 begin

  if ch='2' then  process_step_subsitu(Thead,quesIx,suptype,resptime,qtime)
  else
   begin
    supindex:=select_supposeIx(suptype);
    if suptype=50 then  supindex:=1;
    suppose_w(supindex);
   end;
 end;


procedure HR14_get_process_ch(testtype,suptype,quesix:integer);

var
  outtime:boolean;  ch:char;    resptime1,resptime2,qtime:real;
  Thead:recpter;

  begin
   resptime1:=0; resptime2:=0;
   if testtype<>0 then
```

```
      begin
       LR27_get_confirm_ch(ch,outtime,resptime1,qtime,testtype);
       if outtime then   outtime_message(suptype)
       else
         begin

          LR38_store_selected_ch(ch);  Initial_tlist(Thead);

          case testtype of
           1: HR13_process_select2(Thead,ch,suptype,quesix,resptime2,qtime);
           3: input_process(44,13,80,25,7,Thead,suptype);
          end;
          End_input(thead);

         end;  {end else}
      end
     else  {testtype=0}

    LR2_store_resptime(resptime1,resptime2);
    stroe_end_input;
  end;

  procedure HR14_RL_step_sub(situindex,step,messix,messnum,actindex,
askindex,hitmess,SLtype,suptype,quesix,testtype:integer);

     var
      outtime:boolean;   ch:char;
   begin
    HR11_output_RLw_mess(situindex,step,messix,messnum,actindex,
askindex,hitmess);
     HR14_get_process_ch(testtype,suptype,quesix);

   end;

 procedure HR20_output_split_mess(situindex,step,messix,askindex,hitmess:integer);

     var
      I:integer;   col1,col2,row1,row2,wcolor:byte;
     begin

      I:=1;
      while I<4 do
       begin
```

```
      case I of
        1: LR35_act_window(46,12,79,22,4);
        2: LR5_sweep_w(2,8,21,19,black);
        3: LR5_sweep_w(23,8,42,19,black);
      end;
      output_situmess(situindex,step,messix+I-1);
     if I=1 then
        LR35_act_window(1,5,42,20,5); I:=I+1;
    end;
    LR1_winroutine(46,12,79,22,white);
     HR10_ask_for_action(hitmess,situindex,step,messix+I-1,askindex);
  end;

procedure HR22_select_2split_w(I:integer);
   var
    col1,col2,row1,row2,wcolor:byte;
  begin
    if I=2 then   LR1_winroutine(1,5,43,5,red);
      write('Observed students" behaviors');
   case I of
     2:LR5_sweep_w(2,7,21,20,blue);
     3:LR5_sweep_w(23,7,43,20,blue);
    end;
  end;

procedure HR23_select_3split_w(I:integer);
   var
    col1,col2,row1,row2,wcolor:byte;
  begin
       if I=2 then
      begin
       LR1_winroutine(1,13,43,13,red);
       write('Observed students" behaviors');
      end;

   case I of
     2:LR5_sweep_w(1,1,21,12,blue);
     3:LR5_sweep_w(23,1,43,12,blue);
      4: LR5_sweep_w(12,15,33,25,blue);
  end;
end;
```

```
procedure HR24_select_4split_w(I:integer);

    var
      col1,col2,row1,row2,wcolor:byte;
    begin
        if I=2 then
      begin
       LR1_winroutine(1,13,43,13,red);
       write('Observed student"s behaviors');
      end;
     case I of
       2:LR5_sweep_w(1,1,21,12,blue);
       3:LR5_sweep_w(23,15,43,25,blue);
       4:LR5_sweep_w(23,1,43,12,blue);
       5:LR5_sweep_w(1,15,21,25,blue);

      end;

   end;

  procedure HR34_output_outtime_mess(nummess,I:integer);

  var
    col1,col2,row1,row2,wcolor:byte;  adtime:integer;
  begin
    if (I<>1) and(nummess=2) then     LR1_winroutine(6,22,36,22,black)
    else
      LR1_winroutine(1,13,43,13,black);
      LR24_wait_hitkey(10);
     if (I<>1) and(nummess<>2) then
     begin
      textbackground(red);
      write('Observed students" behaviors');
     end;

  end;

  procedure HR40_output_fullsplit_mess(situindex,step,startmess,nummess,
askindex,hitmess:integer);
    var
     I:integer; col1,col2,row1,row2,wcolor:byte;
   begin
     I:=1;
```

```
    while I<(nummess+1) do
      begin
       if I=1 then  LR35_act_window(46,12,79,22,4);
       case (nummess-1) of
         2: HR22_select_2split_w(I);
         3: HR23_select_3split_w(I);
         4: HR24_select_4split_w(I);
       end;
      output_situmess(situindex,step,startmess+I-1);
       if I<>1 then
       HR34_output_outtime_mess(nummess-1,I);
      I:=I+1;
     end;

      if hitmess<>20 then
     HR10_ask_for_action(hitmess,situindex,step,startmess+I-1,askindex);
    end;


  procedure HR50_RL_split_w(situindex,step,messix,askindex,hitmess,sltype,
suptype,quesix,testtype:integer);
     var  outtime:boolean;   ch:char;
    begin
       HR20_output_split_mess(situindex,step,messix,askindex,hitmess);
       HR14_get_process_ch(testtype,suptype,quesix);
   end;

  procedure HR51_RL_full_split_w(situindex,step,startmess,nummess,askindex,
      hitmess,sltype,suptype,quesix,testtype:integer);

    var   col1,col2,row1,row2,wcolor:byte;    outtime:boolean; ch:char;
    begin
      LR1_winroutine(1,1,42,25,white);
      HR40_output_fullsplit_mess(situindex,step,startmess,nummess,askindex,hitmess);
      if testtype<10 then
        HR14_get_process_ch(testtype,suptype,quesix);
    end;
```

```
{************************************************************}
{* PART FOUR: PROCEDURE USED TO OUTPUT THE SITUATIONS*}
{************************************************************}
   procedure s1step1_sub2;

    var
       situindex,step,messix,messnum,actindex,askindex,hitmess,sltype,suptype:integer;
       numsec,movmess,nmov,ps1,postnum:integer;
    begin
      HR14_RL_step_sub(1,1,5,2,4,7,9,2,3,2,1);
      LR40_stand_w;
       HR14_RL_step_sub(1,1,9,2,4,7,1,2,2,2,1);
    end;

  procedure s1step2_sub2;

      var
       situindex,step,messix,messnum,actindex,askindex,hitmess,sltype,suptype:integer;
       numsec,movmess,nmov,ps1:integer;

     begin
        HR14_RL_step_sub(1,2,7,3,4,7,9,2,1,2,1);
        LR40_stand_w;
        HR14_RL_step_sub(1,2,11,2,4,7,1,2,1,2,1);
   end;
 procedure s1step3_sub3;
    var
    graphix:integer;
    situindex,step,messix,messnum,actindex,askindex,hitmess,sltype,suptype:integer;
   begin
    HR14_RL_step_sub(1,3,7,2,4,7,16,2,4,8,3);
    HR14_RL_step_sub(1,3,15,2,4,6,0,0,20,2,0);
  end;

procedure s1step3_sub5;
  var  situindex,step,messix,messnum,actindex,askindex,hitmess,sltype,suptype ,
   I:integer;
   begin
    for I:=1 to 5 do
     begin
       case I of
        2: HR51_RL_full_split_w(1,3,22,3,7,9,2,1,2,1);
        1: HR51_RL_full_split_w(1,3,27,3,7,7,2,1,2,3);{s1step3_sub5_sub2; }
```

```
          3: HR51_RL_full_split_w(1,3,34,3,7,7,2,1,2,3); {s1step3_sub5_sub3;}
          4: HR51_RL_full_split_w(1,3,40,4,7,7,2,1,2,3); {s1step3_sub5_sub4;}
          5: HR51_RL_full_split_w(1,3,53,3,7,16,2,2,2,3);{s1step3_sub6; }
        end;
         store_postsign(2);
        end;
      LR6_standard_w;
     End_s1step3_sub5(5,11,77,18,black);
    end;
  procedure s2step2_sub1;
    var
      situindex,step,messix,messnum,actindex,askindex,hitmess,sltype,suptype:integer;
      numsec,movmess,nmov,ps1:integer;
    begin
      HR14_RL_step_sub(2,2,1,2,4,7,16,2,4,4,3);
      HR51_RL_full_split_w(2,2,4,3,7,1,2,2,2,1);
    end;

 procedure s2step2_sub2;
       var
       situindex,step,messix,messnum,actindex,askindex,hitmess,sltype,suptype:integer;
       numsec,movmess,nmov,ps1:integer;
      begin
       HR51_RL_full_split_w(2,2,9,3,7,9,2,3,2,1);
       LR40_stand_w;
       HR14_RL_step_sub(2,2,13,2,4,7,0,0,2,2,0);
    end;

  procedure s2step3_sub2;
      var     situindex,step,messix,messnum,actindex,askindex,
hitmess,sltype,suptype,quesix:integer;
       begin
         HR14_RL_step_sub(2,3,5,2,4,7,16,2,18,4,3);
         LR40_stand_w;
         HR51_RL_full_split_w(2,3,9,4,7,1,2,2,2,1);
       end;
```

```
  procedure s2step3_sub6_sub2;

     var   situindex,step,messix,messnum,actindex,
askindex,hitmess,sltype,suptype,quesix:integer;
      begin
         HR51_RL_full_split_w(2,3,55,3,7,16,2,1,8,3);
         LR35_act_window(46,12,79,22,4);
         output_situmess(2,3,67);
          LR24_wait_hitkey(9);
      end;


    procedure s2step3_sub4all;

      var
       situindex,step,messix,messnum,actindex,askindex,
hitmess,sltype,suptype,quesix , temp,I:integer;
   begin
       LR35_act_window(46,12,79,22,4);
       output_s2mess(3,19);
        LR40_stand_w;   temp:=17;
       for I:=1 to 5 do
        begin
          case I of
               temp:=temp+4;
                HR51_RL_full_split_w(2,3,temp,3,7,16,2,1,8,3);
            end;
         5: begin
            HR51_RL_full_split_w(2,3,38,3,4,0,0,0,0,11);
            LR1_winroutine(46,1,79,12,7);
            HR51_RL_full_split_w(2,3,43,4,7,16,2,2,2,3);
            end;
         end;
        end;
      end;

   procedure s2step3_sub6all;
      var   situindex,step,messix,messnum,actindex,askindex,hitmess,
sltype,suptype,quesix , I.integer;
     begin
      for I:= 1 To 2do
```

```
    begin
      case I of
        1:  s2step3_sub6_sub2;
        2:  HR51_RL_full_split_w(2,3,69,4,7,0,2,2,2,1);
      end;
    end;
  end;

 procedure s2step3_sub7;
      var   situindex,step,messix,messnum,actindex,askindex,
hitmess,sltype,suptype,quesix:integer;
      begin
        HR51_RL_full_split_w(2,3,75,4,7,0,2,1,8,3);
        HR40_output_fullsplit_mess(2,3,80,3,4,20);
        HR51_RL_full_split_w(2,3,83,3,7,0,2,1,2,3);
        LR35_act_window(46,12,79,22,4);
        output_situmess(2,3,91);
         LR24_wait_hitkey(2);
      end;

procedure situ1_step1_subsitua(subindex:integer);
   var    situindex,step,messix,messnum,actindex,askindex,hitmess,
sltype,suptype,quesix:integer;
   begin
      case subindex of
       1:  HR51_RL_full_split_w(1,1,1,3,7,1,2,2,2,1);
       2: s1step1_sub2;
       3: HR51_RL_full_split_w(1,1,60,4,7,9,2,50,2,1);
      end;
      LR40_stand_w;
    end;

   procedure  situ1_step2_subsitua(subindex:integer);

    begin
     case subindex of
       2:  s1step2_sub2;
       1:  HR50_RL_split_w(1,2,1,7,1,2,50,2,1);
     end;
    end;
```

```
procedure situ1_step3_subsitua(subindex:integer);

    var situindex,step,messix,messnum,actindex,askindex,hitmess,
sltype,suptype,quesix:integer;
    begin
     case subindex of
      1: HR14_RL_step_sub(1,3,1,2,4,6,0,0,20,2,0); {s1step3_sub1;}
      2: HR14_RL_step_sub(1,3,4,2,4,7,16,2,2,4,3);
      3: s1step3_sub3;
      4:  HR14_RL_step_sub(1,3,12,2,4,7,16,2,2,4,3);
      5: s1step3_sub5;
     end;
     LR40_stand_w;
    end;

    procedure situ2_step1_subsitua(subindex:integer);

      var  situindex,step,messix,messnum,actindex,askindex,
hitmess,sltype,suptype,quesix:integer;
    begin
     case subindex of
     1:  HR51_RL_full_split_w(2,1,1,4,7,1,2,2,2,1);
     2: HR14_RL_step_sub(2,1,7,2,4,6,0,0,20,2,0);
     end;
     LR40_stand_w;
    end;

 procedure  situ2_step2_subsitua(subindex:integer);

   begin
    case subindex of
     1:  s2step2_sub1;
     2:  s2step2_sub2;
    end;
   end;
```

```
procedure situ2_step3_subsitua(subindex:integer);

  var  situindex,step,messix,messnum,actindex,askindex,
     hitmess,sltype,suptype,quesix:integer;
  begin
   case subindex of
   1: begin
       HR11_output_RLw_mess(2,3,1,2,5,9,20);
       HR14_RL_step_sub(2,3,99,2,4,7,1,2,2,2,1);
      end; {s2step3_sub1;}
   2: s2step3_sub2;
   3: HR14_RL_step_sub(2,3,15,2,4,4,0,0,2,0,0);{s2step3_sub3; }
   4: s2step3_sub4all;{s2step3_sub4; }
   5: HR51_RL_full_split_w(2,3,49,3,4,0,0,18,0,0);{s2step3_sub5;}
   6: s2step3_sub6all;  {s2stpe3_sub6}
   7: s2step3_sub7;   {s2stpe3_sub7 & 8}
  end;
  LR40_stand_w;
 end;
```

```
{************************************************************}
{* PART FIVE:  PROCEDURE USED FOR OUTPUT OF WINDOWS     *}
{************************************************************}

  procedure public_w;
    var  col1,row1,col2,row2,tcolor:byte;
     begin
      LR6_standard_w;
      LR4_box_w(10,9,60,16,blue);
     end;

 procedure HPER_W;
  var
   col1,col2,row1,row2,wcolor:byte;
  begin
   LR4_box_w(50,5,78,22,white);
    writeln('Simulation Exercise');
     writeln('HPER,MTSU');
      writeln('Press 1, when ready');
     writeln('Press 2, to end exercise');
    end;

procedure introduction;
   var    ntype:integer;
 begin
    open_dataf(1);
    instruction_mess(2);
    close(pfile);
  end;

 procedure endmess;

   begin
     writeln('    SIMULATION EXERCISES END');
     write('           THANK YOU');
  end;

  Procedure selection_w(hitix:integer);
   begin
      LR35_act_window(46,2,79,12,7);
      output_situmess(1,3,82);
     LR36_s1step1_hitmess(hitix);
   end;
```

```
procedure  practice_input_w(pIndex:integer);

  var   out,success:boolean;  ch:char;
    begin
     out:=false;   success:=false;
     repeat
        case pindex of
          1:  input_process(44,13,80,25,7,thead,8);
          2:  one_step_w(1,1,3);
         end;
      if success=false then
       begin
        LR1_winroutine(3,20,38,24,green);
       if pindex=2 then writeln('(end of the final example)              ');
        else
      out:=true;
    until out;
  end;

  procedure instruction;
     var ntype,nrepeat,titleIx,I,remindix:integer;

 begin
   assign(ogfile,'tempf.$$$'); assign(infile2,'waste.$$$');
   rewrite(ogfile);  rewrite(infile2); open_dataf(2);
    instruction_mess(4);
      HR11_output_RLw_mess(2,3,150,2,4,7,0);
    instruction_mess2(8);
    instruction_mess(1);
     HR11_output_RLw_mess(1,3,80,2,4,7,20);
     instruction_mess2(2);
     practice_input_w(3);
     instruction_mess2(1);
      ask_quesmess(2);
     instruction_mess2(2);
   practice_selection;
   instruction_mess2(2);
   practice_input_w(1);
   instruction_mess2(1);
   LR40_stand_w;
   instruction_mess2(2);
   instruction_mess(1);
```

```
    practice_input_w(2);
     instruction_mess(1);
   close(pfile);
   close_file;
  end;

procedure Main_drive(situindex:integer);
   var ch:char;
   begin
    case situindex of
     1: begin
         open_dataf(3); instruction_mess(5);      { read in plan}
        end;
     2: begin
         open_dataf(4);  instruction_mess(6);
        end;
    end;
    writeln('( hit any key, if ready )');
    get_ch(ch);
   process_situation_all(situindex);
  end;

 procedure menue_mess(menueIx:integer);
  begin
   case menueix of
    1:  write('  1. Introduction            ');
   2:  write('  2. User"s Information      ');
   3:  write('  3. Instruction for exercise. ');
   4:  write('  4. Simulation exercise 1    ');
   5:  write('  5. Simulation exercise 2    ');
   6:  write('  6. End of simulation        ');
  end;
 end;

 procedure output_menue_w;
  var
   I , x,y :integer;
  begin
   for I := 1 to 6 do
    begin
     gotoxy(4,I*2);  menue_mess(I);
    end;
  end;
```

```
procedure current_mess(messix:integer);
 var    x,y:integer;
  begin
   y:=messix*2;
   menue_mess(messix);
 end;

 procedure first_menue;
 var
   outmenue,out:boolean;
   count,currentIx,caseNum:integer;
 begin
         outmenue:=false;    count:=1;
   repeat
     LR1_winroutine(56,18,79,22,black);
      writeln('To select items, press  any key');
      write('When finished selection,press ENTER');
    LR4_box_w(10,4,52,20,6);
    out:=false;
    repeat
     output_menue_w;    current_mess(count);
     count:=count+1;
     if count>6 then  count:=1;
     repeat
     until keypressed;
        ch:=readkey;
        if ch=chr(13) then  out:=true;
     until out;
    if count=1 then currentIx:=6
    else
     currentIx:=count-1;
      case currentix of
              1: introduction;
              2: get_subject_Data(name,caseNum);
              3: instruction;
              5:   begin
                    get_ch(ch);    LR25_convert_letter(ch);
                     if ch='y' then
                     main_drive(2);
                   end;
```

```
                6: begin
                    endmess;
                    write('  want to save data ? (y/n)');  readln(ch);
                     if(ch='y') or (ch='Y') then
                      begin
                      save_data(1);   save_data(2);
                    end;
            end;
        end;
    end;

    if currentIx=6 then
     outmenue:=true;
 until outmenue;

end;
```

```
{*****************************************************************}
{*  PART SIX MAIN PROGRAM                                        *}
{*****************************************************************}


program situ1(output, input,pfile,infile2,OGfile,tempfile);

 uses  crt, dos;
   const
       stime = 9;     standtime=60;
   type
     symbols= set of '1'..'z';       digit = set of 0..5;

      string32 = packed array[1..wlength] of char;
      string60 = packed array[1..60] of char;
      string20 = packed array[1..20] of char;

       wordrec=record
          wline:linetype;   nline:integer;
        end;
   var
        stime1,taskstep,tasksub,tasksitu,step,substep,situindex,casenum:integer;
        pfile,ogfile,infile2,tempfile: text;     ch:char;
        col1,row1,col2,row2, wcolor,inpcol,inprow,rcolor:byte;
        outtime,out,dline,charflag,timeflag:boolean;
        hr,hr1,min,min1,sec,sec1,sec100:word;
        resp,time1,time2,tempnum:real;

procedure open_file;
     begin
      assign(ogfile,'orignfile.$$$');
      assign(infile2,'wordfile.$$$');
      rewrite(ogfile);
      rewrite(infile2);
     end;

   procedure close_file;
     begin
       close(ogfile);
       close(infile2);
     end;
```

```
{$I R_TOOL}       { CALL SUBPROCEDURES}
{$I MESSAGE}
{$I mess2}
{$I S1S3_rou}
{$I step_w}

procedure output_next_step(step,substep,situindex:integer);

 var cscol,csrow,I,lastsub,taskix:integer;
  begin
     TaskIx:=situindex*100+(step*10)+(substep+1);
            lastsub:=HR1_nsubkey(situindex,step);
     if( substep> lastsub)or(substep=lastsub) then
            begin
              if step<4 then
                  output_mainstep(step+1,cscol,csrow)
               else
                  write(' no more step');
             end
   else
                   nexttask(taskix);
           textcolor(black);
  end;

procedure step_sub_w(step,substep,situindex:integer);

    var
      ch : char;    tempIx:integer;      startflag:boolean;
  begin
    startflag:=false;
    tempIx:=situindex*100+(step*10)+(substep);
    if tempix=111 then
              startflag:= true;
    if tempix=211 then
        startflag:=true;
     LR1_winroutine(1,3,80,25,3);

     if tempIx<>111 Then
           if tempIx<>211 then
                  write('   TEACHING TRASITION INFORMATION')
           else
                  write('   PRE-CLASS INFORMATION')
     else
```

```
                write('   PRE-CLASS INFORMATION');

      LR2_rectang(17,48,1,1,black,1,false);
      window(3,7,23,21);
      writeln('Student Behavior :                                    ');
      writeln('Teacher Action   :                    ');
      writeln('Reminder                ');
      writeln(' 1 Current Task:                      ');
      writeln(' 2 Next Task   :                ');
      window(23,7,48,19);
       Transition_mess(tempix);
       class_formation(tempix);
       LR1_winroutine(53,13,79,15,3);
       situ_task(Tempix);
       gotoxy(1,row1+13);
       output_next_step(step,substep,situindex);
       LR1_winroutine(21,22,46,25,3);
        if startflag then
            write('Press any key to satrt   class')
          else
            write('Press any key to continue class') ;
        get_ch(ch);
       LR40_stand_w;
       textcolor(white);
     end;
 { {$I step_w}

procedure subwindow(situindex,step,subindex:integer);

    begin
      case situindex of
       1:  case step of
            1: situ1_step1_subsitua(subindex);
            2: situ1_step2_subsitua(subindex);
            3: situ1_step3_subsitua(subindex);
           end;
      2:  case step of
            1: situ2_step1_subsitua(subindex);
            2: situ2_step2_subsitua(subindex);
            3: situ2_step3_subsitua(subindex);
           end;
      end;
    end;
```

```
procedure one_step_w(situindex,step,substep:integer);

    var
      cscol,csrow,dcolor:byte;
    begin
      textcolor(black);
      LR1_winroutine(0,2,79,22,white);
      step_sub_w(step,substep,situindex);
      subwindow(situIndex,step,substep);
    end;

procedure one_step_w2( tasksitu,taskstep,tasksub,situindex,step,substep:integer);

     var
      cscol,csrow,dcolor:byte;
       messix,messnum,actindex,askindex,hitmess:integer;
    begin
      if taskcode=1 then
        HR11_output_RLw_mess(situindex,step,33,2,4,7,1)
      else
        subwindow(situIndex,step,substep);
      end;


  procedure  process_step_routine(situindex,step,substep,signnum:integer);

    begin
      store_signnum(signnum);
      one_step_w(situindex,step,substep);
      store_stepmark;
      LR40_stand_w;
    end;

  procedure process_situ1_step1;
    var
      situindex,step,substep,signnum:integer;
    begin
      LR40_stand_w;
      process_step_routine(1,1,1,111);
      process_step_routine(1,1,2,112);
    end;
```

```
procedure process_situ1_step2;

  var
    situindex,step,substep,signnum:integer;
  begin
     process_step_routine(1,2,1,121);
     process_step_routine(1,2,2,122);
   end;

procedure process_situ1_step3;

  var
    situindex,step,substep,signnum:integer;
  begin
     one_step_w(1,3,1);
     LR40_stand_w;
     process_step_routine(1,3,2,132);
     one_step_w(1,3,3);
     LR40_stand_w;
     process_step_routine(1,3,4,134);
     process_step_routine(1,3,5,135);

  end;

procedure process_situ2_step1;

 var
   situindex,step,substep,signnum:integer;
 begin
    process_step_routine(2,1,1,211);
   process_step_routine(2,1,2,212);
 end;
 procedure process_situ2_step2;
  var
   situindex,step,substep,signnum:integer;
 begin
    process_step_routine(2,2,1,221);
    process_step_routine(2,2,2,222);
 end;
```

```
procedure process_situ2_step3;

    var
      situindex,step,substep,signnum:integer;
    begin
       process_step_routine(2,3,1,231);
       process_step_routine(2,3,2,232);
       one_step_w(2,3,3);
       LR40_stand_w;
       process_step_routine(2,3,4,234);
       one_step_w(2,3,5);
       LR40_stand_w;
      process_step_routine(2,3,6,236);
      process_step_routine(2,3,7,237);
    end;

procedure process_situation_all(situindex:integer);

    var
       step:integer;
  begin
     step:=1;
     LR40_stand_w;
     while step < 5 do
       begin
        case situindex of
         1:   case step of
                1: process_situ1_step1;
                2: process_situ1_step2;
                3: process_situ1_step3;
              end;
         2:  case step of
                1: process_situ2_step1;
                2: process_situ2_step2;
                3: process_situ2_step3;
              end;
       end;
        step:=step+1;
       end;
  end;
```

```
{*****************************************************************}
{$I pub_w}
{*****************************************************************}
procedure start_drive;
   var
    ch:char;  col1,col2,row1,row2,wcolor:byte;    loop:boolean;
  begin
    loop:=true;   LR1_winroutine(1,1,80,25,7);
   while loop do
    begin
     HPER_w;  ch:=readkey;
     if ch='1' then
      begin
        LR6_standard_w;
        first_menue;
        LR1_winroutine(1,1,80,25,7);
      end
      else
        if ch='2' then  loop:=false;
    end;
   LR5_sweep_w(1,1,80,25,black);
 end;

Begin       {Main program}
   assign(infile2,'waste.$$$');
   rewrite(ogfile);  rewrite(infile2);
   HR14_RL_step_sub(2,2,1,2,4,7,16,2,4,4,3);
   start_drive;
    writeln('back to B driver, press any key');
  end.
```

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