

# Promoting Learning Through Games and Simulations

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*In this article, the nature of learning is considered and the significance of promoting learning rather than teaching is explored. The notion of learning system is introduced and the active nature of learning from experience is considered. The importance of reflection in the process of learning is discussed. The role of simulations and games in promoting learning is then examined, followed by an exploration of the process of debriefing and its relationship to reflection. Finally, the role of the teacher is briefly considered.*

**KEYWORDS:** *debriefing; experiential learning; game experience; feelings; learning; learning system; reflection; simulation experience; teacher role.*

My experience over recent years of using simulations and games as techniques for promoting learning has caused me to reflect on the nature of learning as encouraged by the use of simulations and games. This has been reinforced, latterly, as I have helped teachers and trainers to understand something of the nature of learning and of the possible role which the use of simulations and games might have in the promotion of learning. This understanding has been promoted particularly through workshops on games and simulations and sessions on game design.

The significance of the debriefing in the use of games and simulations to promote learning became more and more evident as I became increasingly familiar with and practiced in the use of the techniques. At first, this realization was an intuitive reaction to student or pupil response to these experiences, but the realization gradually developed into a more complete comprehension of the process and its complexity.

A lifetime spent working as a teacher, originally of geography and more recently as a trainer of teachers and lecturers, made me realize that my method of working was very much one of wanting to approach a particular

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learning problem in a way which might be more effective than those which I and others currently used; trying out a new method or technique; and evaluating, originally quite unsophisticatedly, its success and subsequently modifying it and developing it as a result of this evaluation.

It was very much a practical, experiential approach to the professional problem of working as a teacher or, as I now feel is more appropriate, a promoter of learning. The theoretical support for what I was doing, initially because it worked, came later and helped to illuminate what I had done, as well as to make it more effective. Thus for me, this greater understanding of the significance of what I had been doing came after I had done it, practically, in response to the identification and resolution of a particular problem—very much a debriefing and self-learning situation!

In developing the use of games and simulations in various learning contexts, I became more and more convinced that the debriefing—the process of reflecting on and exploring what had occurred from the point of view of each of the participants—was the place at which the fundamental learning which resulted from the experience took place.

It seems very odd to me that the emphasis on learning, which is after all the process by which we use and capitalize on our experience to make it part of our conceptual apparatus for future use, has not been considered to be as important as teaching until quite recently. There has always been a great deal of discussion about teaching and effective teaching, and this talk did and still does figure very much in the training of teachers and trainers, but teaching is not always seen as directly related to learning, the process which we are really trying to promote. Perhaps this is because for a long period of time in school, and particularly secondary school, learning was equated with the ability to memorize, largely by rote, a number of techniques and skills or a great deal of factual information often in artificially divided subject areas. The demonstration that the material had been learned came from the ability to succeed in examinations which tested the rote learning. Learning was not necessarily related to living and surviving in the real world, particularly as the real world is so often experienced as a whole and not related to the boundaries of individual academic subject areas.

### **What Is Learning?**

To explore the nature of learning, I shall take two definitions which have significance for me:

Learning is the process whereby knowledge is created by the transformation of experience. (Kolb, 1984)

For us Learning means an approach both to knowledge and to life, that emphasises human initiative. It encompasses the acquisition and practice of new methodologies, new skills, new attitudes, and new values necessary to live in a world of change. Learning is the process of preparing to deal with new situations. It may occur consciously or unconsciously, usually from experiencing real life situations, although simulations and imagined situations can induce learning. (Botkin, Elmandra, & Melitza, 1979)

Both definitions emphasize the importance of change in the learner as a result of the process of learning. Equally, both of these definitions emphasize the importance of seeing learning as a process, and incidentally, as a process which does not have an end, but which continues throughout the life of an individual. There is also an emphasis on the individual nature of learning, each of us learns in a manner which is peculiar to him or her, although there may be much that is shared with others in the process. That process of sharing can, of itself, do much to assist the process of learning in each individual.

### The Learning System

In the years since 1970, I have spent much of my professional life in attempting to relate general systems theory (Boulding, 1956) to the process of learning, and have developed an approach to the problem which I have called the *learning system* (Thatcher & Robinson, 1985; see Figure 1).

Since almost all systems are highly complex interactions of many variables, some of which are not easy to identify, this view of a process is valuable as an attempt to help us to see just how complex most interactions in life are. Within the learning system are many variables among the most significant being: the learner, the teacher, the material to be learned, and the context in which the learning takes place. However, each of these variables is in itself also a complex system of variables so that the interaction in any learning system is profoundly complex.

### The Process of Learning

Fundamental to all learning is some kind of active experience. The learner has to be active and to be involved with the material or skill to be learned in some kind of experience. From the earliest days of childhood, we are learning

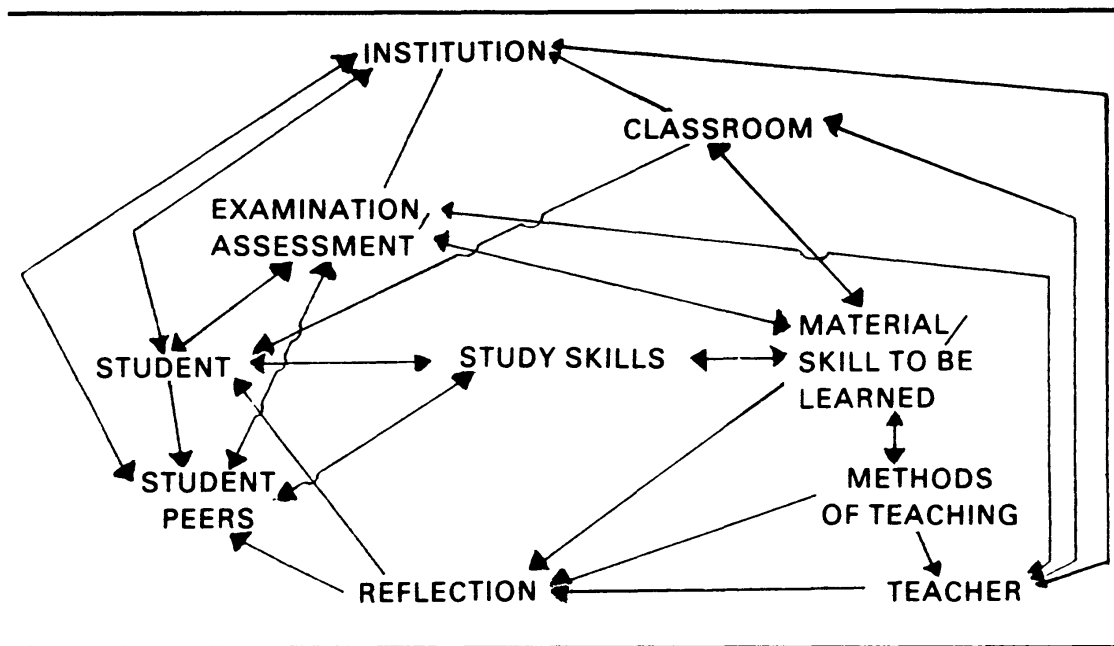
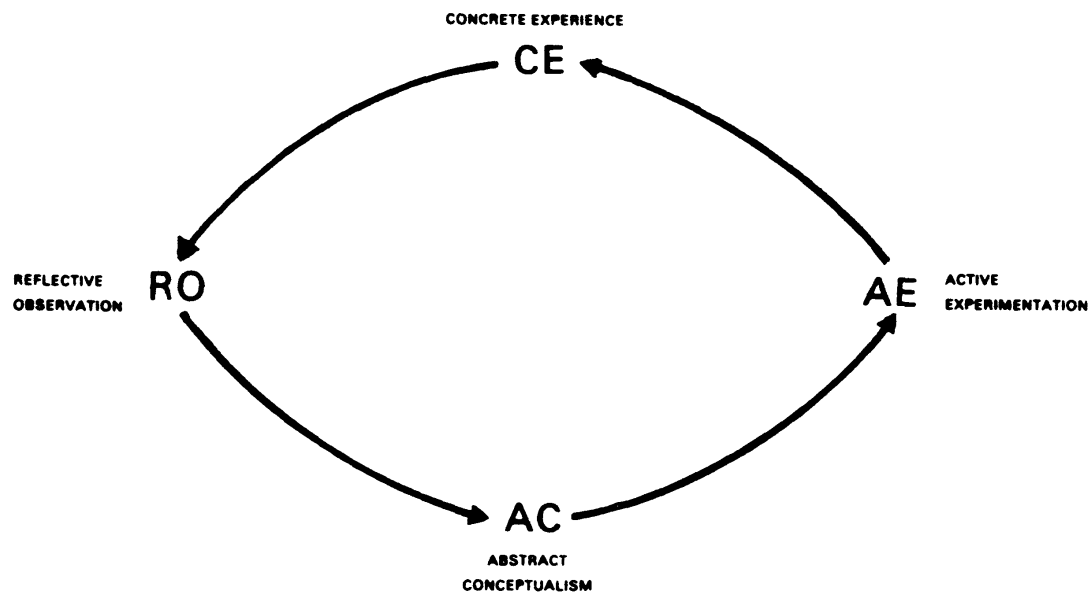


Figure 1: The Learning System

from experience by discovery and experimentation, and by interacting with that experience, making sense out of it for ourselves. Thus the process is seen by many workers in the field as a cyclical one in which experience or experimentation is followed by a series of other activities which make some kind of sense of the experience. From this process of making sense of the experience comes knowledge, skills, or attitudes, which are stored in the mind for future use in new experiences. The process involves identifying, changing, and modifying the knowledge, skills, and attitudes which result from experience, and linking and relating them to the stored knowledge, skills, and attitudes which are already part of our mental apparatus.

Many theories of development in the cognitive, moral, or affective fields describe the stages of adaptation through which most people move when they are acquiring the cognitive, moral, or affective structures which form part of their mental apparatus for problem solving and coping with day-to-day living and working.

Kolb's (1984) description of the learning cycle has four related parts: concrete experience (CE), reflective observation (RO), abstract conceptualization (AC), and active experimentation (AE; see Figure 2). It is a useful model of learning from experience. It offers valuable insights into the nature of that process of learning from experience. It is very relevant to the use of games and simulations in education and training since games and simulations are a type of "controlled" experience from which learning can come if the whole experience is used effectively.



**Figure 2: The Experiential Learning Model**

SOURCE: Kolb, *Experiential Learning: Experience as the Source of Learning and Development*, pp. 41-42. © 1984 Prentice-Hall, Inc. Adapted by permission.

## Reflection

In Kolb's model of experiential learning, reflection or reflective observation is the process which provides a crucial link between experience and the process of change and adaptation in the mind and which makes elements of the experience part of the abstract conceptual apparatus of the learner. It is the equivalent of that process used by young children when they talk through and discuss the solution of a problem or the performance of a task either to other children or adults, or to themselves. This process of articulating one's thinking is a vital part of the process of converting experience into learning or of using one's conceptual apparatus in a concrete experience. The process can be very much assisted by promoting discussion of an experience by raising to the surface the thoughts and embryonic ideas of the individuals in the learning situation.

The process of reflection which is explored by Boud, Keogh, and Walker (1985) and their associates is defined as "a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations." They describe the central place of reflection in learning as it is seen in the thinking of many workers in the field of human learning, from Aristotle through

Dewey to Kelly and Kolb, and they explore and analyze the process of reflection as a focal and vital part of the learning process.

In their analysis, they see the process of reflection as multistaged, involving several distinct parts which nevertheless relate quite closely. These parts are:

*Returning to the experience*, which can consist of recollecting the experience, replaying the events, or recounting them to others. It is very much, initially, each individual's perception of what happened.

*Attending to feelings*, which involves capitalizing on and using the positive feelings which come from the experience, but also not omitting a consideration of the negative feelings, the management of which must be a vital part of the process of reflection.

*Re-evaluating the experience*, which involves the reexamination of the experience in the light of the first two stages. It must be remembered that there is likely to have been some evaluation during the experience, or immediately after it, or perhaps both, and that this process of reevaluation is a more considered event, leading to the appropriation of the new knowledge, skills, or attitudes in the mind and mental apparatus of the learner.

Although, for clarity, Boud et al. (1985) set each stage out separately from the others, the stages are, in fact, very intimately and finely related. Bawden (1985), reviewing the process again as part of a discussion of problem-based learning, added his own ideas about two elements of learning from experience within the cognitive domain and affective domain. He suggested that learning from experience is not only cognitive but also affective, and that there may well be a relationship between the two.

My experience with using non-role-play simulations like STARPOWER (Shirts, 1969) or ME—THE SLOW LEARNER (Thatcher & Robinson, 1984) suggests that these two domains are closely interrelated and that much cognitive learning is either promoted or inhibited by the affective elements present for an individual in a learning process. It is possible that the learning outcome of an experience for different individuals may be very different as a result of the feelings which were present or developed in the experience.

### **The Nature of Learning From Games and Simulations**

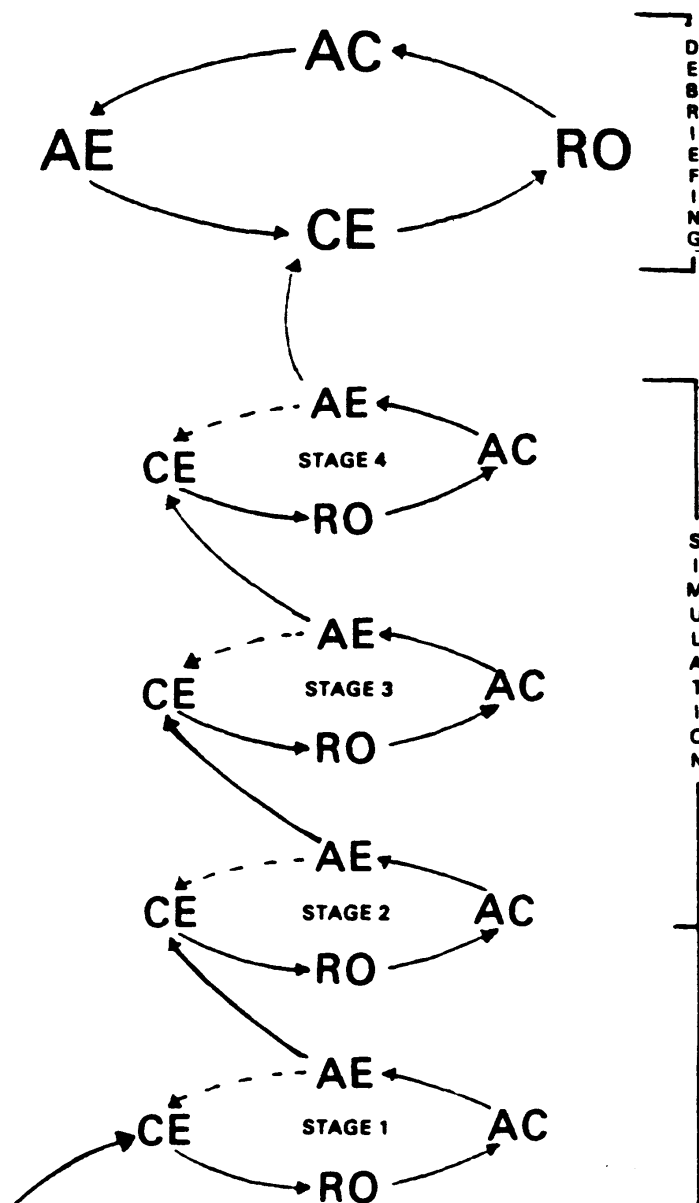
Let me now turn from this brief consideration of the nature of learning and reflection to the ways in which learning is promoted through the use of games and simulations. Since all games and simulations are a form of experiential learning, the learners or players are actually engaged in an

experience. In most simulations, the experience is a dynamic one in which a series of problems are presented for resolution or decisions have to be taken. Very often, these situations have some evaluation and reflection built into them, which may be different for each player but which form an important part of the dynamic of the exercise. The aftermath of each decision point is a new situation with a new problem to be resolved or decision to be taken. Thus in many of these exercises, the total experience is a series of micro-experiences followed by speedy evaluation and reflection and the application of the reflective in a new situation as the game or simulation develops.

By using an adaptation of Kolb's learning cycle diagram in a cyclical form (Figure 3), one can demonstrate how the process occurs several times during a game or simulation experience. For instance, in a card game of patience, the experience is one of solving a problem about relating many random cards into specific patterns. The process is often developed with discussion as in *ALCOHOL—WHAT DO YOU KNOW*, the card game developed by Taccade; it uses a form of branching program to promote discussion. Another example is *INFODRUG* (Thatcher & Eaton, 1985), a nurse revision patience game in which the shuffled packs of cards are turned up by alternate players and placed in the proper order and sequence, usually after some discussion among the players. In both these examples, much of the reflective learning is taking place while the play is in progress, and the post-play debriefing has a different form from the reflection during play. Abt (1968) identified three different types of learning which are often present in a simulation:

1. Learning the facts, expressed in the game context and dynamics (by facts are meant not only facts, concepts, and generalizations but skills)
2. Learning the processes simulated by the game
3. Learning the relative costs and benefits, risks and potential rewards of alternative strategies of decision making

There is also another significant element of learning which occurs in many game experiences—the emotional element of participating in the game and the effects of different decisions on the dynamic of the game and on each of the players at different points in the game. If one examines the learning which is taking place when players are engaged in *STARPOWER* or *ME—THE SLOW LEARNER*, there is a complex interaction between factual learning, the learning of processes, and certainly the relative costs and benefits of different decisions. However, one is also often seeing players experiencing considerable emotions, with their resultant effects upon the other types of learning.



**Figure 3: Learning From a Simulation**

SOURCE: Kolb, *Experiential Learning: Experience as the Source of Learning and Development*, pp. 41-42. © 1984 Prentice-Hall, Inc. Adapted by permission.

What has this to do with the process of learning? As I said at the beginning of this article, the debriefing is the part of the process in which the reflection takes place and from which the change in the persons will occur, because it is the part of the activity which focuses on the complex processes which took place in each individual and in the group as a whole.



## Debriefing in Learning from Games and Simulations

The debriefing is thus the most important point of learning from the use of games and simulations. It is the process by which the experience of the game/simulation is examined, discussed, and turned into learning. An important element of the debriefing is reflection. There are several stages in the process of debriefing, as there were in the process of reflection, and these may be separate or may be integrated. These stages relate quite closely to different kinds of knowledge and to the different ways in which individuals learn, as well as to the different parts of the whole process of reflection. I have identified these stages (Thatcher & Robinson, 1985) and set them out below.

1. Identifying the *impact of the experience* on each individual—this often involves the development of self-knowledge. This may be overt or covert, depending on how threatening the experience has been to each of the participants. For some of the participants the identification remains a personal process, which they may reveal at a later time than the actual debriefing.
2. Identifying and considering the *processes* which were developed in the simulation.
3. Clarifying the *facts, concepts, and principles* which were used in or related to the simulation.
4. Identifying the ways in which *emotion* was involved in or figured in the simulation for each individual and for the group as a whole.
5. Identifying the different *views* which each of the participants formed of the nature of the processes and the experience. This identification is the process by which all the participants begin to explore the complexity of the system in which they were participants.

Each of these stages is an important element in the process of reflection by which the real learning takes place for each individual.

The debriefing can be organized in a number of ways, from an informal discussion, through a structured discussion, to some form of written report or commentary on the experience. I have often found it useful to have a carefully designed response questionnaire which each participant completes and uses as a basis for his or her contribution to the debriefing discussion. In this way, the game organizer can ensure that each of the participants has considered the significant points related to the simulation individually before a general discussion takes place and some important personal experience is lost in the heat of the general discussion.

## The Role of the Teacher

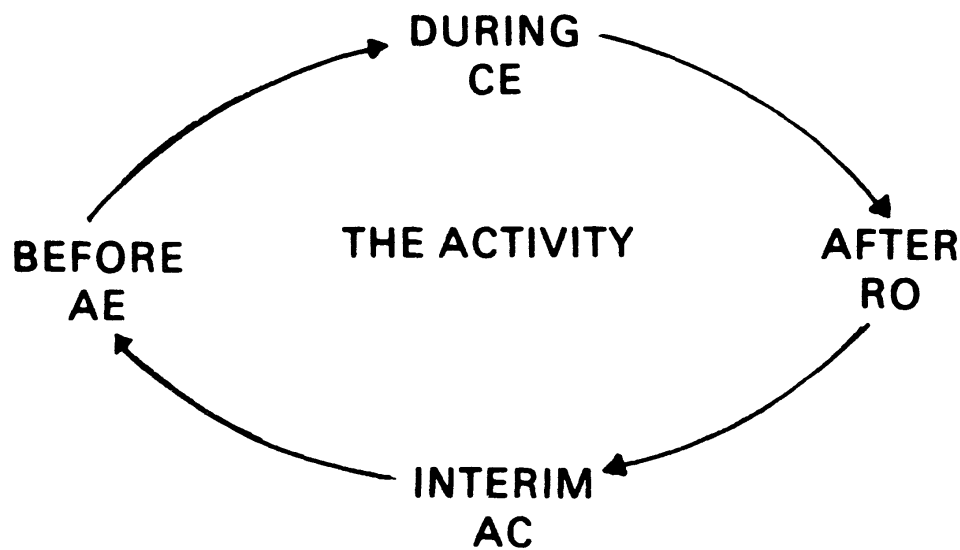
The last point to be considered is the role of the teacher when games and simulations are being used to promote learning. In this context, the teacher is a manager of learning resources, with the role of facilitator and organizer.

Once the resources have been created and the students introduced to them, the teacher has no control over the speed at which the resources are used, nor over the order in which the student will move through them. It is up to the teacher to assist the flow or dynamic of the game or simulation, to facilitate the debriefing, and thus to promote discussion and reflection, in other words, to enable the resources to be used as effectively as possible. This role is the one which a teacher assumes when using simulations or games in a class or lecture room, and it cannot be stressed too much that the teacher must have the courage to let the simulation flow, whether the students are making a mess of it, or making wrong or unwise decisions (Jones, 1980). He or she must learn not to interfere.

Jaques (1984), in discussing the role of the tutor in promoting learning with groups, suggested a cyclical process, in which the tutor anticipates and monitors the process during the activity, reflects after the activity, and subsequently evaluates and revises the activity (see Figure 4). This process relates closely both to the role of the tutor in using games and simulations and to the nature of learning from experience. In the anticipation, the tutor is very much considering what he or she wants to achieve, what might happen, and how he or she will observe and record what is actually happening. During the playing of the game or simulation, his or her task is very much monitoring the process, abstaining from interfering, and noticing and reflecting on the differences between what is happening and what he or she anticipated would happen or what has happened when the game or simulation was used before.

In the debriefing, tutors are assisting in raising to the surface the points that they observed in the activity and relating them to the points that the participants observed. By the skillful use of questions and other kinds of prompting, they are themselves reflecting on the process and also promoting the reflection of the participants on the process. Not only are they promoting learning from experience in the participants, they are promoting it in themselves.

It should be said from experience that this role, which combines that of the manager/organizer, facilitator, and learner, is a very difficult one to assume. It can, in the early stages of using the techniques, be very threatening but it is, in the end, very effective and fulfilling.



**Figure 4: The Role of the Tutor**

SOURCE: Jaques, *Learning in Groups*, p. 143. © 1984 Croom Helm Ltd./Routledge. Adapted by permission.

## Conclusion

Games and simulations are significant forms of experiential learning, which are often very powerful triggers to learning of many different kinds. However, the effectiveness of games and simulations in the learning process depends on the quality of the process of debriefing used after the experience is finished.

This debriefing is a focal method of promoting learning by experience, very closely related to the process of reflection. Practitioners of the art of games and simulations neglect the debriefing at their peril.

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