Problem Solving Skills: Information Preference and Use by Library Managers

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Abstract

Purpose*: This paper aims to determine and discourses various problem solving skills being applied by library managers in tackling everyday challenges they face in the course of answering library patrons queries and decision making.*

Design/Methodology/Approach: *The exploratory approach was used for this study. A conceptual framework was examined so as to identify the relationship that exist between problem solving skills and information preference, and to determine if there are unique skills in solving different problems or same skills applies all through the problem solving process.*

Findings: *Above all library managers must embrace the problem solving skills as it's the only way that they can ensure that users are adequately catered for.*

Originality/Value: *The value of this paper is identify various problem solving skills being applied by library managers, how effective it has proved to be in bringing innovative ideas to modern problem solving skills to enhance library services.*

Key words: *Information, Problem solving skills, Information preference, Library manager.*

Paper type: *The paper is conceptual.*

Introduction

Keith (2006) stipulated that problem solving is something we all do every day. We constantly confront problems of differing importance, scope, and complexity: where to establish organizational priorities; how to confront an employer who did not report to work; how to present a new marketing idea; which strategy the department should pursue over the next two years; and how to increase productivity. Indeed, solving problems takes up a major portion of our time and energies each day. Some problems are fairly routine and easily solved. Others are complex and less easily defined and handled. Our lives are filled with, and frequently complicated by, the need to solve problems.

Many individuals are complacent, yet uneasy, with their own problem-solving skills. It is not unusual talk with someone who privately reveals displeasure with his own methods and skills for solving problems. The assumptions he makes and the skills he uses sometimes work. He will admit, however, that the results of his problem-solving efforts frequently are unsatisfactory; indeed, sometimes the results are not there at all occasionally. Abdication to the status quo takes the place of problem solving.

The cost of poor problem solving is probably beyond estimate. One government official was heard to comment that poor problem solving probably reduces the gross National product by billions of naira each year. The penalties of ineffective problem solving surround us. Penalties to the organization show up in forfeited sales, inept services, disgruntled library users, inefficient service and inadequate utilization of people, wasted time, and so forth. The costs to the individual include frustration, morale problems, reduced work output, diminished career potential, and demotivation. It becomes obvious that from a materials, services, ,and personnel standpoint, the effects of poor problem solving have a far-reaching impact upon the

organization. Although individuals, regardless of where and how they function in an organization, may know the penalties for ineffective problem solving, frequently they do not feel free to act or to change these conditions. More importantly, they frequently lack the ability to understand the human thought process-a vital requisite for solving problems. When these individuals look at what they know about solving problems, their ability to train others in problem-solving skills seems unlikely. To most it would seem easier to become proficient in finance,. Accounting or inventory control than to improve the reasoning process of others. Yet an improved understanding of the problem-solving process and the development of skills and techniques for increased problem-solving effectiveness are achievable.

What is a problem?

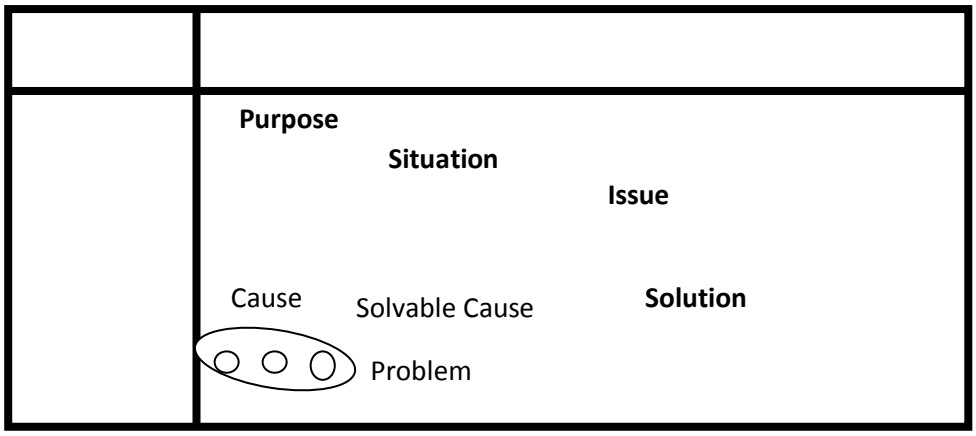
Robert Harris (1998) stated that one of the creative thinker's fundamental insights is that most questions have more than one right answer and most problems have more than one solution. In keeping with this insight, we will offer more than one definition of a problem, in hope of filling out its meaning as fully as possible. He went further to postulate that a problem can be:

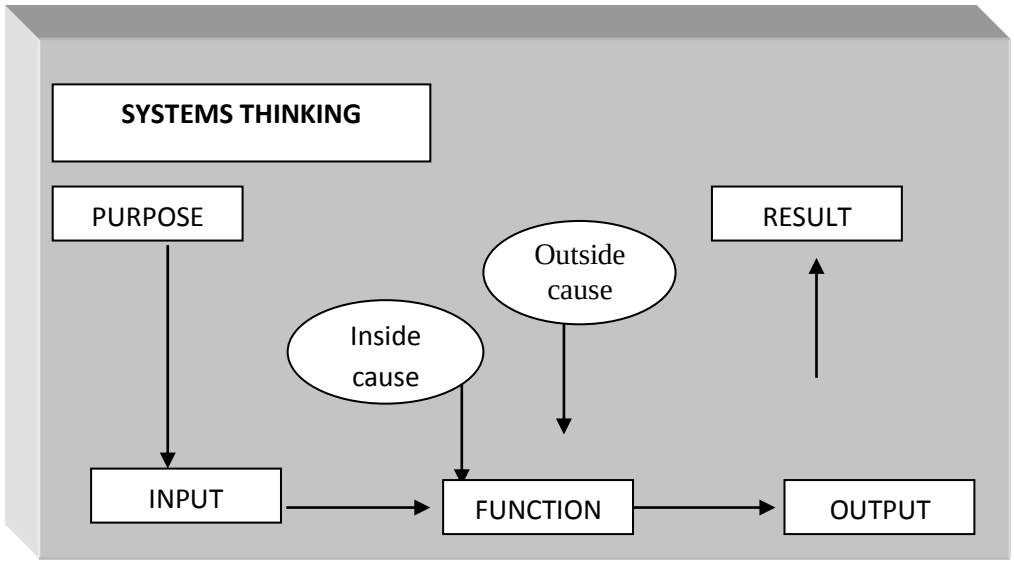
- Opportunity for improvement, a problem can be a real break, the stroke of luck, opportunity knocking, a chance to get our of the rut of the everyday and make yourself or some situation better. Note that problems need not arrive as a result of external factors or bad events any new awareness you have that allows you to see possibilities for improvement bring a "problem" for you to solve. This is why the most creative people are "Problem seekers" rather than "problem avoiders." Developing a positive attitude toward problems can transform you into a happier, saner, more confident person who fees (and is) much more in control of life. Train yourself to respond to problems with enthusiasm and eagerness, rising to the opportunity to show your stuff, and you will be amazed at the result.
- The difference between your current state and your goal state. A problem can result from new knowledge or thinking. When you know where you are and where you want to be, you have a problem to solve in getting to your destination. The solution can and should be fun and exciting as you think over the various possible solution paths you might choose. When you can identify the difference between what you have and what you want, you have defined your problem and can aim toward your goal.
- Result from the recognition of a present imperfect and the belief in the possibility of a better future. Isn't it interesting here that hope produces problems? The belief that your hopes can be achieved will give you the will to aim toward the better future. Your hopes challenge you, and challenge is another definition of a problem.

Problem solving forms part of thinking. Considered the most complex of all intellectual functions, problem solving has been defined as higher –order cognitive process that requires the modulation and control of more routine or fundamental skills (Goldstein & Levin, 1987). It occurs if an organism or an artificial intelligence system does not know how to proceed from a given state to a desired goal state. It is part of the larger problem process that includes problem finding and problem shaping.

Regardless of what they do for a living or where they live, most people spend most of their waking hours, at work or at home, solving problems. Most problems we face are small, some are large and complex, but they all need to be solved in a satisfactory way. Before we look at the area of problem analysis and solution, though, let's take a few moments to think about just what we mean by a problem.

Problem Solving Terminology





***Purpose*:** Purpose is what we want to do or what we want to be. Purpose is an easy term to understand. But problem solvers frequently forget to confirm purpose, at the first step of problem solving. Without clear purposes, we cannot think about problems.

***Situation*:** Situation is just what a circumstance is. Situation is neither good nor bad. We should recognize situations objectively as much as we can. Usually almost all situations are not problems. But some problem solvers think of all situations as problems. Before we recognise a problem, we should capture situations clearly without recognizing them as problems or non-problems. Without recognizing situations objectively, problem solving is likely to be narrow sighted, because problem solvers recognize problems with their prejudice.

***Problem*:** Problem is some portions of a situation, which cannot realize purpose. Since problem solvers often neglect the differences of purposes, they cannot capture the true problems. If the purpose is different, the identical situation may be a problem.

***Cause*:** Cause is what bring about a problem. Some problem solves do not distinguish causes from problems. But since problems are some portions of a situation, problems are more general than causes are. In other words causes are more specific facts, which bring about problems. Without distinguishing causes from problems, problem solving cannot be specific. Finding specific facts with causes problems is the essential step in problem solving.

***Solvable cause*:** Solvable cause is some portions of causes. When we solve a problem, we should focus on solvable causes. Finding solvable causes is another essential step in problem solving. But problem solvers frequently do not extract solvable causes among causes. If we try to solve unsolvable causes, we waste time. Extracting solvable causes is a useful step to make problem solving efficient.

***Issues*:** Issue is the opposite expression of a problem. If a problem is that we do not have

money, the issue is that we get money. Some problem solvers do not know what issue is. They may think of "we do not have money" as an issue. At worst case, they may mix the problems, which should be negative expressions, and the issues, which should be expressions.

Solution: Solution is a specific action to solve a problem, which is equal to a specific action to realize an issue. Some problem solvers do not break down issues into more specific actions. Issues are not solutions. Problem solvers must break down issues into specific action.

Business Organisation and Role of Managers

According to Wikipedia in economics, a business (also called firm of enterprise) is a legally recognized organizational entity designed to provide goods and/or services to consumers or corporate entities such a governments, charities or other businesses. Businesses are predominant in capitalist economies, most being privately owned and formed to earn profit to increase the wealth of owners. The owners and operators of a business have as one of their main objectives the receipt or generation of a financial returns in exchange for work and acceptance of risk. Notable exceptions include cooperative businesses and state-owned enterprises. Socialistic systems involve government, public, or worker ownership of most sizable businesses.

The etymology of "business" relates to the state of being busy either as an individual or society as a whole, doing commercially viable and profitable work. The term "business" has at least three usages, depending on the scope- the singular usage (above) to mean a particular company or corporation, the generalized usage to refer to a particular market sector, such as "the music business" and compound forms such as agribusiness, or the broadest meaning to include all activity by the community of suppliers of goods and services. However, the exact definition of business, like much else in the philosophy of business, is a matter of debate. Business studies the study of the management of individuals organizing to maintain collective productivity toward accomplishing particular creative and productive goals (usually to generate profit), is taught as an academic subject in many schools.

The success of any business relies heavily on the competency and ability of the manager. That is why managers are usually given the most ardent and difficult task of directly supervising the business' operations, dealing with staff, getting into negotiations with potential business partners for deals and making sure the overall well being of the firm is maintained. Those would be enough to justify the usually attractive compensation provided to them. That way, more kids are aspiring to be tough and effective managers someday. Business management is a profession gaining more popularity as people and economies continue to realize their contributions not just to the progress of a company, but to the entire economy.

Business managers should acquire and develop effective problem solving skills yes, managers are first and foremost, problem solvers. Different managers and experts have been coming up with their own problem solving skills. It is inevitable because that is mankind's nature ---to improve what is already widely used norms and practices.

Practically, all problem solving skills and practices are derived from the most basic problem solving processes most popularly known in the academe as the scientific approach. It could be inferred that science in general, regardless of specific branch or discipline, has forced man to come up with a systematic approach to problem solving. Thus the scientific approach to problem solving, being the basic process, is very potent and effective in putting solutions to every challenges, especially in business.

The SWOT analysis: in the management discipline, business schools and most practitioners are using what they call the SWOT analysis in making sure their business is headed to success.

Success is not only achieved through physical hard work. Mental processes and skills are very essential when a manager aims to make the business successful. SWOT is an acronym, more of a mnemonic devised to make the concept of strengths, weaknesses, opportunities and threats easier to remember.

Usually, SWOT analysis is employed by mangers when they are putting up a business. But the practice is very flexible that managers of existing companies are widely employing it when they are facing challenges over the business' operations, prospects and profitability. To do so, enumerate the strengths the business currently has. Then, list all the Weaknesses, or those gray areas where the business is not really doing well at. Opportunities foreseen in the future are listed, in contrast to the threats, or the pitfalls and dangers the business is expected to

encounter along the way. By simply doing that, you could have the relevant data that would lead to you to a simple analysis to solve your business' problems and challenges. Indeed, success of every business is attainable only if the managers would pay particular attention to details and would try to flex their mental muscles

The end of the 2oth century saw economic businesses became more complex, global, and knowledge driven. Managers needed to ensure that their company's continuously innovated and improved in order to achieve and maintain a sustainable competitive edge. In fact porter (1985) highlights that it is this competitive ability which is considered to be at the core of the success or failure of a firm. Managers realized that if their companies are to survive in this dynamic and uncertain environment, they have to make decisions concerning new business opportunities, products, customers, suppliers, markets, and technical developments very quickly

Information as a Tool for Managers in Problem Solving

A knowledge of what information is needed on a regular basis for decision making purposes, how it is sought and used, and the preference for sources would provide an indication not only of the information-seeking behavioral patterns of managers but also provide an insight into why pertinent information may not be utilized. Furthermore a better understanding of the manager's information seeking behavior, needs and perceptions would also help business information providers enhance existing products and services as well as develop new products and services. Ready accessibility to information and knowledge and strategic use of information and knowledge would allow managers to be better decision-makers and lead their organizations to achieve that much sough-after competitive edge.

Daft and Lengel (1984) noted that the design of organizations, in fact the very act of organizing , reflects the use of different methods of handling information and the use of teams, task forces or vertical information systems all reflect information processing needs with organizations. An organization skilled at creating, acquiring, organizing, and sharing knowledge is able to adapt its goals and behaviour to reflect new knowledge. Choo (1996) refers to such an orgaisation as an information-savvy "intelligent learning organisaiton". The critical success factor for successful management is the strategic use of information and a positive correlation has been found between management success and effective information needs assessment, gathering and use (Goodman 1993). While relevant and timely information allows managers to make accurate decisions, irrelevant information makes decision making difficult, adds to confusion, and affects the performance of the company. Therefore it is crucial that managers are aware of what information they require, how to acquire it and how to maximize the use of it in order to survive and prosper in today's information-intensive environment. Managers need to use information not only for decision making and making sense of changes and developments in their external environment but also to generate new knowledge which can be applied to design new products and services, enhance existing offerings and improve organizational processes (Choo, 1996) on the other hand it is also suggested that managers do not characteristically solve problems but only apply rules and copy solutions from others (March, 1991). In either case the need is access to information. Therefore information can be identified as the critical resource for decision making and management considered an information-intensive activity which requires a close relationship between decision making and information use.

Information preference that can be used by managers.

- Public, academic and special libraries
- Internet
- Print materials
- Non-print materials
- Past records of organizations
- Interview
- Questionnaire
- Personal contact/interaction
- External contact (Peers, professional colleagues, competitors)
- CD-ROM
- Database
- Serial (Journals, newspapers etc)
- Government Sources
- Radio
- Television

Managers Activities and Decision Making

Cyert et al., (1956) imply that management is a series of decision making processes and assert

that decision making is at the heart of executive activity in business. But decisions need to be made fast, especially in the current context where the most precious and least manageable commodity available to managers is time. Hales (1986) identifies research studies conducted over a period of thirty years which form the major source of evidence of what managers do and show that only the seminal work of Mintzberg (1973) includes "informational as one of the managerial roles. The information role incorporates monitoring, filtering and dissemination information as common, if not a universal part of managerial work. Mintzberg also observes that a manager's unique access to information and his special status and authority places him at the central point in the system which makes significant and strategic organizational decisions.

But Dieffenbachia (1983) cautions that what managers want and what they need may not be the same. Druker (1995) concurs when he states that most managers still need to learn how to use data and take responsibility for information. He highlights that few managers know how to ask "what information do I need to do my Job? When do I need it? In what form? And from whom should I be getting it? Still fewer ask 'what new tasks should I abandon? Which tasks should I do differently? Practically no one asks 'what information do I owe? To whom? When? In what form?

How Managers Acquire and Use Information

In order to understand the information behaviours of managers, it is first necessary to have an understanding of the contexts in which managers seek and use information. Significant work done in this area include Taylor (1986), Katzer and Fletcher (1992), and Choo and Auster (1993) who identify and analyze previous research work covering the information environment of managers and their information requirements.

Literature on the information behaviours of managers was found to be plentiful in the subject areas of Business Management, Organizational Behaviors, Psychology and information Technology (IT) and only very lately in the field of information science. In fact Auster and Choo (1993) highlight the dearth of literature in the field of information Science devoted to managers and the way they acquire and use information in their work. Literature covering information gathering activities surveyed for the study show that much is written on environmental scanning and competitor intelligence (CI), and also in the field of information Technology how management information systems (MIS) are being effectively used to meet these needs.

Two researchers who undertook a major study and have written prolifically on the information behaviour of managers are Auster and Choo (1992), 1993, 1994a 1994b, and Choo (1994, 1995, 1996) the study found a substantial correlation between the amount of scanning executives carry out and their level of perceived environmental uncertainty and suggests that the turbulence of the external environment, the strategic role of scanning and the information – use contexts of managements all combine to explain why information quality is more important than source accessibility when managers scan the environment.

Prior to the launch of the Reuters Business Information, Reuters commissioned a survey of a representative sample of business managers in order to investigate the usage, flow and politics of information in and around Britain's businesses. The survey report entitled information in organizations (1994) suggests that Britain's managers need to first learn how to manage the politics of information. The report highlights that by making information a key organizational "currency", a generation of managers may have been created who value information highly but are protective of it to the point of withholding it from the others and as an organizational "Currency" too valuable for many managers to give away. The report further states that the giving and withholding of information is inextricable linked with organizational politics and as a result the knowledge-based organization where free flow of information is considered to contribute to the general good is still largely a fantasy.

Creativity and Problem Solving

The concept of creativity in problem solving refers to the ability to go beyond daily and routine in vision and perception. Creativity goes past the obvious and into the realm of the unique. Obviously, not all solutions to problems require unique ideas. However, developing the capacity to extend one' present style and method of problem solving provides the opportunity for creative expansion when needed-analogous to holding a commodity in reserve.

People tend to generate their creative resources in one of two ways. First, individuals sometimes

discover that they are most creative under stressful conditions. For some, time deadlines, group pressure, goals difficult to reach, and the thought of dire consequences start their creative problem-solving juices flowing. Second, others discover that they excel creatively when they are loosened up, or feel uninhibited. During the course of spontaneous play, deep relaxation, and impulsive interactions, ideas begin to rush forth. Individual versus group problem-solving methods are variables that will also have a profound effect upon the outcome of creative problem solving. Regardless of forums, this module provides ample opportunity to discover those methods and skills that will maximize participants capacities.

Problem-solving skills

The ability to be a more effective problem solver means the ability to do the following:

1. Recognize problems when and where they exist
2. Anticipate developing problems while they are still in an embryonic state.
3. Determine an objective or goal, that is, the results desired when the problem is solved.
4. Generate several possible solutions to the problem.
5. Evaluate systematically the possible solutions against a set of predetermined criteria, and thus lead to an effective, appropriate solution.
6. plan for the implementation of the solution in an organized manner
7. Evaluate the results of the solution and monitor for future problems.

An effective problem solver possesses an understanding of the problem-solving process as well as of the specific skills used in that process. These attributes belong to the individual. They are his to use at work, at play –anywhere and everywhere.

Types of Problem Solving

There are three general types of problem-solving situations that confront people each day. Effective problem solving requires and analysis of the situation and the use of appropriate skills. The three types of problem solving are (a) analytic problem solving; (b) judgmental problem solving; and (c) creative problem solving,

Analytic Problem Solving: Analytic problem solving is a specialized type of problem solving. It involves a situation in which there is only one correct answer or result. The solving of a mathematical problem is an example of analytic problem solving. In this situation, 2+2=4 the solution is obviously 4.

Judgmental Problem Solving: Judgmental problem solving frequently offers the problem solver a limited choice of alternatives. The decision thus involves the exercise of judgment. An example of this type of situation might involve a choice between two options, one of which is seen as "good" and the other as "bad" in judgmental problem solving there is no absolute, correct answer, as there is in analytic problem solving. The range of possible solutions, however, is relatively narrow with the limit often being between two or three alternatives.

Creative Problem Solving: Creative problem solving is the type of problem solving People do 90% of the time in a situation calling for creative problem solving there are no absolute answers. The range of alternatives is very broad, much more so than in judgmental problem solving. A key idea in a creative problem – solving situation is to select from a wide range of possible alternatives the most appropriate solution at the time. An example of a situation calling for creative problem solving is "I'm dissatisfied with my current job and went to find a position that will make better use of my skills, give me greater satisfaction, and allow me to earn more money. "Creative problem-solving skills allow the problem solver to pick the most effective solution to the problem today, and to be aware at the same time that changing conditions may dictate a different solution tomorrow.

Decision Making and Problem Solving

Decision making and problem solving are not the same thing, although people often use two terms interchangeably. Decision making is part of the problem –solving process. Before decision making takes place, the process of problem identification and the development of multiple alternatives or solutions must occur. The confusion between decision making and problem solving arises in part because individuals think of a problem situation in decision-making terms. For example, "should I fire this worker for his poor performance or should I keep him on? Is a question addressing the decision-making process? A question addressing the problem-solving process might be, in what ways I might do something about this employee's poor performance?" this question seeks to solve the problem, but recognizes the possibility that there

might be more than one alternative solution. A key difference between decision making and problem solving is that problem solving involves the consideration of a number of possible solutions for the situation. Because creative problem solving is based upon a number of possible solutions, it is especially suited to the involvement of others in the problem – solving process. The perspectives and ideas of others can add unique contributions not otherwise available. A manager or supervisor can involve others in problem solving around a specific situation and still retain the decision-making responsibility that is rightly his.

Problem –Solving Styles: Consider this scene that takes place in an organization. Two individuals are being considered for advancement to a new position. In order to assess who might be better suited for the job, both are given a real organizational problem and are asked to prepare their recommendations within a few days.

Ken sits down and attacks the problem systematically. As a first step he sizes up the situation, defining what is known and what is not. Having analyzed this information, he states the main problem; he next devises a solution and organizes a method of implementation; finally he sets up the steps for carrying out the solution.

Jane approaches the problem in a very different manner. She free-associates what she knew about the problem with solutions that come to mind. Her thought processes alternate among identification of the problem; possible solutions; redefinition of , and ways to implement, a solution. She progresses randomly, searching for a solution that meets criteria not yet fully defined in her mind.

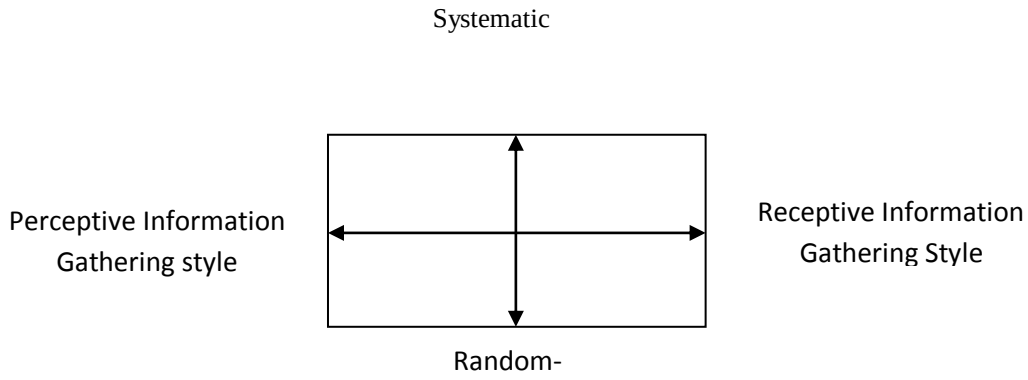
If, at this point, management were to offer the new position to one of these individuals based upon how they are tackling this problem, not upon a specific solution, chances are the job would be offered to ken. This is because there is a common belief that the systematic approach to problem solving is a "better" Method. Recent research shows that there are indeed two distinct major styles of problem solving: a "systematic:" approach and a "random" approach. It has further been shown that each style has unique advantages-strengths to be called upon in specific situations and that neither can be called superior as a problem –solving style. For example, the random, or intuitive, approach, while disorderly and erratic, sometimes gets faster and better results. This is especially true when the problem is elusive and difficult to define. In such situations people who are random thinkers look at different possibilities, follow their instincts, and instead of rushing to solutions, spend a great deal of time redefining the problem. On the other hand, systematic thinkers tend to excel when working on problems that call for planning and organization, or where problems build onto the answers to prior problem. This research has been pioneered by Janes L. Mckeeny of Harvard University and peter G.W. Keen of Stanford University. Here is a quick test that may some insight into major problems solving style. can you decipher the following message? Give it a serious try before moving on.

LMU GQRFC RGKC DMP YJJ ….

Did you get the answer? (it's "Now is the time for all … this is the typical test for typewriter by typewriter repair people, the key to the code is to move right two letters in the alphabet; yet there are other ways of solving the problem,) more importantly, how did you go about solving the problem? If you tackled the problem by substituting different letters one by one until you hit the right combination you used a systematic approach to problem solving. If you jumped around, trying one combination and then another, considering the length of the "words,:" and trying to match phrases to the code, you employed a more random method of problem solving

Remember, neither style is right or wrong. This is just a simple exercise that can give insight into problem-solving style. Not only do people have different problem solving styles, but they also look at problems in different ways. They collect information regarding a problem in one or two ways. They are either perceptive or receptive information gatherers. Watson is a perceptive individual. Along with the men from Scotland Yard, Watson zeroed in on an obvious suspect, seeking out or fitting facts as they were discovered to build a case against the criminal. Holmes illustrates the receptive mode of information gathering. He kept searching out now clues and facts until finally he (to Dr. Watson's embarrassment) concluded that the criminal was someone nobody suspected.

One or the other method of information seeking can be used by either a systematic or a random style problem solver. In other words, individuals will have a predominant information-gathering style and a predominant problem solving style.



Sherlock Holmes and Dr. Watsons Model.

A key finding of the previously cited research by Mckenny and Keen is that about 75% of the people studied used only one problem-solving/information-gathering style. Most people apply their preferred style to all problems even when the problem itself may lend itself more readily to a different style. The other 25% favored one style but demonstrated some flexibility. Too much problem situations.

There are two ways in which this limitation can be overcome. First, because a problem-solving style is a learned style, new problem –solving styles can also be learned through the building of new skills and the use of tools and techniques. A second approach is an adaptation of Will Rogers' statement, "Everybody is ignorant-only on different subject." The goal of utilizing more than one problem-solving style can be achieved through bringing together people who have complementary problem,-solving styles and creating a problem –solving team. This technique has a long and successful history in problem-solving research and is one of the key concepts behind the technique of "brainstorming."

The Problem-Solving Process

Every adult is a problem solver, having learned some method of problem solving somewhere along the way. However, people have varying degrees of skill and differing styles of problem solving. One way in which people can improve their problem-solving abilities is to understand more clearly the process, that is, the flow of the mind in solving problems.

What commonly happens is that people use some or all of this process in their problem solving, but do so unconsciously, so that when they wish to rethink the problem or go back and reanalyze what they have done, they become lost. Some individuals begin a definition of the problem, based upon limited information gathering, jump to a solution (perhaps the one they picked the last time they had this problem), and rush to implement it. When shortly thereafter the problem reappears, they go through the same abbreviated process once more. In this case they end up skipping steps in the problem-solving process.

To be effective as a problem solver, an individual needs to cover all the steps in the process.. This is the type of process that a systematic-style thinker might use. An effective and versatile approach is to combine the two, never locking into just one style. The combination may be done in a linear or sequential manner, discovering what additional information is needed, returning to information gathering, and thinking of some solutions, going back to problem definition, and proceeding linearly again. The key here is using an awareness of the problem –solving process as a guide, letting it assist, rather than being a slave to a procedure.

The major steps in the problem solving process are described below.

Problem Awareness: Most problems do not jump out at us full blown. Frequently they are observable through small hints here, an identifiable mini-problem there. The skill of sensing these "problem signals" early in their life is an important one because smaller problems are generally more easily corrected than larger ones. When small problems come up there is usually more time available in which to solve them. By asking questions such as – "what's going on here?" "what would I like to change?" what's bugging me?"- An increased awareness of potential problems will result.

Information Gathering: Even with a growing awareness of an existing problem, the problem solver must gather additional information in order to sharpen and focus his understanding before she actually defines the problem. To be this, the skilled problem solver asks questions to gather historical data relating to the problem: who? What? Where? Why? and How? The problem solver must be careful to separate facts from assumptions. Therefore, whenever possible, the problem solver should consult the sources of the facts firsthand, rather than merely inferring what the facts are.

Problem Definition: After collecting the information related to the problem, a problem solver will begin to ask "what does this information tell me? In addition, it is important at this time to look behind the apparent problem to some of the underlying facts and causes. In this way it is possible to separate symptoms, or second-level problems from the key problem. Once the key problem has been identified, in order to permit the widest choice of selection, it should be stated in the following manner. Begin the problem definition with the phrase "in what ways might I? By phrasing a problem definition as "my problem is" there is a tendency to lock mentally onto the first solution that comes to mind. In what ways might I…? Keeps the problem solver looking for additional ways in which to solve the problem?

Goal Statement: Problem solving is based upon a motivation to change something or condition. The process can be very erratic, ineffective, and frustrating when the goal of the problem – solving process is not clear. It is important to specify some goal or result that is desired when the problem is solved. The goal is not written in stone; it can be modified later, and this method will include something against which measure progress. An example of a goal statement is "To reduce employee X's inability to catalogue & classify properly by 15% in the next 90 days"

Solution Generation: Except in very rare instances, the success of a problem –solving effort is directly linked to the problem solvers ability to generate a number of possible solutions to his problem. It has been said that if one has only one alternative, one really has no alternatives at all. The greater the problem solvers ability to generate multiple alternatives, the better the results of the problem-solving process. Therefore, this part of the process is critical. One important key to generating multiple solutions is to suspend judgment during this phase of problem solving. Imagination, the key to generating possible solutions, and Judgment are both important problems –solving tools. But as the hammer and the saw are different but equally necessary tools to the master carpenter, each of the problem – solving tools also has a specific use. The appropriate place for using judgment is after the alternatives have been developed. A problem solver can utilize a number of techniques to generate multiple alternatives. Perhaps the best. Known of these is brainstorming, which will be discussed later.

Solution Selection: In solution selection, problem solvers frequently undo the hard work they have invested so far. This is the phase where judgment is applied to the various possible solutions that have been generated. All too frequently a " pet solution is selected at this point, or the problem solver judges solutions in an impulsive, inconsistent manner. A more systematic approach is to list all of the possible solutions to the problem. Next develop a list of key criteria by which the solutions will be judged, for time, cost effectiveness, and acceptance. Next, using a numerical scale, rate each idea against a specific criterion. Then rate each idea against the next criterion, and so forth, until the ratings can be totaled to determine the most appropriate solution. An effective rating scale, for example, is 4 =excellent, 3=Good, 2 =Fair, and 1= poor

Implementation Planning: Up to this point a great deal of work has been put into the problem-solving process. A solution has been chosen. Plans must now be made to implement the solution. Only then will the solution become effective. To be effective , a solution must have two characteristics: it must be of high quality, and it must be acceptable to the people who will have to live with it. Unfortunately, the effectiveness of a solution is often determined less by the quality and more by the process through which it is implemented. The involvement of others in the implementation of the solution tends to produce more effective results. In developing an implementation plan it is important to consider who will be affected by the solution, who will support the solution, and who will resist the solution. Some techniques for gathering support include asking people for their ideas, keeping them informed of progress during

implementation, and running a small-scale test of the solution.

Evaluation:Evaluation is the next phase of the problem – solving process. However, it should not be considered the last phase. The problem solving process never really ends. One reason for evaluating problem solving effectiveness is to determine whether or not the solution has done what was intended. If it has not, there is new problem awareness requiring a new problem –solving effort. If the solution is effective, the change introduced by the solution may generate new problems that need to be handled. The evaluation should be some form of feedback, either verbal or numerical, that measures key information regarding changes in the problem situation.

Problem-Solving Techniques

Two of the most effective techniques to increase problem-solving effectives are brainstorming and diagramming.

Brainstorming

Brainstorming is a group problem –solving technique developed years ago by Alex Osborn, then the "o" in BBD&O the famous New York advertising agency. Osborn, who had a life-long interest in creativity and problem solving, recognizing that each of us is the product of our experiences, values, and knowledge. He reasoned that by bringing together into one problem-solving environment people with diverse backgrounds and experiences, the number and kinds of possible solutions to a problem would be greater than if these people attempted to solve the same problem on their own. The result would be a synergistic effect, with each individual stimulating the ideas of the others. The figure blow shows the synergistic effects of brainstorming. In the years since Osborn first used brainstorming as a problem-solving device in his advertising agency, the world has come to use the technique in a wide variety of settings. Today, from NASA to myriad businesses and libraries from late-night sessions in college dorms to volunteer organizations, brainstorming remains an effective technique.

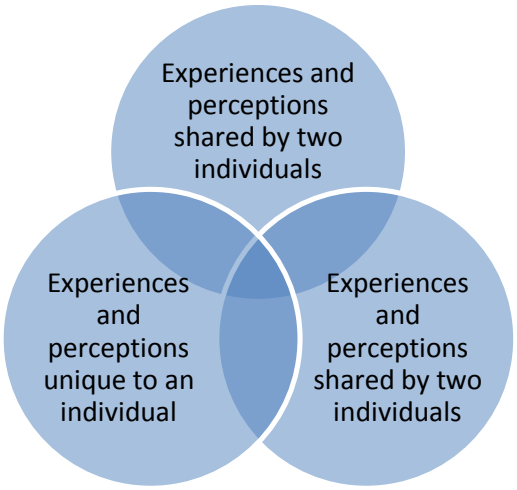
Brainstorming has a simple set of rules. Each brainstorming session must have a leader whose purpose it is to give the group the facts of the problem, record the solutions presented by the group, and keep the group on track. In addition, the group abides by these four rules:

1. Rule out judgments. The time for judgment will come later. Be careful not to judge either the ideas of others in the group or your own.
2. Strive for quantity. The purpose of the brainstorming session is to generate many possible solutions. As possible.
3. Create ideas-the wilder, the better. Innovate. Separate imagination and judgment. it is easier to tame down ideas than it is to "wild" them up.
4. Hitchhike. When someone else says something that gives you a new idea, add it immediately. The hitchhiker need only snap his fingers to get attention for his idea.

   Later the list of ideas should be circulated among all group members for any additional ideas that may come to mind. Other tips on running a brainstorming session are as follows:

   - Let people know in advance why they are to participate. Give them only a brief background on the problem. They do not need to know all of the details; partial ignorance will often provide the solution being sought.
   - During the session record ideas on a blackboard or chart pad in front of the group so that people can review what has been suggested and perhaps kindle new ideas.
   - After the session thank the members for their participation. Also, they may wish to know which solution has been selected.

Diagramming



Diagramming is a technique for visualizing a problem as well as the facts related to it. Most people are generally visually oriented. They grasp things more readily when they can see them. Therefore, diagramming a problem on a blackboard or chart pad may be helpful. You can show relationships between events and facts. Use diagramming to position facts in relation to specific dimensions. For example, one effective use of diagramming is to place facts on a line representing time to see how a sequence of events occurred. Another use is to place a main factor problem in the center of a page and place other facts around it in such a way as to represent their primary or contributing effects.

Blocks to Effective Problem Solving

There are a number of things that act as blocks to effective problem solving. Being aware of these blocks can improve problem-solving results. Some of the more common blocks are as follows:

- Habits. Solving problems means doing things in different ways. The way things are currently done may be a comfortable habit, one that is difficult to break. Occasionally there is little awareness of habits and how they affect problem solving.
- Perceptions. Like habits, perceptions color how problems and solutions are seen. The ability to see things from different perspectives –for example, to see things from another's viewpoint is a way to overcome this block.
- Fears. Everyone experiences fears. Sometimes effective problem solving is blocked by what might be called unrealistic fears –fears that are more in the mind than in reality some of these fears include the fear of failure, the fear of being laughed at, or the fear of being rejected.
- Assumptions. Often assumptions are accepted in place of facts. This is convenient since it saves time, but it may also limit problem-solving effectiveness. Assumptions may be made on what the problem is or not, what solutions are possible, or whether an attempt should even be made to solve the problem
- History. A too –familiar knowledge of what has happened before, what solutions have been tried, and what has and has not worked will lead to making assumptions and to being comfortable with the familiar.
- Skipping steps in the process a combination of habit and anxiety may cause people to rush too quickly through the process, skipping steps without realizing they have done so.
- Change. Above all , problem solving implies changing something that is for something new. Change is difficult for everyone. Resistance, to change in some

form is a natural reaction. When all the other blocks are overcome, this one will still have to be dealt with.

Summary

All people have some problem –solving skills. And for each person problem solving is a very individualized process. Problem solving is something that occurs regularly every day; yet little emphasis has traditionally been given to its improvement.

Recent studies and theories have provided new insight into how people solve problems from this has come a clearer understanding of the problem –solving process, an understanding that problem solving is based upon skills and that new skills can be learned to increase problem solving effectiveness. The key point to be learned are as follow (a) understanding the problem –solving process, from problem, awareness through evaluation; (b) learning the structures and skills that facilitate the use of the problem-solving process; and (C) practicing flexibility in utilizing both the structure and the process to become a better problem solver.

Librarians as library managers must embrace the concept of problem –solving as these is the only means by which the library can ensure that its users are being adequately served. Failure to imbibe problem-solving skills will lead to frustrated library users, which a good library manager should strive to avoid.

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