Problem solving:
A tool for workplace educators

"Collaborative Learning for Continuous Improvement"

New York State Education Department Workplace Education Project

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CONTENTS

Introduction

This statewide workplace education project was set up to explore how employees might develop SCANS-type competencies in the context of solving job-related problems. In its early months, problem-solving was initially focused on dealing with production-related tasks. As sites completed their workplace needs assessments, they indicated that the issues or problems they wanted to deal with were not just production-related ones. One site, for example, wanted to help learners understand and use their employee benefits package. Another wanted employees to understand the larger economic context in which they and their plant operated.

This Tech Note is designed to help stakeholders at the site level better understand how they can use problem-solving as an instructional and planning tool. The document is structured around the following questions:

Questions covered
in this Tech Note

1. How is "problem-solving" being used in adult education, community development, and organizational development?
2. Why and how are workplace educators using problem-solving techniques at various levels within the field?
3. How are workplace educators using problem-solving in the classroom?
4. What are some strengths and limitations of using problem solving techniques in workplace education?
5. What might you do to prepare yourself and those you work with to incorporate problem solving into your work?

This Tech Note repeats -- and expands on -- some of the information contained in the brief discussion of "problem-solving" in Technical Note #5, "Curriculum: Creating Multiple Learning Opportunities." Readers are encouraged to think whether and how they might apply the rationale and techniques outlined here in their

own work. We welcome feedback, further examples, and additional resources to incorporate into future editions of this document.

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CHAPTER 1

How is "problem solving" being used in adult education, community development, and organizational development?

What does "problem solving" mean to you at this stage?

This Tech Note encourages readers to think creatively and "stretch" themselves to figure out how "problem-solving" might be used in workplace education. To begin this "stretching" process, please ask yourself:

- When you hear the term "problem solving," what comes to mind?
- In what contexts do you hear it -- in your work and elsewhere?
- What kind of activity is the term used to describe?
- What other terms are used to describe similar procedures?
- In your own work, when do you use problem-solving techniques?

Take a few minutes to jot down responses to the above questions. This will serve as a "base line" record of where you are at this stage of thinking about problem solving as a tool.

How others have used problem solving

In general adult basic education, workplace education, and other related fields, the term "problem solving" is sometimes used interchangeably with similar terms like "problem-posing," "critical thinking," "trouble-shooting," "decision-making," "action planning."

In the spirit of "best practices" and "cross-fertilization," it is worthwhile to take the time to learn about procedures which others in our own and other disciplines are developing. Here is a summary of how some others in three fields are using "problem-solving" or similar terms. This represents a mix of sources and interpretation about the why's and how's of teaching and using problem-solving skills.

In adult basic education

SCANS and related reports on "education and the workplace": The SCANS report (and similar ones like ASTD's "Workplace Basics: The Essential Skills Employers Want" and AFL-CIO's "Worker-Centered Learning" guide) have broadened how people define "workplace basic skills." Such "basics" now include "problem-solving" and related competencies which previously were designated as "higher-order" skills.

These reports argue that America's workplaces have to change to remain competitive and to retain jobs in the U.S. Central to these changes is a flattening of traditional decision-making hierarchies and with it greater involvement of workers in decision-making and solving workplace problems.

Such skills have to be emphasized not only in school-based education for America's future workforce but in pre-employment and workplace education and training programs for adults. This is because schools have historically not encouraged the development of such skills ("Kids learn to cooperate and make decisions mainly in sports and other extra-curriculars.") and because workplaces have been structured to discourage workers from developing and using such skills. ("Just do your job, keep your mouth shut, and check your brain at the door.")

SCANS defined "problem solving" as . . .

> *Recognizing that a problem exists (i.e., there is a discrepancy between what is and what should or could be); identifying possible reasons for the discrepancy; and devising and implementing a plan of action to resolve it. Evaluating and monitoring progress and revising the plan as indicated by findings.*

Advocates of education as a tool for democratic social change: Those who see adult education as a tool for democratic social change make arguments for a problem-solving approach which in many ways overlap with those found in the SCANS-type reports. These adult educators argue that various social institutions (schools, the media, workplaces, and others) have historically been structured in top-down ways which promote passivity and a lack of critical thinking skills in most of our population. The result has been decision-making and power concentrated in relatively few hands, with negative psychological

and economic consequences for those at the bottom of the decision-making/power pyramid.

To create a more active, thinking, involved, and democratic society, all citizens -- including adults beyond school age -- can benefit from learning activities which help them develop a self-concept, relationships, knowledge, and skills required for participatory decision-making and social action. Such thinking and action are the essence of democracy and a means for the larger population to improve the world.

One advocate of such an approach to adult education, Paulo Freire, developed what he termed a "problem-posing" process which at once helps learners develop basic reading, writing, and oral communication skills while also learning how to think critically, identify and analyze problems of importance to themselves, and map out plans for solving those problems. In such a process, learners name and then focus on solving their own problems rather than limiting themselves to problems selected by others.

In community development

Advocates of participatory community development/ democracy: Community organizers and other community development specialists have long seen problem-solving techniques as central to their efforts to help community members develop the ability to solve their own problems. As such, they share much with the above-described advocates of education as a tool for democratic social change. However, community development specialists tend to place less stress on learners developing reading, writing, and other basic skills as part of the problem-solving process.

In organizational development

Promoters of the "high performance" and "learning" organization model: Since the mid-1980s, many U.S. workplaces have adopted some variation of "total quality management" (TQM) which emphasizes a variety of strategies for gearing operations to satisfying customer needs. One such strategy is orienting all employees to a problem-solving mode via employee training and restructuring of how decisions are made.

Employees are given training to help them develop the skills they need to work individually and collectively as problem-solvers. At the same time, workplace communications, reporting and evaluating procedures, team meetings, incentive systems, and other policies and procedures are restructured to enable and encourage employees to actually use those problem-solving skills to improve the organization.

Some see "learning" as central to creating this new kind of workplace. They argue that all involved in a workplace need to think of themselves as a "learning organization" where all see learning as a tool for "grasping and managing the increasingly complex systems of our world." Learning in such a case is not the traditional mastery of information and procedures created by others; rather, learning is essentially a problem-solving process of understanding how particular human and mechanical pieces fit into larger systems and then taking action to improve how those systems work.

Advocates of workplace democracy: Many of the above arguments for "team learning," "team management," and "team decision-making" as tools for improved quality were predated and influenced by the "quality of worklife" (QWL) movement of the latter 1970s and early 1980s. QWL advocates argued that worker involvement in decision-making was vital not only for improved productivity but for improved quality of worklife for workers. Indicators of such "QWL" included job security, fair wages and benefits, employee ownership, and job satisfaction. "Quality circles" and other team planning and problem-solving procedures were pioneered by QWL advocates.

Related to the QWL movement are the efforts of those who have promoted cooperatives and other forms of worker ownership. Such transferring of organizational control to those doing most of the day-to-day work is seen as a vehicle for not only ensuring quality of worklife for employees but a more democratic and equitable economy and society. In such worker-owned companies and cooperatives, all employees are given opportunities to participate in decisions affecting both production and their roles in the production process. To participate actively in such a system, all employees need team decision-making and problem-solving skills.

The above sources present arguments for an emphasis on problem solving as a workplace tool and as a focal point for adult educaiton activities. Note that, although they come from different diciplines and philosophical orientations, these varied sources make similar arguments and use similar procedures. Workplace educators should familiarize themselves with these sources and draw on the arguments and procedures they've developed, to help them figure out how to incorporate problem solving into workplace education efforts.

CHAPTER 2

Why and how are workplace educators using problem-solving techniques at various levels within the field?

Chapter I presents arguments which researchers, policy makers, and practitioners in several fields have made for a greater emphasis on problem-solving in our educational systems, workplaces, and other institutions. These sources argue that "problem-solving skills" are missing in our society and workforce, and that -- if we want a stronger economy, communities, and/or democracy -- we need to find ways to help children and adults become more pro-active, thinking, organized problem-solvers.

In fact, workplace educators -- who we might define as those involved in planning and implementing basic education and possibly technical training activities for employees in workplace contexts -- are already focusing on "problem-solving skills" in various ways in the work they do.

This Chapter will give you some examples of these uses of problem solving in workplace education. Before reviewing those examples, take a few minutes to note any such examples you are aware of. On a piece of paper, describe . . .

- Any workplace education effort you know of which is using problem-solving procedures in the classroom or otherwise.
- Why those procedures are being taught or used.
- Who is involved.
- What the results have been.

How problem solving is being used within the workplace education field

Workplace educators have recognized the value of problem solving as a tool for instruction and program planning. Here are examples of how problem solving is being adapted at three levels in

the field: in the classroom, in program-level planning, and beyond individual programs.

In the classroom

In contexts where stakeholders agree learners need to strengthen their abilities to work individually and collectively to identify and solve problems, facilitators structure learning activities as group problem-solving exercises.

Learners are asked to identify problems and their causes, debate possible solutions, and prepare and present action plans to appropriate audiences.

Learners thereby develop such broader SCANS competencies as problem solving, teamwork, and finding and organizing information, along with the more traditional basic skills of reading, writing, listening, speaking, and math.

In program-level planning

Stakeholders (managers, union representatives, supervisors, learners, education staff) in a workplace education effort are organized in "educational planning teams" (EPTs). These teams use TQM, strategic planning, and problem-solving procedures to analyze organizational and individual needs; map out a range of possible strategies (educational and otherwise) for responding to those needs; and then plan, run, monitor, and refine those activities.

Such EPTs facilitate communication among stakeholder groups and thereby. . .
> . . . enhance their understanding of and buy-in and support for the educational program.
> . . . keep activities focused on needs considered important by those stakeholders, and
> . . . build a learning organization by enabling stakeholders to develop relationships and skills (including group problem solving) they can use in other situations beyond the workplace education program itself.

Beyond individual programs

Workplace education practitioners and other stakeholders have organized various kinds of collaborative mechanisms for communicating and making decisions which affect a number of programs. These mechanisms include a state-level "Central Planning Team" in New York and a statewide consortium in Massachusetts. In these examples, stakeholders use problem-solving techniques to identify needs at the site level and figure out strategies for providing technical assistance to help sites resolve those needs.

CHAPTER 3

How are workplace educators using problem solving in the classroom?

We have now mapped out three "levels" where workplace educators are somehow using problem-solving techniques. Let's now focus on the level of most interest to curriculum developers and instructors: "the classroom." The following case studies provide examples of how workplace educators have interpreted "problem solving," incorporating it into various kinds of learning activities.

Improving operations in the freight department

Employees in the freight department at World Financial Corporation headquarters participated in a workplace education program aimed at upgrading the reading, writing, oral English, and math skills they needed for their jobs. These jobs consisted primarily of receiving and logging in packages from delivery trucks and transporting those packages to the appropriate offices within the company's 20-story headquarters building.

The company also hoped that, in addition to upgrading immediate job skills, participants would better understand and participate more fully in the "quality team" movement within the company, use new computerized technology, and be better prepared to move into other jobs which might be opening up within the company as it adopts new technology and restructures departments.

As a problem-solving activity, the instructor asked participants to brainstorm problems they faced in their day-to-day work. They agreed that one of the biggest problems was the freight elevator which they relied on when travelling back and forth between the loading dock and the floors.

Their instructor had them describe just what it was that bothered them about the freight elevator. They replied:

• The elevator breaks down and the repair company is slow in making the needed repairs.
• The elevator operator has an attitude problem. Depending on his mood, he may or may not come when he is called. He also has his "favorite" delivery personnel; if you aren't one of his

favorites, he gives you low priority when you ring for the elevator.

• On several floors, custodians pile trash near the elevator entrance. This makes it difficult or impossible to exit the elevator on that floor, making deliveries difficult.

• Most incoming shipments are ready to be delivered upstairs by 9:00 a.m. However, this creates a "traffic jam" of delivery personnel all waiting in line to use the freight elevator at that time. Customers upstairs get angry when they don't get their deliveries by 10:00 a.m., but delivery personnel have to deal with the above obstacles before they can make their deliveries.

Participants then analyzed causes for those problems and mapped out actions which might be taken to rectify those problems. They did so through brainstorming, with the facilitator recording what they said on flipcharts. With a word processor, the facilitator then summarized the participants' list of problems, causes, and possible solutions in a concise action plan. The group submitted the resulting action plan to the freight department supervisor and manager.

Combining training in SPC and problem solving

International Die Casting gave community college instructor Maria the task of teaching the basics of statistical process control to workers in its newly-reorganized production facility. Most of these workers were "rusty" in their math and were also not very familiar with the new computerized machines they would have to use.

The engineering staff explained to Maria that, although the machines would do most of the work, they needed to be constantly monitored by the workers who had previously had greater hands-on control of what their machines did. The workers' roles were thus changing from "operator" to "monitor." In that new role, they had to keep an eye on the statistics being churned out by the machines, which indicated the dimensions of the parts being produced. The workers had to be able to interpret those statistics to understand whether the machines were producing parts which met the stringent quality standards their customers now required.

Many of the primarily-middle-aged workers hadn't had any formal math training since high school. A few had participated in an "SPC math" course offered by the company two years before, but most found the course irrelevant and tedious. (Maria

surmised that that SPC course was very academic in nature, teaching math in the abstract with the result that participants never learned how to connect it back to tasks they faced on their jobs.)

Maria concluded that, rather than teach SPC as an abstract math function, she would teach it as a problem-solving tool. Through interviews with members of the company education planning team, she realized that team problem-solving and decision-making were what workers needed to be able to do, and that SPC was just one (important) tool they'd need to do so.

She thus structured the SPC course as follows:

- For this focused course, participants meet twice, for three hours each time. In the first session, Maria explains the various statistical functions (i.e., mean, medium, mode, and range) which they need to master to use the charts being produced by their machines. They get practice in using those functions, ask questions, get feedback, and practice some more.
- In the second class, the emphasis is more on using those statistical skills in team problem-solving situations. For example, Maria presents the participants with some data which she has taken from a typical production chart and asks them to calculate, say, the mean and range of those data. They are then asked to prepare a graph showing those statistics, which they then compare with a graph actually produced by one of their machines. Emphasis is placed on helping participants individually and collectively be able to use statistics to recognize when the machine is working all right, when it is getting close to malfunctioning, and when it has gone beyond acceptable standards. They also learn to diagnose the causes of any malfunctions and --using a flow chart developed by the education planning team -- to take necessary steps to alleviate problems.
- This combination of activities is designed to ensure that individuals (1) fully understand the why's and how's of using statistical calculations on their new machines and (2) are able to work as a team to pool this statistical understanding to ensure that their machines operate within agreed-on standards.

Maria has found that the problem-solving component is very popular among participants. It enables them to draw on the

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knowledge and relationships they already have and provides a process for them to actually apply statistical knowledge to the solving of real problems they face. This team problem solving is also not something foreign to them, because the company had previously exposed them to a problem-solving process, although that earlier version was more complicated than necessary.

Company managers are gradually seeing the value in providing such training to front-line workers. Managers are themselves now going through ISO 9000 training, which emphasizes team-building, problem-solving, and documentation as responsibilities of all workers, not just supervisors.

A course in financial planning

In their workplace needs assessment, the education planning team at York Manufacturing found that employees needed help developing the skills and knowledge required to plan for their futures within and outside the company. They subsequently discovered that learners needed particular help with using the new benefits package developed by the company. This, in effect, became the "problem" which the instructor designed a course to respond to.

The instructor worked with workers and the human resources manager to review the financial planning package and figure out what was blocking employees from understanding and using the system. The result was a course which looked not only at the immediate tasks (e.g., decisions about stock options, filling out forms, etc.) required by the company's benefits package, but at larger issues of the world economy, the company's role in that economy, why workers need to be pro-active in planning for the future, and so forth. Learners also strengthened not only traditional basic skills of reading, writing, and math, but other SCANS competencies like "self-management," "understanding systems," and "acquiring and evaluating information."

This 40-hour course had the following results: the company felt its efforts to improve its benefit system had the desired outcome for workers; workers felt more empowered to control their financial future,; and the human resources department felt it didn't have to spend so much time explaining the benefits package to employees and helping them make decisions, fill out forms, etc. Those who participated took their enthusiasm back to the plant and now another fifteen employees have signed up for a similar course on their own time.

Although this course didn't follow a "problem-solving method" in the normal sense of "identifying problems and their causes and mapping out solutions," the course did -- in a broader sense -- qualify as a "problem-solving activity" That is, it helped the organization and employees to solve the mutual problem of lack of proper use of the company's financial assistance program. In this case, much of the analysis of the problem and solutions was done by the instructor with the EPT. The participants' role was more to master the resulting procedures and information presented by the instructor.

An introductory course on communications, teamwork, and problem-solving

The education planning team (EPT) at Action Industries conducted a workplace needs assessment and found a need for improved communications, teamwork, and problem solving within and across various levels of the organization. This was seen as vital to help the organization continue to shift toward a high performance, team-oriented model.

The community college representative, Rachel, who was to serve as curriculum developer and instructor for the EPT was thus faced with the challenge of responding to that identified need. Through interviews and focus groups, she realized that most employees had fairly strong basic reading, writing, and math skills. She concluded that she should help participants build on those skills and further strengthen them in the context of activities which would focus on building the relationships and skills employees needed to better communicate, work, and solve problems in teams.

The curriculum is currently in an early stage of development, so specific topics and lesson plans are not yet available. However, Rachel plans to first develop an introductory course which will . . .

1. get learners in the mode of communicating and working in groups (i.e., help them see the value of clear communications and teamwork);
2. give them practice in specific communications and problem-solving strategies they can apply on the job and in future training and education activities;
3. do so while improving their understanding of the history and present conditions of U.S. business and their company's position in it; and

*4. enable learners and the instructor to get to know each other,
develop trust and an interest in ongoing learning, and identify
learning needs which might be covered in future learning
activities beyond the introductory course.*

These four examples show a range of ways to incorporate
"problem solving" into a workplace basic education program. As our
project proceeds, we will expand on these examples in future
editions of this Tech Note.

CHAPTER 4

What are some strengths and limitations of using problem-solving techniques in workplace education?

Reflect on what you now know about problem solving.

You might have already had some personal experience using problem-solving techniques in a workplace education program, or you might know of others who have done so. Take a few minutes to reflect on that experience and on the case studies in Chapter 3. Ask yourself what the benefits and disadvantages of using problem solving in workplace education might be.

More specifically, ask yourself . . .

1. What was achieved by using problem solving in the classroom or in program planning?
  * *Were those involved able to . . .*
    -- Select a problem(s) to focus on?
    -- Describe that problem?
    -- Identify causes for the problem?
    -- Map out possible solutions?
    -- Present a clear action plan?
2. Strengths of the process used:
  * *What positive results came from the process/experience?*
  * *What worked?*
  * *What was useful?*
3. Limitations of the process used:
  * *What didn't work so well?*
  * *What obstacles were encountered?*
4. Given what you now know about using problem solving as an instructional or planning tool, would you use these kind of procedures in your work?
  * *Why or why not?*
  * *If so, in what situations?*
  * *What kinds of procedures would you use?*

5. If you were to carry out similar problem-solving activities in the future, what would you need to have in place? (What are essential ingredients of successful problem-solving?)

Reflect on lessons learned in the field so far.

Let's now consider what other experience in the field is telling us about using problem solving:

Using problem-solving as a tool for instruction and planning: Potential benefits and necessary ingredients

Potential benefits of problem-solving . . .

> . . . <u>as an instructional tool</u>:
> - focuses on a set of skills which are widely seen as important and transferrable to many tasks faced by learners in many contexts.
> - by using problem-solving activities as a framework for learning, learners can develop a number of mutually-reinforcing skills simultaneously.
> - learners can develop action plans which can be applied immediately to organizational and personal improvement.

> . . . <u>as a planning tool</u>:
> - by using team problem solving, stakeholders can improve the education program while also developing skills and relationships which can be applied to other workplace tasks.

What needs to be in place for effective problem solving

Those involved in group problem-solving activities need to have. . .

<u>A common interest</u> (a shared value) in working together to use problem solving as a tool for organizational improvement. (They shouldn't see team problem-solving as a threat or distraction, but as a valuable tool.)

<u>Expertise</u>: Those involved need to know problem-solving procedures and have the skills required (e.g., reading, writing,

math, oral communications, finding information) to carry out those procedures.

<u>Time</u> to go through the problem-solving process. (Complex problems -- and even simple ones -- require time to think through and act on.)

<u>Clear roles and user-friendly procedures</u> for those involved so that all work on tasks appropriate and interesting to them, and thereby make best use of the expertise and time represented in the group.

<u>A supportive context</u>: It's not enough to come up with an action plan. A problem-solving group must then have others willing to listen to, negotiate, and respond to the plan. Otherwise, the action plan and planning process won't have much lasting impact.

CHAPTER 5

What might you do
to prepare yourself and those you work with
to incorporate problem solving into your work?

You have now reviewed some "why's and how's" of using problem-solving procedures as instructional and (to a more limited degree) planning tools in workplace education. Those readers who might like to more systematically investigate these issues further might do the following:

Exploring the use of problem-solving
in workplace education:
What you might do

1. <u>Clarify what you need to know</u>. On your own and/or with colleagues also interested in the subject, jot down some questions you have in mind about using problem-solving procedures in your work.

2. <u>Collect the information you need</u>. Use a variety of ways to collect information which will help you answer your questions. You might:
   - Do some reading. (Organizational development guidebooks abound with "how-to's" of using various kinds of problem-solving procedures. See Appendix A of this Tech Note.)
   - Talk with others already using problem-solving procedures in instruction and/or planning. (See Appendix B.)

3. <u>Design a pilot project</u>. Based on your findings, map out a plan for various instructional or planning activities in which you use problem-solving techniques.

4. <u>Prepare those you'll work with</u>. Propose to those you work with the idea of using the problem-solving procedures you have in mind. Explain the potential benefits as well as what will have to be in place for your procedures to work. Negotiate the time, expertise, and commitment your colleagues will require.

5. <u>Try out your ideas</u>, evaluate your experience, and decide whether and how to try them again.

6. <u>Share your experience</u> with others <u>and advocate</u> for use of these practices where appropriate.

A sample problem-solving activity
for the workplace education classroom

Most workplaces -- especially those which have adopted some version of total quality management -- have some kind of problem-solving method in place. A "problem-posing" version of such a process (i.e., one which emphasizes having learners identify -- or pose -- the problems they want to deal with) might contain the following elements:

How to organize learning
as a problem-posing activity

1. Identify the problem/question.
  • Learners identify a range of possible problems or questions to focus on.
  • Learners decide which problem/question to focus on next (How immediate and interesting is the problem? Is it something they can do somethong about? Is it too "hot" to touch?)

2. Describe the problem.
  • Learners get more specific, identifying "symptoms" of the problem. (Don't allow learners to get away with defining the problem as "waste," or "inefficiency," or "unsafe working conditions." They need to be more specific and describe what it is they are concerned with.)

3. Identify possible causes.
  • Learners identify various factors -- human and otherwise -- which contribute to the problem. (Try to get away from "personalizing" the problem too much -- assigning blame to particular individuals. Look for deeper, underlying, systemic causes for the problem, to encourage a deeper understanding of why things work -- or don't work -- as we might like them to.)

4. Map out possible solutions.
  • Learners identify resources -- good ideas, best practices -- which might be used to deal with the various causes of a

problem. (Often there are already a lot of good practices already in place in an organization. They just aren't being used properly.) Where a number of stakeholders share responsibility for a particular problem, be sure to identify appropriate actions which each stakeholder group can take. This spreads the responsibility around, making it more of a team effort rather than focusing all of the blame or responsibility on one party. Be sure to be realistic and not ask the impossible of anyone. You might break actions down into chewable bites, starting off with more-immediate "next steps" and then pointing to longer-term actions.

• Learners review their list of actions which various stakeholder groups might take and choose which of these possible corrective actions to recommend. The group then weaves those actions together into a set of shorter-term and longer-term recommendations, possibly organized according to the stakeholder groups responsible for those actions.

• To be consistent with a TQM approach, learners might also identify how they would monitor those activities, to determine whether they are being implemented effectively.

5. *Present the action plan and follow up.*

• The group presents its action plan to appropriate audiences. These might include the education planning team, representatives of the union or management, fellow workers, or other individuals or groups. Reports might take the form of written documents (including brief executive summaries), oral presentations (with flipcharts, several speakers), articles in the company or union newsletter, posters, slide shows, or other imaginative formats.

• Once recommendations are presented, learners should be ready to listen to the audience's response and negotiate actions which all can agree on. Once those actions are decided, learners and other stakeholders should follow up and be sure that the actions are in fact carried out properly.

How does this relate to "basic skills education"? Such a framework provides a purpose for learning as well as meaningful "hooks" to attach practice in various basic skills to. Brainstorming, for example, gives participants practice in oral communications. When recording responses on flipcharts, learners use listening, clear-writing, and reading skills. Learners can practice using fishbones, ven diagrams, and other graphic tools to show causes,

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relationships, solutions. In fact, within such a framework, learners can practice the broad range of competencies outlined in SCANS and similar reports about the skills the modern workforce needs. This framework is also consistent with holistic views of how people learn, using a number of skills concurrently and in mutually-reinforcing ways.

In an integrated workplace education/training/change initiative, such a problem-posing approach provides learners with a way of approaching organizational improvement which they can apply in many different situations they face on and off the job. It thus helps learners see learning as relevant, and encourages them to use what they are learning in many different situations. Learners thereby continually get in more "time on task" using their skills, thereby reinforcing their skills and producing real change for the learners and organization.