

## **Role-play cases for teaching interviewing skills in information systems analysis**

**Hazel Taylor  
The Waikato Polytechnic  
Hamilton, New Zealand**

*The information requirements determination phase of systems analysis is commonly acknowledged to be critical in determining the ultimate success of systems development. In practice, elicitation of requirements is frequently complex and problematic, with issues of personalities and politics impacting on the information gathering process. Yet, textbooks used in tertiary institutions tend to present requirements determination as a simple and straightforward process of interviewing users and specifying their needs. Little attention is directed to the difficulties of this process. This paper looks at an alternative method of developing interview skills in students. Drawing on research in skills-based training, role-play cases are used to give students the opportunity to practice and apply skills they have learned about in investigating and developing initial system requirements. Details of a typical role-play case are given, together with discussion of the advantages and difficulties of using this form of teaching delivery within the constraints of a tertiary teaching environment.*

It is commonly accepted that information requirements determination and analysis play a critical role in determining the success of information system implementation. Faulty requirements analysis has been identified by a number of authors as a leading cause of information system problems and failures (Brooks Jr, 1995; Hoffer, George, & Valacich, 1996; Laudon & Laudon, 1996). Errors made during the requirements analysis phase are frequently the last to be discovered, and they become increasingly costly to fix as system development proceeds (Boehm, 1987; Boehm & Papaccio, 1988; Davis, 1990). In particular, the interactions between systems analysts and users of the information system are critical to the successful determination of requirements (Holtzblatt & Beyer, 1995) (Valusek & Fryback, 1987). However, in practice, elicitation of requirements is frequently complex and problematic, with issues of personalities and politics impacting on the information gathering process (Markus, 1983; Newman & Robey, 1992). As Galliers (1987) says: "our ability to analyze information needs, to take account of changing requirements and individual idiosyncrasies, remains rudimentary." (Galliers, 1987:viii)

Although researchers have recognized the inadequate state of knowledge about how to interact with users in order to analyze information needs, textbooks used in our tertiary institutions to teach systems development methods continue to present information requirements analysis as a simple and straightforward procedure (Hoffer et al., 1996; Laudon & Laudon, 1996; Whitten, Bentley, & Barlow, 1994). The process is presented as a routine one, during which analysts elicit the needs of users and obtain assurance that these requirements are complete and correct. Interpersonal skills, and especially communication skills, are seen as an essential part of an analyst's repertoire, but are only described in broad, general terms. Not much has changed since 1984, when Vitalari and Dickson (1984) pointed out that there is little understanding of the skills required for effective performance by analysts, and little guidance on how to transfer practitioners' expertise for educational or training programs.

In the tertiary environment, in particular, the *practical* difficulties of initial investigation of information requirement needs are given little attention. Two areas are of particular concern. Firstly, it is essential to develop in students an appreciation of the wider organizational issues that can impact on what appears on the surface to be a

straightforward information system problem. Secondly, it is critically important that students learn practical skills to help in investigating the complex and confused problem situations they are likely to face in the 'real world'. Just lecturing about information systems in their organizational context, for example, or about interviewing and analysis skills, alone, does not ensure that the students will appreciate the contextual issues in practice, or understand how to use appropriate interview techniques in real situations. It is here that research in the areas of learning theories and training methods can help in developing a more useful approach.

### **Learning theories**

Research into learning theories of skills acquisition suggests that learners progress through two major stages during the development of a cognitive skill, a declarative knowledge stage and a procedural knowledge stage (Anderson, 1982). Declarative knowledge can be thought of as "knowing what", while procedural knowledge is "knowing how" (Eysenck & Keane, 1990). In the declarative stage learners acquire a knowledge of the facts and procedures that are required in order to perform the skill. At this stage learners are able to answer questions about what they ought to do when applying the skill, but they may not be able to demonstrate the skill in practice. The practical ability to apply the skill comes with the acquisition of procedural knowledge. At this stage learners are able to integrate their declarative knowledge (knowing *what* to do) with a knowledge of *how* to do the task, and are actually able to perform the task successfully (Anderson, 1982; McCloy, Campbell, & Cudeck, 1994).

Thus, education involving the development of a skill, rather than simply acquiring knowledge, should progress through two stages. Firstly, students should gain an understanding of the facts and procedures relating to the skill so that they develop a declarative knowledge of *what* to do. Then the students need to be given the opportunity to develop their procedural knowledge, so that they attain the capability of actually performing the task i.e. they learn *how* to apply the declarative knowledge. Clearly, it is important in skills-based education to find ways of building on the declarative knowledge which can be obtained from traditional teaching approaches and textbooks, in order to develop the procedural knowledge which will give the student the capability of actually applying the knowledge in practice. How then can we address the need to develop procedural knowledge in our students?

### **Training methods**

There is an extensive range of research into the relative effectiveness of various training methods for skills based training. In a meta-analysis of seventy training studies Burke and Day (1986) identified behavior modeling training and the use of role-plays as two methods associated with positive results for skills-based training. Behavior modeling has also been used effectively in the computer training field, (Compeau & Higgins, 1995; Simon, Grover, Teng, & Whitcomb, 1996; Simon & Werner, 1996) and is especially useful for skills training that involves both "knowledge" and "doing" (Fox, 1988). Furthermore, behavior modeling training has been used extensively in the human resources area for teaching supervisory and employment interview skills, and sales negotiation skills (Byham & Pescuric, 1996), which are all skills related to those needed for effective systems analysis interviews. Thus, behavior modeling training is a good candidate for the purpose of developing interview skills for the requirements determination process.

The remainder of this paper reports a behavior modeling approach to the development of procedural knowledge and skills in the performance of requirements analysis interviews. The next section outlines the typical behavior modeling methodology, and discusses how this is applied in the context of a third year undergraduate systems analysis course. The following section overviews the role-play cases that are used in conjunction with the behavior modeling approach, and the final section discusses some of the advantages and disadvantages of using this form of teaching delivery within the constraints of a tertiary teaching environment. Details of the role-play cases are given in the Appendix.

### **Behavior modeling methodology**

Behavior modeling is based on social cognitive theory, which suggests that effective performance will be enhanced if the learner has first had an opportunity to observe others performing the behavior (Compeau & Higgins, 1995). Most behavior modeling approaches are based on a five-step process (Pescuric & Byham, 1996). Firstly, learners are introduced to the general content area i.e. the students learn the facts and procedures related to the required skill. Secondly, students are given the opportunity to observe a positive example of the required skill in practice. In the third step, the learners practice the skill, and fourthly receive feedback on their performance. Finally trainees apply the behavior in a real-life setting.

An adaptation of behavior modeling methodology has been applied in a third year undergraduate systems analysis course in order to give students the opportunity to practice and apply investigation skills that they have learned about in theory, and to challenge them to consider the wider work environment when considering possible solutions to a problem situation. The behavior modeling steps are applied as follows:

1. A traditional lecture approach is used to introduce students to the content area. We overview information systems in their organizational context, information gathering and analysis skills, and aspects of systems development methodologies particularly relevant to the information requirements determination and analysis stages of system development. Students review different techniques for analyzing and evaluating information gained from interviews, including critical factor analysis, problem and opportunity analysis, traditional methodologies such as Information Engineering and SSADM, and Soft Systems Methodology (see, for example, Avison & Fitzgerald, 1995 for coverage of these).
2. In order to demonstrate models of interview behavior, we view a video on a related application of interviewing skills, the job interview. Although this is not a direct model of the desired behaviors, it does allow students to view and discuss a variety of techniques for dealing with an unclear and difficult interview situation. This session is supplemented by a discussion of potentially difficult requirements analysis interview situations, with a brief acting out, by the instructor, of possible strategies and behaviors for handling these situations.
3. Students then have a practice interview session, working in groups of three. Each member of the group plays the role of an employee in one interview; acts as the analyst in the second interview (with a different employee); and observes and critiques a third interview. The instructor facilitates group feedback and discussion at the end of the session. This session covers both the practice and feedback steps of the behavior modeling methodology.

4. Finally, we use a set of role-play cases, based on real-life situations, to approximate the step of application of the skill in a real-life situation. These role-play cases are discussed in detail in the next section.

### **The role-play cases**

Four role-play cases are used (see Appendix A). The cases are based on real-life information systems applications in New Zealand, and are designed to give students practical experience in the investigation of an initial problem situation. Students work in teams, playing the part of new employees of a software consulting firm, on their first major assignment. Each team is assigned to a different case, and those not involved in a particular case observe the interviews and participate in the feedback sessions after the interviews. Students get only a memo from their boss, and a letter from their client, briefly outlining the situation they are to investigate.

Students are expected to carry out their investigation with minimal guidance from the instructor. They are required to conduct the role-play interviews in a fully professional manner, to develop a report analyzing the situation for their boss, and to prepare a presentation for the clients. Student approaches to the exercise have varied considerably but, generally, successful students make considerable effort to inform themselves about the type of business their clients are in, and to plan and prepare their interviews, and analyze and organize their findings.

#### *Preparation*

Each role-play case has three key characters, and these roles are played by the instructor, and two colleagues. The role-players are encouraged to develop 'difficult' aspects of their characters, (for example, taciturnity, vagueness, being in a hurry, etc.) so that the students experience the challenge of handling different interview situations. The teaching colleagues who assist with the role-plays commit about 2 to 3 hours of their time – about an hour for preparation, half an hour for the interview, and an hour for the final presentation and debriefing session. The role-players must be prepared to improvise if the students ask detailed questions about areas not fully elaborated in the notes. Such improvisation may sometimes result in confusing or contradictory answers. This reflects what frequently happens in real life when different interviewees have different perspectives on the situation, and the answers tend to illustrate the different priorities of each of the key players.

#### *Debriefing*

Two separate de-briefing sessions are used. In the first session, we focus on giving feedback on interview technique, while in the second session we concentrate more on the specific issues arising from each case.

The first debriefing of the interview sessions takes place in the next class meeting. Students from the other teams, and the instructor, participate in a group discussion on the conduct of the interviews. As well as discussing how well student interviewers planned and structured their interviews, we also discuss how they handled the personalities and dealt with any sensitive issues, and review various approaches for dealing with the interview situations they faced. In this initial de-briefing we focus particularly on the interview techniques that students used and give feedback on the interview process.

The final debriefing takes place once the students have made their presentation to the clients. The colleagues involved in the role-play are present, and provide feedback to the student teams on how well their presentation addresses the client's concerns. At this session, discussion focuses on the various issues that arose during the interviews, with particular emphasis on the wider problems that could impact on any proposed information system solution. Discussion of these issues (management, political, interpersonal) is encouraged in order to give the students a better appreciation and understanding of the need to consider the whole context of the organization in making their recommendations. We also review the techniques the students used to analyze and present their information (critical factor analysis, Soft Systems techniques etc) and discuss how useful these were in practice, and which were most appropriate for the situation. This review leads into discussion about the theory of systems development methodologies in general, and how practical their application is in real-life situations, particularly in the small business context.

Finally, in the debriefing session we discuss the specific issues and themes the students have discovered, and what possible solutions might be explored.

### *Specific issues and themes*

Information systems issues in the cases fall into three main areas – control of daily routines for the particular business; dependence on inadequate systems for much of the major record-keeping, reporting and analysis of performance; and 'people' issues.

In each case, one very useful line of discussion can explore the most suitable information systems support that can be provided for control of daily routines, and for reporting and analysis of performance. Students tend to want to rush in and 'build a system', and discussion can focus on whether this is indeed the best and most cost-effective solution in this situation. In two of the cases, the firms actually opted for manual, and highly visual, whiteboard systems to control and track daily procedures, which resulted in a dramatic improvement at very little cost. In the third case, an off-the-shelf software package was chosen as the best option, and only in the fourth case was a custom-built solution actually selected as the best alternative.

The people issues are also well worth following up in discussion. The role-players are encouraged to highlight the tensions between the characters during their interviews, and several of the characters show considerable discomfort about anything related to computers. Students are able to identify that the lack of co-operation and communication between key members of each firm, and in some cases computer 'phobia', are major hurdles to be overcome if any system implementation is to be successful. Each case also illustrates the need for the major stakeholders in a system to have common aims, and students are able to recognize that divergent aims among the key players is likely to be a major problem.

### **Discussion**

Behavior modeling is a well-known training technique for skill building, and it is widely used in commercial managerial training programmes for development of interpersonal and interactive skills (Burke & Day, 1986; Byham & Pescuric, 1996; Fox, 1988; Tosti, 1980). However, it does have some limitations in the tertiary education area. It works best for specific, clearly identifiable tasks, and needs a good demonstration of best practice of the skill. It is also particularly important that learners have the opportunity to

apply the skill immediately after training in real-life situations (Byham & Pescuric, 1996). In the example discussed in the present paper, the interview skills required to deal with poorly defined information requirements determination situations are complex, and not easy to define precisely: students need to use their judgement about which techniques will be most appropriate in the different situations. This complexity also makes it difficult to provide clear models of best practice. Moreover, students at a tertiary institution are not in a position to practice the skills immediately after training.

In spite of these limitations, the application of behavior modeling discussed in the present paper goes some way to addressing the problems of developing interview skills for the determination of initial information requirements. In particular the use of the role-play cases provides an effective alternative to real-life practice. Student feedback is generally positive, with students commenting that that they found the exercise a valuable and enjoyable one, where they could actually practice the skills we had discussed in a 'safe' real-life setting.

Other practical difficulties in using the behavior modeling approach in a tertiary setting include time and curriculum constraints, and the need for teaching colleagues to share the role-playing. Information requirements analysis and interview skills are only one small part of a systems analysis curriculum, and therefore only a limited amount of time can be devoted to addressing training in this area. This issue is addressed by incorporating the interview training sessions into the development of other systems analysis skills and techniques, and encouraging students to apply their understanding of these other systems analysis techniques to the analysis of their findings from the interviews. The time constraints include typical time-tabling issues, which sometimes make it difficult to find colleagues who are available to participate in the role-plays during the scheduled class times. Role-players also have to be willing to commit two or three hours of their own time in order to prepare for their role. However, all colleagues who have assisted with these role-plays have commented on how enjoyable they are, and so far have always been willing to return for a repeat performance.

## **Conclusion**

There are a number of practical results from using the behavior modeling approach together with role-play cases for the development of interview skills for initial information requirements determination. Students experience a real-life requirements analysis situation, and have the opportunity to become more proficient in investigating and developing initial requirements, in a 'safe' setting. My experience has been that students develop a better understanding of the need to take into account the context of the organization, and the interactions of the people in it, when making recommendations to deal with problem situations identified. They also have the opportunity to develop teamwork skills, and to practice professional presentation and report writing skills. However, in addition to these very practical outcomes, the students also gain an understanding of the limitations of the traditional textbook presentation of requirements determination as a simple and straightforward process of interviewing users and specifying their needs. Students become aware of the complexities of the process and the need for careful planning, and much practice and perseverance in order to complete successfully the information requirements determination stage of systems development.

## References

- Anderson, J. R. (1982). Acquisition of cognitive skill. Psychological Review, 89(4), 369-406.
- Avison, D. E., & Fitzgerald, G. (1995). Information systems development: Methodologies, techniques and tools. (2nd ed.). London: McGraw-Hill.
- Boehm, B. W. (1987). A spiral model of software development and enhancement. IEEE Transactions on Software Engineering.
- Boehm, B. W., & Papaccio, P. N. (1988). Understanding and controlling software costs. IEEE Transactions on Software Engineering, 14(10), 1462-1477.
- Brooks Jr, F. P. (1995). The mythical man-month: Essays on software engineering. (Anniversary ed.). Reading, CA: Addison-Wesley.
- Burke, M. J., & Day, R. R. (1986). A cumulative study of the effectiveness of managerial training. Journal of Applied Psychology, 71(2), 232-246.
- Byham, W. C., & Pescuric, A. (1996). Behavior modeling at the teachable moment. Training, 33(12), 50-53.
- Compeau, D. R., & Higgins, C. A. (1995). Application of social cognitive theory to training for computer skills. Information Systems Research, 6(2), 118-144.
- Davis, A. M. (1990). Software requirements, analysis and specification. Englewood Cliffs, NJ: Prentice-Hall.
- Eysenck, M. W., & Keane, M. T. (1990). Cognitive psychology: A student's handbook. London: Lawrence Erlbaum Associates.
- Fox, W. M. (1988). Getting the most from behavior modeling training. National Productivity Review, 7(3), 238-246.
- Galliers, R. (Ed.). (1987). Information analysis: Selected readings. Sydney: Addison-Wesley.
- Hoffer, J. A., George, J. F., & Valacich, J. S. (1996). Modern systems analysis and design. Menlo Park, CA: Benjamin/Cummings.
- Holtzblatt, K., & Beyer, H. R. (1995). Requirements gathering: The human factor. Communications of the ACM, 38(5), 30-32.
- Laudon, K. C., & Laudon, J. P. (1996). Management information systems: Organization and technology. (4th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Markus, M. L. (1983). Power, politics, and MIS implementation. Communications of the ACM, 26(6), 430-444.
- McCloy, R. A., Campbell, J. P., & Cudeck, R. (1994). A confirmatory test of a model of performance determinants. Journal of Applied Psychology, 79(4), 493-505.

- Newman, M., & Robey, D. (1992). A social process model of user-analyst relationships. MIS Quarterly, June 1992, 249-265.
- Pescuric, A., & Byham, W. C. (1996). The new look of behavior modeling. Training & Development, 50(7), 24-31.
- Simon, S. J., Grover, V., Teng, J. T. C., & Whitcomb, K. (1996). The relationship of information system training methods and cognitive ability to end-user satisfaction, comprehension, and skill transfer: A longitudinal field study. Information Systems Research, 7(4), 466-490.
- Simon, S. J., & Werner, J. M. (1996). Computer training through behavior modeling, self-paced, and instructional approaches: A field experiment. Journal of Applied Psychology, 81(6), 648-659.
- Tosti, D. T. (1980). Behavior modeling: A process. Training and Development Journal, 34(8), 70.
- Valusek, J. R., & Fryback, D. G. (1987). Information requirements determination: Obstacles within, among and between participants. In R. Galliers (Ed.), Information Analysis: Selected Readings (pp. 139-151). Sydney: Addison-Wesley.
- Vitalari, N. P. (1984). A critical assessment of structured analysis methods: A psychological perspective. In T. M. A. Bemelmans (Ed.), Beyond productivity: Information systems development for organizational effectiveness (pp. 421-433). Amsterdam: Elsevier Science.
- Whitten, J. L., Bentley, L. D., & Barlow, V. M. (1994). Systems analysis and design methods. (3rd ed.). Burr Ridge, IL: Irwin.

## Appendix A

The four role-play cases presented here all have the same format, and have been developed from the author's experiences as a systems analysis professional. Names have been changed to preserve confidentiality. The cases illustrate the situations many software consultants face when working with small firms. An initial assessment of an organization's requirements is needed in order to determine what assistance, if any, the software consultants can offer the organization. The organization's situation is often more complex than appears on the surface, and even in small firms, personalities and politics can impact on the initial analysis and ultimately the success of any implementation. The cost of the consultant's initial assessment generally cannot be charged to the client, so there is a tension between the consultant's need to gather the necessary information as quickly as possible, while at the same time ensuring that the assessment goes into enough depth to make an informed decision.

The cases are conducted as role-plays, with students taking the part of new employees of the software consulting and development firm, Software Unlimited. The instructor and teaching colleagues play the roles of three key interviewees from the client firms. The students' task is to make efficient use of limited consultation time to analyze their client's situation. In order to do this, they get a brief outline of the problem situation in a memo from their boss and a letter from the client. From this realistically vague introduction, they must inform themselves about the business they are investigating, and prepare a plan of the interviews they will conduct. Having carried out the interviews, the students must develop their assessment of the situation, identify the problem areas and make recommendations about what can be done. Although there is a need for better information systems for each client, solving the problems with the current system will not immediately result in improved performance. Students need to identify that other factors, such as task scheduling, performance monitoring, constraints imposed by external entities (e.g. government, customers etc.) and inter-personal conflicts between the key players, also need to be addressed if a satisfactory outcome is to be achieved.

Students are given a memo from their 'boss' that refers to a letter from a potential client. The memo instructs the students to conduct initial interviews with the three key actors from the client organization, to prepare a confidential report for the 'boss', and a presentation for the client. In the confidential report, students can raise concerns about any issues that may have an impact on whether their firm can effectively do business with the client. In the presentation, the students are expected to present their summary of the client's problems, and their recommendations as to what the client should do. These recommendations may include a suggestion that the client address any internal problems identified by the students before proceeding with an information systems solution.

The four client organizations are typical of New Zealand small businesses. The first is a general medical practice partnership of six doctors. The practice administrator is keen to computerize the medical records, but the partners have differing views on the future development of the practice. The second firm is a road contracting firm, which is having difficulty with administration of its repair contracts, and the scheduling of staff and equipment. The third organization is a non-profit organization whose members are interested in stud stock breeding and record keeping. Membership has suddenly increased dramatically, since a commercial market has been developed for the stock, and the voluntary workers are no longer able to keep up with member demands for services. The fourth business is a commercial pig farm, which has also undergone rapid growth in size, with a corresponding increase in management and record keeping problems, and decrease in profits.