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Communication and IS - How effective are current training programs?.

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DISSERTATION

Communication and IS - How effective are current training programs?

Presented To

The Department of Information Systems
University of the Witwatersrand

in partial fulfilment of the
requirements for the

Master of Commerce Degree
in Information Systems

By
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ABSTRACT

The need for Information Systems (IS) professionals to communicate effectively has been identified as one of the key issues of IS management in the 1990s. The communication gap between IS professionals and other personnel in organisations has been well documented and studies have shown that appropriate training can improve communication skills.

The objective of this research was to establish what constitutes effective communication skills training and to produce a guideline which IS managers and trainers could use to address this problem.

The major finding of this research was that IS personnel do not perceive themselves to be poor communicators despite the fact that many studies have shown that there is need for improvement. This shows that there seems to be a gap between what is expected of IS personnel and their own perceptions of their communication abilities.

In order for change to take place, IS Personnel need to be aware of their shortcomings and organisations need to get more involved. Managers can facilitate the process by communicating the need for improvement to their employees and can demonstrate their commitment by recommending appropriate training.

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 Background 1
1.2 The Problem 1
1.3 Objective of Research 2

2.0 LITERATURE REVIEW 2

2.1 History 2
2.2 Critical Elements 3

3.0 RESEARCH METHODOLOGY 5

3.1 Discussions with trainers 5
3.2 Survey Instrument 5
3.3 Available Training Courses 6

4.0 ANALYSIS OF RESULTS 7

4.1 Derivation of critical elements 7
4.2 Survey Results 9
4.21 Breakdown of Responses 9
4.22 Differences in Populations 10
4.23 Results 10
4.231 Training History 10
4.232 Organisational Factors 11
4.233 Training Courses 12
4.234 Education 13
4.235 Motivation 13
4.3 Guideline 18
4.4 Limitations 20

5.0 CONCLUSION 20

6.0 REFERENCES 22

APPENDICES 25

1.0 INTRODUCTION

1.1 Background

Effective communication between Information Systems (IS) staff and other personnel within organisations has been identified as one of the key management issues in IS in the 1990s.

> *"IS professionals urgently need to develop management, business and communication skills as well as skills in enabling and directing change."* (Remenyi, 1993)

Building trusting relationships between IS and other staff and bridging the "culture gap" are some of the stated means to improving both the actual and the perceived performance of IS. Training in communication skills can prove to be a vital catalyst in the transformation in attitude which is required by IS personnel, but only if such training addresses the correct problems.

1.2 The Problem

It has been shown that IS professionals have a low "social need strength" i.e. a low need to interact socially with others. Both IS managers and subordinates, whether in South Africa or in the United States showed this trait. (Couger and Smith, 1992; Couger and Zawacki, 1978).

The problem therefore is that IS professionals need to become effective communicators, but they do not show a great need for social interaction. There is evidence that training in communication skills can positively influence communication effectiveness. (Weiss, 1983; Blank and Barrat, 1988; Gaines, 1994).

> *"The more systems professionals can effectively express feelings related to the substantive issues and help others to do so, the more likely they are to be effective in problem solving and decision making. Such increased effectiveness is a meaningful step towards the important goal of more effective systems that truly meet the needs of their users"* (Weiss, 1983)

1.3 Objective of research

The objective of this research is to establish what constitutes effective communication skills training and to produce a guideline which IS managers can use to identify the key elements in an effective communications training program.

2.0 LITERATURE REVIEW

2.1 History

Ineffective communication has been identified by many as a major cause for IS projects being behind schedule, over budget and not meeting users specifications. (Bostrom, 1989).

In a study by Amoako-Gyampah and White (1993) it was shown that there is a positive correlation between user involvement in Management Information Systems (MIS) projects and user satisfaction and that communication between MIS personnel and users is important in improving users' perceptions of the success of such projects.

A further study by du Plessis, Rip and Lay (1990) found that effective group communication between systems analysts and users is positively associated with the quality of the requirement specification for a system.

Studies show the existence of a communication gap not only between IS and users but also between general business management and IS management. (Shah, Dingley and Golder, 1994; Remenyi 1993). The "communications void" is given as one of the prime reasons why information systems fail. (Norman, 1991).

Many practitioners state that IS professionals need to "speak the users' language", "learn the users' business" and "become team players" if they wish to succeed. (Hawkins, 1975; Edwards 1993). The differences in the dates of the two references just given, 1975 and 1993, show that the situation has not improved in nearly two decades.

Nelson (1991) made a number of recommendations on the educational requirements of IS personnel one of which was that there is a need to improve the organisational skills of IS professionals. These skills included interpersonal communication, interpersonal behaviour, group dynamics

and project management. Roets (1994) replicated the Nelson study in South Africa and found that IS professionals' greatest deficiency was in the organisational skills area.

Another study into the evaluation of skill requirements for entry level graduates in the IS industry (Smith, Newton and Riley, 1992) found that South African industry required more interpersonal skill training than the current academic courses provided.

In summary, IS professionals need training in communication skills, but such training must be effective i.e. it should cover t correct problem areas and it needs to address the requirements of business as well.

2.2 Critical Elements

The literature review provided the first step in establishing the critical elements of an effective training program in communication skills. Analysis of the literature showed that effectiveness is multi-dimensional and many factors are involved. For example, the course content is important, but the motivation of the person undergoing the training can influence the effectiveness of the training as well. Three dimensions need to be considered to gain an overall insight into the problem:

The first involves the trainee. Factors involved here are job level or position, experience and education. A considerable amount of research has revolved around the differences in skill and knowledge requirements for Information Systems professionals based on their job levels and education. (Cheney, Hale and Kasper, 1990; Khan and Kukalis, 1990; Nelson, 1991). Research by Vitalari (1985) showed that experienced systems analysts spend more time communicating with users than less experienced ones.

Another factor here is motivation. It focuses on the individuals' "need awareness" or the importance that an individual places on the training for his career prospects or success. Much research (Couger and Zawacki, 1978; Couger and Smith, 1992) has shown that IS professionals have a low "social need" or a low need to interact with others.

> *"U.S. companies have instituted training programs to help computer personnel learn techniques to communicate more effectively and to work more effectively in groups. When*

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personnel have the "need awarene .", they work diligently to acquire these new skills". (Couger and Smith, 1992).

Khan and Kukalis (1990) found that the factor contributing most to professional advancement from systems analyst to project leader level is skill in communication. The literature also indicates that IS personnel have been more technically orientated and have concentrated less on acquiring communication and business skills. (Nunamaker, 1981; Roets, 1994).

The second dimension involves the training itself. Factors involved here are the content and the type of institution providing the training. In the case of universities, the curriculum is under constant debate and many studies express the need to include the teaching of communication skills in both graduate and undergraduate courses. (Couger, 1973; Nunamaker, 1982; Smith,Newton and Riley, 1992).

Training practitioners emphasise that in order for training to be effective, the quality of the presentation is important; the reinforcement of concepts is crucial; the participants should be challenged; the knowledge should be immediately applicable and that the course should be enjoyable. (Heckel, 1987; Philips, 1989).

The third dimension involves the organisation. Factors which influence effectiveness here are: business commitment, incentives and the degree to which a company perceives these courses to be important. Nelson (1991) stressed that the IS director should view staff as assets whose value could be increased with training. Organisations should conduct periodic need assessments with staff and these should be followed up with appropriate training. A study by Cheney, Hale and Kasper (1990) indicated that the concept of the importance of communication is growing:

"Senior IS managers believe that human factors and managerial knowledge, skills, and abilities have and will continue to increase in importance for all IS workers, particularly project managers"

Table 1 shows a summary of the critical elements deduced from the literature review:

Dimensions	Factors
Trainee	Job Category
	Education
	Experience
	Motivation
Training	Training Institution
	Content/Curricula
	Effectiveness
Organisation	Perceived Importance

TABLE 1

3.0 RESEARCH METHODOLOGY

3.1 Discussions with Trainers

In order to supplement what had been established from the literature review, informal discussions were held with five commercial trainers whose combined experience in communication skills training exceeded 75 years.

Approximately thirty commercial training institutions in the Johannesburg area were contacted in order to find suitable trainers with experience in training computer personnel in communication skills. They were asked to discuss what factors they believed to be important in training computer people in communication skills. The trainers selected are listed in Appendix 1.

Analysis of the literature review and the discussions with trainers resulted in the derivation of the critical elements of an effective communication skills course.

3.2 Survey Instrument

Once the critical elements had been established, a survey instrument was derived to test how the IS profession viewed these elements.

A pilot study of the survey instrument was performed. Ten Master of Commerce students at the university of the Witwatersrand were given the questionnaire and asked to document any problems they had in understanding the questions. This process led to the rewording of some of

the text and the deletion of two of the questions. It was established that it took approximately five minutes to complete the questionnaire.

The final version contained twenty questions. The first part, questions 1-11, established the respondents background and education using direct questions. The second section, questions 12-20, used a Likert scale with degrees of 1 to 5 to assess the importance of each subject to the respondent. A three point Likert scale was considered but it was felt that some of the questions particularly 12-17 required a wider definition of importance. In order to simplify the questionnaire and avoid confusion, the wider scale was chosen for all questions involving relative importance scales.

A full discussion of how the questionnaire was derived from the critical elements appears in APPENDIX 2. A summary follows:

Questions one to seven establish the respondents job level, experience, education and training history.
Questions eight and eleven establish the incentives and the importance with which organisations place on training programs.
Questions ten and eighteen to twenty deal with the training itself.
Questions nine and twelve to seventeen cover the motivation issue.

The full questionnaire is contained in APPENDIX 3.

3.3 Available Training Courses

At the start of this research it was felt that an analysis of the content of available training courses in communication skills would provide a basis for determining an effective training program. It became obvious during the research that this approach would not be constructive for the following reasons:

- The problem is multi-faceted, with many factors contributing to the definition of effectiveness. Content is only one issue.
- Interviews with commercial trainers showed that in commercial institutions content is not so much an issue because either the trainee or the organisation sending the trainee on the course determines this.
- At universities, the content is under constant debate and many studies have concentrated on this issue. (Couger, 1973; Nunamaker, 1982). One study of direct interest investigated

whether the curricula at universities in South Africa met business requirements. (Young, Sabor and Smith, 1994). They conducted two workshops with IS professionals to identify the skill requirements for IS graduates. Results showed that although spoken communication was given one of the highest scores by the IS professionals, only four of the ten universities investigated plan to place emphasis on it in the next 5 years.

- Telephone conversations with twenty companies providing training courses in communication skills revealed that the content varies considerably and can be tailor-made to an individual organisations' needs.

It was decided, therefore, to channel the research into developing a general guideline for effectiveness of training rather than to concentrate on content.

4.0 ANALYSIS OF RESULTS

4.1 Derivation of the critical elements

The interviews with commercial trainers consolidated what had already been deduced from the literature review. A summary of the results these discussions follow, divided into the three dimensions identified earlier in the literature review.

Dimension One : Trainee issues

All trainers agreed that computer personnel are "introverted". One stated that they were "analytical" and needed to be more in touch with their feelings, echoing the findings of Couger and Zawacki (19[illegible].

There was some disagreement as to the importance job level plays in influencing the motivation of trainees. Two stated that motivation of trainees at the lower levels was lacking. Another stated that personality and past experience plays a greater role than job level in motivation.

Dimension Two: Training

All stated that presentation is very important. Courses need to be interesting and the quality of the instructors needs to be high as well.

The curricula debate is not so much an issue in commercial institutions as it is in the case of universities, as market forces determine what should be taught. Either the provider of the course or the company sending the trainee on the course decides on the content.

All agreed that training in communication skills should be ongoing. One stated that team-building exercises by their nature are once off exercises and therefore are an exception to the rule. Low retention (25-32% of what is learned is retained) was given as the reason for the need for ongoing training. One trainer pointed out that although ongoing training is important, there are very real difficulties in monitoring this, due to mobility of computer staff. Cost was brought up as an issue here and it was felt that companies are spending money on training their staff to keep abreast of rapidly changing technology in the computer profession and therefore little is left for training in other skills.

Dimension Three: Organisational issues

Two of the trainers stressed that companies need to realise the importance of developing their staff and that the involvement of managers in this issue is crucial. All of the trainers stated that there needs to be a close link between the organisation and the trainer in order to be in touch with the needs of the organisation and the trainees.

All agreed that effectiveness of the training is subjective and is therefore difficult to assess. Word of mouth, feedback and the amount of repeat business are some of the methods used to determine this. Very few of the trainers perform post-course reviews with trainees.

Table 2 shows a final list of the critical factors derived from both the literature review and from the discussions with trainers. Most of elements were deduced from the literature review and reinforced by the discussions. Because of the emphasis which all trainers placed on the need for ongoing training, this was added to the final list. It must be noted that the derivation of these elements was subjective.

Dimensions	Factors
Trainee	Job Category
	Education
	Experience
	Motivation
Training	Training Institution
	Content/Curricula
	Ongoing nature of training
	Effectiveness
Organisation	Perceived Importance

TABLE 2

4.2 Survey Results

4.21 Breakdown of Responses

Ten to twenty survey forms were sent to sponsors in each of fourteen firms in the greater Johannesburg area. The sponsors were asked to select a random sample of respondents. In total 220 forms were distributed, of these 118 forms were returned representing a 54% response rate.

Breakdown of responses by job category:

	No. of Respondents	Percentage
Programmers	42	35.6
Systems Analysts	31	26.3
Project Managers	25	21.2
Technical Specialists	14	11.9
Others	6	5.1
	118	

TABLE 3

Breakdown of responses by industrial sector:

	No. of Respondents	Percentage
Manufacturing	23	19.5
Public Sector	43	36.4
Financial	29	24.6
Computer	23	19.5
Total	118	

TABLE 4

4.22 Differences in populations

The Median test was used on questions 12-17 to determine if there were any differences in responses given based on population differences. This test was chosen for two reasons:

- The test is nonparametric. The data is based on an ordinal scale of measurement, where only the comparisons between the measurements is relevant and not the numbers themselves. Most parametric (based on the normal distribution) statistical methods require at least an interval or stronger scale of measurement whereas most nonparametric methods, including the median test, allow for the nominal or ordinal scales of measurement to be used.
- The less powerful Median test was chosen instead of the Kruskal-Wallis test because of difficulties of ranking observations when a high number of ties are present. (Conover, 1971).

The data was divided into two populations, one based on job category and the other based on industry differences. The results are shown in APPENDIX 4. As each result is discussed, any population differences which are significant will be referred to.

4.23 Results

4.231 Training History:

Chart 1 shows the percentages of respondents sent on training courses. The most popular has been oral communication, with interpersonal second. Less than half of those surveyed have been on an oral communications skills course. If business believes that interpersonal skills are important, (Smith, Newton and Riley, 1992), the percentage sent on these types of courses should be higher.

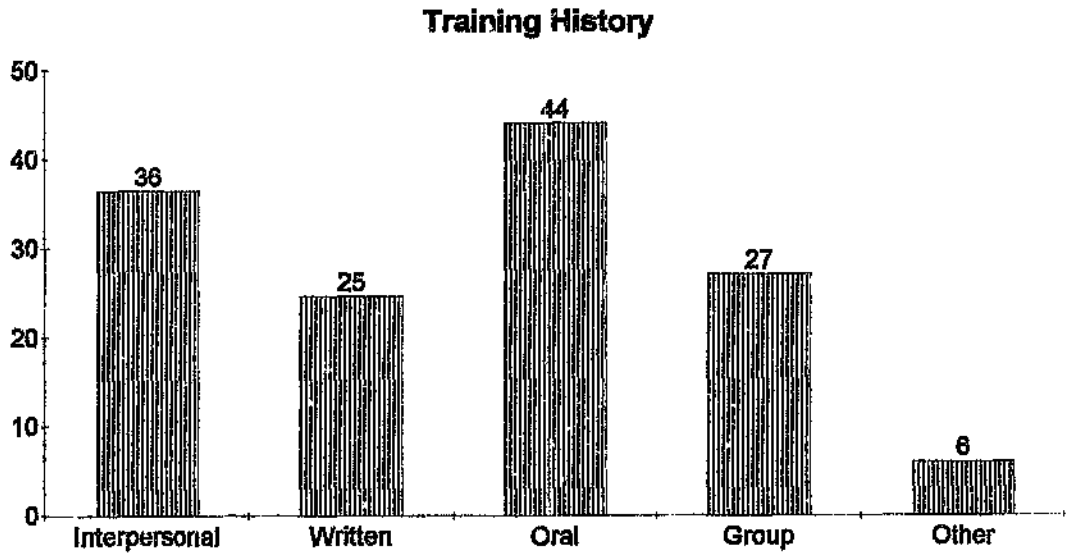


CHART 1

Table 5 shows that 27% of respondents have never been on a communications skills course and half of these are programmers:

	No. of Respondents	Percentage
Programmers	16	50.0
Systems Analysts	7	21.9
Project Managers	4	12.5
Technical Specialists	4	12.5
Others	1	3.1
	32	

TABLE 5

4.232 Organisational factors:

71% of the respondents said that their companies sent them on communications skills courses, 25% said that their companies did not and the rest did not know or did not answer. 53% are rated on their communication skills in a performance appraisal, 42% say not and the rest did not know or did not answer.

Couger and Smith (1992) maintained that when personnel have the "need awareness", they work hard to acquire these skills. If this is true, more businesses need to make their staff aware of the importance of effective communication skills.

4.233 Training Courses

87% of respondents said that communications skills training should be ongoing, 12% said not and the rest did not know or did not answer. 1.2 years was given as the average time interval for refresher courses.

Tables 6,7 and 8 show the percentages of respondents which gave a rating of 1 or 2 to each of the subjects listed.

Interpersonal Skills	89
Group Dynamics	75
Written communication	61
Oral communication	88
Conflict Handling	73
Ability to hear and listen	92
Consensus Building	65
Selling of Ideas	69
Facilitation	69
Handling of Change	65
Negotiation skills	73
Interviews	64
Organisational Behaviour	54
Problem solving	73

TABLE 6

In analysing the content issue, Table 6 shows that respondents gave highest ratings to Oral communication, Interpersonal skills and the ability to hear and listen.

Only 39% of the respondents thought that communication skills should be taught in a programmers course, whereas 82% believed that it should be taught in a project managers course. Interestingly enough, 58% of programmers believe that communication skills should be taught in a programmers course.

Schools	71
Formal Institutions	75
Training Courses	71
Systems Analysis course	69
Project Management	82
Programmers	38

TABLE 7

Most respondents believed that a training course is effective if it meets the stated goals and that the quality of the instructor and that of the presentation is important:

Meets goals	83
Retention	63
Quality of Instructor	83
Quality of presentation	78
Trainee challenge	59
Meets organisations needs	61
Improves productivity	69
Enhances morale	74
Practical Training	72

TABLE 8

4.234 Education:

Only 20% believed that enough emphasis was placed on communication skills during their education, 77% disagreed and the rest did not answer.

4.235 Motivation:

Only 25% of respondents would or have sent themselves on communication skills courses, 74% would not and the rest did not answer.

As far as rating their communication skills, very few of the respondents rated themselves poorly:

Importance Rating	Percentage
>3	5%
3	44%
2	45%
1	6%

TABLE 9

Nearly 90% rated themselves in the region 2-3. If IS personnel are poor communicators, this is either not admitted by the respondents, or the respondents do not perceive this to the case. It is interesting to note that not one respondent from the computer industry gave an importance rating of 1 to this question.

In order to establish whether the respondents who rated themselves highly (lower numbers in the importance scale of 1 or 2) came from the class of people who spend more of their time communicating, a correlation between these two elements was done. A small negative correlation -.18 was obtained indicating that there is only a very slight tendency for those who rate themselves highly to come from the class of people who spend more of their time on communication.

Chart 2 shows that most respondents believe that effective communication is important in their positions.

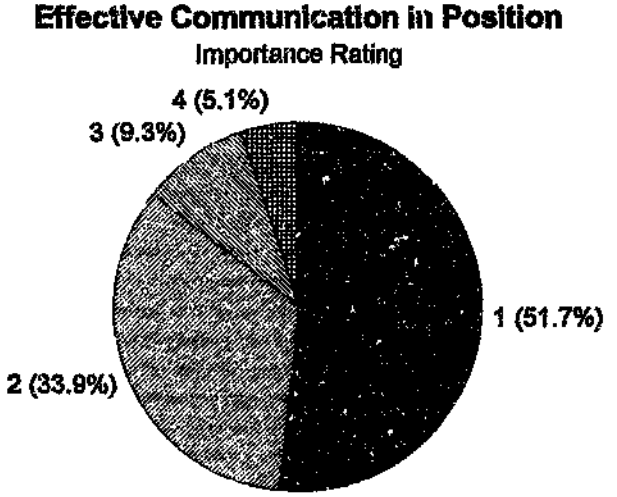


CHART 2

Chart 3 shows that most respondents believe that training does positively influence ones ability to communicate effectively:

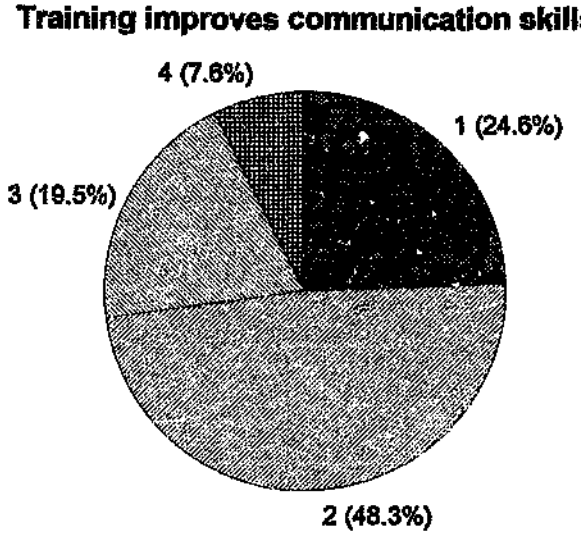


CHART 3

Chart 4 shows that most respondents believe that effective communication skills can further their careers.

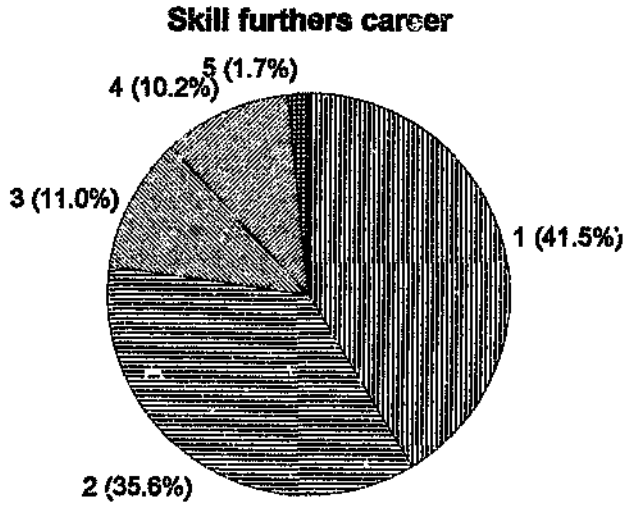


CHART 4

With regard to the career question, the median test based on industry differences yielded a test statistic of 10.82 which was significant (see Table 13 in APPENDIX 4). The following table shows the percentage of respondents from each industry:

	Importance Rating				
	1	2	3	4	5
Manufacturing	39	48	4	9	0
Public	58	21	7	9	5
Financial	41	45	14	0	0
Computer	13	39	22	26	0

TABLE 10

The table shows that respondents from the computer industry tended to view this question with less importance than other industries. After removing the responses from the computer industry the median test yielded a test statistic of 0.94 which was not significant, meaning that the industries other than the computer industry yielded similar results.

Chart 5 shows that most respondents believe that communication skills positively influences the application design process:

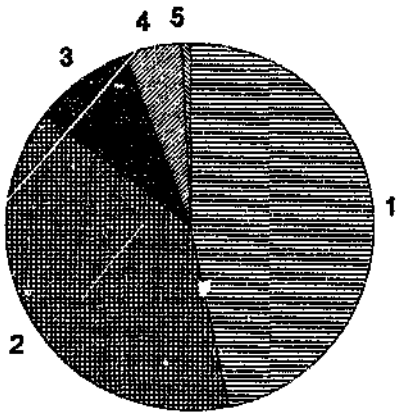


CHART 5

The median test based on industry differences for the design process question, yielded a test statistic of 20.74 which was significant (see Table 13 in APPENDIX 4). The following table shows the percentage of respondents from each industry in each importance scale 1-5:

	Importance Rating				
	1	2	3	4	5
Manufacturing	61	35	0	4	0
Public	80	28	7	5	0
Financial	38	59	3	0	0
Computer	17	39	26	13	4

TABLE 11

Table 11 shows that respondents from the computer industry tended to view this question with less importance than other industries. After removing the responses from the computer industry the median test yielded a test statistic of 4.16 which was not significant, meaning that the industries other than the computer industry yielded similar results.

Chart 6 shows the relative importance between technical, communication and business skills:

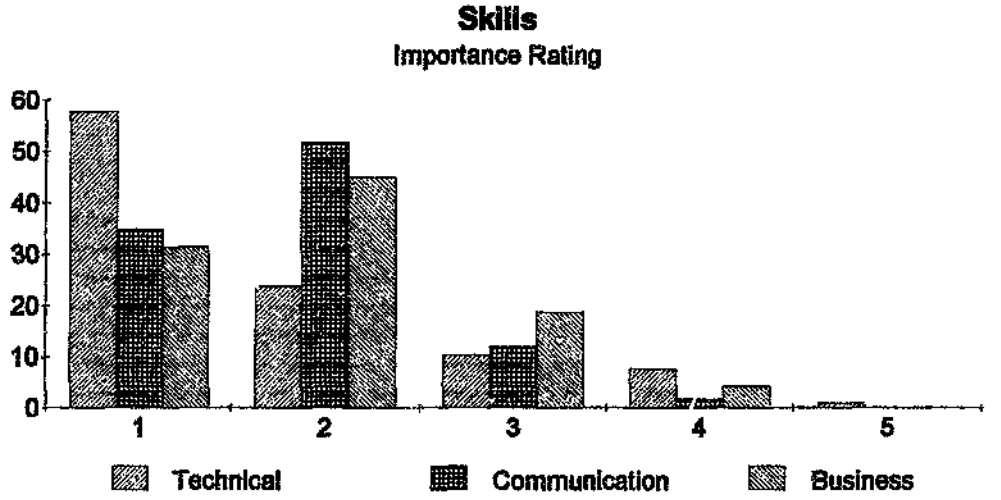


CHART 6

Technical ability is given the highest overall rating. 58% of all respondents gave technical ability an importance rating of 1. 52% of all respondents gave communication skills an importance rating of 2. 45% of all respondents gave business skills an importance rating of 2.

The median test (Table 12, Appendix 4) showed significant differences between the job categories with respect to this question. For this reason, the data was analysed further and it was found that programmers and systems analysts rated technical skills as being most important whereas project managers gave communication skills a higher importance rating:

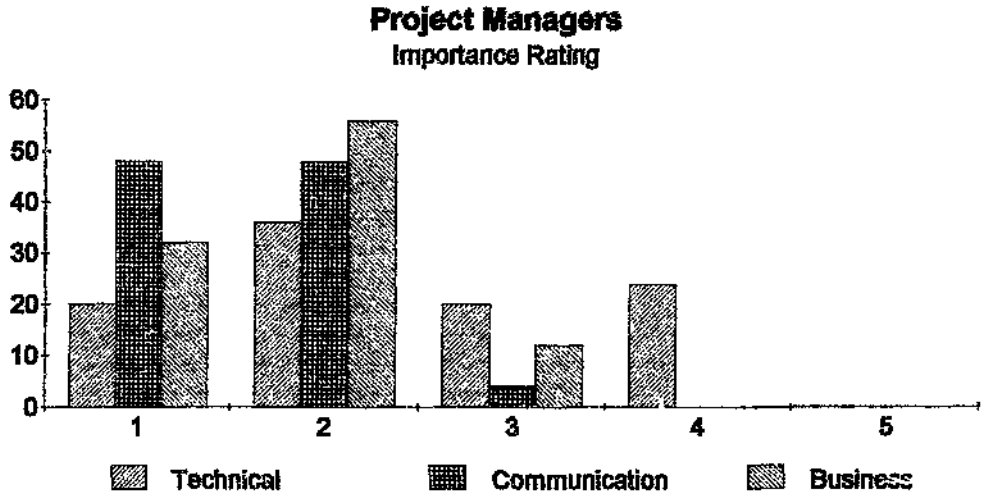


CHART 7

Further analysis showed that systems analysts with greater than 5 years experience gave business knowledge more importance:

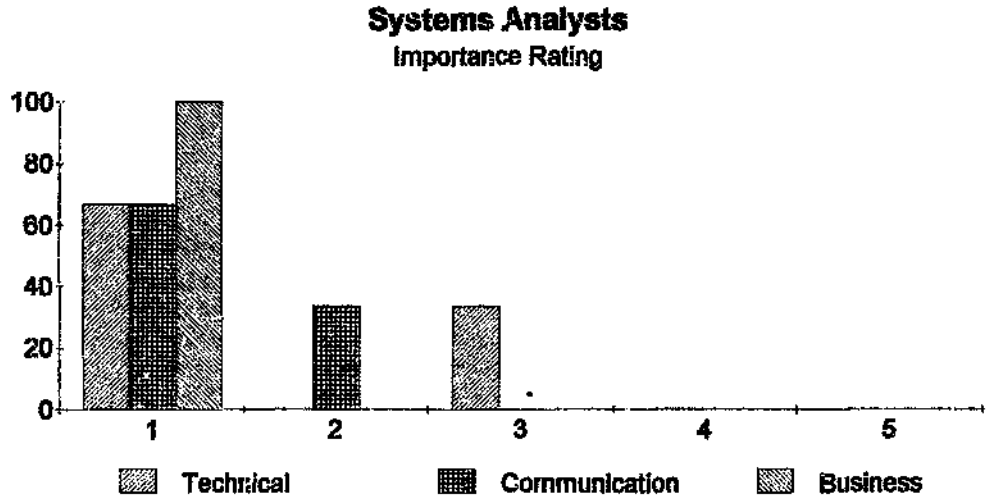


CHART 8

4.3 Guideline

A summary of the results of this research provides a guideline on what to look for in assessing training effectiveness:

- From the literature review and from the discussions with trainers it became apparent that the problem is multi-dimensional and one needs to realise that there are many factors

involved in determining whether training will be effective. The trainee, his motivation experience and education needs to be taken into account. The training itself, the course content and the quality of the instructor and instruction is important. The organisation sending the employee on the course can influence its effectiveness by communicating the importance of the training to the trainee.

- The literature showed that computer personnel have a low "social need" or a low need to interact with one another. But, although people cannot change their need for social interaction, they can change their behaviour and when personnel have this "need awareness" they work diligently to acquire these new skills. Only 5% of the respondents to the survey rated their communication skills poorly which could mean that this "need awareness" is not present or that it has not been communicated well enough.
- The majority of respondents did agree that effective communication skills is important in their positions and that it does play an important part in their careers. They further believed that effective communication positively influences the design process and also that effective training can improve communication skills. This indicates that the "need awareness" is indeed present. But, on the other hand, the importance of technical skills still outweighs that of communication skills in all job categories except that of project managers. These results again emphasise the fact that companies who believe that effective communication is as important as technical ability need to appraise their employees of this.
- Only 25% of respondents to the survey stated that they would send themselves on communication skills courses. A study by Khan and Kukalis (1990) found that 25% of MIS managers do not have computer-related degrees. These findings show that, even if a higher percentage of universities institute communication skills training, a fairly substantial number of people would not benefit from it, and, because many of these people would not sponsor themselves, the responsibility for acquiring such training would fall on business.
- Only 20% of respondents believed that enough emphasis was placed on communication skills during their education. 27% of respondents have never been on any communication skills course, and less than half of the respondents have been on an oral or an interpersonal communication course. These

percentages seem low when compared to the perceived importance of acquiring these skills.

- 25% of respondents said that their companies did not send them on communication skills courses and 42% reported that they were not rated on communication skills in their performance appraisals. These figures indicate that business commitment to the problem could be improved.
- In order for training in communication skills to be effective, regular refresher courses are required. The content should cover interpersonal and oral communication skills with emphasis on the ability to hear and listen.
- An effective course should meet the stated goals and the quality of both the instructor and the presentation is important.

The literature shows that a change in behaviour is required by IS personnel to improve communication skills. This change can only take place if awareness of the need for improvement exists. Managers need to communicate this need to their employees and to recommend appropriate training courses.

4.5 LIMITATIONS

- The derivation of the critical elements of an effective training program was subjective being deduced from the literature and from discussions with commercial trainers.
- More interviews with commercial trainers may have resulted in more factors being discovered.
- The source for both the interviews and the survey was restricted to the greater Johannesburg area.

5.0 CONCLUSION

The need for Information Systems (IS) professionals to communicate effectively has been identified as one of the key issues of IS management in the 1990s. The "communication gap" between IS professionals and other personnel in organisations has been well documented and studies have shown that appropriate training can improve communication skills.

The objective of this research was to establish what constitutes effective communication skills training and to produce a guideline which IS managers and trainers could use to assess training programs.

The first step in this process was to identify the critical elements of effective training in communication skills. The elements were deduced from the literature and from interviews with commercial trainers. This analysis showed that the problem is multi-faceted. Effectiveness of training depends not only on the content or quality of the training itself, but that the motivation and commitment of the trainee also plays a part. The importance that organisations attach to the training can influence its effectiveness as well.

The next step was to gauge what IS professionals felt about these elements. A survey instrument was developed for this and sent to over two hundred IS professionals in Johannesburg. Results showed that most IS personnel are aware of the importance of effective communication in their current positions and to their career prospects. They also believe that training can influence the ability to communicate effectively. Despite this, IS personnel still believe that technical skills are more important than communication skills in all job levels except that of project manager.

The major finding of this research was that IS personnel do not perceive themselves to be poor communicators despite the fact that many studies have shown a need for improvement. The problem, therefore, is that there seems to be a gap between what is expected of IS personnel and their own perceptions of their abilities in this area. If this is the case, organisations need to communicate this gap in order to create a greater awareness for improvement. However, this research showed that only 53% of businesses rate their staff on communications skills in their performance appraisals, meaning that the formal channels of communicating gaps between desired and actual performance are not being used as extensively as they could.

Transformation can only take place if people are aware that a problem exists. Managers can facilitate this process by communicating the importance of acquiring better communication skills to their employees and by committing resources to appropriate training programs.

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APPENDIX 1:

List of Commercial Trainers

The five trainers interviewed were:

R. Joubert from Dynamic Growth Training.
M. Engelbrecht from Dynamic Performance.
T. Coetzee from Entertrainment.
B. Lanker-Byrn from Creative Communications.
J. Hugget from Charter Training Group.

APPENDIX 2:

How the survey questions relate to the critical elements:

Questions one to seven establish the respondents job level, experience, education and history and relate to the trainee dimension.

Questions eight and eleven establish the incentives and the importance with which organisations place on training programs and therefore fit into the "organisational" dimension.

Questions nine and twelve to seventeen deal with the motivation issue:

- Question nine establishes personal motivation.
- There is evidence that training in communication skills can positively influence communication effectiveness.(Weiss, 1983; Blank and Barrat, 1988; Gaines, 1994). Question fourteen probes this aspect.
- Khan and Kukalis (1990) found that the factors contributing most to the professional advancement from system analysis to projects leaders is communication skills. Questions twelve, thirteen and fifteen test whether IS professionals agree with this finding.
- A wealth of literature alludes to the fact that effective communication skills positively influence the design process. (Du Plessis, Rip and Lay, 1990; Amoako-Gyampah and White, 1993). Question sixteen tests this belief.
- There is evidence to suggest that IS personnel have been more technically orientated and have concentrated less on acquiring communication and business skills. (Nunamaker, 1981; Roets, 1992). Question seventeen probes this.

Questions ten and eighteen to twenty deal with the training itself:

- Question ten concentrates on the ongoing nature of the training.
- The eighteenth question is designed to establish if there are any particular skills which are perceived to be more important than others in the realm of communication. The categories were derived from research by Couger (1973), Nunamaker (1982), Du Plessis Rip and Lay (1990), Smith, Riley and Newton (1992), and Ives (1993).

- The nineteenth question attempts to establish if a particular institution is preferred for the training of communication skills. (Blank and Barrat, 1988; Friedman and Khan, 1994).
- Question twenty attempts to establish what factors are important to a student in the assessing the effectiveness of a particular training course. (Heckel, 1987; Philips, 1989).

APPENDIX 3:

Survey Questionnaire

1. What is your position? (Circle the appropriate letter)

   a) Project Manager
   b) Systems Analyst
   c) Programmer
   d) Technical specialist
   e) Other - Please specify _____

2. Number of years in your present position? _____

3. How many people report to you? _____

4. What is your highest level of education? (Circle the appropriate letter)

   a) High School
   b) Technical Diploma
   c) Bachelors Degree
   d) Post Graduate Degree
   e) Other - Please specify _____

5. Do you believe that enough emphasis was placed on communication skills during your education? (Circle the appropriate letter)

   a) Yes
   b) No

6. What percentage of your time is spent communicating with users, writing reports, or performing other communication related tasks? _____

7. What type of communication skills training have you had? (Circle all appropriate letters)

   a) Interpersonal skills
   b) Written communication skills
   c) Oral communication or presentation skills
   d) Team or group communication skills
   e) Other - Please specify _____

8. Does your company send employees on communication skills courses?

   a) Yes
   b) No

9. Would you or have you attended a communication skills course at your own expense? (Circle appropriate letter)

   a) Yes
   b) No

10. Do you believe training in communication skills should be ongoing with regular refresher courses? (Circle appropriate letter)

    a) Yes
    b) No

    If yes, please give an estimate of how often refresher courses should be held (e.g. one a year, once every two years)

    _____

11. Are you rated on your communication skills in your performance appraisal?

    a) Yes
    b) No

****
FOR QUESTIONS 12 ONWARDS, please indicate ratings on a scale of 1 to 5 by circling the appropriate number.
****

12. How would you rate your communication skills?

    Highly 1 2 3 4 5 Poorly

13. How important do you think effective communication is in your position?

    High Importance 1 2 3 4 5 Low importance

14. To what extent do you believe that training in communication skills could improve your ability to communicate effectively?

    High 1 2 3 4 5 Low

15. To what extent do you believe that effective communication skills could further your career?

    High 1 2 3 4 5 Low

16. To what extent do you believe that effective communication skills could positively influence the application design process?

    High 1 2 3 4 5 Low

17. Rate each of the factors below in terms of its importance to your job?

	High				Low
Technical ability.....	1	2	3	4	5
Ability to communicate well.....	1	2	3	4	5
Business Knowledge.....	1	2	3	4	5

18. How important are each of the following factors in an effective communication skills course?
Add any factors which you think are missing from the list and rate them as well.

	High				Low
Interpersonal skills.....	1	2	3	4	5
Group Dynamics.....	1	2	3	4	5
Written Communication.....	1	2	3	4	5
Oral Communication.....	1	2	3	4	5
Conflict Handling.....	1	2	3	4	5
Ability to hear and listen.....	1	2	3	4	5
Consensus Building.....	1	2	3	4	5
Selling of Ideas.....	1	2	3	4	5
Facilitation.....	1	2	3	4	5
Handling of change.....	1	2	3	4	5
Negotiation skills.....	1	2	3	4	5
Interviews.....	1	2	3	4	5
Organisational behaviour.....	1	2	3	4	5
Problem solving.....	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

19. Rate the importance you attach to communication skills being taught in:

	High				Low
Schools.....	1	2	3	4	5
Formal Institutions.....	1	2	3	4	5
(Universities, Technikons)					
Training courses.....	1	2	3	4	5
(Short courses, seminars)					
A systems analysis course.....	1	2	3	4	5
A project management course.....	1	2	3	4	5
A programmers course.....	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

20. How would you assess the effectiveness of a communications skills course? Circle a number in the range of 1 - 5.
1 = High importance and 5 = low importance.

	High				Low
Meets the goals.....	1	2	3	4	5
Amount of information retained..	1	2	3	4	5
Quality of instructor.....	1	2	3	4	5
Quality of presentation.....	1	2	3	4	5
Amount of Challenge for trainee	1	2	3	4	5
Meets needs of the organisation	1	2	3	4	5
Improves trainee productivity...	1	2	3	4	5
Enhances trainee morale.....	1	2	3	4	5
Amount of practical training....	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5
_____	1	2	3	4	5

APPENDIX 4:

Population Differences

The data was divided into two populations, one based on job category and the second based on Industry. Table 12 shows the calculated values for the test statistic using the Median Test on the five job category populations (programmers, systems analysts, project managers technical specialists and others). Values greater than 9.488 are significant using the chi-squared approximation with four degrees of freedom and 95% confidence. Those questions where the null hypothesis (that all populations have the same median) was rejected are highlighted with an asterisk:

Job Category Population Differences:

Question	Test Statistic	Significant
12	3.41	
13	6.07	
14	0.51	
15	2.77	
16	1.53	
17.1	22.24	*
17.2	7.06	
17.3	9.26	

TABLE 12

Table 13 shows the calculated values for the test statistic using the Median Test on the four industry populations (manufacturing, public sector, financial and computer related). Values greater than 7.815 are significant using the chi-squared approximation with three degrees of freedom and 95% confidence. Those questions where the null hypothesis (that all populations have the same median) was rejected are highlighted with an asterisk:

Industry Population Differences:

Question	Test Statistic	Significant
12	2.75	
13	6.55	
14	2.13	
15	10.82	*
16	20.74	*
17.1	0.18	
17.2	6.03	
17.3	2.02	

TABLE 13

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