An Empirically Based Technique for Improving Communication Skills of Systems Analysts

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Abstract

Few would argue with the premise that communication is critical to an Information Systems professional's success. While researchers recognize the importance of communication, organizations and individuals continue to have communications problems because remedial action is rarely suggested. The purpose of this paper is to recommend an interpersonal communications technique that helps a systems analyst develop much more convincing arguments and presentations to users. The technique has been used and documented in the classroom, where it provides an interesting, fun, convincing, and memorable experience for the students. Classroom experiments that demonstrate the effectiveness of the technique have been extremely favorable. The technique is regularly used by the professor in teaching Systems Analysis and Systems Design. The focus of the paper is on the classroom experiment, and the conclusions that can be applied to the profession as a whole based on those experiments.

Keywords: Systems Analysis, Presentations, Requirement Specifications

1. INTRODUCTION

There is little doubt that interpersonal communication skills are critical to an organization's success (Wolvin 1991; Whitten 1998). Effective communication is a major concern of organizations and is an important determinant of organizational productivity (Wolvin 1991). Communication skills are probably the single most important ingredient to success (Hoffer et al. 1999; Whitten 1998), and 74% percent of managers report that communication breakdown is the single greatest barrier to organizational effectiveness (Gibson 1982).

In the Information Systems (IS) field, communication of data and information is the essence of the profession, yet it is difficult for technology professionals to communicate in understandable, layperson, terms (Gupta 2000). Many information systems projects fail because IS language is significantly different from the users' language (Whitten 1998). To be successful, the systems analyst must be able to relate to users and identify with their views and concerns (Ray 1989).

In an attempt to begin to improve the communication skills of college students in the IS department, a simple technique was developed and tested. The focus of the technique is to teach students to formulate ideas and to present those ideas in terminology familiar to receivers of those ideas and presentations. The classroom provided very convincing empirical data. Importantly, the technique is also grounded in interpersonal communication theory.

Although the idea that a speaker should know his/her audience is not a new concept, the technique documented later in this paper dramatically proves the importance of presenting ideas using the terminology of the audience. One goal of teaching is to inspire the enthusiastic participation of the students; rather than simply reading about presentations that use the user's terminology, this technique provides a very participatory and convincing exercise.

Communication Theory
Communication is a process that involves the transmission and exchange of information between two or more people. Communication is "the exchange of

information between a sender and receiver and the inference of meanings" (Gordon 1987); "the transmission of information between two or more persons" (Wexley & Yukl 1977); and "the sharing of messages, ideas, or attitudes resulting in a degree of understanding between a sender and a receiver" (Lewis 1980).

There are multiple steps in the communication process (Egan 1977; Covey 1977; Munter 1987; Lewis 1980; Ivancevich, et al. 1987; Northcroft and Neale 1990). The process begins with a meaning, in the sender's mind, that the sender intends to transmit to a receiver. The sender encodes the meaning into a message and transmits it via some channel (verbal, written, nonverbal) to a receiver. The receiver must receive and then decode the message. The receiver interprets the message into meaning in his/her mind. Finally, the receiver provides feedback that acknowledges receipt of the message, degree of understanding of the message, and some degree of agreement (Gordon 1987).

There are many barriers to successful communication. Perceptions and semantics are critical to the communication process. Semantics are a subset of perceptions because people use their backgrounds and experiences to develop meanings for words (Covey 1977; Gordon 1987; Munter 1987; Northcroft and Neale 1990).

Perceivers may respond to cues they are not aware of, be influenced by emotional factors, use irrelevant cues, weigh evidence in an unbalanced way, or fail to identify criteria used in the judgments they reach about a message. Wexley and Yukl (1977) state that "people respond to their perceptions of the world." If the information received does not match preconceived ideas or biases, then the information is either not received or is ignored. The more familiar the words are to the receiver, the more likely that the receiver will relate to them.

Bettinghaus (1973) states, "Perception is a collection of attitudes and beliefs that form a frame of reference that functions as a filter." The filter mediates the way in which messages are received. People have many frames of reference; some are strong, clear, and extensive while others are weak, sketchy, and incomplete. The stronger the frame of reference a person has developed, the harder it is to influence the person. It is only logical to assume that if a speaker uses terms familiar to a receiver, the receiver will be more open to those ideas.

A key aspect of perception is attention (Wexley and Yukl 1977; Northcroft and Neale 1990; Bettinghaus 1973; Gordon 1987). The sender must first penetrate the listener's frame of reference to get his/her attention (Bettinghaus 1973). People receive many stimuli, and cannot put full attention on all stimuli. Therefore,

certain stimuli will not be received nor decoded, which results in communication failure. A stimulus that is consistent with a person's frame of reference is more likely to be received and decoded. Thus, the speaker should use terminology of the intended receiver.

The use of words can elicit different meanings and different emotions in different people (Bettinghaus 1973). Wexley and Yukl (1977) explain that comprehension of a communicated message depends upon the receiver's interpretation of the language used to transmit the message. The listener has a major challenge—to understand the terminology of the sender. The sender can help the listener by putting the presentation into words that are already familiar to the listener.

2. TECHNIQUE

The premise of the proposed technique is that there are barriers to interpersonal communications due to prior perceptions, experience, background, culture, terminology, and premature judgments. If a communicator, referred to here as the sender, recognizes the barriers and develops good techniques for penetrating the perceptual framework of the receiver(s), then that sender should be more effective in the communication process. Since much of the available research on this topic emphasizes the fact that IS analysts tend to use terminology that is different from users' language, this paper asks the question, "Can the value of using the user's terminology be demonstrated?"

The simple technique documented here requires speakers to present ideas framed explicitly in the terminology (words, language) of listeners. The task requires that two students with distinctly different opinions present their ideas to each other. To determine the effectiveness of using the listener's language, the tester determines if the listener is then able to see the presenter's viewpoint after the presentation. Without guidance, these communication attempts regularly fail. Individuals who understand both points of view are then asked to formulate an explanation of each viewpoint in the receiver's terminology (our *technique*). These explanations were 100% successful in expressing the viewpoints to the listeners.

3. RATIONALE

This communication technique simply states that it is important to express points of view in the terms and terminology of the second party. Points of view involve language, connotations, and terminology, as well as ideas. The act of learning and using the terminology of the second party helps to "penetrate" the barriers to successful communication. It is easier to acquire and maintain someone's attention if ideas are stated in familiar terms. The use of familiar terms also minimizes

defense arousal and helps to penetrate perceptual frameworks.

The best technique an analyst can employ to explain his or her point of view is to learn the user's (the listener's) point of view. The analyst must then incorporate the user's point of view into his or her language. It simply makes it easier for the user to follow the analyst's point of view if the analyst states his or her information in language familiar to the user. Thus, to understand the other's point of view includes understanding and using his/her language, terminology, reference points, connotations, etc. Therefore, the technique advocated in this paper places a heavy burden on the analyst because he or she must learn and correctly use the user's terminology. Experience convinced this author that an analyst is doomed to failure if he or she doesn't learn and employ the terminology of the user.

4. CLASSROOM EXERCISE

The first challenge in demonstrating the value of effective communication was to select a task in which students have clearly different views and different terminology. The well-known image that incorporates images of both a young woman and an old woman was used in the classroom experiment, see Figure 1. Some people quickly see both images, but many people can only see either the young or the old woman, but not both. Stephen Covey (1977) experimented with this picture in the mid-1970s. His technique was to allow the students to debate, argue, and try to convince each other of what they saw. In Covey's experiments, when faced with a collapse in communication, a student occasionally demonstrated sensitivity and asked another person what he/she saw. Once this sort of query was made and one viewpoint was able to incorporate the other progress was made; most students were eventually able to see both images. However, Covey also stated that some students *never* saw both images.

Unlike Covey's experience, the technique described in this document was successful in 100% of the attempts. The technique requires the students to consciously formulate their presentation in the terms of the other students. That is, a student who is trying to explain the young woman to someone who only sees the old woman must start his presentation with terms that also describe the old woman. Clearly, this is impossible if the speaker does not see the old woman's, as well as the young woman's, image.

Groups
Fifty-three dyads were formed from a total of 106 college students over a three-year period. The 106 students ranged from sophomores to graduate students enrolled in the Marist College Information Systems program. Each dyad consisted of two people who saw singular but opposite views, or one person who saw one

view and one person who saw both views. There were a total of 53 trials: 22 students who saw only one view tried to explain their views to someone who did not see it, and 31 students who saw both views explained one of the views to someone who saw only the opposite view.

Procedure
The classroom procedure included three steps:

Step 1: Display the image of the old-young woman, Figure 1, on an overhead projector and ask each student to write down exactly what she or he sees. This preliminary step identifies who can see the elderly, younger, or both views. Some discussion took place during this step to determine that the student really did see either or both views.

Figure 1 Old - Young Woman[1]

Step 2: Create dyads and ask someone who sees only the elderly woman to explain it to someone who sees only the young woman (or vice versa).

Step 3: Ask someone who sees both the young lady and the elderly woman to describe the elderly woman to someone who sees only the young woman or to describe the young woman to someone who sees only the elderly woman.

5. RESULTS

There were 10 dyads in which someone who saw only the young woman attempted to explain the young woman to someone who saw only the elderly woman. Nine of these attempts failed and one succeeded. These dyads are labeled Case IA.

There were 12 dyads in which someone who saw only the elderly woman attempted to explain the elderly woman to someone who saw only the young woman. Nine of these attempts failed and three succeeded. These dyads are labeled Case IB.

There were 16 dyads in which someone who saw both the elderly woman and the younger woman attempted to explain the elderly woman to someone who saw only the young woman. All 16 of these attempts succeeded. These dyads are labeled Case IIA.

There were 15 dyads in which someone who saw both the elderly woman and the younger woman attempted to explain the younger woman to someone who saw only the elderly woman. All 15 of these attempts succeeded. These dyads are labeled Case IIB.

Cases	Successes	Failures	Totals
IA	1	9	10
IB	3	9	12
IIA	16	0	16
IIB	15	0	15
	35	18	53

People who only saw one point of view (Cases IA and IB) were treated as one group collectively called Case I, and people who saw both points of view (Cases IIA and IIB) were treated as another group (Case II). The groups achieved statistically different results with a computed t value of 9.72 and $p < .000$. Case I had four successes and 18 failures, whereas Case II had 31 successes and no failures. This is very strong evidence in favor of the argument that it is important for the sender to use the receiver's terminology to explain you're the sender's point of view.

Individuals who saw only one view could explain their view to someone who saw the opposite view only 25% of the time. People who saw both points of view could explain either point of view to someone else 100% of the time by using the recommended technique.

6. DISCUSSION

The first interesting observation resulting from this experiment is that several people are surprised and even shocked that others see a different image from the one they see. This observation makes the point that it is possible that two or more people will see the same information and yet reach different conclusions about that data. Systems analysts often believe that their initial observations are completely accurate and feel no need for further effort to put the concept at hand into the user's terminology. This exercise helps train analysts to recognize that two people can reach different conclusions from the same data. The first step in understanding another point of view is acknowledging that it can exist; this exercise underlines the need for analysts to put conclusions and observations into the user's terms, and then to review that data with the user.

A second observation is that the person who sees only one point of view has trouble explaining it to someone who sees the opposite image. Invariably, the describer is unsuccessful at explaining his or her vision and becomes frustrated repeating his (her) description. The description of the elderly woman always consists of details such as: she has a big nose, bags under her left eye, and hair down over her forehead. However, because the receiver does not recognize these elements in the image, the description is of no use in the explanation. This part of the demonstration usually concludes with the describer's total frustration and his/her comment that the other person just can't see his/her point of view. The key observation here is that the description fails because it uses the describer's terms to relate what he/she sees.

The third observation is that the person who sees both views can easily put his/her explanations into the other's terminology. In 100% of the cases, the individual with both viewpoints named some part of the young woman and then described how that part, if twisted or turned, became part of the elderly woman's image. For example, the describer might say the chin of the young woman is also the nose of the elderly woman, or the ear of the young woman is the left eye of the elderly woman. In 100% of the cases, this approach was successful and the receiver was able to see both images.

An IS professor will often have an opportunity to refer to these points in discussing requirements definition issues, design decisions, teamwork issues, alternatives development, and operational considerations.

Many IS projects require group problem solving sessions that include people with diverse backgrounds. The technique is very effective in group problem-solving sessions. The professor may challenge the groups to reach agreement on a solution to a problem. If a group fails to reach agreement, ask a member of the group to explain why agreement could not be reached. If the explanation begins with a restatement of the one individual's point of view then immediately ask that individual to explain the merits of the views of the others in the group. This forces the individual to see the others' points of view and to state his/her arguments in the terms of the other person's viewpoint, which generally leads to agreement.

The exercise as described herein helps convince students to phrase presentations in "user terms." An example involves determining which is a better statement to make to users. Statement A says that our database runs on a LAN, has 9 tables and 12 foreign keys. Statement B says that your [i.e., the user's] database links sales and order entry to manufacturing & inventory such that work may begin on an order as soon as it is entered into your system. Clearly, statement B is expressed in user terms. Feedback in the classroom has been very strong that the technique taught above is persuasive and students now pick statement B.

When teaching Systems Design classes, the technique helps demonstrate the importance of terms and language on the screens that are well known to the users.

Often Information System Audit teams phrase their findings in legalistic terms to prove that there was a violation of some obscure corporate standard. This author has managed an Information System Audit team in which we avoided using the corporate terminology. Instead we began all of our findings using the terms of the site being audited. Any deficiencies noted were in direct reference to some concrete weakness in the site's procedures without referencing the "letter of the corporate law." Even though the site being audited received an unsatisfactory rating they actually thanked us for such a value-added audit. It was all in the user's terminology.

7. SUMMARY

This paper discusses and demonstrates that the best way to be understood is to first understand. That is, in attempting to help another person understand a point of view, the best first step is to understand the opposing points of view and communicate that understanding. Explaining a point of view using the language, terminology, and reference points of the other person is a very effective way of achieving mutual understanding.

There are numerous applications and practical examples that facilitate classroom discussion, analysis, and problem solving, and that enhance user requirements definition and system and business proposals. Using the classroom to foster systems analysts and information specialists who can communicate with users in the users' own terminology will only improve the effectiveness of the profession as a whole.

8. REFERENCES

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[1] The Old-Young Woman image exists in the public domain. In 10 minutes of searching the Web I noticed that there were more than 30 sites that made the image available. Some examples include:
a) http://www.ads-online.on.ca/illusion/
b) http://www.electroplasm.com/planetanimal/afm/psychosis/optical/
c) http://www.run-down.com/illusions.shtml
d) http://psycharts.com/opt_illus.html