

INVESTIGATING THE USE OF ROLE PLAY TRAINING TO IMPROVE THE COMMUNICATION SKILLS OF IS PROFESSIONALS: SOME EMPIRICAL EVIDENCE

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ABSTRACT

Today, one of the most sought after skills among IS professionals is effective communication. The lack of communication skills of IS professionals has resulted in IT failures in a number of crucial areas including information requirement determination, knowledge discovery, and end-user support. Although it has long been acknowledged that the communication skills of IS professionals is critical to information system success, little effort has been made to investigate how to improve such important skills. This study investigates the effectiveness of the role play exercise, an active training strategy that has been proven successful in many different fields, for the communication skill improvement of IS professionals. Ninety-three role play exercises aiming to improve the two dimensions of the communication skills, content and process related skills were conducted among ninety-two graduate students enrolled in systems analysis and design courses between 1998 and 2000. The analysis of the data collected from these exercises suggests that role play is a viable training method that can yield measurable results of communication skill improvement. Repeated measure results demonstrate a significant improvement in both content and process related skills after the role play exercises, and ANOVA results additionally illustrate the improvement patterns of the two types of skills. The recommendations and implications to both researchers and practitioners are also discussed.

INTRODUCTION

IS human resources has been consistently ranked among the top ten key issues in information systems management in the 90s (8, 31). While information systems are becoming one of the most important business tools, organizations are experiencing a shortage of qualified IS professionals who can design and develop systems that have great strategic implications to organizations. Qualified IS professionals, entrusted to play a strategic role in an organization, should not only master the up-to-date technological issues, but also have the necessary business skills to serve their clientele effectively. These business skills include business functional knowledge, teamwork, leadership, and communication skills (24). As the alignment of IS solutions and business goals becomes an increasingly critical issue, the tasks of IS professionals will require increasing collaborations and communications with business managers as well as among themselves.

While technical knowledge is vital to the success of an IS professional's work, more and more IS managers are stressing the importance of non-technical skills such as interpersonal skills. Studies by Benbasat et al. (5) and Leitheiser (25) investigated the relative importance of specific MIS skills by surveying IS managers. Both studies found that interpersonal skills ranked the highest among all. Other studies have also shown that the success of an IS project largely depends on how well the system developers are able to communicate with business managers and end-users (e.g. 29).

Most IS professionals are found to be highly motivated in their work; however, they are less competent in maintaining meaningful interpersonal relationships and social contacts (6, 49). The lack of communication skills of IS professionals has seriously impeded IT success in a number of key areas including information requirement determination (IRD), knowledge discovery (KD), and end-user support (7, 18, 29, 30). In addition, much of the IS research on this topic focuses on identifying the importance of the communication skills in various IS functional areas, but little effort was made to investigate how the communication skills can be improved. To partially fill this void, the authors conducted a study between 1998 and 2000 to investigate the viability of using role play exercises, a training method that has long been practiced in other disciplines, for improving the two dimensions of the communications skills of IS professionals: content and process related skills. The contribution of this research lies in the validation of the appropriateness of using role play exercises for improving the communication skills of IS professionals and a deeper comprehension of the improvement patterns of both content and process related skills throughout ninety-three role play exercises.

In this article, we will first present the problems with today's training environment for IS professionals and the opportunities that role play exercises offer to dramatically improve IS professionals' communication skills. This is followed by the research questions, hypotheses and research methodology. The data analysis was followed by the discussion of the findings and recommendation to corporate trainers, IS educators and researchers.

RESEARCH BACKGROUND

Investment in training has consistently been considered a key factor for organizations to sustain a competitive edge (3, 17, 23). Studies find that the amount of training provided to employees correlates with a firm's performance and that it allows

an organization to achieve a higher return on hardware and software investment (22, 35). Moreover, training has also been used as an effective vehicle to increase employee retention in this competitive labor market (9, 27). In the last decade, organizations have made enormous investment in training their employees. A previous study found that U.S. firms alone spent over \$50 billion a year on training (15). Companies found their IT training cost increased dramatically over the last few years. According to Gartner Group, on average, each IS professional costs his or her company more than \$2,000 a year on training, and IT training is a more than \$20 billion market today (43). Sprague and Carlson (37) classified training in IS into seven broad categories: tutorial, courses/lectures/seminars, computer-aided instruction, interactive training manual, resident expert, help component, and external training. This list focuses mostly on the training methods for improving technical skills. Trainings of non-technical skills, such as communication skills, have by and large been minimal among IS professionals (32). Non-technical related training, such as training aiming at improving communication skills, is often overlooked due to the assumption that such skills would improve naturally as the employee's experience grows. Furthermore, another obstacle for corporations to commit a sizable budget in the training of professionals' communication skills is that the outcomes of such training programs are difficult to detect and measure in a short period of time (32).

The two important aspects of communication are content and process (41, 45). Brownell (11) argues that developing a good communication skill without considering these two aspects is largely misdirected. According to Wetherbe and Wetherbe (45), content is defined as what is being communicated, and process deals with how information is being communicated. When well-developed content is being delivered via an effective process, one is considered to have achieved effective communication. To develop good content, one is required to have a good understanding of the topic, eloquence, and logic in organizing the ideas. Effective process, on the other hand, requires one to have highly skilled interpersonal techniques and effective behavior. Wetherbe and Wetherbe (45) argue that process preempts content. The effectiveness of the communication largely depends on the way the content is delivered rather than the content alone; however, process related skills are often the more difficult ones to master. They also suggest that communication skills can be improved over time with practice in low-risk and real life situations, hence training methods, such as role play exercises, are recommended for developing communication skills among IS professionals.

As an active learning technique, role play has been found to be an effective training technique in various disciplines including marketing, management, finance, etc. (e.g. 12, 14, 19, 40). Role play creates a training situation in which the interpersonal interactions and communication flow characteristics of the real world can be accurately reflected (10). When used properly, role play can be a rich interactive teaching and learning method. It has been successfully used in training in public policy making (10), business ethics (33), leadership (20), selling techniques (1), etc.

Studies have found that role play exercises can rapidly and effectively improve the communication skills of trainees (1, 21). Role play exercises put participants on stage to dramatize a variety of human-relations, problem-solving, or skill-developing situations. When role play exercises are used for business training, participants could make themselves acquainted to possible difficulties by simulating business communication that is close to reality. Davies (14) found that role play exercises allowed trainees to learn from one another, improve organizational skills in allocating duties, coordinate work under an agreed deadline, and develop persuasion skills to justify

decisions. Therefore, role play is often considered an accelerated learning technique, which delivers more training with fewer human resources (34).

Participants in a role play exercise can gain numerous additional benefits. They are more involved in the training, and this helps to leave a more long lasting effect on the participants' memory (11). Participants have been found to have a better overview of problems and foresee what possible solutions can be used and why (1). Although role play training emulates real situations for its participants, it allows participants to experiment with various strategies to deal with a problem without the real consequences. Therefore, role play exercises are often considered superior training techniques that create low-risk conditions for trainees to express their opinion freely (12). When conducted properly, role play training could enhance participant's self-confidence by improving participant's ability to foresee several kinds of uncertainties (2, 39). Moreover, role play exercises can often make an ordinary boring topic more accessible and stimulate the trainees to participate actively (34).

RESEARCH QUESTIONS AND HYPOTHESES

Although role play exercises have been proven successful in a number of areas, there is a lack of empirical validation as to their effectiveness in improving the communication skills of IS professionals. Therefore, one of the objectives of this study is to provide empirical evidence that IS professionals' communication skills can be improved via role play exercises. We decided to measure the increased communication skills by measuring improvement in the content and process aspects of the communication over a period of time. However, knowing that role play exercises are effective tools for improving IS professionals' communication skills is not enough, human resource managers who focus on the return on investment (ROI) are likely to ask the following two questions. 1) How fast can role play exercises generate measurable results? 2) Does the incremental improvement in communication skills between role play exercises decrease over time? If it does, how many role play exercises are optimal giving limited corporate resources? Hence, we would like to further investigate the improvement patterns for both content and process related skills due to the role play exercises. Understanding the inner workings of the impact of role play exercises on IS professionals' communication skill development will help human resource managers better utilize the valuable corporate training resources. As role play exercises are generally designed to give a heavier emphasis on process related skills, we realize that the magnitude of improvement for content and process related skills may be different. We expect that process related skills will improve at a more rapid speed than content related skills. Based on these rationales, the following two sets of research hypotheses are proposed:

H_A: Hypotheses for assessing the effectiveness of role play exercises in improving the communication skills of IS professionals.

H_{A1}: Content related skills can be significantly improved throughout a series of role play exercises.

H_{A2}: Process related skills can be significantly improved throughout a series of role play exercises.

H_B: Hypotheses for investigating the improvement pattern of both content and process related skills due to role play exercises.

H_{B1}: The incremental improvement in both content related and process related skills will decrease over time.

H_{B2}: Process related skills can be significantly improved more than content related skills.

RESEARCH METHODOLOGY

Effective communication is crucial to the success of IRD processes in system analysis and design projects (18, 43, 44). System analysts, the key personnel during these processes, are required to interact with users and business managers with effective communication skills (16, 46, 48). Consequently, this research chose to use the Master of Science students of a metropolitan university, who were enrolled in graduate level systems analysis and design courses between 1998 and 2000, as the subjects of the study. As the courses are offered at evening, over two third of the students of these courses were full time IS workers at local companies. This allows the demographic characteristics of the samples used in this study to closely mirror the demographic characteristics of IS professionals in real

companies.

The role play exercises were based on the communication models developed by Wetherbe and Wetherbe (45). The communication models were specifically developed and have been widely used for improving the communication skills of IS professionals. The communication models can be divided into two sets of models. The first set of models includes Explanation Model, Agreement Model, and Close Model. These three models are used under an ideal communication situation. The second set of models handles the "What-if" scenarios, and it consists of the Reservations/Doubt Model, Question/Confusion/Conflict Model, and Query Model. The main purpose of this set of communication models is to get the conversation back into a position in which the Agreement Model followed by the Close Model can be used thereby bringing the conversation to a successful conclusion. Table 1 provides a brief description of the five communication models. See Wetherbe and Wetherbe (45) for a detailed description of the communication models and examples.

TABLE 1
Communication Methods
[Source: Wetherbe and Wetherbe (45)]

Communication Models	Description
Explanation Model	The model requires the problem to be clearly articulated in an organized fashion ending in an impact statement.
Agreement Model	This model requires the speaker to support and expand the listener's positive response.
Close Model	This model concludes the conversation by reviewing agreed upon points and any proposed actions.
Reservations/Doubt Model	This model requires the speaker to reassure the listener's concern immediately followed by proof which elevates the uncertainty.
Question/Confusion/Conflict Model	This model provides a means for dealing with more aggressive disagreement.
Query Model	This model consists of both indirect and direct probes.

The communication models were explained at the beginning of each semester to the students enrolled in the systems analysis and design courses. Multiparty role play was employed in this study; participants are randomly assigned to three person communication groups for role play exercises. Every effort was made to make the role play exercises as realistic as possible. Throughout the semester, various types of problems that may arise in a system development project were randomly given to the communication groups (see the role play exercise instructions in Appendix A and the sample role play exercises in Appendix B). The groups were given five minutes to prepare a scenario and organize their thoughts. Then, the groups entered into a role play scenario with the instructor whose main function was to provide stimulus in their communication using the six communication models discussed above. Each group was given the opportunities of three role play exercises, which were usually four weeks apart, throughout the semester. When not engaged in role play exercises, participants were asked to be the judges, rating each member of the group in the role play exercises both in terms of his or her effectiveness in the "content" and "process" using the guidelines provided by Wetherbe and Wetherbe (45). The participants were peer-evaluated using a 5-point Likert scale where "1" represented "not effective at all" and "5" represented "highly effective." Between 1998 and 2000, 92 students (31 communication groups including 30 three member groups and one two member group) participated in a total of 93 role play exercises. No other training on the improvement of communication skills of any sort was given during that period to ensure the reliability and validity of the findings.

DATA ANALYSIS

Repeated measure was used to test whether or not the subjects' content and process related communication skills were improved after the role play exercises. Table 2 shows the descriptive statistics of the participants' scores of content and process related skills for the three role play exercises. As the table suggests, the content and process related skills of the participants improved consistently over the three role play exercises on average.

To test whether the improvement in the content and process related skills was statistically significant, the mean scores of the content and process related skills were analyzed using the repeated measure technique. The results are displayed in Table 3. For the content-related skills, the statistical result shows an F value of 45.548 (significance = 0.00). This suggests that the improvement in the content related skills was statistically significant during the three role play exercises. The same result was found in the process related skills. The F value was calculated to be 66.471 (significance = 0.00), which suggests that the improvement in the participants' process related skills were statistically significant during the three role play exercises. Both H_{A1} and H_{A2} were strongly supported by the empirical results. As content and process are the two aspects of communication, it is concluded that, using role play exercises, participants are expected to see measurable improvements in their communication skills over a period of time. This provides empirical support to the authors' belief that role play exercises are effective training methods for improving the communication

skills of IS professionals.

The second objective of this study is to investigate the improvement patterns of both content and process related skills via role play exercises. The post-hoc analysis was conducted to test the significance of the improvement between two consecutive role play exercises for both content and process related skills. Table 4 shows the repeated measure for post-hoc analysis. The statistical results demonstrate that both content and process unrelated communication skills were significantly improved

between the first and second role play exercise. However, only process related skills showed significant improvement between the second and third role play exercise, and no significant improvement was evident for content related skills for the same period. The observation indicates that role play exercises have a longer lasting effect on improving process related skills than content related skills. To further analyze the incremental improvement, we look into the descriptive statistics for more insights.

TABLE 2
Descriptive Statistics of the Scores of the Content and Process Related Skills of the Participants

	Content Related Skills		Process Related Skills	
	Mean	Std. Dev.	Mean	Std. Dev.
Exercise 1	4.28	0.43	4.12	0.52
Exercise 2	4.56	0.33	4.51	0.37
Exercise 3	4.61	0.32	4.61	0.33

TABLE 3
Repeated Measure Statistics for Testing the Effect of Role Play on Communication Skill of IS Professionals

Experiment Period	F value	Sig.
Content Related Skills	45.548	0.00**
Process Related Skills	66.471	0.00**

*p<.05 **p<.01

TABLE 4
Repeated Measure Statistics for Testing the Effect of Role Play on Communication Skill of IS Professionals

Experiment Period	F value	Sig.
<i>Content-Based Skill</i>		
Period 1 and 2	55.55	0.00**
Period 2 and 3	2.598	0.11
<i>Process-Based Skill</i>		
Period 1 and 2	77.78	0.00**
Period 2 and 3	6.185	0.02*

*p<.05 **p<.01

Table 5 displays the descriptive statistics for the incremental improvement for both content and process related skills. As the results clearly show, while the communication skills of the participants continued to progress, the incremental improvement decreases as more role play exercises were conducted. This observation is consistent with the classic learning curve theory, which states that the speed of the progression of learning decreases as learning continues. By combining the information from Table 4 and Table 5, we conclude that the improvement pattern of both content and process related skills acted similar to the classic learning curve. The improvement was most evident during the first two role play exercises. For content related skills, no significant improvement was evident during the third role play exercise. For process related skills, on the other hand, significant improvement was found, but the improvement was far less than what was seen during the first two role play exercises. Therefore, H_{B1} is strongly supported.

Table 5 also provides us with insights on the differences between the improvement pattern between content and process related skills via role play exercises. It shows that, on average, the amount of improvement in process related skills exceeds that of content related skills. To statistically prove this proposition, an

ANOVA test was conducted. The ANOVA results in Table 6 indicate that the amount of improvement in process related skills were significantly greater than that of the content related skills during the first two role play exercises. Nevertheless, no significant difference could be detected during the third role play exercise. These results support H_{B2} , which suggests that role play is a training methodology more effective in improving process related communication skills than content related communication skills.

DISCUSSION OF FINDINGS

This research provides empirical support to the effectiveness of role play as a training methodology for improving the communication skills of IS professionals. The statistical results show that both content and process related skills, the two most important dimensions of communication, can be improved after a series of role play exercises by IS professionals. The study also shed new light on the improvement patterns of both content and process related skills during the role play exercises. The incremental improvement of both types of skills tends to decrease over time. In the case of content related skills, no significant

improvement was found during the third role play exercise. For process related skills, on the other hand, significant but diminished improvement could still be found during the third role play exercise. The diminishing improvement in both content and process related skills over time can be explained by the following two reasons. First, according to the learning curve theory,

human's ability to learn is expected to decline over a period of time (42). Second, participants may become apathetic to role play exercises in time (40). One source of this apathetic feeling toward role play exercises may be that the participants are frustrated with the fact that no continuing significant improvement can be seen by themselves.

TABLE 5
Average Increment Values of Communication Skill

Experiment Period	Content		Process	
	Mean	Std. Dev.	Mean	Std. Dev.
Period 1 to Period 2	0.276	0.3558	0.391	0.422
Period 2 to Period 3	0.053	0.319	0.098	0.378

TABLE 6
ANOVA Results Testing the Differences in Skill Improvement

Experiment Period	F value	Sig.
Period 1 to Period 2	3.935	0.048*
Period 2 to Period 3	0.741	0.390

*p<.05 **p<.01

The fact that role play was found to produce more significant improvement in process related communication skills than content related communication skills can partially be explained by the following three reasons. First, role play is a training method that emphasizes more heavily on communication process than content, hence greater improvement in trainees' ability to better carry out the communication is logical. Second, it is articulated that humans are able to observe the process of communication, such as body language and tone of voice more easily than the verbal content (38). Therefore, the judges tend to pay more attention to the trainees' process related skills during the evaluation. Finally, the samples demonstrated poorer process related skills than content related skills at the beginning of the study (in exercise 1). In other words, process related skills had more room for improvement than content related skills for these particular samples. This factor might have contributed to the observation that content improvement seemed to deteriorate faster than process improvement.

The implications of these findings to both corporate trainers and researchers are as follows. First, role play should be considered as a viable training method for improving the communication skills of current and future IS professionals. Role play uses the cooperative model of learning, which requires individuals to learn via the interaction with other individuals (36). The trainer's responsibility is to provide stimulus during the exercise, and feedbacks are provided by both the trainer and the trainee's peers. Such a learning model has been found to be most appropriate for communication-oriented learning (25). Though an effective training strategy, role play exercises are challenging to devise. Molloy (28) found that many role play situations suffered from a lack of sound planning and preparation. As the result, the outcomes of these ill-devised role play exercises were seriously compromised. A negative reaction to role play among trainees is commonly found because role play exercises put individuals on the spot. Also, trainees who are accustomed to traditional objectivist model of learning (e.g. lecture) are likely to resist these new learning methods. To maximize the benefits, role play exercises should be carefully planned. The trainer should

consider various issues including learning objectives, structure of the exercise, conflict resolution, time management and potential problems, just name a few (10). The trainer should also make role play sessions small, friendly, enjoyable and relevant to their participants in order to reduce the resistance from trainees (4). Such an environment could make the participants feel more comfortable to experiment and role play exercises more successful. Second, the diminishing improvement in both content and process related skills over the time suggests that role play exercises are best used for initial training (40). They can be used to familiarize the participants with the possible scenarios in the real world and the strategies to deal with the various scenarios in a relatively short period of time. Third, due to the same reason, the amount of role play exercises to be conducted should be carefully planned to minimize the investment while maximizing the returns. And finally, because little improvement in content related skills was seen after the second role play exercises while the process related skills continue to improve, role play exercises should be combined with other training techniques that focus on improving the content related communication skills to amplify the results.

LIMITATIONS AND FUTURE RESEARCH SUGGESTIONS

This study has a number of limitations. First, this study employed Master of Science students enrolled in systems analysis and design courses as the subjects. Although student samples are often used in MIS research, it circumscribes the extent to which our findings generalize. In this study, the authors deliberately chose evening classes as the testing environment since over two thirds of the students were full-time IS workers in local companies, and this allowed the sample characteristics to better mimic the real IS environment. Nevertheless, future research projects should reassess the findings of this study using IS professionals in real company settings. Second, this study uses peer evaluation as the source of data. Although students were given specific guidelines on the evaluation of both content and

process related skills, the consistency of the scores was slightly compromised. It is suggested that future studies use a panel of experts as the judges. Third, although the data have shown a significant improvement in the communication skills through role play exercises by the samples, the result needs to be interpreted with caution. One can argue that the improved scores were due to the improvement in the samples' skills to play the role play game rather than the communication skills. To revalidate the results from this study, future research projects may choose to employ experimentation as the research methodology by using two groups of IT professionals in their studies. By comparing the resulting communication skills of the group that underwent role play exercises with those of the control group (the group to whom no role play exercises were administered), the efficacy of role play exercises in improving the communication skills of IT professionals can be more precisely evaluated. Finally, due to the time limitation, each communication group was only given the opportunity to participate in three role play exercises. This gave the authors only a short time span for analyzing the improvement patterns of both content and process related skills. Although significant findings were evident during this short time period, future research using a longer time horizon may be able to find more interesting improvement patterns.

CONCLUSIONS

Using the data collected from 93 role play exercises conducted between 1998 and 2000, this study provides empirical support to the hypothesis that role play is an effective training method for improving the communication skills of IS professionals. The study also allows corporate trainers, IS educators and researchers to have a deeper comprehension of the improvement patterns for both content and process related communication skills throughout a series of role play exercises. The better understanding of the efficacy of role play training renders a number of implications and recommendations to both practitioners and researchers. Based on the result of this study, the authors argue that training in the communication skills of IS professionals should be given a higher priority. We also feel that active training methods, such as role play, deserve more attention from the IS community. As the success of a business increasingly depends on the productivity and strategic advantages generated by its information systems, training for IS professionals should not remain only in technical areas. Corporate trainers and IS educators need to explore the possibility of using role play as the training methods for producing high quality IS professionals in this competitive environment.

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APPENDIX A ROLE PLAY EXERCISE INSTRUCTIONS

In the real world, you are never asked to close your books and take a test. The only true way to convey your understanding of a subject matter is by conveying it to other people. The instructor will spend a great deal of time during the first few classes discussing this topic.

You will be graded by your peers on both communication content and process. The grading is on a 5 point scale from poor to excellent. It is possible that your peers may give you a 0 in some cases. These cases are discussed below. The 5 point scale breaks down as follows:

- 5 = 100 % - excellent
- 4 = 90 %
- 3 = 80 %
- 2 = 70 %
- 1 = 60%
- 0 = 0% - poor

A grade of zero **MUST** be given when:

- The student does not convey content (i.e., not prepared)
- The student does not attempt to utilize the communication models (process) that were discussed during the early classes.
- The student cannot be understood (i.e., you are unable to determine what they are saying - language).

Do not expect to be an excellent communicator at the beginning of the course. These skills take time to develop. It is not unusual to take half the semester to get proficient at communicating using the models.

APPENDIX B
SAMPLE ROLE PLAY EXERCISES

A large number of role play exercises were conducted during the two years. A few examples of the role play exercises are given below.

Sample Role Play Exercise I:

You are the MIS group of a major organization in the consumer electronics market. The company has been organized the same way since the company's inception in the 1920s. Convince the president that IT has benefited the organization in such a way that restructuring the company will make it more flexible and profitable.

Sample Role Play Exercise II:

Your group is made up of three individuals:

- Dave Masters - VP of Manufacturing
- Masters' assistant
- A staff member from corporate management

Discuss your viewpoints with the president of the company and make a recommendation for the future of IT in the organization.

Sample Role Play Exercise III:

Your group is in charge of new technology for your organization. As such, you must evaluate technology as it becomes available. With PDA use becoming more prevalent for the mobile workforce, discuss with the CEO your plan to integrate PDA usage into the information architecture.

Sample Role Play Exercise IV:

The CEO of your organization has decided that it is time to reengineer the company. While he feels that an outside firm should be used for this process, your IT group feels that they are up to the task. Your IT group has been charged with the task of convincing the CEO to keep the process in-house.

Sample Role Play Exercise V:

The CEO is trying to cut costs. The IS group wants to purchase new computers for all of the organization's knowledge workers. The CEO is against this because he finds people playing computer games all of the time. Convince the CEO that it is important to keep up with changes in technology.