SCOTT G. ISAKSEN
SIDNEY J. PARNES

Curriculum Planning for Creative Thinking and Problem Solving

INTRODUCTION AND PURPOSE

This article reports results of a survey of 150 curriculum planners about their knowledge, attitudes and behavior with respect to the deliberate development of creative thinking and problem-solving skills. Based on the findings and conclusions, suggestions are provided for a creative problem-solving model to engage in curriculum planning for creative learning.[1]

First, though, we will provide background and the research context for the findings, as well as a rationale for creative learning.

BACKGROUND

Many writers have contributed to the literature on creative thinking, problem solving and curriculum, but few have tried to integrate the three. In 1981, the senior author undertook a computer search using the ERIC data base to find help in planning programs to enhance creative thinking and problem solving. The search yielded 6,376 entries related to creative thinking, 1,094 for problem solving and 46,465 related to curriculum. However, out of these nearly 62,000 entries, only 57 were related to all three areas. Of the 57, only a handful were directly related to curriculum planning practices for designing programs to enhance creative thinking and problem-solving skills (Isaksen, 1983a).

This lack of information, coupled with the fact that it is usually easier to do more of the same old thing, accounts for Goodlad's (1983) recent findings that not very much has changed in our nation's classrooms. The primary emphasis is still on the teacher providing basic information to passive learners. Yet more and more of our nation's parents, business people and organizational leaders are becoming increasingly

concerned with the quality and relevance of educational outcomes.

Brandt (1984) provided an overview of a recent issue of *Educational Leadership* which included a special emphasis on the teaching of thinking. In recognizing the current high level of interest in this type of program, he stated:

> Educators across the country are reviewing their curricula and looking for assistance in planning thinking skills programs...the stress on intellectual development voiced in the recent national reports makes it prudent for schools to provide for teaching thinking throughout the curriculum. ASCD will try to help.

Furthermore, Foshay (1981) pointed out, there is a long history to the type of educational goal statement which is supportive of creative learning, by citing a long list of notables: "...including Plato, Montaigne, Milton, Franklin, Rousseau, Jefferson, Newman, Spencer, Dewey, and Whitehead...."

Dewey (1933) identified an appropriate emphasis for education to be the process of reflective thinking. He charged teachers with the responsibility to know this process and facilitate its development in students by providing appropriate conditions to stimulate and guide thinking. Hullfish and Smith (1961) provided even more detail regarding Dewey's theories. They reported:

> Where there is no problem, where no snarl appears in the normal flow of experience, there is no occasion to engage in thought...it is important that teachers understand the intimate relationship between problem-solving and thought.

Further support for this type of learning was provided by Whitehead (1929). He wrote his book, *The Aims of Education*, to protest education's emphasis on "dead knowledge." He stated:

> Let the main ideas which are introduced into a child's education be few and important, and let them be thrown into every combination possible. The child should make them his own, and should understand their application here and now in the circumstances of his actual life.

Learning which promotes the development of creative thinking and problem-solving skills is important for a society with an emphasis on democracy and innovation. People capable of making effective decisions are essential for the functioning of a democratic society. Society also needs to bring its most

creative thinkers to bear on some of its basic problems.

Smith (1966) examined the conditions for creative teaching and learning and summarized his view by stating that:

> Creativity was once considered as "garnish" or a "frill" to the basic...curriculum. Currently, we have come to regard it more as the very core of the total curriculum itself, the basis for learning and self-realization. As the core of learning, curriculum planning and teaching methodology, it assumes a role of major importance in each aspect of...curriculum.

Guilford (1970) also provided support for the view that the schools are important environments to foster the deliberate development of creative learning. He stated:

> If we look to education to foster development of intellectual skills, the implications of all this should be obvious. If we want to produce skilled problem solvers, we should see that individuals encounter the experiences that will exercise the functions in all categories (of the Structure-of-the-Intellect Model). This means attention to curriculum building so as to provide broad opportunities for different kinds of intellectual activity, while making the content seem relevant to the learners.

RESEARCH

A great deal of research supports the view that creative learning can be enhanced directly. Regarding children, much research has been reviewed by Torrance (1972). There is also evidence for the effectiveness of this type of learning for older students (Reese, Parnes, Treffinger & Kaltsounis, 1976). There is even some research regarding the pervasiveness and effectiveness of this type of learning in business and industry (Johanson, 1975; Basadur, 1982). In a review of 71 studies covering a wide variety of grade levels and testing conditions, Mansfield, Busse and Krepelka (1978) concluded that "most evaluation studies of creativity training programs seem to support the view that creativity can be trained."

Covington (1967) researched the effectiveness of creative learning and provided support for it being a central concern for education. He concluded:

> The nurturing of the cognitive skills of productive thinking should assume a central place in the curriculum, not a secondary or incidental one. Training of these skills should not be subordinated to the overriding demands of subject matter acquisition, as at present, but should be dealt with directly. What we

> need, in short, is a curriculum...which nurtures the process of productive thinking in its own right and yet in such a manner as to be fully coordinated with the other more traditional content-centered curricula.

A recent meta-analysis was conducted to examine the impact of instructional programs across a wide range of studies. Rose and Lin (1984) reported that their results suggested that training does affect creativity. They acknowledge that creative thinking is both a skill and an innate ability. The skills can be developed and the innate abilities can be stimulated and nourished through education and training.

A RATIONALE FOR CREATIVE LEARNING

Support for a creative learning approach to the curriculum comes from a wide variety of "centers of interest." These range from those concerned with developing independent, self-directed learners to those concerned with providing a more humane type of learning. All these educational arenas seem to focus on effective preparation for an ever-changing and increasingly complex world as well as the internally-oriented emphasis of maximizing individual productivity. Treffinger (1980) summarized the rationale for creative learning by stating that this type of learning is important because:

1. It helps learners be more effective when teachers or trainers aren't around.
2. It creates possibilities for solving future problems that cannot be anticipated.
3. It may lead to powerful consequences in our lives.
4. It can produce great satisfaction and joy.

Much of what can be currently observed in classrooms and training centers is influenced by the early curriculum developers. These writers viewed curriculum as the vehicle with which to hand down to the learner all the necessary "learnings" for effective citizenship. This emphasis for education was deemed appropriate to prepare factory workers, provide other labor services and develop an educated citizenry. Essentially, the learner was treated as "...raw material to be processed and transformed into a product" (Molnar & Zahorik, 1977). This curricular zeitgeist can be referred to as the industrial model, since the source for this movement was the coincidental effort of scientific management in industry. The emphasis of this industrial effort was to eliminate waste and inefficiency, and to maximize productivity and profits. This view led Bobbitt (1918) to analyze life activities and distill out the discrete skills and other learnings so that they could be taught more efficiently in schools.

Toffler (1980) described the major cultural, economic and sociopolitical shifts as occurring in waves. The first wave he identified as agrarian. This wave provided a major shift, in that farming and settling changed the previous nomadic life style. Tribes of wanderers became communities or villages. There was a corresponding shift in curricular efforts as well. From a survival emphasis came a community-based effort to communicate, trade and record.

The second was described as the industrial wave. The production of goods and services, the centralization of population and the specialization of labor had a profound impact on our culture. Again there was a related change in the way the culture provided education. Schools were developed (and later centralized) and the curriculum was designed in a structured grade-level format to educate following the thinking put forth by Bobbitt.

Toffler suggested that the third wave, cresting at the present time, will have a profound effect on our culture. It is described as "post-industrial" as it will be hard to give it a name until after it has crested. Ferguson has labeled it the information society and Naisbitt has described the elements of the third wave in his book, *Megatrends*. Miller (1981) described some of the implications of the third wave for education's future. If the curriculum planner is searching for a potent rationale for creative learning, the preparation of students for dealing with a "third-wave culture" offers fertile ground for a variety of seeds of support.

One basic consideration is that changes will continue to increase in frequency and intensity. Within this geometrically changing context, it will be increasingly difficult to predict exactly what will be needed to function effectively twelve to sixteen years in the future. This point is well illustrated by noting that Socrates would have had only minimal difficulty in adjusting to the culture available to Bobbitt, the curriculum spokesman of the 1920s. However, Bobbitt would most likely be overwhelmed by today's culture. The pace of change is accelerating to the point that predicting the long-term future is nowhere near as accurate as it was when the industrially-oriented curriculum was formed.

To illustrate the increasing pace of change, ask yourself the names of the early inventors of the industrial era. Most people will be able to identify the inventor of the telephone, telegraph, steam engine, light bulb, cotton gin, radio or airplane. These inventions occurred at a time when individuals were associated with their inventions. The pace of new inventions occur-

ring was slow and steady. However, ask yourself who invented the 800 toll-free number system, the dishwasher, the color television or the 747 Jumbo Jet. The pace of innovation has increased to the point where it is very difficult to keep track of each one. In addition, many innovations are products of group effort and previous invention.

One of the major elements of change is the increasing availability and sheer quantity of information. During more static times, it was feasible to collect much of what was known and transmit it. However, our information-rich society provides a much more dynamic and complex picture. It is simply not possible to give students all the information available. New information grows so rapidly and alters previous information so greatly, one would have to seriously question why anyone would memorize it in the first place.

Creative learning does not discount the overall importance of information. On the contrary, information provides the raw material for learning rather than being the end product. The traditional emphasis for the curriculum has been the mere *acquisition* of knowledge by focusing on memorization and recall. Creative learning stresses the importance of *using* knowledge by focusing on analysis and synthesis.

If knowledge of information is not the end product, then what is? What then is education's purpose? In examining "What the future demands of education," Arthur Combs (1981) wrote:

> An educational system unable to predict the knowledge or behaviors demanded by the future will have to concentrate instead on producing persons able to solve problems that cannot presently be foreseen. Tomorrow's citizens must be effective problem-solvers, persons able to make good choices, to create solutions on the spot. That is precisely what intelligence is all about.

Creative learning transcends mere recall, providing the learner with the opportunity to synthesize and apply previously learned material to novel situations. Torrance and Myers (1970) provided an excellent framework for defining the creative learning process:

> ...Becoming sensitive to or aware of problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; bringing together available information; defining the difficulty or identifying the missing element; searching for solutions, making

TABLE 1 A comparison of assumptions.

SOME TRADITIONAL ASSUMPTIONS	SOME ASSUMPTIONS APPROPRIATE FOR CREATIVE LEARNING
1. The student goes to school to acquire knowledge which has existed for a long time and is handed down on authority.	1. The student goes to school to acquire skills which enable him/her to continue learning to deal with unknown/unpredicted events and challenges. Part of these skills involves the ability to acquire data (knowledge) necessary for the task at hand.
2. Subject matter taken on authority is educative in itself.	2. Subject matter provides the raw material for learning but has value only when put to use in relevant and meaningful ways.
3. The best way to set out subject matter is in unassociated fragments or parcels.	3. The best way to attain knowledge is through active, experiential learning in a setting meaningful to the individual.
4. A fragment or parcel of subject matter is the same to the learner as to the teacher.	4. What is relevant, meaningful and sensible to the learner varies according to each individual's background, experience, characteristics and needs.
5. Education is supplementary to and preparatory to life, not life itself.	5. Education involves growth, and is, therefore, a component of living.
6. Since education is not present living, it has no social aspects.	6. Personally meaningful learning involves interaction and effective communication with others.
7. The teacher can and should furnish the purpose needed for the acquiring of knowledge.	7. The learner's needs and involvement provide the initial purpose for creative learning.
8. Working on tasks devoid of purpose or interest is good discipline.	8. It is important to involve the learner in choosing tasks which are interesting and have relevance for the learner, or to find ways of making given tasks interesting or purposeful to the learner.
9. The answer to the problem is more important than the process.	9. While solution to problems may have immediate importance, learning a problem-solving process has great long-range importance.
10. It is more important to measure what has been learned than it is to learn.	10. It is both possible and important to document the impact (effect) and value of creative learning.

> hypotheses, and modifying and retesting them; perfecting them; and finally communicating the results.

This definition of creative learning appears to describe a problem-solving process. Problem solving and creative thinking are linked to creative learning. Guilford (1977) provided support for this linkage by reporting that:

> ...problem-solving and creative thinking are closely related. The very definitions of those two activities show logical connections. Creative thinking produces novel outcomes, and problem-solving involves producing a new response to a new situation, which is a novel outcome. Thus, we can say that problem-solving has creative aspects.

Many programs developed to enhance thinking focus on the development of critical thinking skills rather than (or, as opposed to) on creative thinking skills. Creative learning and effective problem solving are based on *both* creative and critical types of thinking. Isaksen and Treffinger (1985) define creative thinking as making and communicating meaningful new connections; thinking of many possibilities; thinking and experiencing in various ways and using different points of view; thinking of new and unusual possibilities; and generating and selecting alternatives. Critical thinking has been defined as analyzing and developing possibilities to compare and contrast many ideas; improving and refining promising alternatives; screening, selecting and supporting ideas; making effective decisions and judgments; and providing a sound foundation for effective action (Treffinger, 1984).

Creative learning is based on entirely different assumptions than more traditional or industrially-oriented learning. Kelley (1947) examined the assumptions for traditional learning and provided the basis to develop opposing assumptions which would outline the support for creative learning. (Kelley did not support the traditional assumptions, he simply stated them so well that we have used his work to provide the antithesis for developing our own assumptions.) See Table 1 for a comparison of these assumptions.

These assumptions for creative learning provide a framework for the various elements of the rationale we discussed. They support the development of programs designed to enhance creative thinking and problem-solving skills. They also provide a rationale for an interdisciplinary approach. The traditional approach is more subject-centered and appears to focus on externally-imposed standards. The creative learning

assumptions appear more learner-centered and focused on intrinsic motivation.

Planning programs for creative learning represents a new direction for those who have had to deal with the more traditional types of learning. As such, it represents a new area of concern for most of those involved in education. Although there seems to be little available literature on the planning process which stimulates creative learning programs, there is an abundance of methods, techniques and programs aimed at enhancing creative thinking and problem solving. There are many reviews and collections of descriptions of these materials available in the literature (see: Davis & Scott, 1971; Feldhusen & Treffinger, 1980; Parnes, Noller & Biondi, 1977; VanGundy, 1980).

THE PRESENT STUDY'S PURPOSE, METHODS AND PROCEDURES

The major question about these programs and techniques is what kind of planning is needed so the available tools can be used wisely? We have many instructional materials, but what are the most effective curriculum-planning practices to develop programs to enhance creative thinking and problem-solving skills of students? Curriculum planning is the process of generating and selecting information to develop learning experiences to attain the goals of the program.

Motivated by the need to know more about these planning practices, a study was conducted to survey curriculum planners from business and industry, from public education, and specialists in curriculum planning (Isaksen, 1983a). The study utilized descriptive methodology including the questionnaire and interview techniques.

Questionnaires were sent to 100 business and industrial planners who were leaders at the Creative Education Foundation's (CEF) Annual Creative Problem-Solving Institute (CPSI).[2] A second hundred questionnaires went to teachers

TABLE 2 Questionnaire return results.

Category	Number Sent	Number Deliverable	Number Returned	Percentage Returned
Business and Industry	100	96	51	53%
Education	100	98	57	58%
Curriculum Planning	100	90	44	49%
Total	300	284	152	53.5%

(50 from a suburban Western New York school district having an active inservice program for creative learning and 50 from the leadership of the CPSI). The third hundred went to curriculum-planning specialists engaged in advanced study at the State University of New York at Buffalo.

Follow-up interviews were conducted on the basis of a one-in-ten sampling procedure of the respondents. Data was collected during February, March and April, 1982. Interviews were conducted during June. The returns are reflected in Table 2.

The questions considered by the study related to curriculum-planning strategies used in the development of programs designed to nurture creative thinking and problem-solving skills. The study was also concerned with identification of a curriculum-planning schema that would enumerate the significant curricular components considered by planners. The central question of the study was: To what extent, if any, could a curriculum-planning schema be devised which might provide programming to enhance the creative thinking and problem-solving skills of students?

RESULTS OF THE STUDY

The 152 questionnaires that were returned provided a great deal of information about successful planning methodologies, useful techniques and effective ways to establish and maintain programs designed to enhance creative thinking and problem-solving skills. The following are a few highlights from the findings which may be helpful to those interested in developing and planning programs.

High Degree of Deliberate Planning for Creative Learning

One of the most striking findings relates to the manner in which most of these specialists actually and deliberately planned for creative learning. Eighty-seven percent of those surveyed deliberately planned for the development of creative thinking and problem-solving skills as either a distinct area of focus or through regular subject matter contexts. Only two percent of those surveyed thought that these skills would be developed sufficiently through regular instruction efforts. This preponderance of choice held true for planners whether they were associated with CPSI or not. Thirty-eight curriculum planning students out of 44 such respondents, for example, chose the deliberate approach.

This finding is consistent with research on the effectiveness of programs designed to deliberately nurture creative ability. The findings of Parnes and Noller (1973) point out that those involved in a deliberate two-year college program significantly outperformed comparable control students on a wide range of measures. Control students were provided the regular college

curriculum without the creativity-enhancement program. These findings were in agreement with the results of numerous elementary, secondary and other studies reported by Torrance (1972).

In summarizing the results of a large-scale research project financed by the Carnegie Corporation and conducted by the University of California's Institute of Personality Assessment and Research (IPAR), Covington (1967) stated:

> These data...suggest that the disposition, attitudes and skills which characterize the innovative thinker can be enhanced directly by methods and techniques which are presently available to educational planners.

Use of Programs Tied to Effective Involvement

Most planners develop their own programs (65 percent). Some weave theirs into existing subject-matter courses and others combine a few elements of one program with aspects of another. Most planners were reluctant to simply implant a particular program into a situation.

Most planners described the most effective means of developing and using programs in terms of a democratic process of involvement. They also indicated that this method of planning was carried out most effectively in organizational settings conducive to innovation. Conversely, those reporting either the non-use or least effective use of programs pointed out the lack of support for such programs in their organizations.

These results appear to confirm the findings of Kimpton and Sonnabend (1973). They found that faculty members view their school's organizational health more positively in buildings characterized as being innovative. The most significant factors involved in this view were the extent to which a building administration involved the staff in the decision-making process for solving problems, and how the administration felt about trying new methods, designs and programs.

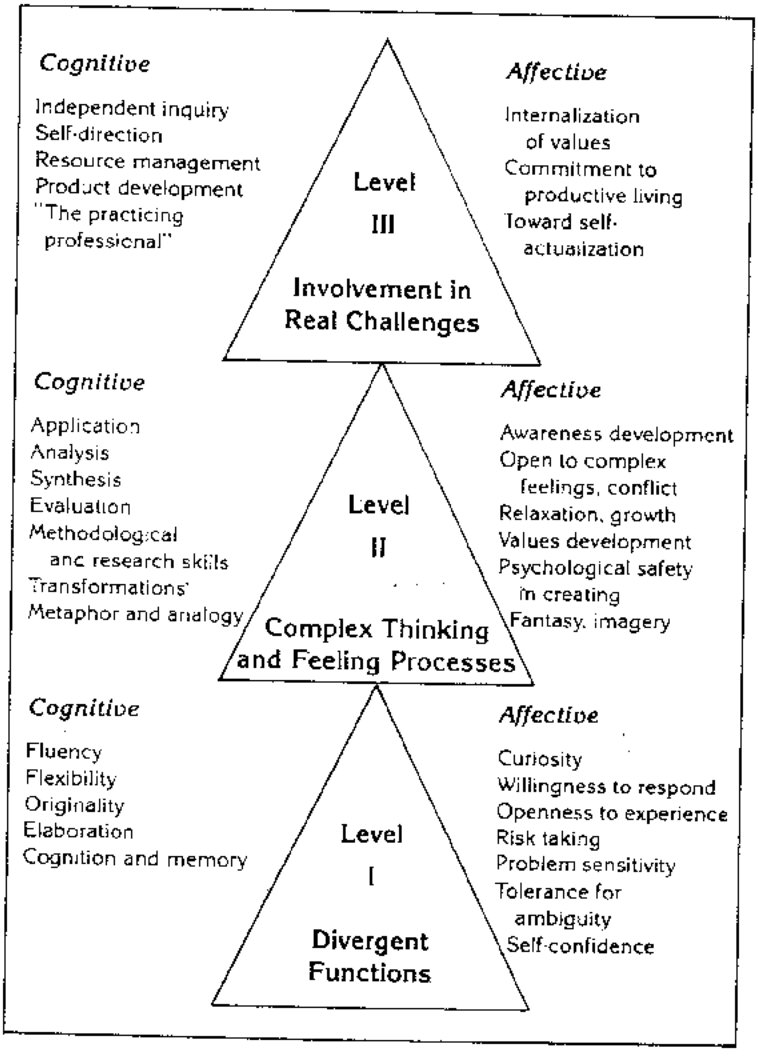
Most Successful Creative-Thinking Techniques

The respondents were requested to list the three creative thinking techniques which provided them with the greatest degree of success. Over 120 different techniques were reported as being successful.

The study used Treffinger's Model for Creative Learning (MCL) to give meaning to the results obtained (Treffinger, Isaksen & Firestien, 1982). This model includes three levels of creative learning, with consideration of both cognitive and affective dimensions at each level (see Table 3). The three levels are: (1) divergent functions; (2) complex thinking and feeling processes; and (3) involvement in real challenges.

The initial level of the MCL involves a variety of cognitive and affective factors called "divergent functions." Its suggested

TABLE 3 Creative learning model. Treffinger, D. J. *Encouraging Creative Learning for the Gifted and Talented.* Ventura, CA: Ventura County Schools/LTI, 1980.



emphasis is upon openness—seeing or sensing many different possibilities. It provides the foundation for creative learning because it includes a variety of important divergent thinking and feeling processes so basic to creative learning.

Level II of the model extends the basic cognitive and affective factors from Level I. Higher-level or more complex thinking

and feeling processes are included. These include the higher levels of Bloom's Taxonomy (1956) as well as related but unspecified (by Bloom) methodological and research skills, transformations, metaphor and analogy. In addition, the focus is on dealing with complex feelings and tensions, engaging in imagery, and on the development of psychological freedom and safety.

Level III of the MCL focuses on involving the learner in real problems and challenges. The cognitive elements include independent inquiry, self-directed learning, resource management and product development. In addition to the cognitive emphasis of the "practicing professional," the affective elements focus on the internalization of values, a commitment to productive living and focus on self-actualizing.

The category receiving the most frequent indication of usage was the Level I cognitive area. The second most popular response was for the Level II cognitive category. Over 60 percent of the techniques reported as most successful fell into these two categories. Under 20 percent of the techniques fell into the affective areas on all three levels. In general, there was a heavy emphasis on the use of cognitive techniques and the lower levels of the MCL. These results may be due to the fact that the lower-level cognitive methods and techniques are relatively easy to define, describe, plan for and evaluate.

Cole and Lacefield (1978) emphasized four reasons for the lack of effort in the affective domain:

1. Cognitive outcomes are easier to measure and evaluate than affective outcomes.
2. Teachers are generally reluctant to grade students in affective areas.
3. Affective goals are perceived as "private" while cognitive goals are felt to have "public" status.
4. Most of the educational system is set up to "accumulate" cognitive material.

Osborn-Parnes Used by Most as Curriculum Model

The planners responding in this study were asked to identify a curriculum model they found most useful in designing and implementing their creative thinking and problem-solving program. The largest number of responses indicated the use of the Osborn-Parnes Creative Problem-Solving Process (CPS) as a curriculum planning model. This was true for the curriculum-planning specialists unidentified with CPSI as well as for CPSI subjects. The next largest number of responses came in the "other" category where most of the respondents reported an eclectic approach.

The senior author's search turned up no literature available to support the use of CPS as a model for curriculum planning purposes, except for Maker's *Curriculum Models for Gifted Education* (1982) where an entire chapter is devoted to the use of CPS in gifted curricula. However, Maker appears to dismiss the use of CPS as a program planning model. The results of the study are pointing out CPS's general use, in this manner, for the first time.

Most Effective Implementation Means

One of the most challenging concerns to curriculum planners who recognize the importance of providing a more creative type of learning is "how to get started?"

The question was asked, "What, in your own experience, have been the most effective ways to implement programs which nurture creative thinking and problem-solving skills?" The respondents identified 95 different suggestions. These were compressed into 12 disjunctive categories:

1. *Broad Justification:* Provide a broad justification for this type of program. This rationale should include why this type of programming is important as well as research on its effectiveness.

2. *Specific Benefits:* Demonstrate that programs this type result in specific benefits. Make examples of successful and effective applications of this type of programming available.

3. *Spheres of Influence:* Work with various "spheres of influence." Provide exposure about the nature and rationale of the program to key people such as school and board members, district administrators, principals and various curriculum leaders.

4. *Supportive Practitioners:* Initiate this type of program with small groups of supportive practitioners. Then, build on early successes and share effective procedures. Start with the safe and simple.

5. *Integration:* Integrate program into existing curriculum. Make this type of program fit into various student assignments, subject-matter presentations and regular planning activities. This category would include mini-courses within other courses.

6. *Responsive Environment:* Capitalize on classroom situations that pique students' interest and enthusiasm as well as meet individual needs. This may involve teacher-pupil planning and working on real and relevant problems. This

category describes a responsive environment sensitive to the individual needs of learners.

7. *Experiential Approach:* Use an experiential approach which allows learners to see, understand and feel the benefits of using this type of program. Involvement and fun (but not "for fun") are characteristics of the activities.
8. *Leaders:* Start with those who have decision-making authority. Convince them to support this type of program approach. A supportive administrator working with a single teacher or group of teachers can be very effective.
9. *Teacher/Trainer:* Focus on the teacher or trainer, who must have the personal commitment, enthusiasm and knowledge to be an effective role model. The teacher needs a deep-seated belief in the necessity and usefulness of creativity.
10. *Inservice:* Give inservice training to those individuals who can do the most. Provide the necessary resources, support groups and knowledge to do the job. This category includes making time available for attending workshops and developing and reviewing materials.
11. *Funds/Support:* Commit the funds and support to provide materials and other essentials.
12. *Spinoff G/T:* Develop courses as a spin-off from the programming emphasis for gifted and talented students.

Each respondent was given the opportunity to have three suggestions included in the response. No one had more than three in the response, so none were excluded on that basis. The results for this question appear in Table 4. A multiple response procedure for the results is included in Table 5.

These suggestions were, in order of their importance:

1. Provision of a responsive environment (category #6).
2. The use of inservice training (category #10).
3. The characteristics of the teacher or trainer (category #9).
4. The use of an experiential approach (category #7).

On the basis of these data, it appears that any framework which is designed to develop and implement creative learning programs would do well to consider at least these four aspects.

Most Successful Strategies and Methods

Many curriculum planning strategies are available. The respondents for this study identified teacher-learner or trainer-client planning as the most successful strategy for creative learning. The next most successful strategy was the teaching- or training-team planning approach.

TABLE 4 Frequency of response of implementation means.

	First Choice		Second Choice		Third Choice	
	Absolute Frequency	Relative Frequency	Absolute Frequency	Relative Frequency	Absolute Frequency	Relative Frequency
No Response	19	12.5%	91	59.9%	139	91.4%
Broad Justification	7	4.6%	5	3.3%	2	1.3%
Specific Benefits	9	5.9%	6	3.9%	1	.7%
Spheres of Influence	4	2.6%	3	2.0%	0	0%
Supportive Practitioners	9	5.9%	1	.7%	1	.7%
Integration	13	8.6%	3	2.0%	2	1.3%
Responsive Environment	24	15.8%	9	5.9%	0	0%
Experiential Approach	13	8.6%	13	8.6%	1	.7%
Leaders	4	2.6%	6	3.9%	2	1.3%
Teacher/Trainer	25	16.4%	2	1.3%	2	1.3%
Inservice	20	13.2%	9	5.9%	2	1.3%
Funds/Support	0	0%	2	1.3%	0	0%
Spinoff G/T	5	3.3%	2	1.3%	0	0%

TABLE 5 Multiple response of implementation means.

Category	Count	Percentage of Responses
Broad Justification	14	6.8
Specific Benefits	16	7.7
Spheres of Influence	7	3.4
Supportive Practitioners	11	5.3
Integration	18	8.7
Responsive Environment	33	15.9
Experiential Approach	27	13.0
Leaders	12	5.8
Teacher/Trainer	29	14.0
Inservice	31	15.0
Funds/Support	2	1.0
Spinoff G/T	7	3.4
TOTAL	207	100.0

There is also an abundance of instructional methodologies available to the curriculum planner. The data generated from this study indicate that some instructional methodologies appear to be more suitable than others for use in creative learning programs.

The following methodologies were selected most frequently by the numbers indicated:

1. Discussion-questioning (53)
2. Individualized instruction (51)
3. Group investigation (51)
4. Simulation (47)
5. Inquiry (42)

All the methodologies selected by the respondents represent a significant departure from the more traditional recitation methodology heavily used for rote learning. More information about the specific results and discussion are reported in Isaksen (1983a).

Best Ways of Encouraging the Development of Programs

After identifying the most effective means for getting a program started, it is important for the curriculum planner to know how to encourage others to lend their support to already existing programs.

The respondents were asked "What, in your opinion, is the best way to encourage the development of programs which nurture creative thinking and problem-solving skills?"

A total of 119 responses were received to this question. They were compressed into 12 disjunctive categories. Each response was then coded to belong to up to three categories. No response belonged to more than three categories, so none were omitted on that basis. The categories the responses fell into were:

1. *Knowledge Base:* A sound knowledge base is essential. This conceptual framework should include research and background on results of the program.
2. *Planning System:* The existence of a planning system is important. This may take the form of an interdisciplinary team approach, cooperative group planning and teacher-pupil planning.
3. *Inservice:* Inservice and workshops to update skills of teachers/trainers can be helpful. Knowledge about the program can be provided. Practice can be made available to encourage confidence in using the strategies.
4. *Personal Attributes:* The commitment, skills and other personal attributes of the people responsible for teaching provide an essential baseline for encouraging the programming. Practicing what they preach is important.
5. *Climate:* An environment conducive to openness and trust, and supportive of risktaking, should be established. This type of climate ought to be enjoyable and helpful.
6. *Networks:* Communication of the need for and the success of the program ought to be spread over a variety of journals and media. Success can be shared, based on program evaluation, with boards of education, parent groups and school administration. The establishment of networks for this purpose may also be helpful.
7. *Leadership:* Effective leaders can provide organizational readiness for the program and establish a climate where there is room for experimentation. Top-level leadership can pave the way for the establishment of goals to provide an organizational focus.
8. *Support:* Support for the program is essential. This may take the form of money, time for planning and visitations or limited class size. Actual classroom materials and instructional packages ought to be available.

TABLE 6 Frequency of response for ways to encourage the development of programs.

	First Choice		Second Choice		Third Choice		
	Absolute Frequency	Relative Frequency	Absolute Frequency	Relative Frequency	Absolute Frequency	Relative Frequency	Total # Choices
Knowledge Base	12	7.9	5	3.3	1	0.7	18
Planning System	10	6.6	5	3.3	0	0	15
Inservice	24	15.8	8	5.3	2	1.3	34
Personal Attributes	15	9.9	12	7.9	3	2.0	30
Climate	6	3.9	3	2.0	3	2.0	12
Networks	26	17.1	4	2.6	1	0.7	31
Leadership	3	2.0	4	2.6	5	3.3	12
Support	8	5.3	6	3.9	2	1.3	16
Ind. Needs/Interests	8	5.3	4	2.6	3	2.0	15
Experiential Approach	8	5.3	9	5.9	4	2.6	21
Integrated Into Curr.	16	10.5	8	5.3	6	3.9	30
Groupings	2	1.3	1	0.7	0	0	3
No Response	14	9.2	83	54.6	122	80.3	219

9. Individual Needs/Interests: Focusing on individual needs and interests is important. The program ought to be built around these.
10. *Experiential Approach:* An involving, experiential approach should be used to focus on processes as much as on content.
11. *Integrated Into Curriculum:* Creative thinking activity ought to be integrated into all curricular subject-areas. The focus should be on practical, day-to-day situations, problems and concerns.
12. *Groupings:* It is important to provide a variety of groupings for this kind of program. An example might be the "pull-out" gifted program. Table 6 depicts the results for this question.

The following categories of responses were most frequently mentioned as the best ways to encourage the development of programs designed to enhance creative thinking and problem-solving skills:

1. *Inservice:* Inservice and workshops to share knowledge and provide practice (34). This most popular response involves updating skills of teachers and trainers. It affords an opportunity to share knowledge and provide practice. The ultimate aim of these activities is to encourage confidence in the use of strategies to promote creative thinking and problem solving by students. Teachers must first experience the kinds of learning they will provide and then practice teaching them. This concept is supported in the literature (see Houle, 1980).
2. *Networks.* Communication of the need for, and success of, the program through a variety of networks (31). This category includes the involvement of a variety of groups and individuals ranging from parents and parent-groups to boards of education and administrators. The general intent is to make as many people as possible aware of programs designed to build the creative thinking and problem-solving abilities of students. This category relates to the importance of communication and the informed public, which is so essential to effective, democratic decision-making in the curriculum-planning process.
3. *Personal Attributes:* The commitment, skills and other personal attributes of the teachers/trainers (30). The commitment, skill level, sensitivity and many other at-

tributes provide essentials for encouraging development of these programs. Someone capable of practicing what he or she preaches will have more positive influence than someone who doesn't think creatively or solve problems effectively. The centrality of *person* to the curriculum planning process as well as the creative process has been documented in the literature.

4. *Integrated Into Curriculum:* Integration into all curricular subject-areas focusing on a variety of applications (30). This should include a focus on applying these creative thinking and problem-solving skills to practical problems and concerns as well as day-to-day realities in any part of the curriculum. This emphasis on integration is emphasized in the literature. For example, in discussing Eisner and Vallance's five basic orientations to the curriculum, Welsch (1980) complained about the lack of integration:

> Each approach, as it is described, tends to neglect the others. Cognitive processes are emphasized to the exclusion of any systematic content. Self-actualization takes precedence over any cognitive activity. Academic rationalism ignores affective education and social concerns. Social reconstruction neglects the basic skills and cognitive processes. Technology often becomes an end in itself, losing insight of its reason for being.

CONCLUSIONS

Integration of creative thinking and problem-solving programs within all curricular areas seems to offer the ultimate challenge to curriculum planners. Many curricula involve creative thinking and problem-solving techniques actually offer a way of resolving the five conflicts Welsch outlines. Welsch (1980) stated:

> A curriculum that is designed with creative problem-solving in every discipline or cluster of disciplines speaks to all five approaches. This curriculum will be designed to develop the presently understood scope of cognitive processes. It will nurture self-actualization. It can teach critical thinking or academic rationalism. The problem-solving skills can be applied to social problems for social reconstruction. Technology can be an integral part, both as a delivery or instruction and as a technical problem to be approached in order to further the education of society as a whole.

Bingham (1963) provided further support for the concept of integration of creative thinking and problem-solving skills into

all areas of the curriculum. She pointed out that involvement in these experiences promoted growth in all areas, in and out of school. She stated:

> Where curiosities are stimulated and ideas can be tried; where feelings of individuals are recognized and individual needs are taken into account; and where there is real purpose in learning — in such an environment problem solving flourishes. The child who experiences this type of environment, feels its effects and recognizes its internal elements, comes to understand that problem-solving efficiency is needed in many areas and in diverse situations. He no longer solely associates solving problems with a particular subject, such as arithmetic or social studies. He understands that problem solving is an effective way of working.

On the basis of data presented in this study, it appears that a curriculum-planning schema to accomplish this type of educational objective is already functioning implicitly for those developing programs to enhance creative thinking and problem solving.

Although the respondents consistently mentioned the importance of planning, they were generally careful to mention that there was no *one* way to do this. The planning framework, because of its aim to enhance creative thinking and problem-solving skills, must be open to new inputs and provide flexibility so the learning experience can center around the needs and interests of individual learners. Thus, the framework for this planning process must be sensitive to the demands of a variety of climatic inputs, in order to be effective.

The necessary strategies to provide this planning are in existence and have been for some time. One of the major descriptors placed on these strategies is that they are individualized or child-centered. Another factor is that they provide for experiential learning in a supportive environment.

The planning schema which nurtures creative thinking and problem-solving skills was indicated to be different from a framework which promotes recall of factual information. The planners involved in this study identified the need for a different role for the individual providing "instruction." Instead of the more typical stance of imparting knowledge, they pointed to a more facilitative role in which the teacher provides a conducive environment and instructional strategies to enhance student involvement in creative thinking and problem solving. This role has been described in more detail by Isaksen (1983b).

Wittmer and Myrick (1974) and Torrance (1962).

The planners noted that the supportive environment was crucial to their ability to provide these programs. They identified a need for a framework which would improve the school's creativity. Nisbet (1974) defined the creativity of the school as its capacity to adopt, adapt, generate or reject innovations. He declared:

> Thus, the term creativity is being used to indicate something more than just innovation and initiative in reform of the educational system. It implies a flexibility of approach which has three elements: confronting problems, responding to problems and evaluating the response to problems; if schools can develop the capacity to do these things as relatively autonomous units, the system as a whole may develop dynamically, in that each step a school takes toward greater flexibility improves the confidence in taking the next step, thus increasing step-by-step the problem-solving capacity of the system. The point at issue, therefore, is not just a matter of improving the receptivity of schools to planned innovation from a central authority: It is assumed that we want to improve the capacity of the school itself to deal with innovation.

The schema necessary for development of creative learning programs should include facilitative interaction between learners and teachers taking place in supportive environments. A certain amount of cooperative planning as well as continued openness to learning also appears important for those involved in planning these programs.

IMPLICATIONS

The findings of the studies point to the desirability of a Creative Problem-Solving (CPS) curriculum. In *Curriculum Theory* (Molnar & Zahorik, 1977), the theme recurs constantly stressing the importance of *how to learn*, as well as the lamentation about how rarely it is taught in the schools. Perhaps that explains the fact that our Creative Problem-Solving Institutes (CPSI) have attracted thousands of educators and other interdisciplinary professionals over the years — people with a variety of bachelor's, master's and doctoral degrees — who have evidently missed something important in their earlier education. That question of *how to learn* is the focus of the Institute as well as our year-round college program. The CPS process introduces the learner to internal resources, including the powerful imagination, as tools for *creative* learning. Any specific learning objective or goal is approached as a problem or

challenge for creative attack. All individual's cognitive abilities and emotional energies are harnessed toward achieving that objective, in an oscillating pattern between imagination and judgment or creative and critical types of thinking.

Let us illustrate how this procedure may be applied by curriculum planners as their own "creative learning" tool — to *learn creatively* how to reach their own broad educational objectives or goals. (Curriculum planners are trying to *learn* how to do their job better, just as the student is trying to learn, for example, to write a better theme, better interpret a reading, increase understanding of a mathematical principle or better grasp a social studies concept.) *How* to learn any of these becomes the focus of CPS. Let us examine it stage-by-stage for the curriculum planner.

Fundamentals to each of the stages is the oscillation mentioned between imagination and judgment. Each stage will therefore have a *divergent* and a *convergent* phase. During the divergent phase a free flow of thoughts — *beyond* any usual effort in this respect — is elicited. Many specific techniques are used to encourage this flow and to increase it beyond any former level to which the individual or group is accustomed. For a detailed explanation of these processes, as well as the convergent ones, see Parnes (1981), Treffinger, Isaksen and Firestien (1982), Isaksen and Treffinger (1985) and Parnes, Noller and Biondi (1977). Each convergent phase involves the evaluation and selection of the thoughts with the greatest potential. What follows shows the logic of the stages of the process, but not the "psychologic." The latter can only be felt or experienced in the doing — in the *stretching* for more and more alternatives, in an atmosphere of deferred judgment, in the divergent phase of each stage. An example item is used in each stage — one that might be related to Macdonald's (1977) basic aims of education: socialization, development and liberation.

STEP 1: Objective-Finding (Mess-Finding)

A. *Diverge:* List broad objectives, goals or purposes of educational program being developed. (An example: socialization.)

B. *Converge:* Select best statement of the first objective sought.

STEP 2: Data-Finding

A. *Diverge:* List extensive data dealing with that chosen objective — data about learners, teachers, environment, content,

etc. (An example: Student-body is diverse, including mixed cultures and races.)

B. *Converge:* Select data most pertinent to the objective.

C. Repeat now or at conclusion for each other desired objective.

STEP 3: Problem-Finding

A. *Diverge:* List as many problems and challenges as possible regarding the attainment of the chosen objective. Glean many diverse problem-statements from the pertinent data. Search widely for diverse views, approaches, etc. (An example: In what ways might we get students to appreciate one another's cultural heritage?)

B. *Converge:* Select the most promising definition of the most important challenge for creative attack.

C. Repeat now or at conclusion for other desired objectives.

STEP 4: Idea-Finding

A. *Diverge:* List ideas, alternatives, approaches, strategies, means, options or learning activities for handling the chosen challenge. (An example: Have students prepare for and conduct role-reversal exercises in one another's cultures, surrounding historical and current information on those cultures.)

B. *Converge:* Cull out ideas that are most interesting, promising or intriguing.

C. Repeat eventually for each other important challenge of Step 3 for each desired objective handled.

STEP 5: Solution-Finding

A. *Diverge:* List diverse criteria for evaluating the culled-out ideas. Promote the greatest awareness by generating all conceivable consequences, repercussions or implications of the ideas. (An example: Will it be misunderstood by parents?)

B. *Converge:* Choose the most important criteria; evaluate and develop the chosen ideas carefully against the criteria; make adjustments, additions, modifications, adaptations (or table or reject ideas) to bring ideas into congruence with the criteria and/or to make them square better with the criteria.

C. Eventually repeat for each group of ideas culled out of the idea-list regarding each chosen challenge of each desired objective.

STEP 6: Acceptance-Finding

A. *Diverge:* List ways of implementing the ideas — of "delivering the instruction." Include ways of gaining acceptance and enthusiasm, of getting support and resources, of overcoming obstacles, of taking first steps — using CPS further as necessary if an identified obstacle is important enough to consider through this approach. (An example: Invite parents to experience and discuss role-reversal activity at a PTA meeting.)

B. *Converge:* Develop plans — and contingency plans — from the best thoughts in 6A. Carry out plans, obtaining feedback and monitoring results. Revise action accordingly.

C. Repeat eventually for all chosen ideas under each challenge to reach the desired objective.

The group of action-plans will thus constitute the curriculum plan developed through the CPS process. This illustration of the "flow" of the CPS process is very close to approximating other descriptions of the curriculum-planning process (Tyler, 1949; Taba, 1962; Briggs, 1970; Saylor, Alexander & Lewis, 1981). The uniqueness is the constant *stretch* for multiple options, viewpoints, ideas, criteria, etc. throughout the CPS process.

The outcome of the curriculum-planning process is a plan to affect the people and things constituting teaching-learning situations. Since CPS is a process readily learned and taught, it appears to have great potential for implementing teacher-pupil planning and other more democratic approaches to planning curriculum, as well as for helping students learn *how to learn*.

Thus, CPS is one potentially productive means to provide curricula for creative thinking and problem solving.

FOOTNOTES

[1]The senior author acknowledges the assistance and guidance of Dr. Arthur Kaiser, Dr. Conrad Toepfer, Dr. Charles Fall and Dr. Ruth Noller in serving on the dissertation advisory committee.

[2]This institute is hosted each year at State University College at Buffalo and involves over 500 individuals in the study of creativity and how to nurture it in organizations and individuals. See Parnes (1975) for further information.

REFERENCES

BASADUR, M. S. Research in creative problem-solving training in business and industry. In Gryskiewicz, S. & Shields, J. (eds.), *Proceedings: creativity week IV, 1981*. Greensboro, NC: Center for Creative Leadership, 1982, 40-59.

BENT, R. K. & UNRUSH, A. *Sunday school curriculum*. Lexington, MA: Heath, 1969, 13.

BINGHAM, A. *Improving children's facility in problem solving.* NYC: Teachers College Press, 1963.

BLOOM, B. S. *Taxonomy of educational objectives handbook I: cognitive domain.* NYC: David McKay, 1956.

BLOOM, B. S. & BRODER, L. J. *Problem-solving processes of college students: an exploratory investigation.* Chicago, IL: The University of Chicago Press. 1950.

BOBBITT, F. *The curriculum.* Boston: Houghton Mifflin, 1980.

BRANDT, R. Overview: teaching of thinking, for thinking, about thinking. *Educational Leadership,* 1984, *42 (1),* 3.

BRIGGS, L. J. *Handbook of procedures for the design of instruction.* Pittsburgh: American Institute for Research, 1970.

COLE, H. P. & LACEFIELD, W. E. Skill domains critical to the helping professions. *Personnel and Guidance Journal,* 1978 (October), 116.

COMBS, A. W. What the future demands of education. *Phi Delta Kappan* 1981 (January).

COVINGTON, M. V. Productive thinking and a cognitive curriculum. Paper presented at Symposium, Studies of the Inquiry Process: Problems of Theory, Description and Teaching, American Psychological Association Convention, Washington, DC, September, 1967, p. 6.

DAVIS, G. A. & SCOTT, J. A. *Training creative thinking.* NYC: Holt, Rinehart, 1971.

DEWEY, J. *How we think: a restatement of the relation of reflective thinking to the educative process.* Lexington, MA: Heath, 1933.

EISNER, E. W. & VALANCE, E. (eds.). Five conceptions of curriculum: their roots and implications for curriculum planning. In *Conflicting conceptions of curriculum.* Berkeley, CA: McCutchan, 1974, 1-18.

FELDHUSEN, J. F. & TREFFINGER, D. J. *Creative thinking and problem solving in gifted education.* Dubuque, IA: Kendall/Hunt, 1980.

FOSHAY, W. R. & FOSHAY, A. W. Curriculum development and instructional development. *Educational Leadership,* 1981 (May), *38 (8),* 621-625.

GOODLAD, J. I. *A place called school.* NYC: McGraw-Hill, 1983.

GOODLAD, J. I. A study of schooling: some findings and hypotheses. *Phi Delta Kappan,* 1983 (March), *64 (7),* 465-470.

GUILFORD, J. P. Creativity: retrospect and prospect. *The Journal of Creative Behavior,* 1970, *4,* 185.

GUILFORD, J. P. *Way begond the IQ.* Buffalo, NY: Creative Education Foundation, 1977, 161.

HOULE, C. O. *Continuing learning in the professions.* San Francisco, CA: Jossey-Bass, 1980, 225.

HUDGINS, B. B. *Problem solving in the classroom.* NYC: Macmillan, 1967, 9-21.

HULLFISH, H. G. & SMITH, P. G. *Reflective thinking: the method of education.* NYC: Dodd, Mead, 1961, 212.

ISAKSEN, S. G. A curriculum planning schema for the facilitation of creative thinking and problem-solving skills. Unpublished doctoral dissertation, State University of New York at Buffalo, 1983a.

ISAKSEN, S. G. Toward a model for the facilitation of creative problem solving. *The Journal of Creative Behavior,* 1983b, *17 (1),* 18-31.

ISAKSEN, S. G. & TREFFINGER, D. J. *Creative problem solving: the basic course.* Buffalo, NY: Bearly Limited, 1985.

JOHANSON, B. Creativity and creative problem-solving courses in United States industry. Unpublished project report from the Center for Creative Leadership, Greensboro, NC, Summer, 1975.

KELLEY, E. C. *Education for what is real.* NYC: Harper, 1947.

KIMPSTON, R. D. & SONNABEND, L. C. Organizational health: a requisite for innovation. *Educational Leadership,* 1973 (March), *30,* 544-546.

MACDONALD, J. B. Value bases and issues for curriculum. In Molnar, A. & Zahorik, J. A. (eds.). *Curriculum theory.* Washington, DC: ASCD, 1977, 10-21.

MAKER, C. J. *Teaching models in education of the gifted.* Rockville, MD: Aspen Systems, 1982.

MANSFIELD, R. S., BUSSE, T. V. & KREPELKA, E. J. The effectiveness of creativity training. *Review of Educational Research,* 1978 (Fall), *48,* 531.

MILLER, W. C. *The third wave and education's futures.* Bloomington, IN: Phi Delta Kappa Educational Foundation, 1981.

MOLNAR, A. & ZAHORIK, J. A. (eds.). *Curriculum theory.* Washington, DC: Association for Supervision and Curriculum Development, 1977.

NAISBETT, J. *Megatrends: ten new directions transforming our lives.* NYC: Warner, 1982.

NISBET, J. Strengthening the creativity of the school. In *Creativity of the school.* Paris, France: Organization for Economic Cooperation and Development, Center for Educational Research and Innovation, 1974.

PARNES, S. J. *The magic of your mind.* Buffalo, NY: Creative Education Foundation/Bearly Limited, 1981.

PARNES, S. J. CPSI — a program for balanced growth. *The Journal of Creative Behavior,* 1975, *9 (1),* 23-29.

PARNES, S. J. & NOLLER, R. B. *Toward supersanity: channeled freedom.* Buffalo, NY: D.O.K. Publishers, 1973.

PARNES, S. J., NOLLER, R. B. & BIONDI, A. M. *Guide to creative action.* NYC: Scribners, 1977.

POPHAM, W. J. & BAKER, E. I. *Systematic instruction.* Englewood Cliffs, NJ: Prentice-Hall, 1970.

REESE, H. W., PARNES, S. J., TREFFINGER, D. J. & KALTSOUNIS, G. Effects of a creative studies program on structure-of-the-intellect factors. *Journal of Educational Psychology,* 1976 (August), *68,* 409.

ROGERS, C. R. Can schools grow persons? *Educational Leadership,* 1971 (December), *29,* 215.

ROSE, L. H. & LIN, H. T. A meta-analysis of long-term creativity training programs. *The Journal of Creative Behavior,* 1984, *18 (1),* 11-22.

SAYLOR, J. G., ALEXANDER, W. M. & LEWIS, A. J. *Curriculum planning for better teaching and learning.* NYC: Holt, Rinehart, 1981.

SMITH, J. A. *Setting conditions for creative teaching.* Boston, MA: Allyn & Bacon, 1966, 175.

TABA, H. *Curriculum development: theory and practice.* NYC: Harcourt, Brace, 1962.

TOFFLER, A. *The third wave.* NYC: Bantam Books, 1980.

TORRANCE, E. P. Can we teach children to think creatively? *The Journal of Creative Behavior,* 1972, *6,* 114-143.

TORRANCE, E. P. *Guiding creative talent.* Englewood Cliffs, NJ: Prentice-Hall, 1962.

TORRANCE, E. P. & MYERS, R. E. *Creative learning and teaching.* NYC: Dodd, Mead, 1970, 22.

TREFFINGER, D. J. Critical and creative thinking: mutually important components of effective problem solving. An unpublished paper prepared as a part of a series of papers on gifted education for the Language and Learning Improvement Branch of the Division on Instruction of the Maryland State Department of Education, 1984.

TREFFINGER, D. J. *Encouraging creative learning for the gifted and talented.* Ventura, CA: Ventura County Superintendent of Schools, 1980.

TREFFINGER, D. J., ISAKSEN, S. G. & FIRESTIEN, R. L. *Handbook of creative learning — volume I.* Williamsville, NY: Center for Creative Learning, 1982.

TREFFINGER, D. J., ISAKSEN, S. G. & FIRESTIEN, R. L. Theoretical perspectives on creative learning and its facilitation: an overview. *The Journal of Creative Behavior,* 1983, *17 (1),* 9-17.

TYLER, R. W. *Basic principles of curriculum and instruction.* Chicago: The University of Chicago Pre 1949.

VanGUNDY, A. Comparing little known creative problem solving techniques. In Gryskiewicz, S. (ed.), *Proceedings: creativity week III, 1980.* Greensboro, NC: Center for Creative Leadership, 1981, 58-76.

WELSCH, P. K. The nurturance of creative behavior in educational environments: a comprehensive curriculum approach. Ph.D. dissertation, Michigan State University, 1980.

WHITEHEAD, A. N. *The aims of education and other essays.* NYC: The Free Press, 1929. 16.

WITTMER, J. & MYRICK, R. D. *Facilitative teaching: theory and practice.* Pacific Palisades, CA: Goodyear, 1974.

Scott G. Isaksen, Director, Interdisciplinary Center for Creative Studies.
Address: State University College at Buffalo, 1300 Elmwood Avenue, Buffalo, New York 14222.

Sidney J. Parnes, President.
Address: Creative Education Foundation, 437 Franklin Street, Buffalo, New York 14202.