

# Developments In Business Simulation & Experiential Exercises, Volume 22,1995

## CHALK & CHEESE: Executive Short-Course vs Academic Simulations

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### ABSTRACT

This paper discusses the differences that exist between the use of computerized business simulations on executive short courses and their use on academic full time programmes. It argues that these differences are such that simulations designed for one domain are not effective for the other.

Although it specifically addresses the differences in the context of simulations much can be generalized for academic programmes vs executive short courses. This is especially true for suggestion that the central difference between the academic programmes and executive short courses is their respective focus on content and process. Further, the core need for academic simulations is learning effectiveness as proved by examination. For executive short course simulations these needs extend to include efficiency and consistency.

### INTRODUCTION

Some three years ago I decided to turn over twenty years experience in the design and use of business simulations on executive short courses into theory and therefore began a part-time research programme. During the literature search phase of this it became apparent that there were considerable differences between my experiences and the problems discussed in the academic literature. And, this difference was due to the difference in usage between the two domains. Specifically, the needs of short courses run by companies, training consultants, commercial training organizations and training centres (executive short courses) differed substantially from those run by colleges and universities on a full time basis and leading to qualifications (academic use).

This led to an attempt to find the key differences between the two and consider the implications of each. Implications of whether computerised simulations designed for and used on academic programmes accomplish the same purpose and must provide similar functionality. Secondly, because my research and interests are focussed on the executive short course use, the analysis provides a means of testing the relevance, applicability and validity of academic papers.

### THE DIFFERENCES

FIGURE 1  
THE DIFFERENT DIMENSIONS

|            | Academic                    | Short Course               |
|------------|-----------------------------|----------------------------|
| LOGISTICS  | multiple sessions over term | single session             |
| COMPLEXITY | complex to very complex     | very simple to complex     |
| DURATION   | long (many hours/days)      | short (2 hours to 2+ days) |
| KNOWLEDGE  | narrow range but high       | wide range                 |
| EXPERIENCE | generally very restricted   | extensive                  |
| MATURITY   | young adults                | mature managers            |
| OBJECTIVES | defined by examination      | individual learning        |
| POWER      | with tutor & university     | with executive & purchaser |

### Logistics

The most usual use of simulation on academic programmes is on multiple sessions over a term or semester (Fritzsche & Cotter 1990, Armitage 1993). In contrast, on executive short courses, most use is as a single, contiguous session (Figure 2). The list of executive short course use is derived from experience running hundreds of simulations over a twenty-five year period. It is in order of decreasing frequency of use. Thus use, as a course finale to integrate and reinforce learning is by far the most frequent.

However, The general availability of the microcomputer has made viable short (two to three hour) simulations that reinforce a single topic

(reinforcement exercise) or act as an icebreaker and their use is growing. The remaining are used less frequently.

FIGURE 2  
USE ON EXECUTIVE SHORT COURSES

| Simulation Use on Executive Short Courses |                   |
|---|-------------------|
| COURSE FINALE                             | single session    |
| REINFORCEMENT EXERCISE                    | single session    |
| ICE BREAKER                               | single session    |
| STAND ALONE                               | single session    |
| ASSESSMENT CENTRE                         | single session    |
| COURSE BREAK                              | single session    |
| COURSE 'THEME'                            | multiple sessions |

Single vs multiple session use raises important issues in terms of the learning process, tutoring pressure, team-working and simulation complexity.

The classic Experiential Learning Cycle (Kolb 1984) requires reflective observation and abstract conceptualization. When a simulation is run on a multiple session basis these fit naturally into the periods between the sessions where, either consciously or subconsciously, students can reflect and conceptualize. When the simulation is run as a single session, even with careful timetable design (Hall 1971) reflection and conceptualization is restricted.

Time restrictions generate tutoring pressure. Pressure not only to process decisions rapidly and produce results quickly (Hall 1989) but also on the tutor's ability to respond to participant questions, evaluate learning, stimulate thought and record progress (Hall 1994a).

Besides pressure on the tutor, there is the pressure on the participant. Team working pressure, when coupled with the restriction on time for reflection and conceptualization, leads to 'fire-fighting' and, perhaps, concentration on winning the game' rather than learning.

Implicit in the multi-session vs single session divide is the amount of time that is granted to the simulation. As describe in the following session, duration is highly correlated with complexity. Therefore, multi-session simulations are, of necessity, complex.

A second, logistics aspect is the question of where the simulation is run and this raises questions on "territoriality" and infrastructure. Where the simulation is used as part of an academic programme this is, usually, at the tutor's own college. Thus it is run in a known environment with consistent facilities and support services. One where the simulation can be installed and fully tested before use.

In contrast, the executive short course tutor may be faced by a more uncertain environment. At one extreme there are the large, commercial training centres with custom built training facilities, in depth secretarial and support services and ingrained 'customer' orientation. At the other extreme, the short course tutor may be running the simulation in a hotel in a foreign country. Here, besides basics such as pens & paper, adequate lighting in syndicate rooms, etc., one may have to worry about getting a laptop computer through customs and ensuring the hotel has some sense of urgency at meal times.

In simulation design, where simulations are used on a wide range of computers using a similarly wide range of printers there is a strong argument for features lagging the technology. So, for example, colour graphics may be

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attractive but will be counter productive where the software is run on a monochrome laptop. Similarly, a network may be available in an academic environment but will not be available in a hotel. Although a network may be available at the commercial training center, software installation time and complexity of use may mean that using the network is counter productive.

### Duration & Complexity

Although listed separately in Figure 1 the aspects of complexity and duration are treated together. As empirically demonstrated (Hall & Cox 1994) duration and complexity are very highly correlated and therefore are not independent. From the pedagogic (academic programme) viewpoint it is often argued that complexity is necessary to ensure effective learning (Miller and Leroux-Delmers. 1992; Thorne, 1992). Yet, on executive courses, short, simple simulations are used more frequently than longer, complex simulations. It is entirely possible that the logistics of use on academic programmes (in multiple sessions over one or more terms or semesters) means that the simulation must fill many hours of course time and therefore must be complex or very complex. One must suggest, that the widely held view that complexity as necessary is because of the long durations of academic multi-session use rather than anything else!

On executive short courses. it is difficult to budget inure than a few hours for any session or topic. This means that the simulations must be simple and complex simulations can only be used on the few courses that last more than a week. This emphasis on short durations is illustrated by statistics from 569 runs of a representative range of thirteen different simulations used on executive short courses (Hall & Cox 1994). Despite the longest simulation lasting two and a half days (20 hours) the modal duration for these 569 runs was two hours, the median 2.7 hours and the mean five hours.

Short durations mean that individual simulations must focus on very specific learning objectives and peripheral activities cannot be allowed to dilute the process. Time restrictions limit the amount of remedial tutoring possible and so the simulation must closely match course content and the prior experience and knowledge of participants. In contrast longer academic durations allow peripheral issues to be explored and remedial tutoring to take place.

### Knowledge

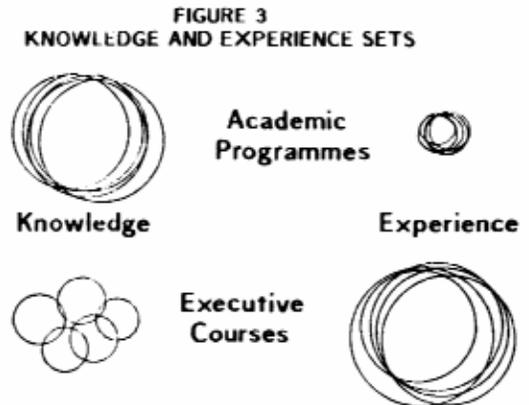
Knowledge can be considered as consisting of two pails: Pre-course knowledge and course provided knowledge. The length of an academic programme means that individual students should develop like sets of knowledge from the course (Figure 3). Thus the knowledge sets of students should overlap and, since they are derived from the same source will be consanguine (have the same lineage).

In contrast, the amount of new knowledge provided on a short course is limited. Pre-course knowledge cannot be discounted (on academic programmes. Pre-course knowledge can be (or is) discounted). Although this knowledge may be limited to the executive's functional area, for the group as a whole, is likely to be as wide as the academic knowledge set and, possibly, in greater practical depth. Thus, as illustrated in Figure 3, although the executives' knowledge sets are smaller but because they intersect rather than overlap the complete knowledge base is wide.

These knowledge sets have implications in terms of learn formation and tutoring needs. Where knowledge sets are consanguineous, Teams may be self-selected.... (Fritzsche and Cotter 1990) or even selected randomly. But, for executive short courses, where the knowledge sets differ, learning can be enhanced cognitively and affectively by balancing teams in terms of knowledge and experience. Enhancement of cognitive learning occurs where knowledge is shared and team members learn from each other. Affectively, if teams feel they are at a disadvantage, they may become demotivated especially if they perceive that this has influenced their

relative, competitive position. Thus, for example, a team may feel deprived if their group does not include an accountant and other teams do. This, despite the fact that, sufficient finance was fully covered in the course.

On academic programmes the knowledge set, based on the course syllabus, is known and therefore can be matched to the knowledge implicitly needed by the simulation. For executive short courses, the unknown nature of pre-course knowledge and experience means that not only there may be gaps in knowledge but these are not exhibited before the simulation.



Consequently, there is a need for the tutor to identify these gaps and remedy the lack of knowledge. This suggests that the tutor takes a very active, management, role (Hall 1994a) rather than a passive 'facilitation' role.

### Experience

Again, as illustrated in Figure 3, there are differences in experience with academic students having limited business experience and executives having considerable experience. (Obviously, this is a simplification, MBA's -especially executive MBA's -may have some experience and junior, supervisory, management little.)

Thus for executive short courses, deficiencies in (theoretical) business knowledge can be balanced by experience. For academic students, deficiencies in real-world experience are rectified by the simulation.

Besides the cognitive dimension there is the affective one. Knowles (1985), while discussing the difference between andragogic (adult) learning and pedagogic (academic) learning, emphasizes a key difference is the recognition of the importance of experience to the adult and its use by the tutor. A difference that must be recognized by the Tutor. If this is not done and the tutor does not draw upon the executive's experience, the executive will (rightly) become disaffected.

### Maturity

Usually, students on academic programmes are young adults who are in transition from school to the real world. At school, they have been encouraged to treat the teacher as a source of wisdom and not to question things. As shown by written communications, this parental' style is replicated at university. In contrast, attendees on executive short courses are mature managers. Knowles (1985) discusses this difference in terms of concept of self and in particular, how adults control and expect to control' their life.

Besides behavioral differences, there are cognitive differences associated with maturity. Crider et al (1989) suggest that cognitive skills are consolidated and sharpened

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during adulthood. Further, there is evidence (Newman & Newman 1983) that metacognitive skills (judgement and reasoning) improve in adulthood. This, coupled with experience means that practical, participant driven, learning is beneficial in both cognitive and affective terms. Also, one can suggest that the chosen learning process should facilitate knowledge recall a situation inherent in the problem solving nature of simulations.

The maturity divide suggests a reason why many academic papers propound the need for “realism” and justify improvements to simulations based on making them more “real”. Students, without experience of business, willingly accept this. However, mature executives, who have longitudinal experience of, say, the 1960s, 1910s, 1980s and today, can handle abstractions and, anyhow, are not sure what business reality is!

### Objectives

Key characters of adult learners are that learning is self directed and towards immediate business problems (Knowles, 1985; Mezirow, 1981). This contrasts with academic objectives of passing exams and getting a qualification, where the application of learning is deferred.

Thus although academic programmes usually include formal exams it is unusual for short courses to assess delegates in this manner. It is argued that formal or even, informal assessment of participants on executive short courses will constrain learning. This matter is illustrated by a leading provider’s statement of ‘Policy on Feedback’. “It is a definite element of Ashridge policy that no report or information regarding a manager’s performance while on a programme is sent back to the sponsoring organization the highly participative nature of the programmes would be inhibited by the knowledge that discussion was being monitored” (Ashridge Management College Programme and Services 1991).

But, for executive short courses, the learner’s objectives are only one part of a multifaceted scheme. Besides the executive and tutor, the executive’s company and the training organization’s objectives must be considered.

The executive’s company, as purchaser of the training, has its own objectives. Beddowes (1993) suggests “They want courses which embrace the development needs of individual managers within the context of the organization’s own priorities” This suggests that the learning objectives for the simulation must be congruent with both those of the executive and his organization.

Besides this, there is the need to constrain costs. One, result of this, as previously discussed is restricted course length. A second aspect is the efficiency of the teaching methodology suggesting that simulations designed for short course work not only must have short durations but additional functionality to support learning efficiency (Tutor Support Systems (Hall 1994a) and Participant Support Systems (Hall 1994c)).

On executive short courses it is usual to measure quality by means of the course review<sup>7</sup>. This measures quality in terms of customer perceptions. This is a wider measure than academic excellence. One is not just concerned with cognitive learning but also with affection (Hall & Cox 1993).

### Power & Authority

The question of power and authority builds on the earlier differences. The experience of short course members, coupled with their self-directed learning, maturity and position in life means that they expect to have control over the learning process. This is reinforced and recognized by the way the course participants review the course rather than the reverse where the lecturer examines the students.

In contrast, on academic programmes the power rests with the lecturers. Their knowledge and experience when contrasted to that of the students gives them authority. The academic emphasis on the assessment of knowledge by examinations reinforces this power and confirms it.

Further, in the UK, the grant system effectively separates the buyer (student) from the purchaser (grant provider). Even where the student pays, it is a one off (hopefully) non-repeat purchase with all that implies in marketing terms. Training on executive short courses is often for a group of executives from the same organization rather than an individual and is part of a long-term relationship between the executive’s company and the training provider. Beddowes (1993) quotes research that suggests that about fifty percent of organizations preferred no more than three training “providers with which they could have an on-going informed dialogue”.

The power of the executive on short courses leads, naturally, to teaching that is “participant-centered”. This is exemplified by learning activities (discussions, case studies, role-plays and, of course, simulations) and the environment (with lecture theatres replaced by flat, U-shaped room layouts and comfortable chairs). Knowles (1985), in a very mild understatement (about the usual academic environment) describes “the typical classroom set-up, with chairs in rows and a lecturer in front, is probably the least conducive to learning that the fertile human brain could invent”. Certainly the class room and, especially, the lecture theatre, is designed to reinforce the position of the lecturer and discourage participation by the students. The reverse is true for executive courses.

### FOCUS: CONTENT OR PROCESS

When organizing and summarizing the differences between academic and short-course use it is apparent that, perhaps, the key difference is that of emphasis or focus: on content/subject or on process. Obviously this is not a simple either-or situation. It is not two-dimensional nor are content and process orthogonal and independent. Yet the question of focus: on what is learned (content) or how this is learned (process) is vital. Academic programmes tend to focus on content and executive short-courses tend to focus on process.

Content or subject focus is appropriate where the students’ objectives are to gain a foundation of knowledge. Where the content can be predefined and this predefinition is appropriate both because of the lack of pre-course knowledge and experience and because the students are willing to accept the expertise of the teachers and the relevance of the subject matter. Where, knowledge is proved by examination and this examination is accepted as relevant and rational. Where, overall, the objective is knowledge acquisition rather than application.

In contrast, on executive short courses the emphasis is on satisfying the customers’ needs and wants. The emphasis on customer satisfaction coupled with the ambiguous definition of pre-course knowledge and experience means that the role of the tutor is to provide the right environment to allow the appropriate exploration of issues. This reactive approach is disquieting especially to lecturers who are used to the unquestioning reception of their (one-way) “learned” communications.

### EFFECTIVENESS, EFFICIENCY & CONSISTENCY

Just as differences exist in focus (subject content vs process) so too, do the core needs differ. Core needs that are the ability to deliver effective learning in an efficient and consistent manner.

It may seem that these are obvious. Yet, although the effectiveness of simulations as valid pedagogic tools has been discussed widely, the need for efficiency of use is discussed

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rarely. And, consistency of learning is not discussed.

Effectiveness: VALUE not QUALITY

Customarily, effectiveness is discussed in terms of academic or pedagogic validity in terms of content, internal and external validity (Rolfe 1991). Where content validity refers to the way the simulation model “maps” with reality. Internal validity measures the degree to which the simulation provides learning as defined by the course syllabus and examination. External validity is concerned with knowledge transfer and its application in the work place.

For executive short courses effectiveness is both easier to judge and a wider issue. The universal course review means that each run of the simulation is judged by the participants. Participants who are experienced, or very experienced executives. Executives who are concerned with the direct application of the knowledge to their jobs (external validity) and because of their experience can judge and be expected to judge the effectiveness of the learning process. However, for these executives, satisfaction is not just with the quality of learning (as, perhaps, is the case with the student on the academic programme) but with the value of learning. Value that is measured in terms of personal needs and the time taken for the learning experience.

One aspect of this value dimension is the way learning meets developmental objectives. Objectives that do not just cover the acquisition and assimilation of business knowledge but extend to the clinical exercising of management skills, the provision of a suitable learning process and motivational issues.

Although business knowledge acquisition and assimilation on a short course may map with a similar academic programme the other objectives do not. Even so, the mix of pre-course knowledge and individual priorities means that business knowledge needs cannot be defined absolutely and completely. Therefore, the course must proactively adjust to these needs (re-emphasizing the process focus). Further, as an executive’s career progresses business knowledge needs change. Executives will have received basic training and the requirement is to provide a learning experience that facilitates the recall and refreshment of this knowledge together with clinical practice.

The learning process implicit in simulations facilitates andragogic learning (Knowles (1985). In contrast it may be traumatic for tutors who are used to their academic students being conditioned to receive knowledge passively. This, perhaps, partially explains why, at UK universities, “few were using specific role plays, simulations or games to any great degree” (Cherrington and van Ments, 1993).

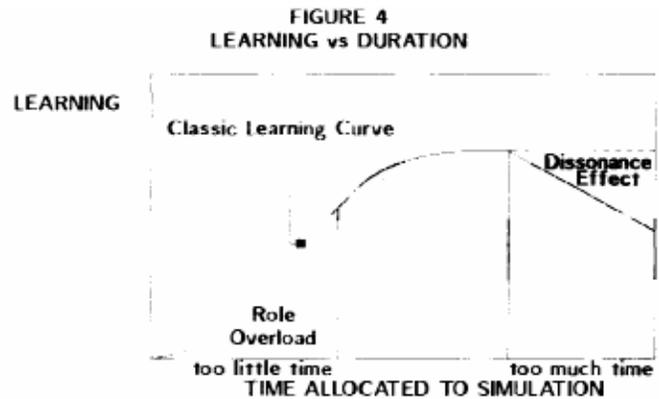
Efficiency

Executive short courses are expensive. The time spent by the executives on the course is valuable especially if one includes the opportunity cost of being off the job. Yet, seemingly few papers have mentioned the need for efficient learning. Robinson (1992) highlights this thus “Wilson and Burgess (1986) give a rare but to an economist anyway welcome reminder that cost-effectiveness may be important”.

Efficiency is important both for the participants and for the tutor. For participants, learning efficiency can be defined as the amount of learning delivered in the available time. However, this is not a simple relationship. It is not a matter of providing access to knowledge (as with the academic lecture) or shortening course durations. For learning to be delivered one must ensure that it is assimilated and can be applied.

If too little time is made available for the simulation role overload (French and Caplan, 1972) occurs diminishing learning (Figure 4). Equally, if too much time is provided learning efficiency will reduce leading to dissonance.

This leads to a peak in learning (as empirically demonstrated by Hall and Cox (1994) that depends on the complexity of the simulation.



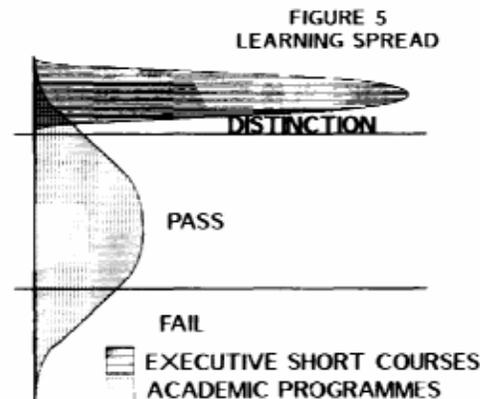
Delivering learning requires tutor involvement. Unfortunately, economic pressures mean that group sizes are often large. Yet, on executive short courses, the participants still expect value. By automating routine calculations computerised simulations increase tutor efficiency. However, there is still a need to explain results, coach teams, measure, judge and record progress (Hall 1993a). A Tutor Support System can automate much of this work and so increase tutor efficiency.

The task of entering decisions into the simulation model can be delegated to the participants either as part of a networked Decision Support System or where the simulation has no inter-team interaction. However, this improvement in tutoring efficiency may be at the expense of effective learning (Coote et al, 1985) and so reduce the consistency of learning. Where consistency is important (as it is for Executive Short Courses) the simulation software must address these needs. One approach is “computer pacing” and a “learning support system” (Hall 1993c).

Consistency

On executive short courses one is faced with the unenviable task of ensuring universal satisfaction. Every participant will demand that they gain from the experience. A demand that is based on and supported by their maturity and power. A situation where success is judged by the course review. If satisfaction is not provided the blame rests with the tutor.

In contrast, on academic programmes, the examination process is designed to discriminate. Distinctions are awarded to those who deserve them. Failure is for a proportion or those who deserve it and the rest pass. Consequently the “spread” of learning (Figure 5) differs between academic programmes and executive short courses.



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The difference is not just a matter of lowering standards. The experience and maturity of the executives, coupled with their self direction means that they will perceive any lowering of standards and react accordingly.

To ensure consistent learning by groups, teams and individuals, it is necessary to:

- \* structure the learning process (in terms of mix of participant knowledge and experience, variety of teaching methods etc.)
- \* measure progress and selectively coach groups and individuals
- \* to provide appropriate feedback to stimulate thought

### CONCLUSIONS

The differences between the two domains suggest that the design focus for simulations used on academic programmes is towards the development of a comprehensive, complex and elegant model. In contrast, for executive short courses simulations, the model is diminished but additional functionality is required.

The complex simulation model is consistent with the longer durations and academic use in multiple sessions. A complex simulation model can be mapped with course content and knowledge development needs. Further, its very complexity, tests (examines) students subject knowledge. Therefore, this model focus reflects academic concern with subject matter and validity.

In contrast, executive short courses focus on process, have duration constraints and need learning efficiency and consistency in addition to learning effectiveness. This lessens the role of the model but, demands additional support for the learning process.

The simpler, more abstract model is satisfactory for several reasons. First, time pressures (learning efficiency) necessitate simplicity. Second, the maturity and experience of executives means that they are better able to handle abstractions. Finally, the focus on process rather than content, coupled with the impossibility of defining precise learning needs means that the external, dynamic behaviour of the model is more important than its internal algorithms.

The short durations and the need to provide consistently satisfactory training for all participants means that the tutor has to actively manage learning and this, together with administration and facilitation tasks, are provided through a computerised Tutor Support System (Hall 1994a).

Where participants make direct use of the simulation software there is a similar widening of scope. The model focus of academic simulations is duplicated by their emphasis on Decision Support Systems. On executive short courses a Participant Support System that encompasses decision support, learning support and knowledge support (Hall 1994c) provides this.

Thus, the conclusion is that simulations designed for the different domains fulfill different requirements and this leads to the need for different functionality.

### REFERENCES

Armitage Susan (1993) Guidelines for enhancing learning opportunities in computer-based management simulations, in *The Simulation and Gaming Yearbook 7993* eds Fred Percival, Sheila Lodge and Danny Saunders, Kogan Page: London

Bateson P (1973) *Steps to an Ecology of Mind* Ballantine Books: New York

Beddowes P (1993) *Training Management*, Nov 5-19 1993

Cherrington, Ruth and Morry van Ments (1993) Is there anyone out there? The use of experiential teaching techniques with adult learners in UK universities, in *The Simulation and Gaming Yearbook 1993* eds Fred Percival, Sheila Lodge and Danny Saunders, Kogan Page: London

Coote, Alan, David Crookall and Danny Saunders (1985) Some Human and Machine Aspects of Computerised Simulations *Gaming and Simulation 11* Kogan Page: London

Crider Andrew B, George R Goethals, Robert D Kavanaugh and Paul R Solomon (1989) *Psychology* Scott, Foresman and Company: Illinois

French, Jr, J R P and R D Caplan (1972) Organizational Stress and Individual Strain, in *The Failure of Success* ed Alfred J Marrow AMACOM American Management Association Inc New York

Fritzsche, David J & Richard V Cotter (1990) Guidelines for Administering Business Games, in *Guide to Business Gaming and Experiential Learning*, ed James W Gentry Nichols/GP Publishing: East Brunswick

Hall Jeremy & Benita Cox (1993) Computerized management games: the feedback process and servomechanism process, in *The Simulation and Gaming Yearbook 1993* eds Fred Percival, Sheila Lodge and Danny Saunders, Kogan Page: London

Hall Jeremy J S B & Benita M Cox (1994) Complexity: is it really that simple, in *Developments in Business Simulation & Experiential Exercises* eds Precha Thavikulwat and John D Overby, Oklahoma State University, Oklahoma

Hall J J S B (1971) *Management Game System -Administrator's Guide*, Honeywell I.S. Ltd., London

Hall Jeremy (1989) Designing the Management Challenge *This is Qatar* Jan/Feb 1989

Hall Jeremy J S B (1994a) Computerized tutor support systems: the tutor's role, needs and tasks, in *The Simulation and Gaming Yearbook* Volume 2 eds Roger Armstrong, Fred Percival and Danny Saunders, Kogan Page: London

Hall Jeremy J S B (1994b) Computerised Tutor Support Systems, in *Developments in Business Simulation & Experiential Exercises* eds Precha Thavikulwat and John D Overby, Oklahoma State University, Oklahoma

Hall Jeremy J S B (1994c) Computer Paced Project Management Simulation *Developments in Business Simulation & Experiential Exercises* eds Precha Thavikulwat and John D Overby, Oklahoma State University, Oklahoma

Knowles M S and Associates (1985) *Andragogy in Action* Jossey-Bass: San Francisco

Kolb D (1984) *Experiential Learning*, Prentice Hall: London

Mezirow J (1981) A Critical Theory of Adult Learning and Education *Adult Education*, Vol. 32, No 1

Miller R and T Leroux-Demers (1992) Business Simulations: Validity and Effectiveness *Simulation/Games for Learning 22 4* Kogan Page: London

Newman, B P and P R Newman (1983) *Understanding Adulthood* Holt, Rinehart & Winston: New York

Rolfe J (1991) SAGSET 1990 - The Proof of the Pudding: Effectiveness of Games and Simulations *Simulation/Games for Learning 21 2* Kogan Page: London

Robinson, Nick (1992) Evaluating Simulations and Games: An Economists View *Simulation/Games for Learning 22 4* Kogan Page: London

Thorne J (1992) New stimulus for those Simulations *Management Today* December 1992 Haymarket: London

Wilson R and T Burgess (1986) Designing a cost-effective business game, in *Perspectives on Gaming and Simulation 11* eds D Craig and A Martin SAGSET Loughborough