Interactive group exercises became a curriculum staple in education and training in the 1960s. To date, however, comprehensive design guidelines that differentiate the various types of interactive exercises and which are easy to use are lacking. One recently developed taxonomy of simulations, for example, includes over 90 categories and sub-categories. Of importance to designers and potential users of games and simulations are definitive criteria that reflect the key processes operating in each type of exercise.

**NEED FOR A COMPREHENSIVE THEORY**

The need for a comprehensive analysis of interactive exercises is indicated by two current problems. One is the negative effects of poorly developed exercises. This problem is particularly apparent in microcomputer exercises. For example, some computer exercises that are labeled "simulations" are merely drill-and-practice exercises accompanied by animated graphics (Gredler, 1986).

Others are Russian-roulette types of exercises that purport to simulate such events as operating a lemonade stand. However, the only activity executed by students is the assignment of values to a few variables in an effort to guess the correct values acceptable to the computer program. The curriculum message embedded in such exercises is that ability and hard work do not influence life outcomes. Instead, success is random.

The second major problem in accurately analyzing interactive exercises is the inconsistent application of the terms "games" and "simulations". One typical result is that some participants view an exercise as a game and others treat it as a simulation (Jones, 1987). An example is a phenomenon observed in business simulations (typically referred to as "games"). These exercises involve several rounds or cycles of business or trading. Sometimes a business team that is not doing well in later rounds attempts to "crash the system" (Lundy, 1985). These participants are behaving like game players and, seeing no way to 'win', behave in such a way as to prevent others from 'winning'. Their behavior, of course, ruins the experience for the other participants.

The inconsistent use of the terms "games" and "simulations" leads to the mixing of techniques that seriously flaws an exercise (Jones, 1987). A common practice is the use of scoring criteria or other mechanisms of determining winners and losers in exercises that purport to reproduce a particular psychological reality.

An example is the *Life Career Game* developed in the 1960s. Teams of 2-4 players, using the profile of a fictitious person, planned the individual's schedule of school activities, job, family responsibilities and leisure for 1 week (1 round) up to 12 weeks or rounds. Points were assigned for different decisions about education, occupation, family, life and leisure.

Such decisions, however, are value-laden; that is, they depend in large measure on one's basic philosophy of life and personal goals. To score such decisions as though they were "right" or "wrong" in the same way that statements about geography or biology are either right or wrong is to distort the basic decision-making process. A participant cannot totally focus on making decisions consistent with his or her belief system when the bottom line is
a total score. In other words, to mix social processes with efforts to score points leads to confusion, unintended side effects and a reduction in the effectiveness of the exercise.

Similar effects also occur with the use of the categories that join the two terms, i.e., "gaming-simulation" and "simulation-gaming". Games and simulations represent different psychological realities. Thus, merging the two categories results in a contradiction in terms and the exercises send conflicting messages to participants (Jones, 1984; 1987). Gaming-simulations also can lead to bad feelings between participants who address their roles in a professional manner and those who treat the exercise as "only a game". To mix the two categories, in other words, is like mixing oil and water (Jones, 1987).

One reason for the confusion in terminology is that interactive exercises often are categorized according to surface characteristics such as the various types of paraphernalia that are used (e.g., boards, role cards, tokens, etc.). Instead, games and simulations should be analyzed in terms of their fundamental defining features, or "deep structure" (van Ments, 1984). For the purpose of analysis in this text, deep structure is further defined as the nature of the interactions (a) between participants and the situation, crisis, problem or task, and (b) among participants in the exercise (Gredler, 1990, p. 329). Analysis of deep structure includes identification of the types of objects and events that precipitate learner actions, the types of actions or behaviors that earn reinforcement, the nature of feedback for the individual’s actions, and the relationship of the individual to others in the exercise. This approach is used in the text to differentiate between games and simulations and to identify key differences between types of simulations (discussed later in this chapter).

**BASIC DEFINITIONS**

Both games and simulations are interactive exercises. However, each fulfils a separate purpose and establishes a particular psychological situation for the player (game) or participant (simulation).

**Games**

A commonly accepted definition of a game is that it is "any contest (play) among adversaries (players) operating under constraints (rules) for an objective (winning, victory, pay-off)" (Abt, 1968). The difficulty with this definition is the use of the word "contest". That is, contests encompass two types of activities, only one of which is a game. Specifically, some contests are engaged in for fun, entertainment, or simply to exercise one’s skill. A variety of activities from competitive exercises on the playing field to intellectual contests, such as bridge, chess, or backgammon, are in this group. Although consequences are experienced by the players within the exercise, the consequences do not apply to real-life outcomes.

In contrast, other contests are serious and important events in one’s life that may be accompanied by long-term implications. Examples include licensing examinations in various fields such as medicine or law, competitions for scholarships and similar events (Jones, 1987). They are not engaged in for fun or entertainment. Thus, to describe a game as a contest fails to address the essence of the activity.

Three important characteristics define a competitive exercise as a game. First, a game is a world unto itself that is determined by its own particular sets of rules that are not replications of real life. Moreover, the consequences experienced as a player in a game do not extend to real life. Losing all one’s money in Monopoly, for example, does not lead to being declared bankrupt in one’s daily affairs.

Second, the paraphernalia used in a game and the consequences prescribed by the rules
may be any of a vast combination of objects and events that may enable a player or a team to defeat one’s opponents. Several athletic games, for example, make use of any of several odd-shaped balls and implements (small balls, large balls, pucks, sticks, bats, mallets, paddles, rackets and so on) and a set of rules for setting the projectile in motion and earning points or penalties. Board games, in contrast, use carved figures, pegs, marbles, small round discs and other markers that are manipulated in various ways in allocated spaces on the board.

Third, a game involves winning by taking any course of action allowed by the rules to thwart or defeat other players. In bridge, for example, when one team wins the bid or contract, the objective of the other team is to prevent them from capturing enough cards (tricks) to meet their contract.

Sometimes the behaviors sanctioned in a game are considered reprehensible in the real world. In Monopoly, for example, players are reinforced for adding hotels to properties and charging high rents. The objective is to bankrupt the other players. In the real world, of course, bankrupting one’s colleagues would be considered the epitome of greed. Thus, it is important to remember that any game is a fantasy world, defined by its particular rules and efforts to win within those rules.

Simulations

The term “simulation” has been used in a variety of ways. Included are efforts to model some complex process or reality, and a representation of some aspect of the universe. However, modeling or imitating the central features of a situation does not render an activity a simulation. The question is, “What types of actions are the participants engaged in and what kinds of decisions are they making?”

Suppose, for example, a group of students is given a portfolio of materials describing the terrain, natural resources, towns and industries of a seaside region in a small country. The students are asked to plan a viable energy policy for the region for the next decade.

In this exercise, the students are taking part in a group problem-solving activity that makes use of simulated materials. Of course, a simulation is a problem-based exercise. However, a simulation differs from a group planning exercise in several ways. First, a specific issue, problem or policy is posed that precipitates a variety of actions by the participants. In other words, some precipitating or initiating event to which participants react is a key characteristic of simulations. An example is a proposal to build a nuclear reactor on the coast near the town.

Second, roles are defined that interact with the posed problem or issue in particular ways. In a simulation about a proposed nuclear reactor, the roles would likely include the mayor of the seaside town, the head of the local environmental group, various government officials promoting different energy policies, and so on. In addition to each participant receiving a description of his or her role, all receive a copy of a press release announcing that the government is considering building a nuclear reactor near the town. The participants then interact in their various positions in response to the press release as they attempt to meet their goals and priorities.

This brief description illustrates two major criteria of simulations. First, a simulation involves the experience of functioning in a bona fide role and encountering the consequence of one’s actions as one makes decisions in the execution of that role. Second, the participants address the issues and problems seriously and conscientiously, i.e., in a professional manner (Jones, 1984). This critical feature of simulations is referred to by Jones (1984; 1987) as “reality of function”. That is, “a chairman really is a chairman with all the power, authority, and duties to complete the task” (Jones, 1984, p 45).
Reality of function refers to more than the words or actions of the participants — it also includes their thoughts (Jones, 1982, p 4). In other words, participants must mentally accept the function that is expected of them in the simulation.

Developing a simulation, which supports reality of function, requires attention to three aspects of design. One is to establish bona fide roles for the participants in which they are to carry out important tasks that are functional in the particular social microcosm. Examples include attempting to find food and water after landing on a desert island, attempting to design the best widget, or serving as an emissary to another country. The second is to provide sufficient documentation on an issue or a problem (such as memos, newspaper articles and maps) so that the participants can behave in a professional manner (Jones, 1987, p 91). The third requirement is that of designing the simulation so that behavioral contingencies support the conscientious execution of the assigned role by the participant. That is, random behaviors or actions that are counter to the context of the exercise, such as crashing the system in a financial management exercise, are not reinforced by success.

These three requirements are of particular importance in the analysis of computer-based exercises. An example is Lemonade Stand, described by the developers as a simulation. Students enter values (for each “day”) for the number of glasses of lemonade to be sold, the price per glass and the daily expenditure for advertising. The computer program, using a model unrelated to the professional experience of operating a lemonade stand, calculates the daily profit or loss.

Reality of function for the participant is lacking in the exercise. First, a bona fide role in a meaningful social context is not established. The participant is not informed as to whether the role is that of children or teenagers planning to earn extra money or some other situation. Further, is the stand to be located in a neighborhood, near a school or athletic event, or some other site? In addition, the student makes repeated decisions only about three events. Other decisions such as the specific ingredients to be used in the lemonade are omitted.

The unstated goal of this exercise is for the student to discover the optimum values to be allocated to the selected variables according to the computer model (Gredler, 1989). In other words, the student interacts with the computer (the major “player” in the exercise] rather than with an evolving scenario (Edens and Gredler, 1990). Thus, the exercise lacks reality of function. At best, it is a type of game in which the goal is to beat the computer.

In summary, five major characteristics describe simulations. They are as follows:

Simulations are problem-based units of learning that are set in motion by a particular task, issue, policy, crisis, or problem. The problems to be addressed by the participant may be either implicit or explicit, depending on the nature of the simulation.

- The subject matter, setting and issues inherent in the simulation are not textbook problems or questions in which answers are cut-and-dried and determined quickly.
- Participants carry out functions associated with their roles and the settings in which they find themselves.
- The outcomes of the simulation are not determined by chance or luck. Instead, participants experience consequences that follow from their own actions.
- Participants experience reality of function to the extent that they fulfill their roles
conscientiously and in a professional manner, executing all the rights, privileges and responsibilities associated with the role.

MAJOR TYPES OF SIMULATIONS

The prior criteria provide general guidelines for evaluating potential exercises for classroom use. However, in designing simulations, the possibilities for different kinds of interactions between participants and issues as well as interactions with each other at first seem almost endless.

Nevertheless, simulations may be categorized into major types and groups based on the general nature of the dynamics of the interactions produced by the simulation. In other words, attempting to categorize simulations as “business simulations”, “social simulations”, “computer simulations” and so on does not reveal the underlying dynamics of the particular exercise. Such a categorization is referred to by van Ments (1984, p 52J as “surface structure”.

Instead, simulations should be examined in terms of their fundamental defining features or “deep structure” (van Ments, 1984J. As stated earlier, identifying the nature of the interactions in the exercise reveals different types of simulations.

For example, in one simulation, members of an archeological team sift through the soil of a constructed dig and analyze the discovered fragments. The goal is to determine the nature of an ancient civilization. In contrast, in another simulation, the participants are pupils faced with impossible tasks in their classroom. By the end of the exercise, the participants have experienced frustration, humiliation and anger.

These two simulations differ in the types of tasks established for the participants and the nature of the interactions in the particular exercise (deep structure). As a result, the participants focus on different kinds of goals and undergo different kinds of experiences. In the first example, the primary interactions are with a complex problem which participants, in executing their roles, make use of their skills interpreting data, organizing their findings and managing a solution strategy to the problem. This simulation is one of several exercises referred to as tactical - decision simulations.

In contrast, the latter example is a simulation in which the participants attempt to function as members of a social group, in the case, an elementary school classroom. In this example, the participants experience the same frustrations and emotional reactions often experienced by learning--disabled pupils. This exercise is one type of the group of simulations referred to as social-process simulations. The primary interactions in such simulations are between and among participants as they attempt to achieve particular social or politic goals.

Table 1.1 summarizes the major characteristics of these two broad categories of simulations. As indicated, they differ in a) the basic task established for the participants, b) the focus of participant attention, c) the role of problems in the simulation, d) activities essential for participant success, and e) the primary form of reactions to participant actions.
### Table 1.1 Key characteristics of tactical-decision and social-process simulations

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>TACTICAL-DECISION SIMULATIONS</th>
<th>SOCIAL-PROCESS SIMULATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task established for the participants</td>
<td>To interact with a complex evolving problem or crisis and bring it to a safe and/or logical conclusion</td>
<td>To interact with other members of a social group or groups in an effort to achieve a particular social or political goal or to address a particular challenge</td>
</tr>
<tr>
<td>Focus of participant attention</td>
<td>An evolving scenario of a complex problem or crisis that depends on data interpretation and management for resolution</td>
<td>Actions executed by other participants and the effects on one's own assumptions, goals, and strategies</td>
</tr>
<tr>
<td>Role of problems in the situation</td>
<td>Explicit – they are the “raison d'être” of the simulation</td>
<td>Implicit -- they arise from conflicting participant goals or actions</td>
</tr>
<tr>
<td>Participant actions essential for success</td>
<td>Perceiving, interpreting and organizing data, implementing strategies derived from the data interpretation</td>
<td>Use of various types of social communication, including interviewing, writing, editing, persuasion, negotiation, confrontation, etc.</td>
</tr>
<tr>
<td>Primary form of feedback to participants</td>
<td>Changes in the nature or status of the problem</td>
<td>Reactions of other participants</td>
</tr>
</tbody>
</table>

The four components illustrated in Table 1.1 illustrate the nature of the deep structure for these two major categories of simulations. In other words, a basic assumption of simulation development is that one can rarely, if ever, create a simulation in which perceiving, interpreting and organizing data and developing strategies from the data is equally important as using various types of social communication to achieve one’s goals. (Inter-nation Simulation, which was based on several years’ research and the development of detailed data indices on the effects of one’s actions approximated, but did not achieve equal status for both functions.) Therefore, a successful simulation depends, in part, on the consistency with which the set of components is developed.

Of course, a simulation in which the major purpose is data interpretation and management in a particular role does not rule out social interaction. Members of a bank management team or a team investigating an air accident, for example, must communicate with each other. The important point, however, is that the pivotal focus of participant activity and feedback is, respectively, the changing status of the bank’s resources or the progress of the accident investigation.

**Tactical-decision simulations**

The earliest examples of tactical-decision simulations are war games in which opposing commanders matched their forces to achieve a military objective. First used for training in 1664, these exercises have become a staple in strategy, planning and training.
However, the process of data interpretation and resource allocation to solve a problem or crisis is not limited to military exercises. At present, three types of tactical-decision simulations may be identified. They are diagnostic simulations, crisis-management simulations, and data-management simulations. Each reflects a particular type of data interpretation and management. They also differ in the basic context in which these skills are to be executed, i.e., a complex, evolving problem, an impending crisis, or the ongoing management of financial or economic resources (see Table 1.2).

Several skills are required in tactical-decision simulations. They are the selection of data to provide clues to the problem or crisis, interpretation of the data, implementation of a strategy to resolve the situation and monitoring and adjusting the strategy when necessary.

Several factors are involved in establishing a situation in which participants may experience reality of function. The simulation must be designed so that the participant conscientiously takes on the assigned role; becomes involved with the particular problem; are fully selects and attends to relevant data; and weighs alternatives as though his or her life or career depended on the decisions found in the medical field in the training and assessment of medical interns, nurses and therapists. However, the model is also appropriate for social work, counseling, educational administration and others.

The second sub-type is the “Solve the mystery” simulation. An example is In The I-lot Seat (Rolfe and Taylor, 1984) in which the participants are members of an accident investigation team assigned to a particular air crash. However, one as yet untapped use of this type is in subject areas such as history, literature, chemistry and others. In such an exercise the participant may take the role of a well-known literary, historical or scientific figure and attempt to solve a mystery in that field.

Table 1.2 Types of tactical-decision simulations

<table>
<thead>
<tr>
<th>TYPE</th>
<th>FOCUS</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic</td>
<td>Participant(s) collect data and define the nature or crux of a complex problem and implement strategies based on the interpretations of the data</td>
<td>Any of a variety of patient or client management simulations in the health sciences, social work, or other fields</td>
</tr>
<tr>
<td>○ Client-management</td>
<td>Participant takes the role of a teacher, school psychologist, physician, or other professional and diagnoses and manages the problems of a student, patient, or other client</td>
<td>In the Hot Seat (aircraft accident investigation)</td>
</tr>
<tr>
<td>○ Solve the mystery</td>
<td>Participant(s) determine the causes of a particular event and/or devise a solution to or escape from the problem</td>
<td>In the Hot Seat (aircraft accident investigation)</td>
</tr>
<tr>
<td>Crisis management</td>
<td>Participants allocate resources in an effort to avert or minimize an impending threat or danger to a business, social service, industry, or a social, economic or political system</td>
<td>Atlantis (disaster management simulation)</td>
</tr>
<tr>
<td>Data management</td>
<td>Participant(s) manage a set of data in an effort to fulfill established goals, typically to improve the status of an institution or an individual</td>
<td>On the Campaign Trail</td>
</tr>
</tbody>
</table>

In both types of diagnostic simulation, the participant(s) address a situation for which they must deduce the exact nature of the problem and resolve it. Data-gathering consistent with
Also important, of course, is that elements which impinge on the problem-solving efforts of the participants intrude during the simulation. Complications in the patient’s condition (client-management) and intrusions by the press and public pressure for information (accident investigations are examples.

**Crisis-management simulations**

Unlike diagnostic simulations, crisis-management simulations are precipitated by a scenario that sketches an imminent crisis or a natural or industrial disaster at the community, regional, national or international level. Typically, crisis-management simulations run in real time from two to seven days.

The focus in crisis-management simulations is the interpretation of data and allocation of resources to avert, alleviate or terminate a threatening or dangerous situation. An example is Atlantis (Ritchie, 1985) which addresses the problem of crisis analysis and resource management in a natural or nuclear disaster. Participants assess the situation and deploy various forms of rescue, relief and repair resources. They experience the consequences of their actions in the form of data on rates of infection, numbers of dead and injured and so on.

Reality of function in crisis-management exercises is established in several ways. First, the crisis must threaten the decision-makers in the simulation. Second, they must face incomplete information and accelerated time pressures for decision-making. Third, events provided in the simulation should create the impression that, in the absence of key decisions, the situation is a runaway train that will end in disaster.

**Data-management simulations**

The task in a data-management simulation is to allocate economic resources to any of several variables in order to achieve a particular goal. The long-range goal is to improve the status of an institution, group or individual. A forerunner of data-management simulations developed in the 1960s is The Sumerian Game, set in Mesopotamia in 3500 BC. The student assumed the role of Luduga I, priest-king or Lagash, and managed the annual grain harvest for several years (Carison, 1969).

Problems faced by the ruler included granary fires, floods, an expanding population and the needs of foreign trade. In the second phase of the exercise, the goal was to accumulate surplus supplies of grain in order to support the development of crafts and other activities.

Team simulations in data-management may also be developed. Such exercises are common in business schools in banking, finance and company management. However, they may also be used in other subject areas in which teams construct a database that they then apply to solve a particular problem.

**Social-process simulations**

The focus in tactical-decision simulations is an evolving problem that depends on data interpretation and management for a solution. In contrast, the focus in social-process simulations is the various human interactions involved in pursuing social or political goals. Thus, participants function as members of some group, such as villagers threatened by the imminent construction of a nuclear power plant, radio broadcasters preparing a news program, or learning disabled children attempting to cope in the classroom setting. Participants, in their roles, attempt to complete an assigned task in a social milieu. Actions
executed by other participants and their reactions to one’s own behavior in the assigned role are key factors in planning and executing goal-implementation strategies.

The range of strategies initiated in social-process simulations includes interviewing, writing, questioning, editing, negotiation, persuasion, confrontation and others. As participants attempt to achieve their social or political goals, they may experience frustration, pride, rejection, acceptance, cooperation, conflict, anger and other emotions. Therefore, essential components of social-process simulations are the post-simulation activities. Origins of emotional reactions are explored and discussed as well as the relationships to the larger sphere of human experience.

Three types of simulation are round in this broad category. Summarized in Table 1.3, they are social system, language skills, communication and empathy/insight simulations. They differ primarily in the types of interactive processes that are set in motion in each.

**Social-system simulations**

The focus in social-system simulations is the complex supporting fabric of relations that is found in organized societies. The two sub-types, multi-agenda and single-agenda simulations differ in the range of processes that are addressed and the nature of the contingencies for participant behavior.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>FOCUS</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social system</strong></td>
<td>Participants engage in the dynamic social and/or political processes that form the fabric of organized social groups</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Multi-agenda</td>
<td>Inter-nation simulation St Philip</td>
</tr>
<tr>
<td></td>
<td>Participants in different roles attempt to fulfill different political or social goals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Single-agenda</td>
<td>The Numbers Game Talking Hocks</td>
</tr>
<tr>
<td></td>
<td>Participants, as members of a group, experience a particular process or mechanism in the social system that contradicts their accepted assumptions and/or expectations</td>
<td></td>
</tr>
<tr>
<td><strong>Language skills/communication</strong></td>
<td>Participants are placed in a challenging situation that is language-intensive; participants stretch their communication and language skills to meet the challenge</td>
<td>Radio Covingham Space Crash</td>
</tr>
<tr>
<td><strong>Empathy/insight</strong></td>
<td>Participants undergo a frustrating or traumatic event and struggle to function in the negative condition</td>
<td>Me the Slow Learner</td>
</tr>
</tbody>
</table>

In multi-agenda simulations, participants assume individual roles in a hypothesized social group and experience the complexity of establishing and implementing particular goals within the fabric established by the system. The differences and potential conflicts among the roles set in motion the dynamics of the simulation. Examples are Inter-nation Simulation and St Philip.

In *Inter-nation Simulation*, participants functioned as representatives of hypothetical...
nations, members of an international organization and producers of the World Newspaper. In each 70-minute cycle (one year), military alliances, trade agreements, economic treaties and other activities were undertaken. Decision-makers were constantly faced with diverse events within their broad areas of responsibility, illustrating the difficulty of mediating on several fronts simultaneously.

*St Philip*, in contrast, is situated in a hypothetical Caribbean island. Participants assume names and roles of members of parliament (different parties), hotel developers and private secretaries to the MPs. The conflicting issues of the development of tourism and harming the environment and way of life of the island are analogous to a variety of contemporary situations (Walford, 1983).

The single-agenda simulation, in contrast, sets up a situation in which participants as a group experience a particular social mechanism or process that contradicts typical assumptions and expectations. Examples are The Numbers Game and *Talking Rocks* developed by Robert F. Vernon (Jones, 1982). In *The Numbers Game*, participants experience the effects of a shift in classroom structure from a competitive to a cooperative organization. Participants in *Talking Rocks* experience the difficulties of constructing messages of important survival information for others in the absence of a written language system.

In single-agenda simulations, participants do not assume individual roles. Instead, they undergo a particular experience as members of a group. Participants in *The Numbers Game* are members of classroom teams that are each given specific problems to solve. In *Talking Rocks*, participants are a primitive group referred to as “the Eagle people”.

**Language skills/communication simulations**

A key skill in functioning effectively in society is that of using language to communicate with others. The major purpose of language skills/communication simulations is to establish interesting and involving tasks such that students engage in communication “in spite of themselves”. Depending on the particular simulation, opportunities are provided to practice different skills, such as interviewing, reporting, note taking, drafting, editing, presenting a case, listening, negotiating and so on.

Particularly important in designing these simulations is that the task or situation established for the participants is one that is all-absorbing. Two examples are *Radio Covingham* (Jones, 1984) and Space Crash (Jones, 1982). In the former, participants produce and broadcast a brief news program. Preparation takes place while items continue to be received at the station and while participants are under pressure to observe a 10-minute time limit for the broadcast.

In contrast, Space Crash is an imaginative simulation in which six crewmembers must communicate with each other in order to survive. Each role card describes vital information for survival on the planet Dy - information that is not known to the other participants. Thus, effective communication and discussion are essential skills in the simulation. In other words, in this type of simulation, language skills are a critical means to accomplish an interesting and challenging goal. As participants become involved in the ongoing activities, they stretch their capabilities to meet the challenge.

**Empathy/insight simulations**

The issue of simulation characteristics that specifically contribute to the development of empathy is a relatively new one in simulation design. Requirements for developing empathy include a) placing participants in a frustrating, traumatic, or debilitating situation that evokes the feelings and frustrations experienced by a particular group and b)
constructing post-simulation activities to process the feelings and emotions.

An example is *Me The Slow Learner* (Thatcher, 1983) in which prospective or in-service teachers are learning disabled pupils in a classroom. They are fitted with different handicaps and then are allowed 24 minutes to complete 6 tasks. However, the tasks are constructed to be nearly impossible. The participant reactions during the exercise typically begin with disbelief, followed by efforts to try their best and finally apathy or rebellion.

Three issues are crucial in the decision to implement an empathy/insight simulation. They are 1) the construction of the exercise so that participants are not tricked in any way; 2) the rationale for implementing the exercise; and 3) the post-simulation activities. In other words, because these simulations generate negative emotions, they should only be used when they can reflect pivotal factors that may influence participants’ decisions in working with others. Also, post-simulation discussions and other activities are essential for working through the negative emotions generated by the exercise and in developing empathy.

**Discussion**

The major groups of simulations introduced in this chapter reflect two different perspectives on developing meaningful problem-based exercises that require the execution of particular roles. In tactical-decision simulations, social pressures and requirements for communication are held to a minimum so that students can apply the data interpretation, organization and management required in particular roles. In contrast, the social-process simulations include the major types of simulations that address some aspect of task implementation in a social milieu. The focus in these exercises is on the factors in the social setting that a) may hamper realization of one’s goals, and b) may not function in a way that is consistent with our assumptions and expectations. For example, participants in St Philip typically learn that “prepared ‘blue-print’ answers are rarely effective” in resolving complex social issues (Walford, 1983, p 170).

The purpose of these categories is to identify effective types of simulations, their characteristics and the major requirements for design. They also serve as a standard against which to analyze and evaluate already-developed exercises.

**REFERENCES**


Thatcher, D (1983) “A consideration of the use of simulation for the promotion of empathy in the caring professions — “Me-The Slow Learner”, a case study, Simulation/Games for Learning, 13, 1, 10-16.
