Role Play Simulations: The Assessment of an Active Learning Technique and Comparisons with Traditional Lectures

Kristina M. DeNeve and Mary J. Heppner

ABSTRACT: Although effective teaching is focusing more on the need to use active learning techniques, the research literature regarding the efficacy of various teaching methods is inconclusive. An innovative active learning technique combining the features of role plays and simulations for an industrial psychology course is presented. Subjective reports and objective assessments of knowledge retention measured at two distinct times indicated the role play simulation is an effective teaching technique. The differential importance of active learning and passive learning (i.e., lectures) techniques for the college classroom was also examined. Finally, the application of this technique for several college courses is presented.

The need for college instructors to incorporate active learning techniques in the classroom is becoming increasingly apparent as passive learning is examined. General consensus is building that the problem with lectures may be that students passively write down information without ever thinking about the material. The professional literature has begun to advocate active learning through the use of techniques such as the following: debates (Huryn, 1986), cooperative controversies (Bredehoft, 1991), dramatic performance (Lyons, Bradley, & White, 1984), game design (Somers & Holt, 1993), mental aerobics (Weaver & Cotrell, 1985), student developed surveys (Millard, 1983),

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Professor DeNeve is an Assistant Professor in the Department of Psychology and Neuroscience at Baylor University. She received a B.A. in Psychology and Theology from St. Ambrose University and her M.A. and Ph.D. in Social Psychology from the University of Missouri-Columbia. Her current teaching interests are focused upon the use of laserdiscs and computer-generated media in the classroom. Her primary research interests include empirical investigations of active learning techniques, quantitative research synthesis, subjective well-being, and the psychology of religion. Professor Heppner received her Ph.D. in Counseling Psychology and is an Assistant Professor in the Psychology Department at the University of Missouri-Columbia. She has developed an innovative two-semester course in the Psychology Department called the Practicum in the Teaching of Psychology, in which graduate instructors teach and participate in a seminar to learn about and receive feedback on their teaching. Her research interests include pedagogical innovations, vocational development of adults, and rape prevention.

and written assignments (Keller, 1993; Tuckman, 1991). In addition to descriptions of teaching techniques provided by the literature, several theories explain why active learning is superior to passive learning (e.g., Brookfield, 1987; Eble, 1988; King, 1993). For example, the constructivist theory of learning posits that individuals uniquely construct knowledge for themselves, primarily through the synthesis of new information with information previously learned (King, 1993).

Although effective teaching is fast becoming synonymous with the facilitation of active learning techniques, the research literature regarding the actual efficacy of various teaching methods is sparse. An indication of this emphasis is seen in the proliferation of literature focused on active learning. When the keywords "active learning" were entered in a search of the 1992 to September 1995 database for Educational Resources Information Center (ERIC), fully 175 records were found. However, further scrutiny of these records revealed that only 12 studies actually compared an active learning technique with another teaching method. Six of these studies examined the use of computer or laserdisc technology, with four reporting an interactive use of the materials as more effective than passive reading of the same information or no use of the technology (Doran, 1994; Dori & Yochim, 1994; Kritch, Bostow, & Dedrick, 1995; Tudor & Bostow, 1991). On the other hand, after utilizing a hypermedia instructional system, Bin and Lee (1992) reported no significant differences between active and passive learners with respect to achievement. Likewise, when Bain, Hougleton, and Carroll (1995) used several interactive video methods to teach six learning disabled students appropriate classroom behaviors, only one student improved significantly.

The remaining six studies which compared active learning techniques with other teaching methods have also produced mixed results. On indices of achievement, three studies reported that active learning techniques were no better than passive learning (Etemad, 1994; Hilligoss, 1992; Ross & Smith, 1994). Lampe and Rooze (1994) reported higher achievement for active learners than passive learners, but found no differences on self-esteem. Finally, two studies indicated that active learning techniques were more effective for achieving specific goals, such as application to real-world problems, but also reported that lectures are effective for achieving other goals, such as learning economic theory (Carlson & Schodt, 1995; Ferguson & Hegarty, 1995). In sum, active learning techniques appear to have some benefits for student learning, with seven of the 12 studies from

ERIC reporting active learning techniques to be more effective than passive learning techniques.

The purpose of this article is to describe an innovative classroom technique and to assess its effectiveness in comparison with traditional lectures. The innovative classroom technique, called a role play simulation, combines features of traditional role playing and simulation methods. Although the context for the role play simulation we present is a corporate Board of Directors used in an industrial psychology course, we will also describe ways this classroom technique can be applied to other disciplines. Given the need for evaluation of active teaching and learning techniques, we also report a more rigorous assessment of the role play simulations. We examined students' reports concerning the efficacy of our active learning technique, the role play simulations. We also examined what type of material was learned from the role play simulations and what type of material was learned from the traditional lectures.

Defining Role Plays, Simulations, and Role Play Simulations

"Role playing is the setting up of more or less unstructured situations in which students' behaviors are improvised to fit in with their conceptions of roles to which they have been assigned" (McKeachie, 1986, p. 174). McKeachie outlined seven purposes for role playing, including allowing students to practice what they have learned, to have a concrete basis for a discussion, and to develop increased awareness of their feelings and the feelings of others. Role plays also promote working in groups and can potentially generate student enthusiasm and interest (Bonwell & Eison, 1991). Role plays are often spontaneous events although sometimes they are set up as a production for which students must prepare in advance (Weisz, 1990; Bonwell & Eison, 1991).

Simulations are similar to role plays, although they tend to be more structured events that generally require more class time than the typical role play. Bonwell and Eison (1991) noted that simulations are defined more precisely than role plays and include guiding principles, specific rules, and facilitative relationships. Simulations can take several hours or even several days to accomplish their objectives (Bonwell & Eison, 1991). Role plays may entail situations that could

never happen in reality, such as Aristotle debating Nietzsche on the
nature of good and evil in the world. On the other hand, simulations
usually attempt to model some real-life problem (McKeachie, 1986).
For example, in a sociology simulation called SIMSOC students are
citizens of a society and are assigned different economic and social
roles within that society (Gamson, 1966).

The role play simulation described below contains elements of role
plays as well as elements of simulations. Specifically, role play simu-
lations entail students being assigned to unique roles that guide their
behavior within a group context as the group addresses a series of
issues presented throughout a course. Whereas the typical role play
is transitory, the role play simulation is a permanent feature of the
course. Students are assigned to roles at the beginning of a course
and improvise their behavior throughout the entire semester.
Whereas the typical simulation focuses on one elaborate goal (such
as designing a prison system), the goal of role play simulation is to
solve several issues or problems. More specifically, the objectives of
role play simulations are: (a) to arouse student interest for a par-
ticular field of study, (b) to help students apply material learned in
class, (c) to help students develop insight into the group dynamics
of problem solving situations, (d) to give students a chance to develop
leadership skills, and (e) to provide students with a working grasp
of the scientific method.

Hypotheses

Several hypotheses guided the assessment of the role play simula-
tion within the context of an industrial psychology course. We pre-
dicted that: (a) students would react positively to the technique
during class and at the 8-month follow-up interview, (b) students
would report that the role play simulations were more applicable
than traditional lectures for jobs students held at the time of the
follow-up interview, (c) students would report that the traditional lec-
tures were more applicable than the role play simulations for other
college course work, and (d) at the 8-month follow-up interview stu-
dents would recall more information from a specific role play simu-
lation than from a specific lecture that focused on one general topic
covered by both teaching methods.

Method

Participants

A total of 29 undergraduate students (n = 21 female) enrolled in a three-credit hour industrial psychology course at a large midwestern university. Eighty-three percent of the students were seniors at the time of enrollment. Most students identified themselves as majors within the College of Arts and Sciences (69%). An additional 17% were within the College of Business and Public Administration while the remaining 14% were within the Colleges of Engineering, Journalism, or Education. A statistics course and a psychology research methods course were recommended prerequisites.

At the time of the follow-up interview (eight months after completion of the course), 18 students had graduated with a baccalaureate degree. Of those graduates, four were enrolled in graduate programs. Eight students were employed part-time, and eight were employed full-time. Although no students were directly employed in an industrial psychology job, five students held psychology-related positions.

Role Play Simulation

The role play simulation was adapted from the text titled *Industrial/Organizational Psychology: Science and Practice* (Saal & Knight, 1988). This text describes a fictional pizza company, called Peter's Pan Pizza, along with a hierarchy of job positions within the corporation. A Board of Directors containing 10 roles was developed, with students assuming one role for the duration of the course. For every 10 students enrolled, an additional, autonomous Board of Directors was formed which contained the same roles and addressed the same issues as the first Board. During simulations the course instructor assumed the role of an Industrial/Organizational Psychologist, clarifying questions and observing the Board's activities. The Board convened once a week for an entire fifty-minute class period. Because the course was taught on the semester system, there were a total of 15 simulations during the semester. In this way, one-third of the class sessions was devoted to simulations while the remaining class sessions were primarily lecture in format.

During each simulation, the Board attempted to solve a different issue relevant to Peter's Pan Pizza. The simulation topics varied and can be found in Table 1, along with the roles that were assigned as

Table 1
Role Play Simulation Roles and Topics

Leadership Roles	Topic
President & V.P. Retail Operations	Cutting employee benefits to maintain profits
V.P. Personnel & Store Manager	Re-examination of a promotion from within policy
V.P. Marketing & Senior Vice-Pres.	Advertising to obtain new customer markets
V.P. Finance & V.P. Personnel	Developing hiring criteria for an entry-level C.P.A.
V.P. Facilities & President	EEOC Guidelines for construction workers hired
V.P. Purchasing & Labor Union Rep.	Employees unhappy with immediate supervision
V.P. Finance & V.P. Marketing	Lack of motivation among accounting interns
Senior Vice Pres. & Labor Union Rep.	Custodial workers unhappy with shift schedule
V.P. Retail Oper. & V.P. Purchasing	Job dissatisfaction due to lack of challenge
Senior Vice-Pres. & V.P. Finance	Criteria for performance evaluation of middle management
Store Manager & V.P. Personnel	Difficulties concerning supervisor leadership styles
Labor Union Rep. & V.P. Facilities	Labor union contract expiring and being renegotiated
V.P. Purchasing & V.P. Marketing	Miscommunication leading to surplus of warehouse goods
V.P. Retail Oper. & V.P. Facilities	Organizational job design for policy writing workers
President & Store Manager	Vision for organizational development of franchises

leaders for each session. Students were randomly assigned to each role, and a preliminary assignment required students to write a job description appropriate for a person holding their position/role in the company.

Once the Board convened, students were expected to maintain their role during the entire simulation. Two members of the Board were responsible for leading each Board meeting. Every student led the Board meeting three times during the course. The leaders adapted the steps of the scientific method by using a worksheet to facilitate

the Board meeting (see Table 2 for the questions contained in the worksheet). Table 3 contains more detail on the steps an instructor could use to implement the role play simulation during a 50 minute class period.

The Board meetings varied dramatically from one session to the next. The unfolding of the role play simulation was determined by the type of issue being addressed, the dynamics of each separate Board group, and the leadership styles of the students involved. For example, sometimes the leaders had an elaborate solution prepared initially for the Board of Directors while at other times the leaders had not even discussed the issue themselves prior to the Board meeting. Certain topics required the leaders to begin by describing course material to make sure all the members understood the material before applying it to the day's issue. Other issues, however, did not require as thorough an understanding of the basic material, so no foundation was laid by the leaders. Sometimes the Board meeting

Table 2
Questions for Worksheet and Evaluation

Worksheet

1. What is the problem or issue to be solved?
2. What hypotheses/solutions were suggested?
3. How do you get relevant data into this problem?
4. How do the possible solutions hold up to the potential data (evaluate all/most suggested hypotheses)?
5. What is the final solution and why?

*Evaluation**

1. The leaders guided the group through the five discussion steps very well.
2. The leaders gathered input from the group members very well.
3. The leaders prevented the discussion from becoming biased very well.
4. The leaders seemed very well prepared for this discussion.
5. Overall, I thought this discussion was very interesting.
6. Overall, I thought this role play was very valuable educationally.
7. On a scale from 1-100, what overall score do you feel the leaders deserve for this role play discussion?
8. Were there any extenuating circumstances surrounding this role play that affected any of the above responses? Are there any comments you would like to make about this role play discussion?

*The first six statements were rated on 5-point Likert-type scales with 1 = Strongly Disagree, 3 = Neutral, and 5 = Strongly Agree.

Table 3
Steps for Role Play Simulation

Step	Procedure
1	Assign students to roles and have students research their role prior to first simulation. A homework assignment can allow credit to be earned for this research.
2	During the class period before the role play simulation, give all students the issue to be discussed along with directions for the leaders to meet prior to the next class in order to talk about how to structure the simulation for the group.
3	At the beginning of the class period, briefly detail for the class what the issue is and what goal should be accomplished by the end of the simulation.
4	Have the groups begin the simulation. The leaders should structure the remainder of the event for the group. The instructor should be available to clarify student questions throughout and to resolve group disputes if the leaders are unable to do so themselves. Although the instructor may listen to portions of the simulation, it is best if the instructor doesn't attend the entire session so as to allow the leaders to truly exercise their leadership duties.
5	Leaders should help the group to work through the steps of the worksheet. The group agrees on exactly what the issue is that needs to be solved. Only one student should be allowed to speak at a time. Leaders should encourage all group members to share information from the perspective of their role. One leader should keep track of who speaks, serving as secretary for the meeting. The other leader should insure the steps are followed on the worksheet and that the form is completed prior to the end of the simulation.
6	Once the group has come to a solution, the entire group, including the leaders, completes the evaluation form.
7	The class comes together as a whole during the last five to ten minutes of the class period. One of the leaders of each group will then share with the entire class the solution of their particular group. Thus, the entire class will hear several plausible solutions to the same issue.
8	Students can then verbalize their feelings and thoughts about the role play simulation issue to the instructor and the class in an effort to improve the simulation for the following week.

lasted the full 50 minutes of the class period without reaching a final solution. At other times, the Board found its solution relatively quickly and just refined their decision until the class ended.

When using this simulation, the instructor made no attempt to have any Board meeting follow a certain routine, other than the completion of the worksheet before the end of the class period. Although

the instructor joined the Board meeting periodically, she found that leaving the group discussion after a short period of time encouraged the leaders to maintain their leadership roles during the simulation. Students were free to solve the issues as best they could. At the conclusion of each role play simulation, each Board member completed an evaluation form to assess the effectiveness of that specific simulation (see Table 2 for the questions contained in the evaluation). Finally, before the end of the period, the class came together as a whole; and each group presented their final solution. This type of conclusion enabled students to appreciate the fact that several plausible solutions existed for each issue.

Grading the Role Play Simulation

For this industrial psychology course, the role play simulations accounted for 20% of students' overall course grade, with 5% for each of the three times students led the Board meeting and 5% for participation when not serving as the leader. The leadership grades were determined by: (a) ratings made by the other Board members at the conclusion of each simulation (see Table 2 for the rating scales used in the evaluation), (b) the extent to which the group completed all steps on the worksheet (as graded by the instructor), and (c) the instructor's general impression of the student leaders' ability to facilitate the discussion during the Board meeting.

Follow-Up Interview

Eight months after completion of the course, all students who had been enrolled in the course were located by examining current directory information from the University or by locating the addresses left with the alumni office upon graduation. Each student then received a letter requesting their participation in a telephone interview concerning their perception of the course. Twenty-three of the 29 enrolled students (n = 19 women) were then contacted by phone. All students verbally agreed to participate in the study and answer questions over the telephone. Each interview lasted approximately 15 minutes. A graduate research assistant who was not known by the students used a structured protocol to conduct the interviews and record their responses. Questions from the interviews are reported in Table 4.

Table 4
Evaluation of Teaching Techniques

Time of Evaluation	Question Asked	Response Categories	Mean Response	Mean Response "Role Play"	Mean Response "Lecture"
(A) Immediately following Role Play Simulation	Overall, I thought this discussion was very interesting.	1 = Strongly Disagree 3 = Neutral 5 = Strongly Agree	4.4	N/A	N/A
(B) 8-month Follow-Up	To what extent would you recommend using role plays in industrial psychology courses?	1 = Not Recommend at all 9 = Very Strongly Recommend	7	N/A	N/A
(C) Immediately following Role Play Simulation	Overall, I thought this role play was very valuable educationally.	1 = Strongly Disagree 3 = Neutral 5 = Strontly Agree	7	N/A	N/A
(D) 8-month Follow-Up	How much have you used information learned in role plays [lectures] in subsequent college course?	1 = Not at all 9 = Used Very Extensively	N/A	4.9	5.6
(E) 8-month Follow-Up	How much have you used information learned in role plays [lectures] in subsequent jobs that you've held?	1 = Not at all 9 = Used Very Extensively	N/A	4.3	4.8

Results

The assessment of the role play simulations focused on two specific areas. First, we examined student reaction to the simulations. Second, we examined the extent to which students learned from the simulation, including comparisons with traditional lectures. For both areas, we examined data gathered immediately after the role play simulation as well as data gathered during the 8-month follow-up interview.

Evidence of Positive Student Reaction to Role Play Simulations

Our first hypothesis predicted that students would react positively to the role play simulations, both during the course and at the time of the 8-month follow-up interview. As can be seen from Questions (A) and (B) in Table 4, students responded that they thought the role play simulations were very interesting and that they would highly recommend their use in subsequent industrial psychology courses.

A second index of students' reactions occurred during the follow-up interview when they were asked an open-ended question about their thoughts concerning the use of role play simulations in industrial psychology courses. These comments were coded as positive, negative, or neutral by two independent coders not familiar with the purpose of the study (93% agreement between coders). Comments were given a positive code if positive emotions were expressed ("thought it was wonderful") or if students indicated they learned from the role play ("learn how to solve problems in a concrete situation"). Comments were given a negative code if negative emotions were expressed ("felt uncomfortable during role plays") or if students indicated it was not a valuable educational tool ("should be more challenging"). Comments were given a neutral code if none of these criteria were expressed ("different people use it in different ways").

Fully 21 of the 23 participants (91%) gave positive comments. As expected, the difference between the mean number of positive and negative comments was statistically significant, $t(23) = 3.83$, $p < .001$, indicating that students reported more positive comments ($M = 2.13$ positive comments) than negative comments ($M = .60$ negative comments).

Evidence for Learning During Role Play Simulations and Lectures

Following each role play simulation, students indicated on the evaluation form the extent to which they thought the simulation was educationally valuable. As seen in Table 4, question (C), students reported that the role play simulations were quite valuable.

Our second hypothesis concerned the extent to which students would report using more material learned in role play simulations for subsequent jobs they held than they would use material learned during lectures (question (E) in Table 4). This prediction stemmed from basing the role play simulations upon a corporate structure, dealing with realistic corporate issues. However, students did not report applying more from the role play simulations in subsequent jobs (M = 4.3) than the lectures (M = 4.8), t(18) = .70, p = .48.

Our third hypothesis was that students would report that material learned during lectures was more useful for subsequent college courses than material learned during role play simulations (question (D) in Table 4). This prediction was derived from the belief that lectures often cover course material that is likely to be more directly relevant to material presented in other collegiate courses than material learned as a result of participation in the role play simulation. This prediction was supported, t(20) = 2.29, p < .05, with the mean response being 4.9 for the role play simulations and 5.6 for the lecture material.

Our final hypothesis focused on an objective measure of material students recalled from the course. Students were asked an open-ended question about what information they remembered from a specific role play simulation and a specific lecture. Both activities occurred during the same week, covered approximately the same material, and were based on one 50-minute class period. The instructor rated the extent to which information was correctly recalled on a three-point Likert-type scale. The mean recall of information from the role play simulation was .74 (1 = recall some information correctly) and the mean recall for the lecture was .24 (0 = recall no information correctly). This predicted difference in mean recall of material was marginally significant, t(23) = 1.93, p = .07, indicating students tended to recall more information from the role play simulation.

Discussion

In this article, we presented an innovative active learning technique that combines features of role playing and simulation methods. Results concerning the efficacy of role play simulations clearly demonstrated that students responded positively to the role play simulations. Specifically, both during the course and at the follow-up interview, students reported they found the technique interesting, recommended its use in other industrial psychology courses, and vocalized a variety of positive statements about the efficacy of the technique. Our findings provide empirical evidence supporting the global, positive statements made by theorists regarding the strengths of active learning techniques (e.g., Brookfield, 1987; Eble, 1988; McKeachie, 1987). Likewise, these results are quite comparable to those reported in other articles which measured student reaction, all of which suggest that students have favorable impressions of these active learning methods (e.g., Elliot, 1993; Millard, 1983; Somers & Holt, 1993).

The extent to which active learning techniques are effective in helping students learn material is perhaps a more important issue than students' interest or enjoyment of these techniques. The self-reports addressing this issue show that students found the technique educationally valuable. Extending the assessment of student self-reports, an objective assessment of recall eight months after course completion showed a tendency for students to remember more information from the role play simulations than from the lectures.

However, our research indicated that lectures also serve a unique purpose not addressed by the role play simulations. When asked about using material learned during role play simulations and lectures in other college coursework, students reported that lectures were more important than the simulations. This result indicates that the passive learning technique of lectures *does* serve a purpose. These results agree with recent research that suggested that active learning techniques are more effective for achieving some goals, while lectures are more effective for achieving other goals (e.g., Carlson & Schodt, 1995; Ferguson & Hegarty, 1995). That lectures and active learning techniques are both important also makes intuitive sense. Lectures address the goal of helping students gain a body of knowledge which can *then* be integrated with other material and applied

to new situations. In this way, perhaps lectures provide basic infor-
mation that active learning techniques then utilize in a more critical
fashion.

Surprisingly, students did not rate the role play simulation as more
important than lectures for their applicability to actual job settings.
One plausible reason for this unexpected result may lie in the fact
that only eight students in this sample were actually working full-
time at the time of the follow-up interview. Beyond this, no students
were employed in industrial psychology settings. Perhaps the trans-
ferability of the constructs taught in the class would have been more
apparent if a larger number of students had assumed career occu-
pations in their chosen field or if the jobs they assumed were more
similar to those depicted in the scenarios.

Although the role play simulations have been described within the
context of industrial psychology courses, this technique in its current
form is quite relevant to business, management, and marketing
courses that focus on the fields of human resources or human factors.
In addition, the role play simulation can easily be modified for use
in such diverse disciplines as economics, law, medicine, political sci-
ence, and sociology. For example, an instructor in an economics
course might find it useful to assign students to roles as leaders of
various countries. When a world meeting of leaders is called, they
could deal with such issues as trade between two countries, common
interests they may share in developing a new technology, and in-
creasing the power of one currency over another. In a pre-law course,
a corporation of lawyers (made up of different specialties) could meet
to discuss cases involving real estate, taxes, or personal property in-
jury.

Conclusion

Based on our results, we recommend that active learning tech-
niques, such as role play simulations, be used in conjunction with
traditional lecture formats in collegiate courses. The role play simu-
lation shows promise as an active learning technique which fosters
student interest, helps students apply material to real world situ-
ations, and may be remembered by students well after the course
ends. Although active learning techniques, such as the role play
simulation, are quite useful, we do not advocate that active learning
techniques replace traditional lecture formats. Our results indicated

lectures may provide a structured framework for learning a basic body of information which can then be integrated, synthesized, or applied to new situations with active learning techniques.

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References

Bain, A., Hougleton, S., & Carroll, A. (1995). Using interactive video-based modeling to teach social skills: An experimental study. *British Journal of Educational Technology, 26*, 62-65.

Bin, Y., & Lee, B. (1992). Effects of learning style in a hypermedia instructional system. *Proceedings of the Selected Research and Development Presentations at the Convention of the Association for Educational Communications and Technology*, pg. 5.

Bonwell, C. C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom*. Washington, DC: George Washington University.

Bredehoft, D. J. (1991). Cooperative controversies in the classroom. *College Teaching, 39*, 122-125.

Brookfield, S. D. (1987). *Developing critical thinkers: Challenging adults to explore alternate ways of thinking and acting*. San Francisco: Jossey-Bass.

Carlson, J. A., & Schodt, D. W. (1995). Beyond the lecture: Case teaching and the learning of economic theory. *Journal of Economic Education, 26*, 17-28.

Doran, M. S. (1994). *The effects of individual, cooperative, and collaborative learning structures using a computer simulation in accounting*. Unpublished doctoral dissertation, Arizona State University.

Dori, Y. J., & Yochim, J. M. (1994). Human Physiology: Improving students' achievements through intelligent studyware. *Journal of Science Education and Technology, 3*, 263-269.

Eble, K. E. (1988). *The craft of teaching* (2nd Ed.) San Francisco: Jossey-Bass.

Elliot, L. B. (1993). Using debates to teach the psychology of women. *Teaching of Psychology, 20*, 35-38

Etemad, M. E. (1994, April). *The role of kinesthetics in learning: The importance of active engagement and the connected process of reflection*. (ERIC Document Reproduction Service No. ED 374 887).

Ferguson, E. L., & Hegarty, M. (1995). Learning with real machines or diagrams: Application of knowledge to real-world problems. *Cognition and Instruction, 13*, 129-160.

Gamson, W. A. (1966). *SIMSOC: A manual for participants*. Ann Arbor, MI: Campus Publishers.

Hilligoss, T. (1992). Demystifying "classroom chemistry": The role of the interactive learning model. *Teaching Sociology, 20,* 12-17.

Huryn, J. S. (1986). Debating as a teaching technique. *Teaching Sociology, 14,* 266-269.

Keller, C. W. (1993). Using book reviews for cooperative learning. *College Teaching, 41,* 26-28.

King, A. (1993). From sage on the stage to guide on the side. *College Teaching, 41,* 30-35.

Kritch, K. M., Bostow, D. E., & Dedrick, R. F. (1995). Level of interactivity of videodisc instruction on college students' recall of AIDS information. *Journal of Applied Behavior Analysis, 28,* 85-86.

Lampe, J. R., & Rooze, G. E. (1994). *Enhancing social studies achievement among Hispanic students using cooperative learning work groups.* Paper presented at the meeting of the American Educational Research Association, New Orleans, LA.

Lyons, M. J., Bradley, C., & White, J. (1984). Video taping and abnormal psychology: Dramatized clinical interviews. *Teaching of Psychology, 11,* 41-42.

McKeachie, W. J. (1986). *Teaching tips: A guidebook for the beginning college teacher.* Lexington, MA: DC. Heath & Co.

Millard, R. J. (1983). A morale survey project as a group activity in an industrial/organizational course. *Teaching of Psychology, 10,* 110-112.

Ross, S. M., & Smith, L. J. (1994). Effects of the success for all model on kindergarten through second-grade reading achievement, teachers' adjustment, and classroom-school climate at an inner-city school. *The Elementary School Journal, 95,* 121-138.

Saal, F. E., & Knight, P. A. (1988). *Industrial/Organizational psychology: Science and practice.* Belmont, CA: Wadsworth.

Somers, J. A., & Holt, M. E. (1993). What's in a game? A study of games as an instructional method in an adult education class. *Innovative Higher Education, 17,* 243-257.

Tuckman, B. W. (1991). Motivating college students: A model based on empirical evidence. *Innovative Higher Education, 15,* 167-176.

Tudor, R. M., & Bostow, D. E. (1991). Computer-programmed instruction: The relation of required interaction to practical application. *Journal of Applied Behavior Analysis, 24,* 361-368.

Weaver, R. L., & Cotrell, H. W. (1985). Mental aerobics: The half-sheet response. *Innovative Higher Education, 10,* 23-31.

Weisz, E. (1990). Energizing the classroom. *College Teaching, 38,* 74-76.