Theory and Development of Creativity for the Gifted

Bureau of Exceptional Education and Student Services
K-12 Public Schools
Florida Department of Education
2007
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Implementation Guidelines

Introduction

This manual provides a guide for a gifted endorsement course. Included you will find suggested resources, a list of prerequisite skills, objectives, components, activities, and assignments.

It is understood that there will be flexibility in course formats (number of meetings, duration of each meeting) depending on the participants and nature of the instructional setting. The mastery must be equivalent to a 3-semester hour course in a university setting (16 weeks/3 hours). Each participant must show evidence of mastery which could be held as a portfolio for each course

The courses have been updated with two central concepts, Infusion and Modeling.

Infusion includes the following principles:
• Required skills as excellent general practitioners
• Diversity issues
• Adult education principles
• Technology and information skills
• Differentiated curriculum
• Appropriate assessment
• Independent learning and research skills

Modeling includes the following principles:
• Facilitative practitioner
• Reflective ongoing self-assessment
• Intake interview: pre-assessment including knowledge base, skills, learning styles, interests, socio-cultural preferences
• Formative evaluation
• Gifted instructional strategies: compacting, contracting, creative productivity

The facilitative practitioner should use the following effective strategies:
• Process built into content
• Examination of current issues and key concepts
• Overview of multiple models
• Networking with other instructors
• Infusion of lower level thinking; focus on higher level thinking skills
• Interactive and open-ended
• Freedom of choice: constructivism
• Flexible structure: complexity, pacing
• Model effective strategies
Built into each of the courses are levels. The use of the pre-assessment is critical to the delivery of these modules. The levels are:

1. Pre-assessment
2. Base level: compacting and built in assessment in every module to facilitate acceleration
3. Curriculum extension/skill development for those who evidence mastery of some of the basic concepts at pre-assessment
4. Creative productivity for those evidencing a higher level of mastery

The outcomes of the modules are:

- Base level: content expertise for all participants
- Higher level: alternative outcomes for participants with some degree of mastery of the topics
- Professional development as an educator of gifted students
- Documentation of skill development (portfolio)
- Open-ended yet accountable evidence of mastery
- Continuity across the five courses

Instructors/facilitators

Recommended qualifications for instructors/facilitators of the add-on endorsement classes are:

- A current Florida teaching certificate (or the equivalent) with gifted endorsement (or documented expertise in gifted education)
- A Master's Degree or higher
- A background of successful staff development and/or adult training expertise
- A minimum three years successful teaching experience in gifted education

Additional materials

Three additional documents are included with these guidelines. The first is recommended resources and supplementary texts for the five endorsement courses. When instructors are selected, they should review these recommended resources for the courses and check Web site addresses for accuracy. Also, included is a list of prerequisites that prospective teachers enrolled in the endorsement courses should possess. The instructor may need to direct participants to other staff development offerings instead of trying to teach pre-requisites as part of the endorsement course. The third document outlines specific delivery strategies that should be used for gifted endorsement courses. The instructor should model these strategies throughout the implementation of the courses.
This is one of five Gifted Endorsement Modules available through the Bureau of Exceptional Education and Student Services, Florida Department of Education, designed to assist school districts and state agencies that support education programs in the provision of special programs for exceptional students. For additional information on this publication contact the Clearinghouse Information Center, Bureau of Exceptional Education and Student Services, K-12 Public Schools, Florida Department of Education, Room 628 Turlington Building, Tallahassee, Florida 32399-0400.

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Creativity
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2007

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Theory and Development of Creativity for the Gifted
Theory and Development of Creativity

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Module Evaluation Form
Theory and Development of Creativity for the Gifted

INTRODUCTION

This notebook provides a guide for instructors and participant materials for the gifted endorsement course titled Theory and Development of Creativity of the Gifted.

BACKGROUND

The original Theory and Development of Creativity course development took place in 1992. Since that time, Creativity has been a requirement for the endorsement of gifted teachers. In 2002, a WOGI work group examined the course to revise the objectives and develop a framework for updating the course. Work continued in 2003 resulting in this course guide.

COURSE DESCRIPTION

The course provides an overview of the theory, research, practical strategies, and resources on creativity, with an emphasis on classroom applications in the gifted classroom. The course is designed as a 60-hour course that includes participation in instructional activities, research, and extended learning outside of the classroom.

COURSE DESIGN

The content has been organized around 5 topics: Valuing Creativity; Knowledge and Characteristics of Creativity; Planning/Developing/Implementing Creativity; Assessment and Evaluation of Creativity; and Personalization/Actualization/Commitment to Creativity. The course has been divided into ten sessions designed to address eight Key Questions and a specific set of instructional objectives. You will find these at the beginning of each course session.

The eight Key Questions are:

• Why is creativity important?
• What is creativity?
• “Where” is creativity?
• Can creativity be measured?
• What is a creative learning environment?
• How can creativity be nurtured / developed?
• How can the outcomes of creativity be assessed and evaluated?
• How will you commit to nurturing creativity in your students?
ORGANIZATION AND STRUCTURE OF COURSE MATERIALS

The notebook is divided into a course overview, ten sessions, and an appendix. Each of the ten sessions is organized around a topic and includes Guiding Standards/Objectives, Key Questions, Materials, Session Opener/Compass, Learning Options, Options to Evidence Mastery, Recommended Readings and Resources, and Other Resources/Extensions. The Appendix includes a current bibliography of general resources on creativity and creative thinking, assessment resources, and sample items that may be beneficial in implementing this course successfully.

DEFINITION OF SESSION COMPONENTS

- **Topic:** Offers a focal point for the session
- **Guiding Standards/Objectives:** Lists the specific areas of focus or the measurable outcomes that should result from the learning options and readings in the session
- **Key Question(s):** Provides a guide for inquiry within each session
- **Materials:** Lists materials that are recommended for use during the session
- **Compass/Session Opener:** Provides an assessment of the participant’s current level of knowledge and a connection to the session topic
- **Learning Options:** Outlines multiple options from which the instructor may select to help participants accomplish session objectives
- **Options to Evidence Mastery:** Provides multiple options to use to assess participants’ attainment of session outcomes
- **Recommended Readings:** Refers to written materials (text, articles for duplication, current on-line articles) for use during the session
- **Other Resources/Extensions:** Lists additional resources that may be used to extend or augment the class session and may be of particular value to participants who desire to explore the topic in greater depth

COURSE MANAGEMENT

Flexibility should be built into the course format (number of meetings, duration of each meeting) depending on the specific needs of the participants and the nature of the instructional setting.
## Creativity Matrix

### Topic 1: Valuing Creativity

<table>
<thead>
<tr>
<th>Resources</th>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>List of 100 examples of creativity.</td>
<td>Large group discussion of “Basics of Tomorrow” (Overhead). Discussion of Torrance’s description of creativity from preface of <em>Creativity is forever</em>.</td>
<td></td>
</tr>
</tbody>
</table>

### Evidence of Mastery

- Personal definition of creativity (Portfolio Entry).
- List of 100 examples of creativity.
- Reporting of personal experiences with creativity.

### Learning Options and Activities

- Take pre-test and discuss.
- Develop personal definition of creativity.
- Small group discussion. Sharing individual personal experiences with creativity in the workplace and classroom.
- Large group discussion of “Basics of Tomorrow” (Overhead). Discussion of Torrance’s description of creativity from preface of *Creativity is forever*.

### Guiding Objectives

- Identify the role that creativity plays in personal development.
- Describe the impact of creativity on personal growth and self-actualization.
<table>
<thead>
<tr>
<th><strong>Key Questions</strong></th>
<th><strong>Guiding Objectives</strong></th>
<th><strong>Learning Options and Activities</strong></th>
<th><strong>Evidence of Mastery</strong></th>
<th><strong>Resources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>State several definitions of creativity and compare and contrast these definitions.</td>
<td>Definition of creativity through provided handouts.</td>
<td>List of self-actualized individuals who have demonstrated creativity.</td>
<td>Treffinger, D. J. (1992). <em>Overcoming misunderstandings on the importance of creativity</em>, 1-3. Center for Creative Learning.</td>
</tr>
</tbody>
</table>
### Creativity Matrix

**Topic 3: Understanding the Elements of Creativity**

<table>
<thead>
<tr>
<th><strong>Key Questions</strong></th>
<th><strong>Guiding Objectives</strong></th>
<th><strong>Learning Options and Activities</strong></th>
<th><strong>Evidence of Mastery</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>What is creativity? (Part II)</td>
<td>State several definitions of creativity and compare and contrast these definitions. Identify specific personal, socio-cultural, and educational experiences and opportunities that facilitate/inhibit the development of creativity.</td>
<td>Explore definitions of creativity and create a product to compare and contrast the similarities and differences between definitions. Small group or individual research and presentation of creative people. Explore individual vs. collaborative creativity and discuss which setting was most conducive for various tasks.</td>
<td>Portfolio Entry—List of multiple examples of creativity. Creative Reflection #2: Case Study of a Creative Person with justification.</td>
</tr>
</tbody>
</table>

**Resources**

## Creativity Matrix
**Topic 3: Understanding the Elements of Creativity, continued**

<table>
<thead>
<tr>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Resources</th>
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</thead>
<tbody>
<tr>
<td>Evidence of Mastery</td>
<td>Resources</td>
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</table>

<table>
<thead>
<tr>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research to explore “Man’s relationship to creativity” during various periods of history and from various cultures. Small group discussion of similarities and differences of the development and expression of creativity.</td>
<td>Identify controversies concerning the nature of creativity. Identify a universally accepted definition of creativity. Identify cognitive and personal characteristics associated with creativity.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of the controversy regarding the nature of creativity.</td>
<td>Small group discussion of similarities and differences of the development and expression of creativity.</td>
<td>Identify controversies concerning the nature of creativity. Identify a universally accepted definition of creativity. Identify cognitive and personal characteristics associated with creativity.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Guiding Objectives</th>
<th>Learning Options and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>List similarities and differences of cognitive and personal characteristics associated with creativity.</td>
<td>Debate the positive/negative historical and contemporary controversies concerning creativity.</td>
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<tr>
<th>Evidence of Mastery</th>
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<th>Evidence of Mastery</th>
<th>Resources</th>
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</thead>
<tbody>
<tr>
<td>Topic 5 Key Questions</td>
<td>Guiding Objectives</td>
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</tbody>
</table>
### Creativity Matrix

**Topic 6: Fostering a Creative Learning Environment**

<table>
<thead>
<tr>
<th>Resources</th>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
<th>Evidence of Mastery</th>
</tr>
</thead>
</table>


**Meador, K. (2001). The whistles stop here: Encouraging meaningful creative thinking in the classroom. Understanding Our Gifted, 12, 4.**
**Creativity Matrix**  
Topic 6: Fostering a Creative Learning Environment, *continued*

<table>
<thead>
<tr>
<th>Resources</th>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
<th>Topic 6 Key Questions</th>
</tr>
</thead>
</table>
Review/analyze the importance of creative thinking to the person, those around him/her, and society. | Redesign a lesson to incorporate one or more of the climatic characteristics described in, “Climate for Creativity.”  
What are some personal, social, educational reasons for encouraging creativity? (Portfolio entry) | Analyze the creative learning environment from 3 perspectives:  
personal, socio-cultural, educational.  
Describe the importance, implications, and benefits of creative thinking for students in today’s schools and society. | What is a creative learning environment? |
Examine organizational and managerial structures and practices that facilitate/inhibit the development and expression of creativity.

Discuss the nature of innovation and the process of thinking relative to creative outcomes. Identify examples of how creative thinking can be used to address problems in society.

List of descriptors found within a creative learning community: compassion, courage, wisdom, and forgiveness.

Journal Entry: What behaviors facilitate creativity within the classroom.

Identify tools for generating ideas and focusing thought with overview of relevant programs.

Checklist of creative behaviors.

Identify tools for generating ideas and focusing thought with an overview of relevant programs.

List of descriptors found within a creative learning community: compassion, courage, wisdom, and forgiveness.

Creative Reflection #3, "Creativity and World Affairs." Plan and develop creativity centers or demonstrations that can be shared with the group.

Creative & Critical Thinking—Demonstrate that both types of thinking are essential for creative problem solving.

CPS Program: "Future Problem Solving Program" Synectics Activity

Generate a list of some ideas and practices in your school that have been successful in the past, but are now limiting your productivity and growth. How can you get rid of them? Develop an action plan.

Creative Reflection #3, "Creativity and World Affairs." Plan and develop creativity centers or demonstrations that can be shared with the group.


List of descriptors found within a creative learning community: compassion, courage, wisdom, and forgiveness.

Journal Entry: What behaviors facilitate creativity within the classroom.

Identify tools for generating ideas and focusing thought with an overview of relevant programs.

Examine organizational and managerial structures and practices that facilitate/inhibit the development and expression of creativity.

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Generate a list of some ideas and practices in your school that have been successful in the past, but are now limiting your productivity and growth. How can you get rid of them? Develop an action plan.


### Creativity Matrix Topic 8: Identifying Goals

<table>
<thead>
<tr>
<th>Resources</th>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
<th>Topic 8 Key Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Identify programs or curricula that can serve as initiatives for fostering creativity (Odyssey of the Mind, Future Problem Solving, Invent America, Artifacts Box, mentoring, SCAMPER).</em></td>
<td><em>List of criteria that can be used to select appropriate programs.</em></td>
<td><em>Mini-fair of Odyssey of the Mind activities.</em></td>
<td><em>Identify programs or curricula that can serve as initiatives for fostering creativity.</em></td>
<td><em>How can creativity be nurtured/developed?</em></td>
</tr>
<tr>
<td><em>Demonstrate an understanding of the process of invention and identify the steps of the patent process.</em></td>
<td><em>Critique of program(s) that can be used to develop creativity.</em></td>
<td><em>Visit neighborhood sites that support or encourage creativity. Create a list of field trip sites for class use.</em></td>
<td><em>Identify the steps of moving from an idea through the scientific and inventive process.</em></td>
<td></td>
</tr>
<tr>
<td><em>Research the patent process and describe the steps of the process for the development of one invention.</em></td>
<td><em>Compilation of examples of patents that demonstrate the inventive process.</em></td>
<td><em>Conduct a creativity scavenger hunt.</em></td>
<td><em>Search and list Web sites devoted to inventions.</em></td>
<td></td>
</tr>
<tr>
<td><em>Search and list Web sites devoted to inventions.</em></td>
<td><em>List of annotated Web sites.</em></td>
<td><em>Present program overviews with thumbnail lessons from multiple programs to capture the essence of each and how creativity is found in each.</em></td>
<td><em>Develop exemplary lessons that include appropriate teaching strategies and groupings to support the development of creativity.</em></td>
<td></td>
</tr>
<tr>
<td><em>Develop exemplary lessons that include appropriate teaching strategies and groupings to support the development of creativity.</em></td>
<td><em>Exemplary lessons to develop creativity.</em></td>
<td><em>Create a learning wheel of matched creative characteristics and teaching strategies.</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Guiding Objectives**
- Identify programs or curricula that can serve as initiatives for fostering creativity (Odyssey of the Mind, Future Problem Solving, Invent America, Artifacts Box, mentoring, SCAMPER).
- Demonstrate an understanding of the process of invention and identify the steps of the patent process.
- Research the patent process and describe the steps of the process for the development of one invention.

**Evidence of Mastery**
- List of criteria that can be used to select appropriate programs.
- Critique of program(s) that can be used to develop creativity.
- Compilation of examples of patents that demonstrate the inventive process.
- List of annotated Web sites.

**Learning Options and Activities**
- Mini-fair of Odyssey of the Mind activities.
- Visit neighborhood sites that support or encourage creativity. Create a list of field trip sites for class use.
- Conduct a creativity scavenger hunt.

**Resources**
**Creativity Matrix**  
**Topic 8: Identifying Goals, continued**

<table>
<thead>
<tr>
<th>Resources</th>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make a list of the three primary powers of higher order learning and the resulting capabilities.</td>
<td>Group performance of a creative skit to demonstrate creativity found in the environment.</td>
<td>Conduct individual research on current ethical issues. Discuss how integrity is enhanced by higher order thinking “improving” activity.</td>
<td>Using the identified characteristics of the creative individual, plan appropriate teaching strategies and groupings that support the development and expression of abilities. Explore and analyze the ethical issues surrounding creativity.</td>
</tr>
</tbody>
</table>

**Key Questions**

How can creativity be nurtured/developed? (II)
<table>
<thead>
<tr>
<th>Topic 9 Key Questions</th>
<th>Guiding Objectives</th>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Generation of responses to “Emerging Challenges and Opportunities.”</td>
<td>Add a creative component to a pre-existing student assignment and design a rubric for assessing the outcome.</td>
<td>Renzulli, J. S., &amp; Reis, S. M. <em>Student Product Assessment Form (SPAF)</em>. <a href="http://www.sp.uconn.edu/~nrcgt/sem/spaf.pdf">http://www.sp.uconn.edu/~nrcgt/sem/spaf.pdf</a></td>
</tr>
</tbody>
</table>

**Creativity Matrix**

**Topic 9: Evaluation Procedures**
Develop plans to integrate creativity within and across the content areas focusing on process and product.

Design and implement a personal plan for establishing a classroom environment to nurture and develop creativity.

Create pathways/opportunities for developing individual student creativity (mentorship, community resources, contests, clubs, special lessons/classes, dual enrollment, distance learning).

**Guiding Objectives**

- Final course products and performances.
- Creativity Reflection #4: Creativity tools in the classroom.
- Presentations of final course products and performances.
- Activity: Personalizing Creativity Within My Classroom (and My Life!)
- The growth of creativity.

**Evidence of Mastery**


**Resources**

<table>
<thead>
<tr>
<th>Topic 10 Key Questions</th>
<th>Evidence of Mastery</th>
<th>Learning Options and Activities</th>
<th>Guiding Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>How will you commit to nurturing creativity in your students and in yourself?</td>
<td>Final course products and performances.</td>
<td>Presentations of final course products and performances.</td>
<td>Develop plans to integrate creativity within and across the content areas focusing on process and product.</td>
</tr>
<tr>
<td>Creativity Reflection #4: Creativity tools in the classroom.</td>
<td>Creativity Reflection #4: Creativity tools in the classroom.</td>
<td>Activity: Personalizing Creativity Within My Classroom (and My Life!)</td>
<td>Design and implement a personal plan for establishing a classroom environment to nurture and develop creativity.</td>
</tr>
<tr>
<td>Presentations of final course products and performances.</td>
<td>Presentations of final course products and performances.</td>
<td>- The growth of creativity.</td>
<td>Create pathways/opportunities for developing individual student creativity (mentorship, community resources, contests, clubs, special lessons/classes, dual enrollment, distance learning).</td>
</tr>
</tbody>
</table>
ACCOMPLISHED STANDARDS FOR CREATIVITY FOR THE GIFTED
WITH KEY QUESTIONS AND OBJECTIVES

Standard 1: Valuing

Key Question: Is Creativity Important?

Objectives: Participants will perform the following.
1. Identify the role that creativity plays in personal development.
2. Describe the impact of creativity on personal growth and self-actualization.

Standard 2: Knowledge/Characteristics

Key Questions: (a) What is Creativity?; (b) Where is Creativity?; (c) Can Creativity be Measured?

Objectives: Participants will perform the following.
1. Identify the elements of the creative process, person, and product.
2. Compare and contrast primary and secondary creativity.
3. Identify specific personal, socio-cultural, and educational experiences and opportunities that facilitate/inhibit the development of creativity.
4. Discuss contemporary and historical examples of people who have demonstrated creativity in various domains and cultural settings.
5. Identify myths and misunderstandings associated with creativity.
6. Identify major components of creativity according to research.
7. Explore individual creativity, group creativity, and collaborative creativity.
8. Demonstrate an understanding of the elements of creative thinking (e.g., fluency, flexibility, originality, and elaboration).
9. Identify the critical points in the development of human creativity from early childhood through adulthood.
10. Identify cognitive and personal characteristics associated with creativity across cultures and throughout time.
11. Recognize how cultural values may impact the expression of creativity.
12. Recognize that the development and expression of creativity vary depending on the interaction of culture, economics, environment, and time.
13. Examine the interaction of the creative response and cultural/time setting.
14. State several definitions of creativity and compare and contrast these definitions.
15. Identify historical and contemporary controversies and arguments surrounding the nature of creativity.
16. Examine the dynamics of a creative, productive group.
17. Analyze why a universally accepted definition of creativity has not been attained.
18. Understand the role of assessment of creativity and uses of tests and inventories.
19. Describe, compare, and evaluate different instruments for measuring creativity.
20. Provide examples of and discuss reliability and validity of various types of creativity tests and inventories.
Standard 3: Planning/Developing/Implementing

Key Questions: What is a creative learning environment? How can creativity be nurtured and developed?

Objectives: Participants will perform the following:

1. Examine organizational and managerial structures and practices that facilitate or inhibit the development and expression of creativity.
2. Discuss the nature of innovation and the process of change relative to creative outcomes.
3. Identify examples of how creative thinking can be used to address problems in society.
4. Practice using tools for generating ideas and focusing thought (brainstorming, force-field analysis, CoRT Thinking Skills, DeBono’s Six Hats, part-changing, HITS, HOT Spots, morphology, CPS, etc.).
5. Identify programs or curricula that can serve as initiatives for fostering creativity such as Odyssey of the Mind, Future Problem Solving, inventing programs, mentoring.
6. Demonstrate an understanding of the process of invention and identify the steps of moving from an idea through the patent process.
7. Using the identified characteristics of the creative individual, plan appropriate teaching strategies and groupings that support the development and expression of creative abilities.
8. Explore and analyze the ethical issues surrounding creativity (e.g., invention vs. innovation; entrepreneurship vs. internship; ownership of ideas).
9. Discuss the value of creativity in an era of educational accountability.
10. Examine the role of self-assessment in the evaluation of creative thoughts, ideas, and products.
11. Identify constructs that can be used as criteria for evaluating creative outcomes.
12. Promote the use of student portfolios as an authentic way of assessing creative processes and products.
13. Describe characteristics and appropriate criteria used to assess creative products.
14. Develop plans to integrate creativity within and across the content areas focusing on process and product.
15. Develop a personal plan for establishing a creative educational environment.
16. Design and implement a personal plan for establishing a classroom environment to nurture and develop creativity.
17. Create pathways/opportunities for developing individual student creativity (mentor-ships, community resources, contests, clubs, special lessons/classes, dual enrollment, distance learning).
Standard 4: Assessment and Evaluation

Key Question: How can the outcomes of creativity be assessed and evaluated?

Objectives: Participants will perform the following:

1. Discuss the value of creativity in an era of educational accountability.
2. Examine the role of self-assessment in the evaluation of creative thoughts, ideas, and products.
3. Identify constructs that can be used as criteria for evaluating creative outcomes.
4. Promote the use of student portfolios as an authentic way of assessing creative processes and products.
5. Describe characteristics and appropriate criteria used to assess creative products.

Standard 5: Personalization, Application, and Commitment

Key Question: How will you commit to nurturing creativity in your students?

Objectives: Participants will perform the following:

1. Develop plans to integrate creativity within and across the content areas focusing on process and product.
2. Develop a personal plan for establishing a creative educational environment.
3. Design and implement a personal plan for establishing a classroom environment to nurture and develop creativity.
4. Create pathways/opportunities for developing individual student creativity (mentorships, community resources, contests, clubs, special lessons/classes, dual enrollment, distance learning).
TOPIC 1 – KNOWLEDGE AND CHARACTERISTICS (I):
VALUING CREATIVITY

Key Question: What is creativity and is it important?

Objective: Define creativity and describe the impact it has on personal growth and self-actualization.

Key Concept: Valuing creativity

Quote: “If you always do what you always did, you’ll always get what you always got.”

Verne Hill

Materials:
- Syllabus
- Preliminary questionnaire: “Are you ready to learn about creativity?” (HO 1)
- Bag of Junk: containing a variety of items that will stimulate the imagination.
- Transparency: E. Paul Torrance’s description of creativity (from Preface of Creativity is forever, Davis, 1999)
- “The Basics of Tomorrow” (Transparency/ HO 2)

Session Opener:
- Pre-test: “Are you ready to learn about Creativity”?  
- Junk Bag Introductions  
  - Draw an item from “junk bag.” Pair participants. Participants interview one another, then introduce each other to the whole group through the use of the item drawn from the junk bag. (Force Fit)

Recommended Reading Assignments:

Learning Options and Activities:
- Discuss Pre-test
- Draft a tentative personal definition of Creativity
- Think-Pair-Share discussion: Sharing individual, personal experiences with creativity in the workplace and classroom
- Large group discussion of “Basics of Tomorrow” (Transparency/ HO 2)
- Discussion of Torrance’s description of creativity from Preface of Creativity is forever (Davis, 1999)
Evidence of Mastery:
- Developed personal definition of creativity (Portfolio Entry)
- Answered “What is the impact of creativity on personal growth?” (Portfolio Entry)
- Compiled list of 100 examples of creativity
- Reported personal experiences with creativity
- Reviewed exercises in Chapter 1, *Creativity is forever*, (Davis, 1999)

Resources:
Are You Ready to Learn About Creativity?

This brief checklist will help you to examine your general orientation toward creativity and your readiness to learn about creative thinking.

Use this scale when responding to each item:
   4 = Yes, With Enthusiasm
   3 = Mostly Yes, With Interest
   2 = Maybe, Slight Concern
   1 = Great Doubt

Do you believe that it is possible for people to become more creative?

Do you believe it is important in life to approach challenges in a creative way?

Are you prepared to devote time and invest the energy needed to promote creative thought and action in yourself and others?

Are you a person who is willing to try out new ideas?

Are you flexible and able to use a variety of opportunities and techniques in learning and teaching?

Have you already been using any deliberate methods and techniques to promote creativity?
Scoring Directions

To score your own checklist, simply sum your scores to all six items. The higher the score, the greater the likelihood that you’re motivated to incorporate creativity into your own learning and teaching.

If the total score is: You probably:

19 or higher Already have a good background in creative thought and action; you’re poised for leadership!

Between 13 and 18 Have a positive attitude and should be very successful in completing the course.

Lower than 13 Face some obstacles or concerns that could keep you from receiving full benefit from the course. Reflect further on those items which you rated 1 or 2—seek ways to enhance those areas or overcome those obstacles.
The Basics of Tomorrow

- Evaluation and Analysis Skills
- Critical Thinking
- Problem-Solving Strategies
- Organization and Reference Skills
- Synthesis
- Application
- Creativity
- Decision-Making (given incomplete information)
- Communication Skills (through a variety of modes)
Workplace Basics

• The Foundation
  Knowing how to learn

• Competence
  Reading, writing, and computation

• Communication
  Listening and oral communication

• Adaptability
  Creative thinking and problem solving

• Personal Management
  Self esteem, goal setting, motivation, personal and career development

• Group Effectiveness
  Interpersonal skills, negotiation, team work

• Influence
  Organizational effectiveness and leadership

What Work Will Require in the Future...  

The Foundation—Competence requires:
- Basic Skills (reading, writing, arithmetic and mathematics, speaking and listening)
- Thinking Skills (thinking creatively; making decisions; solving problems; seeing things in the mind’s eye, i.e., the imagination; knowing how to learn; reasoning)
- Personal Qualities (individual responsibility, self-esteem, sociability, self-management, integrity)

Competencies—Effective workers can productively use:
- Resources (time, money, materials, space, staff)
- Interpersonal Skills (teamwork, serving others, leadership, negotiating, dealing with diversity)
- Information (acquiring and evaluating data, organizing and maintaining files, interpreting, communicating, using computers)
- Systems (social, organizational, technological—understand, monitor and correct, design and improve)
- Technology (selecting, applying, maintaining)
In 1990, when I began to write...Understanding those who create (1998), I began it with this vignette:

It was a convention for teachers of the talented. Katherine Miller had just been hired to teach in a pullout program for fourth, fifth, and sixth grade talented students. She was glad for the opportunity, for in her undergraduate years during her student teaching experiences, she had always seemed to gravitate toward the bright students. Her new superintendent had received an announcement for the state convention for teachers of the talented, and had told Katherine that he would pay her way to go so she could learn what she was supposed to teach. .

Katherine had not been taught anything about talented children in her education courses, though she had a course in the education of other special children. Before her interview, she had gone to the state university library in a town nearby to do some reading. She had memorized the categories of the talented children that the state served. Among these were “creative” children. Katherine was not sure what creativity was, and was even less sure who “creative” children were. Were they the ones who colored outside the lines? Were they the ones who looked a little weird? She stepped into the large ballroom of the hotel where the convention was being held, took a cup of coffee, and sat down to hear the first keynote speaker.

The conference organizer introduced him as one of the experts on creativity. “Oh good,” Katherine thought. As he began to speak, she settled in. He told a joke or two, and was a little mussed, his hair caught into a fashionable ponytail, his cowboy boots and jeans in contrast with his blazer and striped tie. .

Overhead transparency after overhead transparency bloomed behind him on the giant screen. There were lots of diagrams and curves and arrows and dots and lists. He illustrated his points with cartoons cut out from “Peanuts.” There was a list of tests also, but Katherine couldn’t believe that you could give a test for creativity.

Well, he must know. She scanned the program as he spoke and underlined all the sessions that were on creativity. If he was a keynote speaker and the topic was creativity, obviously she was supposed to teach creativity. This would be her main
emphasis at this convention. She collected the handouts of the dots and diagrams and psychological words, and she hurried down the hallway of the hotel convention wing to a small room.

There, with a pitcher of iced water and two glasses behind a table with a podium and a microphone and a smaller screen and another overhead projector, were two middle-aged women. They were local coordinators in a faraway corner of the state, and they were going to talk about how to enhance creativity in elementary school children. They also had many overheads blooming like flowers on the conference room wall, and they had the group play some simple games. It was fun, and everyone relaxed. But Katherine was getting anxious. The coordinators were very good speakers, and they were using words like “fluency” and “flexibility” and “elaboration” and they talked about creativity as if it were “problem-solving.”

Well, they must know, Katharine thought, for they have been in this field a lot longer than I have. But in the back of her mind, she thought that creativity was a little bit more than fun and games and generating alternative solutions (Piirto, 1998).

When I wrote that, I had already been an educator of the gifted and talented for 13 years, had been a county coordinator in two states, a principal of New York City’s oldest school for gifted children, and was now a college professor. But in my inner life, my real life, I was also an artist, a published novelist and a poet, and I saw the world through an artist’s eyes….

But as I read and reflected, I found that most creative adults who had biographies written about them, who had written memoirs, who had been interviewed and researched, talked about their creative process in more organic terms….Many of the creative and productive adults whose creativity I read about seemed to have creative processes that fell into thirteen categories.

• They seem to have rituals; for example, they like to walk.
• They crave silence.
• They go to retreats and colonies.
• They are inspired by travel.
• They use imagination.
• They trust their dreams.
• They seek solitude so they may go into a state of reverie (or flow).
• They fast.
• They meditate.
• They get inspiration from the muse.
• They are inspired by others’ works of art, science, and music.
• They improvise.
• If they are blocked, they read or write self-help books.
I began to offer an undergraduate interdisciplinary studies course called “Creativity and the Creative Process,” and I began to try out some ideas that tapped into this “oceanic consciousness,” as Brewster Ghiselin called it (1952)....

The activities tap into the mysterious, nebulous, dreamy, solitary, quietness of the creative process as it has been written about and talked about by adult creators. A typical creativity course taught by me utilizes exercises in the core attitudes of risk-taking and naiveté. We do a lot of trust building by cheering each other’s creative efforts. The students also try exercises in cultivating self-discipline by working daily in creativity thought logs. We work with the five I’s:

- Imagery, including guided imagery and film script visualizing;
- Imagination, including storytelling;
- Intuition, including the intuition probe, psychic intuition, and dreams;
- Insight, including grasping the gestalt, going for the aha!, zen sketching;
- Inspiration, including the visitation of the muse, creativity rituals such as solitude, creating ideal conditions, and using background music.

....We try to find our domains of passion, that which we can’t not do. We explore the joys of good conversation and start a monthly salon at my house. We visit a cemetery. We visit a beautiful and silent church with symbolic stained glass windows to meditate on God. We hike in nearby nature parks to meditate on nature. We go to an art museum to meditate on beauty. We visit a bookstore, a library; for the midterm the students must attend a live concert, a play, a poetry reading, or a lecture to honor the creativity of talented others.

The culmination of the course is an individual creativity project. The students may not use already existing kits or molds and must avoid the “season curriculum” of Christmas decorations, Halloween pumpkins, or St. Patrick’s Day shamrocks. One student in Finland wrote a poem when we visited the art museum, and it became the lyrics for the first song she composed. Other individual creativity projects have included performance of an original radio play; a synchronized swimming routine; a grunge rock band audio tape; a reading of an original short story; an autobiographical multimedia presentation; a translation into English of Chinese, Greek, or Spanish literature; an original dance routine; a new recipe for scones; and designs for costumes for a play.

....Projects are evaluated with a holistic scoring system, and we are often so moved at the projects that we weep. At the end of the course, most agree that indeed, creativity can be enhanced through direct teaching.

My students who are becoming licensed to be teachers of the gifted and talented tell me that, yes, indeed, the K-12 students that they work with can begin to see the creative process as something that is, at base, an emotional journey more than a cognitive one. Every week they try out the activities we have done in
class, modifying them for their own use, for I am a firm believer that what I teach is conceptual and not practical….The concept of “risk-taking” is what is important; the concept of “inspiration” is important to devise an activity at the application level that is suitable for the children one teaches. This is where the true creativity of the teacher comes in.

Teachers and parents can work in partnership to enhance creativity. First of all, creativity is affective—the necessary risk-taking and sense of openness to experience, or naiveté required demand a safe environment in which to explore. Both the home and the school should try to provide such. Trust is also important; that is, that someone who is trying out creatively should not be put down, and should be permitted to fail as well as to star. A person who tries out creativity should have a safe group (the class, the family) to be with….

My evolving process as a creative teacher is to try to capture some of what I have learned and to prepare activities or exercises that can make conscious what has, for many, been rather unconscious. Perhaps you will do the same.

How Parents and Teachers Can Enhance Creativity in Children

<table>
<thead>
<tr>
<th>Provide a private place for creative work to be done.</th>
<th>Provide private lessons and special classes.</th>
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</thead>
<tbody>
<tr>
<td>Provide materials (e.g. musical instruments, sketch books).</td>
<td>If hardship comes into your life, use the hardship positively, to encourage the child to express him/herself through metaphor.</td>
</tr>
<tr>
<td>Encourage and display the child’s creative work and avoid overly evaluating it.</td>
<td>Emphasize that talent is only a small part of creative production and that discipline and practice are important.</td>
</tr>
<tr>
<td>Do your own creative work and let the child see you.</td>
<td>Allow the child to be “odd”; avoid emphasizing socialization at the expense of creative expression.</td>
</tr>
<tr>
<td>Pay attention to what your family mythology is teaching.</td>
<td>Interact with the child with kind humor. Get creativity training.</td>
</tr>
<tr>
<td>Value the creative work of others.</td>
<td></td>
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<tr>
<td>Avoid emphasizing sex-role stereotypes.</td>
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Creativity Topic 1, HO 3, continued
TOPIC 2 – KNOWLEDGE AND CHARACTERISTICS (II):
CLARIFYING CREATIVITY

Key Question: What is creativity?

Objectives:
• Identify the elements of creativity.
• State several definitions of creativity and compare and contrast these definitions.
• Identify contemporary and historical examples of people who have demonstrated creativity in various domains and cultural settings.
• Identify myths and misunderstandings associated with creativity.

Key Concept: Knowledge and Characteristics of Creativity

Quotes:
“I see the mind of the five-year-old as a volcano with two vents: destructiveness and creativeness.”

Sylvia Ashton-Warner

“A work of art is a corner of creation seen through a temperament.”

Anais Nin

“Society is downright savage to creative thinkers, especially when they are young.”

E. Paul Torrance

“Contentment comes from identifying the gifts you have been given, submitting them to the necessary training, and then engaging them in work.”

Arthur F. Miller

Materials:
• Bags of “Junk” brought by class participants.
• “Overcoming Misunderstandings on Importance of Creativity” (HO 1)

Session Opener:
• “Creativity Test”
• Journal Entry: “What comes first? Self-actualization OR Creativity?”
  Follow up: – Support the other side of the argument!
Recommended Reading Assignments:

- Treffinger, D. J. (1992). *Overcoming misunderstandings on the importance of creativity*. Center for Creative Learning, 1-3. (HO 1)

Learning Options and Activities:

- “Bag” Activity to demonstrate definition of creativity—Each participant will bring in a paper bag with ten items of his/her choice inside. Place the bags on a table. Later, each class member will choose a bag from the table that is not the one he/she brought. Give students 20 minutes to use the items in the bag to create a model, which represents their definitions of creativity. When completed, have models placed on a “mat” (e.g., tagboard, place mat) with a brief description of how the model represents the “artist’s” definition of creativity.
- Defining Creativity: “4 P’s” (HO 2)
- Small group activity: Creativity Is…Creativity is NOT…(generate a poster of ideas, share)
- Small group or individual research and presentations on examples of creative people
- Group discussions on misunderstandings and the need for building advocacy skills to defend the significance of creativity

Evidence of Mastery:

- Write a personal definition of creativity (Portfolio entry).
- Make a list of self-actualized individuals who have demonstrated creativity.
- List elements of the creative process and examples of the person, process, product, and press.
- Write an article or prepare a presentation for a group of teachers that dispels myths about creativity.
- Role play, draw, or perform musically a variety of myths and misunderstandings associated with creativity.
- Produce the Creative Reflection #1: “Defining Creative People, Processes and Products” (Topic 2 HO 2).
- Create an illustration of personal definition of creativity through drawing or visual presentation.
- Create a collage that represents creative people and their contributions—contemporary and historical examples.
Resources:

Overcoming Misunderstandings on the Importance of Creativity
by Don Treffinger

Educators are often called upon, for a variety of reasons (but especially in difficult economic times), to justify their interest in and attention to creativity in their instructional programs. Why should we be concerned with creativity in the schools? In order to respond effectively to these questions, we might begin by dealing with some common misunderstandings about creativity, and then focus on several positive and important contributions of creativity to learning.

Common Misunderstandings

Several common misunderstandings about creativity can hamper peoples’ understanding and acceptance about its role in teaching and learning.

1. Reducing creativity to exercises and workbook activities.
   Many specific strategies or techniques can be used to help people generate many ideas, look at ideas from different viewpoints, produce unusual or original ideas, or elaborate and add detail and richness to their ideas. These basic “tools” for divergent thinking have been very popular because they are easy to use and can be applied at many age levels and across a wide variety of content areas. As a result, they have been incorporated into many courses, workshops, and books about creativity, and emphasized in many published books and programs for classroom use. We believe these fundamental divergent thinking operations, and the four strategies used to enhance them, can be important and valuable components of creativity development efforts in education. Unfortunately, however, their popularity may have misled some people into the belief that these exercises and activities might be equated with the entire concept of creativity. Creative growth requires one to apply energy and motivation to generating and analyzing ideas, solving problems, making decisions, planning, and carrying ideas into action—all over a considerable period of time. It cannot be reduced to the simplistic application of a few “gadgets” or to the teacher’s request that students “take out your creativity workbook and do a few pages.”

2. Viewing creativity only as arts and crafts.
   Some people view creativity only in relation to artistic or musical productivity. This, too, is a misunderstanding. Although there certainly is considerable creativity in many aspects of the fine arts, there are important ways in which creativity is involved in every other discipline as well. Creativity plays a vital role in contributions to writing and literature,
mathematics, science, technology, the humanities, and the social and behavioral sciences, as people develop new theories, plan and conduct original inquiry, solve problems, create new products, communicate their results, and apply their efforts in many new contexts.

3. Viewing creativity only as a rare form of genius.
   To a number of educators, creativity seems unimportant in their daily work because they view it only as a rare and special “gift,” beyond the reach of most people. They think of creativity only in terms of the exceptional work of a Picasso, a Rembrandt, a Mozart, a Shakespeare, or an Edison. They overlook the many ways we all use creativity in everyday life and work: finding new ideas, seeing new or varied possibilities, coming up with unique solutions to problems at home or on the job. We would do well to keep in mind Maslow’s wise observation that a “first rate chicken soup” might be more creative than a third-rate painting. All students can learn to use better our imagination, to generate new ideas, and to solve problems more effectively.

4. Treating creativity as “comic relief” from the real work of learning.
   Unfortunately, some educators think of creativity only as something to use to provide students with some playful time and activities to step away from the recall and recitation they consider to be the more serious and important agenda of school learning. (“Boys and girls, you’ve been working hard all morning, and I’m sure all your brains are getting tired. So we won’t do any real work for a while. We’ll do our creativity now.”) This kind of thinking fails to recognize that creativity is part of effective inquiry and learning. In recent years, we have begun to see growing interest in “authentic” instruction, or in emphasizing the importance of what students are able to do with what they know, not just how much they know. Creativity builds on memory and past experience, but goes beyond; it helps create the foundation for application, synthesis, and action.

5. Looking only at creative teaching, and not at creative learning.
   In visits to schools, principals often say, “You must visit Mr. Soozy’s (or Ms. Soozy’s class—this person is the most creative teacher in our entire school.” This very often leads to observation of some unusual (and occasionally, bizarre) kinds of teacher activity; much less frequently are there indication of the students’ creativity at work. At the elementary level, for example, it often leads to a trip to a classroom richly decorated and filled with brightly-colored and busy bulletin boards—made by the teacher. At the middle or senior high levels, the “creative teacher” is often the building’s maverick or eccentric in residence, and sometimes the most prominent indicator of the creativity in the classroom is an unusual degree of clutter (all kinds of things, piled everywhere!). Perhaps many of these teacher efforts are used to promote or stimulate students’ creative
thinking. Too often, one fears, they are instead the manifestation only of the teacher’s own creativity, not the students', or at worst, the superficial trappings of someone playing the stereotyped role of the “creative person.” We might hold that creative teaching is not a very meaningful concept unless or until it focuses on ways to stimulate creative learning by the students.

6. Holding narrow, outdated views of basic skills.

Some people urge that schools should focus their attention primarily, or even exclusively, on the basic skills. There are too little time and too few resources, they argue, to waste energy on other “frills.” Unfortunately, these critics usually have a very narrow and outdated view of basic skills. Many contemporary views of the important goals and outcomes for education point out clearly that today’s learners need to become proficient in a new and more complex set of basic outcomes than we have ever defined before. In order to become successful and competitive in today’s world (and tomorrow’s), students must master such new basics as teamwork and collaboration, leadership, technology, communication, adaptability, and problem solving. Many recent reports from educators, governmental agencies, professional organizations within and outside education, and corporations, have emphasized the great importance of creative thinking, critical thinking, problem solving, and decision-making for all students.

**Importance of Creativity**

When we have been able to set aside these common misunderstandings, it becomes easier to see several reasons for the importance of creativity in education.

1. Creative learning helps students to identify and solve problems independently and resourcefully.

2. Creative learning helps students to deal effectively with future problems, challenges, and opportunities that we now cannot even anticipate.

3. Creative learning provides skills that will be important and necessary to be successful in the workplace, today and in the future.

4. Creative learning provides rich and varied opportunities for personal growth, expression, and satisfaction in one’s personal life.

5. Creative learning is an important component of authentic instruction and authentic assessment; it involves processes that are fundamental to outcomes valued in the real world.


Creativity Topic 2, HO 1, continued
CREATIVE REFLECTION #1

Student Name: _________________________________________________________

“Defining Creative People, Processes, and Products”

Part A: After reading Chapter 1 in the “Creativity is forever” text, develop your own definition of creativity and record it below. Definition will be shared in class during the designated session. (Keep this page for Part B of the reflection).

My definition of Creativity:

Part B: During the week you record your definition; closely observe your environment, searching for creative people, creative processes, and creative products (by your definition). Record at least four (4) examples of creativity in your environment.

Briefly describe:

• The creative people
• The creative processes used
• The creative products observed

Then respond to the following:

• What seemed to motivate this creativity?
• How did others respond to the creativity?
Observations of Creative People, Processes, and Products

OBSERVATION #1:

OBSERVATION #2:

OBSERVATION #3:

OBSERVATION #4:

Creativity Topic 2, HO 2, continued
Common definitions of creativity

1. Making new connections
2. Doing things differently
3. Finding and solving problems that calls for new ideas
4. Recognizing one’s own uniqueness and reaching for one’s fullest potential
5. Marching to the beat of your own drummer
6. Generating many varied, or unusual ideas; refining ideas, and making them workable
7. Translating gifts and talents into products and actions
8. Being a wonderful artist, musician, writer, or inventor
9. Engaging more of your mind for more time
10. Using imagination and imagery to form and express new insights or ideas

Creativity Topic 2, HO 2, continued
Thinking
Like a Genius:

EIGHT STRATEGIES USED BY THE SUPERCREATIVE, FROM ARISTOTLE AND LEONARDO TO EINSTEIN AND EDISON

By Michael Michalko

Even if you’re not a genius, you can use the same strategies as Aristotle and Einstein to harness the power of your creative mind and better manage your future.

How do geniuses come up with ideas? What is common to the thinking style that produced “Mona Lisa,” as well as the one that spawned the theory of relativity? What characterizes the thinking strategies of the Einsteins, Edisons, da Vincis, Darwins, Picassos, Michelangelos, Galileos, Freuds, and Mozarts of history? What can we learn from them?

For years, scholars and researchers tried to study genius by analyzing statistics, as if piles of data somehow illuminate genius. In his 1964 study of genius, Havelock Ellis noted that most geniuses are fathered by men older than 30, had mothers younger than 25, and usually were sickly as children. Other scholars reported that many were celibate (Descartes), others were fatherless (Dickens) or motherless (Darwin). In the end, the piles of data illuminated nothing.

Academics also tried to measure the links between intelligence and genius. But intelligence is not enough. Run-of-the-mill physicists have IQs much higher than Nobel Prize-winner Richard Feynman, widely acclaimed for his extraordinary genius, whose IQ was a merely
productive thinker would say that many different ways exist to express "thirteen" and many different ways to halve something, such as:

\[ \begin{align*}
6.5 & \quad 113 = 1 \text{ and } 3 \\
\text{THIRTEEN} & = 4 \\
\text{XI} & = 11 \text{ and } 2 \\
\times II & = 8 \\
\end{align*} \]

As you can see, by expressing 13 in different ways and halving it in different ways, one could say one-half of thirteen is 6.5, or 1 and 3, or 4, or 11 and 2, or 8, and so on.

With productive thinking, one generates as many alternative approaches as one can. You consider the least obvious as well as the most likely approaches. It is the willingness to explore all methods that is important, even after one has found a promising one. Einstein was once asked what the difference was between him and the average person. He said that if you asked the average person to find a needle in a haystack, the person would stop when he or she found a needle. He, on the other hand, would tear through the entire haystack looking for all possible needles.

Whenever Feynman was stuck on a problem, he would invent new thinking strategies. He felt the secret to his genius was his ability to disregard how past thinkers thought about problems and, instead, invent new ways to think. He was so "unstuck" that if something didn’t work he would look at it several different ways until he found a way that moved his imagination. He was wonderfully productive.

Feynman proposed that schools teach productive thinking instead of reproductive thinking. He believed that the successful user of mathematics is an inventor of new ways of thinking in given situations. He believed that, even if the old ways are well known, it is usually better to invent your own way or a new way than it is to look it up.

The problem "29 + 3 = ?" for example, is considered appropriate for children no earlier than the third grade, because it requires the advanced technique of carrying; yet Feynman pointed out that a first grader could handle it by thinking: 30, 31, 32. A child could also mark numbers on a line and count off the spaces—a method that becomes useful in understanding measurements and fractions. One can write larger numbers in columns and carry sums larger than 10. Or use fingers or algebra (2 times what plus 3 is 7?).

Feynman encouraged teaching people to figure out how to think about problems in many different ways using trial and error.

The point is that reproductive thinking fosters rigidity of thought. This is why we so often fail when confronted with a new problem that is superficially similar to past experi-
Thomas Edison, who held more than 1,000 patents, set himself a quota of at least one invention every 10 days. Creative geniuses produce many works, though often of low quality.

Genius is analogous to biological evolution in that it requires the unpredictable generation of a rich diversity of alternatives and conjectures. From this assortment, the intellect retains the best ideas for further development and communication. An important aspect of this theory is that you need some means of producing variation in your ideas and that for this variation to be truly effective it must be “blind.” Blind variation implies a departure from reproductive (retained) knowledge.

A growing number of scholars are striving to characterize the way geniuses think. By studying the notebooks, correspondence, conversations, and ideas of the world’s greatest thinkers, these scholars have identified specific thinking strategies and styles of thought that enable geniuses to generate a prodigious variety of novel and original ideas.

Eight Strategies

Following are thumbnail descriptions of strategies that are common to the thinking styles of creative geniuses in science, art, and industry throughout history.

1. Geniuses look at problems in many different ways. Genius often comes from finding a new perspective that no one else has taken. Leonardo da Vinci believed that, to gain knowledge about the form of a problem, you begin by learning how to restructure it in many different ways. He felt that the first way he looked at a problem was too biased toward his usual way of seeing things. He would restructure his problem by looking at it from one perspective and move to another perspective and still another. With each move, his understanding would have

You’ll always get what you’ve always gotten.

Creativity Topic 2, HO 3

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Creativity Topic 2, HO 3, continued
Creativity is not the same as intelligence.

Bach wrote a cantata every week, even when he was sick or exhausted. Mozart produced more than 600 pieces of music. Einstein is best known for his paper on relativity, but he published 248 other papers. T.S. Eliot’s numerous drafts of *The Waste Land* constitute a jumble of good and bad passages that eventually was turned into a masterpiece.

In a study of 2,036 scientists throughout history, Dean Keith Simonton of the University of California at Davis found that the most respected scientists produced not only great works, but also more “bad” ones. Out of their massive quantity of work came quality.

4. Geniuses make novel combinations. In his 1989 book *Scientific Genius*, Simonton suggests that geniuses form more novel combinations than do the merely talented. Like the highly playful child with a bucket of building blocks, a genius is constantly combining and recombining ideas, images, and thoughts into different combinations in their conscious and subconscious minds.

Consider Einstein’s equation, $E=mc^2$. Einstein did not invent the concepts of energy, mass, or speed of light. Rather, by combining these concepts in a novel way, he was able to look at the same world as everyone else and see something different. The laws of heredity on which the modern science of genetics is based came from the Austrian monk Gregor Mendel, who combined mathematics and biology to create a new science.

5. Geniuses force relationships. If one particular style of thought stands out about creative genius, it is the ability to make juxtapositions between dissimilar subjects. This facility to connect the unconnected enables them to see things others do not.

Da Vinci forced a relationship between the sound of a bell and a stone hitting water. This enabled him to make the connection that sound travels in waves. In 1865, F.A. Kekule intuited the shape of the ringlike benzene molecule by dreaming of a snake biting its tail. Samuel Morse was stumped trying to figure out how to produce a telegraphic signal strong enough to transmit coast to coast. One day he saw tied horses being exchanged at a relay station and forced a connection between relay stations for horses and strong signals. The solution was to give the traveling signal periodic boosts of power.

6. Geniuses think in opposites. Physicist and philosopher David Bohm believed geniuses were able to think different thoughts because they could tolerate ambivalence between opposites or two incompatible subjects. Albert Rothenberg, a noted researcher on the creative process, identified this ability in a wide variety of geniuses—including Einstein, Mozart, Edison, Pasteur, Conrad, and Picasso—in his 1990 book *The
TEST YOUR GENIUS THINKING

Most people see the pattern above as alternate rows of squares and circles. It can not be easily seen as columns of alternate squares and circles.

Once it’s pointed out that it can also be viewed as columns of alternate squares and circles, we, of course, see it. This is because we have become habituated to passively organize similar items together in our minds. Geniuses, on the other hand, subvert habituation by actively seeking alternative ways to look at things and alternative ways to think about them.

—Michael Michalko


Physicist Niels Bohr believed, that if you held opposites together, then you suspend your thought and your mind moves to a new level. The suspension of thought allows an intelligence beyond thought to act and create a new form. The swirling of opposites creates the conditions for a new point of view to bubble freely from your mind. Bohr’s ability to imagine light as both a particle and a wave led to his conception of the principle of complementarity. Thomas Edison’s invention of a practical system of lighting involved combining wiring in parallel circuits with high-resistance filaments in his bulbs—two things that were not considered possible by conventional thinkers (in fact, were not considered at all because of an assumed incompatibility). Because Edison could tolerate the ambivalence between two incompatible things, he could see the relationship that led to his breakthrough.

7. Geniuses think metaphorically. Aristotle considered metaphor a sign of genius, believing that the individual who had the capacity to perceive likenesses between two separate areas of existence and link them together was a person of special gifts. If unlike things are really alike in some ways, perhaps they are so in others.

Alexander Graham Bell compared the inner workings of the ear to a stout piece of membrane moving steel—and conceived the telephone. Einstein derived and explained many of his abstract principles by drawing analogies with everyday occurrences such as rowing a boat or standing on a platform while a train passed by.

8. Geniuses prepare themselves for chance. Whenever we attempt to do something and fail, we end up doing something else. That is the first principle of creative accident. We may ask ourselves why we have failed to do what we intended, which is a reasonable question. But the creative accident provokes a different question: What have we done? Answering that question in a novel, unexpected way is the essential creative act. It is not luck, but creative insight of the highest order.

Alexander Fleming was not the first physician studying deadly bacteria to notice that mold formed on an exposed culture. A less gifted physician would have trashed this seemingly irrelevant event, but Fleming noted it as “interesting” and wondered if it had potential. This “interesting” observation led to penicillin.

Edison, while pondering how to make a carbon filament, was mindlessly toying with a piece of putty, turning and twisting it in his fingers, when he looked down at his hands and the answer hit him between the eyes: Twist the carbon like rope. B.F. Skinner emphasized a first principle of scientific methodology: When you find something interesting, drop everything else and study it. Too many fail to answer opportunity’s knock at the door because they have to finish some preconceived plan. Creative geniuses do not wait for the gifts of chance; instead, they actively seek the accidental discovery.

Applying These Strategies Yourself

Creative geniuses know how to use these thinking strategies—and teach others to use them. Sociologist Harriet Zuckerman discovered that six of Enrico Fermi’s students won the Nobel Prize, just as he had. Ernest Lawrence and Niels Bohr each had four winning students. J.J. Thomson and Ernest Rutherford between them trained 17 winners. These Nobel laureates were not only creative in their own right, but were also able to teach others how to think creatively. Zuckerman’s subjects testified that their most influential masters taught them different thinking styles and strategies rather than what to think. So, clearly, genius strategies can be learned.

Recognizing and applying the common thinking strategies of creative geniuses could help make you more creative in your work and personal life.

About the Author

Michael Michalko is the author of Thinkertoys (A Handbook of Business Creativity) and ThinkPak (A Brainstorming Card Set). His new book Cracking Creativity: The Secrets of Creative Geniuses (Ten Speed Press, 1998, 352 pages, $24.95) is available from the Futurist Bookstore; see page 33 for details.

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Creativity Topic 2 HO 3

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Creativity Topic 2, HO 3, continued
TOPIC 3 – KNOWLEDGE AND CHARACTERISTICS (II): UNDERSTANDING THE ELEMENTS OF CREATIVITY

Key Question: What is creativity and why is it important?

Objectives:
• State several definitions of creativity and compare and contrast these definitions.
• Identify specific personal, socio-cultural, and educational experiences that facilitate / inhibit the development of creativity.
• Examine and analyze the dynamics of individual creativity and collaborative creativity.
• Demonstrate an understanding of the elements of creative thinking (e.g., fluency, flexibility, originality, and elaboration).
• Identify critical points in the development of human creativity from early childhood through adulthood.

Key Concepts:
• Knowledge and Characteristics of Creativity

Quotes: “The creative adult is essentially a perpetual child; the tragedy is that most of us grow up.” Fabun

“Every act of creation is first of all an act of destruction.” Pablo Picasso

“The real voyage of discovery consists not in seeking new landscapes but in having new eyes!” Marcel Proust

Materials:
• Some Characteristics Associated with Creativity (HO 1)
• Creative Reflection #2 (HO 2)

Session Opener:
• Small group discussion of responses to Creative Reflection #1 (defining creative people, processes, and products)
  o Create a group concept map.
  o Share out.

Recommended Reading Assignments:
• Hiam, A. (1998). Obstacles to creativity—and how you can remove them. The Futurist, 32, 30-34. (HO 3)
Learning Options and Activities:

• Explore definitions of creativity and create a product to compare and contrast the similarities and differences between definitions.
• Create a Venn diagram to identify specific areas of various creative fields of expression.
• Complete a mind map of the ways creativity is inhibited or enhanced.
• Conduct small group or individual research and follow with presentation of creative people.
• Explore individual vs. collaborative creativity and discuss which setting was most conducive to various tasks.
  o Divide class into two groups with a similar task: Group 1 participants will work as individuals; Group 2 will do a collaborative activity. Discuss which setting was more effective for the task and why. Sample activities may include: solving tangrams/puzzles and building a tower of toothpicks and clay.
  o Define FFOE—fluency (thinking of many ideas), flexibility (thinking in varied ways or with varied view points), originality (thinking of new and unusual possibilities), and elaboration (thinking beyond the obvious and elaborating on alternatives)—in terms that clarify the role each plays in creative thinking.
  o Identify all the ways you might decorate a brick (or other common object) to give it a different look. Compute fluency (total number of ideas) and flexibility (shifting: What if it were made of other materials—like sponge, foam rubber, plastic, soft clay?) What different uses might it have so you could market it? What originality (unique ideas, designs, responses, or styles), such as “What could you say to a brick?” or “How could you sell tons of the bricks and what would your sales slogan say?” How about elaboration (building on a basic idea by adding details), such as “What could you add to the brick to turn it into something new?” Choose another object and plan activities for your own class using FFOE.
• Conduct a small group discussion using Erickson’s chart of human development and generate implications for education
• Discuss the 3 Types of Characteristics that Combine to Produce Creativeness. Davis, (1999). Creating more creative people.
  o Personality traits
  o Cognitive abilities
  o Biographical traits (experiences)
• Generate a list of experiences that facilitate and inhibit creativity.
• Using the handout “Some Characteristics Associated with Creativity,” identify people known to the participants who possess these characteristics. Discuss ways that these individuals show indications of creativity.
• Creative Reflection #2 – Case Study of a Creative Person (HO 2)

Creativity Topic 3, continued
Evidence of Mastery:

- Make a list of multiple examples of creativity. (Portfolio Entry)
- Complete Creative Reflection #2: Case Study of a Creative Person.
- Draft working definitions of individual, group, and collaborative creativity.
- Illustrate blocks, barriers, and squelchers in the classroom and the social environment.
- Chart critical points in the development of human creativity.
- List examples of facilitating and inhibiting experiences.
- Create a summary of FFOE activity with a class and how they responded.
- Write a position paper or action plan regarding the importance and role of these creativity characteristics in gifted programming (or in programming for all students) in your school or district.
- Complete a presentation of a skit in which the elements of creativity are illustrated.
- Create and present a skit and/or song in which barriers to creativity are illustrated.

Resources:

Some Characteristics Associated with Creativity

- Thinks of many ideas in everyday situations
- Uses materials in unexpected ways
- Looks at things from different points of view (varied perspectives)
- Sees unique or unusual possibilities
- Refines ideas or adds details to make ideas more complex and interesting
- May be seen by others as a risk-taker
- Prefers and trusts own judgments and evaluations to those of others (can lead to resentment by others)
- Is sensitive to paradoxes, inequities or injustices, and unusual events
- Synthesizes: draws ideas from many sources, integrates ideas, makes patterns
- Is alert to transformations or ways to combine, modify ideas
- Often possesses a sharp, accurate, caustic wit
- Is nonconforming, but not necessarily deliberately so
- Displays a high energy level for preferred tasks
- Is alert, aware, sensitive—often notices things that go unseen by others
- Prefers complexity
- Expresses ideas, emotions, and reactions in a spontaneous manner
- Is curious, exploring, playful, adventurous in spirit; enjoys toying with objects, ideas
- Is imaginative; displays rich use of imagery
- Is strongly motivated to achieve in situations calling for independence
- Is eager to communicate ideas and accomplishments to audiences
- Is more concerned with expression (using tasks or requirements as a springboard for own ideas) than with completing tasks or requirements set by others
- Actively seeks opportunities to be creative
- Suspends judgment about new possibilities
- Takes an affirmative, constructive approach to new ideas or directions for problem solving
- Is easily bored by low-level or routine tasks, may drift off into own thoughts
- Is intuitive in perceiving or gathering data
Reflection #2: “Case Study of a Creative Person”

Complete a brief and informal case study of a person you know who you think is creative. Begin by observing the individual for 3–4 days in a variety of settings and while engaged in a variety of activities. Then interview (talk with and actually take notes) the person.

Include the following question within the interview:

- How is your creativity encouraged or discouraged?
- What supports and/or distracts you as you engage in creative pursuits?

Prepare a brief, written summary of your subject, your observations, and the interview in the space provided below and on the back of this sheet. Justify whether this person meets the characteristics of a creative person.

Case Study of a Creative Person
TOPIC 4 – KNOWLEDGE AND CHARACTERISTICS (III):
CULTURAL CONCEPTIONS OF CREATIVITY

Key Questions: What is creativity? Where is creativity?

Objectives:
- Identify controversies concerning the nature of creativity to understand why a universally accepted definition of creativity has not been attained.
- Identify cognitive and personal characteristics associated with creativity across cultures and through time.
- Recognize how culture, economics, environment, and time impact the expression of creativity.

Key Concept: Knowledge of Creativity and Characteristics of Creativity

Quote: “I wish to work miracles…”

Leonardo Da Vinci

“The desire to know is natural to good men.”

Leonardo Da Vinci

“When I have been attentive to the creative gifts within, I have been free to play and grow as a human being. When I have cooperated in the denial of those gifts, or when I have chosen to set them aside, I have withered. My love of life has suffered. I have stopped praying, I have become small and cynical, or I have driven myself to the point of exhaustion and burnout. I have become a compulsive worker trying to make up in my work what I have denied in my most creative self.”

Theologian Matthew Fox

Materials: “Handy Dandy Checklist (or, How to Kill Ideas)” (HO 1)

Session Opener:
- Creative Reflection 2: “Case Study of a Creative Person.” (HO 2 from Topic 3)
- Discuss the factors that the creative people who were studied indicated “encouraged creativity” and those factors that “inhibited creativity.” Create a Venn diagram.

Recommended Reading Assignment:
Learning Options and Activities:
- Research to explore “Man’s relationship to creativity” and develop a time line that shows the distinct periods in history from various cultures and evidence of creativity during each period.
- Develop a matrix or a visual diagram showing similarities and differences of the development and expression of creativity.
- Debate the positive/negative historical and contemporary controversies concerning creativity.
- Create an imaginary interview with an historical or modern-day person you would identify as being a creative individual. Feel free to add your personal creative touch.
- Begin developing a scrapbook of personal key interests, lifestyle, educational background, family support, etc.

Evidence of Mastery:
- Write a summary of similarities and differences of culture, economics, environment and time on creativity.
- Write a summary of the controversy regarding the nature of creativity.
- List similarities and differences of cognitive and personal characteristics associated with creativity. (Portfolio entry)
- Create a video, theatrical display, or a collage as significant evidence of cultural differences and their relationship to the creative process that depicts the creativity of multiple cultures.
- Research and identify genres of music that illustrate the creative differences of various cultures.
- Create a musical medley or show evidence of understanding how music depicts the creative differences between cultures and throughout time.

Other Resources:
The Handy Dandy Checklist
(or, How to Kill Ideas)

1. That idea is silly or ridiculous.
2. We’ve tried it before.
3. We’ve never tried it before.
4. It will cost too much.
5. It’s not in our area of responsibility.
6. It’s too radical a change.
7. We don’t have the time.
8. It will make other things obsolete.
9. We’re too small to do that.
10. It’s not practical in our situation.
11. The community will be upset.
12. Let’s get back to reality.
13. That’s not our problem!
14. The old way has always worked well enough. You’re several years ahead of your time.
15. We’re not ready for it.
16. It isn’t in the budget.
17. You can’t teach old dogs new tricks.
18. The Board (Administration... Management...) won’t go for it.
19. We’ll look foolish if it fails.
20. We’ve done okay with it.
21. Let’s think about it for awhile.
22. Let’s form a committee to study it.
23. Has it worked for anyone else?
24. It won’t work at our level (or in our area).
Key Question: How can creativity be measured?

Objectives:
- Understand the role of assessment of creativity and the use of tests and inventories.
- Describe, compare, and evaluate different instruments for measuring creativity.

Key Concept: Knowledge and Characteristics of Creativity

Quotes:
- “An artist is not a special kind of person. Every person is a special kind of artist.”
  Meister Eckhard
- “Individuality of expression is the beginning and end of all art.”
  Johann Wolfgang von Goethe
- “Since a person can behave creatively in an almost infinite number of ways...it would be ridiculous even to try to develop a comprehensive battery of tests of creative thinking that would sample any kind of universe of creative thinking abilities.”
  E. Paul Torrance

Session Opener: Response to quotation, “How is every person an artist?”

Recommended Reading Assignments:

Learning Options and Activities:
- Discuss the reasons for a creativity assessment: Identification for appropriate learning settings, for research, for counseling purposes, for predicting creative eminence.
- Participate in the following activity: Identification of gifted individuals using descriptions of the characteristics of famous gifted people.
- Generate a checklist to evaluate the reliability and validity of the various creativity tests.
• Review the individual research of creativity tests (see Chapter 8, *Creativity is forever*). Administer 3 tests and share the results.
• Connect the Dots. (HO 1)
• Administer one test of creativity to 5-10 students. Score and analyze.
• Use a Creative Problem Solving (CPS) Evaluation Matrix to compare aspects of various creativity assessment instruments.
• VIEW – preference indicator from Center for Creative Learning (CLC) (2002).
  o Certification is necessary for administration of this inventory and can be obtained from CLC.
  o Inventory the illustrated 3 areas relevant to creative problem solving:
    □ Reaction to change: Explorer or Developer
    □ Processing preference: Internal or External
    □ Orientation: People or Task

Evidence of Mastery:
• Summarize creativity tests results.
• Summarize the reliability and validity of a number of creativity tests and inventories.
• Reflect upon personal awareness of creativity preference (Portfolio Entry).
• Create an informal Creativity Assessment Tool (ICAT) that helps identify or better understand the creative learner (HO 2). Evaluate the Instrument using HO 3.
• Support or refute this statement: “Creativity can/cannot be measured, and efforts to do so are/are not a waste of time.”
• Create a measure of creativity that is nonverbal.

Additional Resources:
• Various tests of creativity:
  o Naglieri Nonverbal Ability Test
  o Meier Art Tests
  o Torrance Tests of Creative Thinking
  o SOI-Meeker (1969)
Connect the Dots

Connect these randomly placed dots to form a picture that symbolizes ____________ _______________ (this can be used in a variety of ways and should be determined by the teacher and/or the students).

Share with the class.
### iCAT Report

**Name:** ____________________________  **Date:** ____________________________

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Evaluate Your iCAT

Did I include IQ/Intelligence data? (Threshold concept, p. 201)

Did I include biographical information? (Details about student’s actual creative activities and behaviors, p. 201)

Does my tool assess past creative achievement? (p. 202)

Will students find it engaging and interesting? (p. 206)

Does it have, as its final result, a manageable score/output/answer?

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

I think this is a useful tool because…

Creativity Topic 5, HO 3
TOPIC 6 – IMPLEMENTING CREATIVITY (I):
FOSTERING A CREATIVE LEARNING ENVIRONMENT

Key Question: What is a creative learning environment?

Objectives:
• Identify ways to establish a classroom environment that fosters the development and expression of creativity. Consider the role of emotion, physical aspects, exploration/discovery, experimentation, unpredictability, and ambiguity.
• Analyze the creative learning environment from 3 perspectives (personal, socio-cultural, educational).
• Describe the importance, implications, and benefits of creative thinking for students in today’s schools and society.

Key Concept: Planning/Developing/Implementing Creative Strategies

Materials:
• HO 1
• HO 2
• Video clip: Billy Elliot
• Video clip: Apollo 13

Quotes:
“To give a fair chance to creativity is a matter of life and death for any society.”

Arnold Toynbee

“Fear stops action. Action cures fear.”

Margaret Bourke-White

“I am the artist! I am the master craftsman shaping my existence from the cradle to the grave. I wield the tolls, dream the dreams, see the visions, draw the plans, take the time, do the work in everything I say and think every moment of the day. As a sculptor takes his raw materials and begins to realize the ideal, or idealize the real, as a painter takes his brush and gives form to his creative idea, so in total life I am the artist!”

Religious writer: Marcus Bach

“Do you lead your students to the water and make them drink or do you try harder to make them thirsty?”

Master Teacher

“It is the supreme art of the teacher to awaken joy in creative expression and knowledge.”

Albert Einstein
Session Opener:

- How does creative thinking evidence itself in the classroom and in society? Discuss in small groups, make a visual, and share.
- Discussion question: Who are the five most creative minds in history? What are the qualifiers?

Recommended Reading Assignments:


Learning Options and Activities:

- Explore the positive and negative implications of creativity in society. Video Clip: Apollo 13
- Explore the concept of FLOW (see HO 4). Video Clip: Billy Elliot
- Generate a brochure stipulating ways to enhance creativity.
- Share Jigsaw articles.
- Discuss the implications of intrinsic and extrinsic motivation.
- Develop an in-service presentation for faculty awareness the importance of creative thinking in the school climate of high stakes testing and accountability.
- Debate the pros and cons of the implications of providing a creative setting for gifted children in the home, school, and community.
- Re-design a lesson to incorporate one or more of the climatic characteristics described in “Climate for Creativity” (HO 1) and “The Environment Conducive to Creativity.” (HO 2)
- What are some personal, social, and educational reasons for encouraging creativity? (Portfolio entry)

Evidence of Mastery:

- List ways to develop a positive classroom environment to promote creativity.
- List suggested strategies that parents can use to enhance creative thinking.
- Re-designed a lesson incorporating the characteristics of a positive environment.
- Review Creative Reflection 3: “Creativity and World Affairs.” (HO 3)
• Produce an annotated illustration of a classroom that supports creative expression and creative growth.
• Develop and present a creative learning activity.
• View a movie or play that has a central character who uses creativity to affect the outcome of the story. Review/analyze the importance of creative thinking to the central character, those around him/her, and society (if relevant).
• Create a visual of a creatively orchestrated classroom.

**Additional Resources:**

Climate for Creativity

Challenge

Challenge refers to the emotional involvement of the members of the organization in its operations and goals. A high-challenge climate is seen when people experience joy and meaningfulness in their jobs, and therefore, they invest much energy. Low challenge indicates alienation and indifference; a common sentiment and attitude is apathy and lack of interest for the job and the organization.

Freedom

Freedom refers to the independence in behavior exerted by the people in the organization. In a climate where this kind of freedom prevails, people make contacts to give and receive information and discuss problems and alternatives. They plan and take initiatives of different kinds and make decisions. The opposite climate would include people who are passive, rule-fixed, and anxious to stay inside established frameworks and boundaries.

Dynamism/Liveliness

Dynamism and liveliness refer to the eventfulness of the organization. In highly dynamic situations, new things are happening all the time and alterations in ways of thinking about and handling issues often occur. A kind of psychological turbulence exists, which is described by people in those organizations as “full speed,” “go,” “breakneck,” “maelstrom,” and the like. The opposite situation could be compared to a slow jog-trot with no surprises. There are no new projects, no different plans. Everything goes its usual way.

Trust/Openness

Trust and openness refer to the emotional safety in relationships. In an environment with a strong level of trust, everyone in the organization dares to put forward ideas and opinions. Initiatives can be taken without fear of reprisals and without ridicule in case of failure. Communication is open and straightforward. However, where trust is missing, people are suspicious of each other and count on high expenses for mistakes that may occur. Without trust, people are afraid of being exploited and robbed of their good ideas.
Idea Time

Idea time refers to the amount of time people can and do use for elaborating new ideas. In the high idea-time situation, impulses and fresh suggestions are discussed and tested. This available idea time is not planned or included in the task assignment; people tend to use these possibilities as creative moments. In the reverse case, every minute is booked and specified. Time pressure makes it impossible to think outside the instructions and planned routines.

Playfulness/Humor

Playfulness and humor refer to the spontaneity and ease that is displayed. A relaxed atmosphere with jokes and laughter characterizes the organization, which is high in this dimension. The opposite climate is characterized by gravity and seriousness. The atmosphere is stiff and gloomy. Jokes and laughter are regarded as improper.

Conflicts

Conflicts refer to the presence of personal and emotional tensions (in contrast to idea tensions in the debates dimension in the organization). When the level of conflict is high, groups and single individuals dislike each other and the climate can be characterized by “warfare” with gossip and slander going on. Plots and traps are usual elements in the life of the organization. In the opposite case, people behave in a more mature manner; they are caring and considerate. They have psychological insight and control of impulses.

Idea Support

Idea support refers to the ways new ideas are treated. In the supportive climate, ideas and suggestions are received in an attentive and kind way by bosses and workmates. People listen to each other and encourage initiatives. Possibilities for trying out new ideas are created. The atmosphere is constructive and positive. When idea support is low, the reflexive “no” is prevailing. Every suggestion is immediately refuted by a counterargument. Fault-finding and obstacle-raising are the usual styles of responding to ideas.

Debates

Debates refer to the occurrence of encounters and clashes between viewpoints, ideas, and differing experiences and knowledge. In the debating
organization, many voices are heard and people are keen on putting forward their ideas. Where debates are missing, people follow authoritarian patterns without questioning.

Risk-taking

Risk-taking refers to the tolerance of uncertainty exposed in the organization. In the high risk-taking case, decisions and actions are prompt, arising opportunities are taken, and concrete trying is preferred to detailed investigation and analysis. In a risk-avoiding climate, the mentality is cautious and hesitant. People try to be on the “safe side.” They set up committees and “cover themselves” in many ways before making a decision.

Based on research by Göran Ekvall. This summary is adapted and reproduced by permission of the Center for Creative Learning and the Buffalo State College Center for Studies in Creativity.
The Environment Conducive to Creativity

To speak of a creative situation is to imply that creativity is not a fixed trait of personality but something that changes over time being facilitated by some conditions and situations, and inhibited by others. (MacKinnon, 1978)

- Provide freedom to try new ways of performing tasks; allow individuals to achieve success in their own areas and ways.
- Permit tasks, activities, projects, and assignments to be varied for individuals; support and discuss the importance and value of individual differences.
- Support and encourage unusual ideas and responses of individuals while engaging in critical and creative thinking; establish an atmosphere of openness in which the principles of deferred and affirmative judgment are observed.
- Encourage individuals to express preferences, make choices, and to be involved in goal-setting and decision-making; promote a feeling of individual control (“ownership”) over what happens and how it might best be done.
- Let everyone get involved and demonstrate the value of involvement by supporting and helping to develop or refine plans, ideas, or solutions for problems and projects; use Creative Problem Solving methods to address problems together.
- Provide an appropriate amount of time for the accomplishment of tasks.
- Communicate confidence in the individuals with whom you’re working; work with them, rather than against them, in a non-punitive environment.
- Hold high, but attainable, standards and expectations that call for engagement in thinking and learning; model the use of appropriate methods and techniques in your own thinking.
- Make deliberate efforts to recognize people’s previously unrecognized and unused potential; challenge individuals to solve problems and to work on new tasks.
- Respect the individual’s needs to work alone, with a partner, or with a small group on various tasks; encourage self-initiated projects.
- Tolerate complexity and disorder, at least for a period of time; even the best planning and organizing requires some degree of flexibility.
- Help individuals use mistakes as starting points for learning and change; encourage revisions and modifications to meet acceptable standards in a supportive atmosphere; provide constructive feedback (pointing toward improvement and change) and explicit evaluation criteria and procedures.
- Criticism can be destructive—use it carefully and in small doses; use encouragement and help to reduce concern over failure.
- Allow time for individuals to think about and develop their responses and creative ideas; “probe” to draw out their thinking and to clarify and enable others to share and contribute. Remember that innovation does not always occur immediately or in a final or polished form.
• Work to create a climate of mutual respect and acceptance in which individuals will be encouraged to share, develop, and learn cooperatively; encourage a feeling of interpersonal trust.

• Be aware that creativity has many dimensions—not just "arts and crafts!"

• To encourage divergent thinking, provide space, time, and resources, and use questioning to provoke thinking beyond the "recognition and recall" level. Don’t try to control every element of the task in a prescribed, step-by-step fashion, but permit individuals with opportunities to explore, invent, or design the tasks.

• Listen to individuals and acknowledge their messages; don’t hesitate to laugh with them. A warm, supportive atmosphere provides freedom and security in exploring and “playing with possibilities.” Laughter is not necessarily indicative of lack of intensity or purpose!

• Use strategies that move discussion and questioning beyond the level of convergent, reproductive thinking in which individuals recite “right” answers on request.

• Minimize expenditures of time on routine tasks that could be handled more economically in other ways (i.e., avoid unproductive note-taking such as copying from a screen or board, or dictating long lists to be copied by group members—photocopy the list in advance and distribute it).

• Promote sharing and cooperation, but don’t avoid challenge; deal openly and supportively with conflict, confrontation of ideas or emotions, paradoxes, different viewpoints, and the expression of individuals' ideas and feelings.

Reflection #3: “Creativity and World Affairs”

Creative Reflection

Student’s Name:______________________________________________________________

Pay close attention to current media such as television, newspaper, magazines, the Internet, etc., for several days. Respond directly to the following questions:

• Why is creativity needed in the “real” world?
• List at least five (5) instances when creativity was used and/or when creativity was needed (whether it was used or not).
By Mihaly Csikszentmihalyi

Creative persons differ from one another in a variety of ways, but in one respect they are unanimous: They all love what they do. It is not the hope of achieving fame or making money that drives them; rather, it is the opportunity to do the work that they enjoy doing.

Interviews with engineers and chemists, writers and musicians, historians and architects, sociologists and physicists confirm that they all do what they do primarily because it’s fun. Yet many others in the same occupations don’t enjoy what they do. So we have to assume that it is not what these people do that counts, but how they do it.

Being an engineer or a carpenter is not in itself enjoyable, but if one does these things a certain way, then they become intrinsically rewarding. What is the secret of transforming activities so that they are rewarding in and of themselves?

Programmed for Creativity

When people are given a list and asked to choose the best description of what they enjoy about doing what they enjoy most—reading, climbing mountains, playing chess—the answer most frequently chosen is "designing or discovering something new." At first, it seems strange that dancers, rock climbers, and composers all agree that their most enjoyable experiences resemble a process of discovery. But the evidence suggests that at least some people should enjoy discovering and creating above all else.

To see the logic of this, consider a simple scenario. Suppose that you want to build an artificial life-form that will have the best chance of surviving in a complex and unpredictable environment, such as that on Earth. You want to install some mechanism that will prepare your creation to confront as many of the sudden dangers and to take advantage of as many of the opportunities that arise as possible. Certainly you would want to design an organism that is basically conservative, that learns the best solutions from the past and keeps repeating them, trying to save energy, to be cautious, and to go with the tried-and-true patterns of behavior.

But the best solution would also include a relay system in a few organisms that would give a positive reinforcement every time they discovered something new or came up with a novel idea or behavior, whether or not it was immediately useful. It is especially important to make sure that such an organism was not rewarded only for useful discoveries, or else it would be severely handicapped in meeting the future. No earthly builder could anticipate the kind of situations the new species might encounter tomorrow, next year, or in the next decade, so the best program would be one that makes the organism feel good whenever something new is discovered, regardless of its present usefulness. Evolution may have given humans such a program.

By random mutations, some indi-
individuals must have developed a nervous system in which the discovery of novelty stimulates the pleasure centers in the brain. Just as some individuals derive a keener pleasure from sex and others from food, so some must have been born who derived a keener pleasure from learning something new. It is possible that children who were more curious ran more risks in the world. But it is also probable that those human groups that learned to appreciate their curious offspring also protected and rewarded them.

If this is true, we are the descendants of ancestors who recognized the importance of novelty; protected those individuals who enjoyed being creative, and learned from them. Because they had among them individuals who enjoyed exploring and inventing, they were better prepared to face the unpredictable conditions that threatened their survival. We also share an ability to enjoy almost anything we do, provided we can discover or design something new into the doing of it. This is why creativity, no matter where it takes place, is so pleasurable.

But there is another force that motivates us, and it is more primitive and more powerful than the urge to create: the force of entropy. This, too, is a survival mechanism built into our genes by evolution. It gives us pleasure when we are comfortable, when we relax, when we can get away with feeling good without expending energy. Without this built-in regulator, we could easily exhaust ourselves and not have enough reserves of strength, body fat, or nervous energy to face the unexpected. The conservative urge to curl up comfortably on the sofa is very powerful, so for most people “free time” means a chance to wind down, to park the mind in neutral.

All of us are torn between these two opposite sets of instructions programmed into the brain: the effort imperative on one side and the claims of creativity on the other. In most individuals, entropy seems to be stronger, and they enjoy comfort more than the challenge of discovery. A few are more responsive to the rewards of discovery. Unless enough people are motivated by the enjoyment that comes from confronting challenges, there is no evolution of culture, no progress in thought or feeling. So it is important to understand better what enjoyment consists of and how creativity can produce it.

What Is Enjoyment?

Certain people devote many hours a week to their avocations, without any rewards of money or fame. Why do they keep doing it? It is clear from talking to them that what keeps them motivated is the quality of the experience they feel at the time. This feeling often involves painful, risky, or difficult efforts that stretch the person’s capacity, as well as an element of novelty and discovery.

I call this optimal experience flow, because many people—artists, athletes, scientists, ordinary working people—have described the feeling in similar words. Flow is an almost effortless yet highly focused state of consciousness. And the descriptions do not vary much by culture, gender, or age.

In interviews, people repeatedly mention certain key elements in their impressions of this enjoyable experience:

- **There are clear goals every step of the way.** In contrast to everyday life on the job or at home, where often there are contradictory demands and our purpose is unsure, in flow we always know what needs to be done. A musician always knows which notes to play next. When a job is enjoyable, it also has clear goals: The surgeon is aware how the inci-

"Happiness is an expression of the soul in considered actions."

— Aristotle
sion should proceed moment by moment.

Sometimes the creative process begins with the goal of solving a problem assigned by someone else or suggested by the state of the art in one's field. The goal may also emerge as a problem in the domain—a gap in the network of knowledge, a contradiction among the findings, a puzzling result. Here the goal is to restore harmony in the system by reconciling the apparent disparities.

- **There is immediate feedback to one's actions.** In a flow experience we know how well we are doing. The musician hears right away is just too excruciating to wait until critics or galleries take notice and pass judgment on their canvases. Research scientists drift away from pure science because they cannot tolerate the long cycles of insecurity before reviewers and editors evaluate the results.

How can such people experience flow without feedback? Evidently those individuals who keep doing creative work are those who succeed in internalizing the field's criteria of judgment: They can give feedback to themselves, without having to wait to hear from experts.

- **There is a balance between challenges and skills.** In flow, we

    "I find my joy of living in the fierce and ruthless battles of life, and my pleasure comes from learning something."

    — August Strindberg

whether she has played the right note. The rock climber finds out immediately whether the last move was correct because he hasn't fallen off the mountain.

Maintaining flow in the context of an unresponsive society can be difficult. Many artists give up because they feel that our abilities are well matched to the opportunities for action. In everyday life, we sometimes feel that the challenges are too high in relation to our skills, or that our potential is greater than the opportunities to express it. Playing tennis or chess against a much better opponent leads to frustration; against a much weaker opponent, to boredom. In flow, the players are balanced on the fine line between boredom and anxiety.

- **Action and awareness are merged.** In everyday experience, our minds are often disjointed from what we do. Sitting in class, students may appear to be paying attention to the teacher, but they are actually thinking about lunch or last night's date. In flow, our concentration is focused on what we do. Single-mindedness is required by the close match between challenges and skills, and it is made possible by the clarity of goals and constant availability of feedback.

- **Distractions are excluded from consciousness.** We are aware only of what is relevant here and now. If the musician thinks of her health or tax problems when playing, she is likely to play a wrong note. Flow is the result of intense concentration on the present, which relieves us of the usual fears that cause depression and anxiety in everyday life.

Distractions interrupt flow, and it may take hours to recover the peace of mind one needs to get on with the work. The more ambitious the task, the longer it takes to lose oneself in it, and the easier it is to get distracted. A scientist working on an arcane problem must detach himself from the "normal" world and roam in his mind in a world of disembodied symbols. Many of the peculiarities attributed to creative persons are really just ways to protect the focus of concentration so that they may lose themselves in the creative process.

- **There is no worry of failure.** While in flow, we are too involved to be concerned with failure. Some people describe it as a feeling of control, but actually we are not in control—it's just that failure is not an issue. We know what has to be done, and our skills are potentially adequate to the challenges. If the challenges become too great, a sense of frustration rather than joy creeps in. Creative individuals counter this by developing internal models that al-

10 Special Report on Happiness
Enhancing Your Creativity—And Happiness

Here are a few suggestions for enhancing your personal creativity and happiness:

* Try to be surprised by something every day.
* Try to surprise at least one person every day.
* Write down each day what surprised you and how you surprised others.
* When something strikes a spark of interest, follow it.
* Recognize that if you do anything well it becomes enjoyable.
* To keep enjoying something, increase its complexity.
* Make time for reflection and relaxation.
* Find out what you like and what you hate about life.
* Start doing more of what you love and less of what you hate.
* Find a way to express what moves you.
* Look at problems from as many viewpoints as possible.
* Produce as many ideas as possible.
* Have as many different ideas as possible.
* Try to produce unlikely ideas.

— Csikszentmihalyi

"The only way to be happy is to shut yourself up in art, and count everything else as nothing."

— Gustave Flaubert

low them to put problems into a manageable context.

* Self-consciousness disappears. In everyday life, we are always monitoring how we appear to other people. Typically this awareness of self is a burden. In flow, we are too involved in what we are doing to care about protecting the ego. Afterwards, we may emerge with a stronger self-concept because we know that we have succeeded in meeting a difficult challenge. Paradoxically, the self expands through acts of self-forgetfulness.

* The sense of time becomes distorted. Generally in flow we forget time, and hours may pass by in what seem like a few minutes. Or the opposite happens: A figure skater may report that a quick turn lasting only a second in real time seems to stretch out for much longer. Our sense of how much time passes depends on what we are doing.

The poet Mark Strand gives this account: "You lose your sense of time, you're completely enraptured and you're sort of swayed by the possibilities you see in this work. The idea is to be so satiated with it that there's no future or past, it's just an extended present in which you're making meaning."

* The activity becomes an end in itself. Much of what we do is not purely for pleasure, but to accomplish a goal. I may be afraid to use a computer and learn to use it only because my job depends on it. But as my skills increase, I may begin to enjoy using the computer for its own sake as well. In many ways, the secret to happiness is to learn to get flow from almost everything we do, including work and family commitments. If everything is worth doing for its own sake, then there is nothing wasted in life.

Flow, Happiness, and the Future

What is the relation between flow and happiness? It is tempting to conclude that the two must be the same thing: actually, the connection is more complex. When we are in flow, we do not usually feel happy, because we feel only what is relevant to the activity. Happiness is a distraction. It is only after we get out of flow, at the end of a session or in moments of distraction within it, that we might indulge in feeling happy.

The more flow we experience in daily life, the more likely we are to feel happy overall. Unfortunately, many people find the only challenges they can respond to are violence, gambling, random sex, or drugs. Such experiences can be enjoyable, but these episodes of flow do not add up to a sense of satisfaction and happiness over time. Pleasure does not lead to creativity, but soon turns into addiction.

The link between flow and happiness depends on whether the flow-producing activity is complex, whether it leads to new challenges and hence to personal and cultural growth. There are many things that people enjoy: the pleasures of the body, power and fame, material pos-
Books by Mihaly Csikszentmihalyi

NEW!
Finding Flow: The Psychology of Engagement with Everyday Life
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To get more pleasure out of our lives, we must learn to get in touch with the joy of becoming completely engaged in our activities. The author, a psychologist and pioneer in happiness research, offers tools for living a richer and more vital life, focusing on three main dimensions: work, leisure, and interpersonal relationships.

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by Mihaly Csikszentmihalyi.

Profiles of many of the world’s most interesting and creative people in the arts, sciences, and public leadership and insights into what makes them tick.

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Regular Price: $14.00
Member’s Price: $12.95

(To order, use the coupon on the back of this report.)

sessions. Strangely enough, even though the means to obtain it are widely different, the resulting feeling of well-being is very much the same. But that does not mean that all forms of enjoyment are equally worth pursuing.

Twenty-five centuries ago, Plato wrote that the most important task for a society was to teach the young to find pleasure in the right objects. Plato was conservative even for his times, so he had rather definite ideas about what those “right things” should be. We are much too sophisticated today to have strong feelings in the matter. Yet we probably agree that we would feel better if our children learned to enjoy cooperation rather than violence; reading rather than stealing; chess rather than dice; hiking rather than watching television. No matter how relativistic and tolerant we have become, we still have priorities, and we want young people to share them. Many of us suspect that the next generation will not preserve what we value unless they now enjoy it to some extent.

The problem is that it is easier to find pleasure in things that are easier, in activities like sex and violence that are already programmed into our genes. Hunting, fishing, eating, and mating have privileged places in our nervous system. It is also easy to enjoy making money, discovering new lands, or building elaborate palaces, because these projects fit with survival strategies established long ago in our physiological makeup. It is much more difficult to learn to enjoy doing things that were discovered recently in our evolution—such as manipulating symbolic systems by doing math or com-posing music—and to learn about the world and ourselves in the process.

Children grow up believing that football players and rock singers must be happy, and they envy high-profile entertainers for what they think must be fabulous, fulfilling lives. Adults, themselves often deluded by infatuation with fatuous models, conspire in the deception. Neither parents nor schools are very effective at teaching the young to find pleasure in the right things. They make serious tasks seem dull and hard and frivolous ones exciting and easy. Schools generally fail to teach how beautiful science and mathematics can be; they teach the routine of literature and history rather than the adventure.

It is in this sense that creative individuals live exemplary lives. They show how joyful and interesting complex symbolic activity can be. With the help of parents and a few visionary teachers, they have become pioneers of culture, models for what men and women of the future will be. It is by following their example that human consciousness will grow beyond the limitations of the past, the programs that genes and cultures have wired into our brains. Perhaps our children, or their children, will feel more joy in writing poetry and solving theorems than in being passively entertained. The lives of creative individuals reassure us that it is possible.

About the Author
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It was my second-grade year of school, and I was eight years old. A constant thought flashing through my mind daily was “Wow—school is my kind of place!” My teacher, Mrs. Henderson, believed that second-graders could take on the world, and we did. I did not do things exactly like most of the other children did, and that was perfectly fine with Mrs. Henderson. In fact, she expected me to ask many questions, to declare “Off the wall” statements, and to color way outside the lines. She nurtured the creative spirit that was bubbling within me. I remember thinking on the last day of second grade that if school was always going to be like this, then I would stay in school forever.

Well, third grade was not quite the same, and fourth grade really was not either. In fact, I never had that exciting feeling about school again until ninth grade with Mrs. Dobbs. What happened? Between second and ninth grade, I had been compelled to believe that school was not the place for creativity and that school would not be school unless everyone did things exactly alike.

It is now 15 years later, and I have just begun my career as a teacher. I am a new teacher, eight months new, actually. Although I know eight months does not classify me as a veteran teacher, I like to think that it classifies me as a veteran rookie. So, as a veteran rookie, I want to address an overwhelming need that I encountered in my own school experience as a child, in my own classroom as a teacher, and in classrooms throughout every school district. I refer to the essential fundamental of meeting the needs of creative children in the classroom.

What is creativity? Many maintain that it is the ability to draw, paint, or play a musical instrument. Others say that creativity is the ability to develop unique ideas and to think divergently in solving problems. William Plomer said, “Creativity is the power to connect the seemingly unconnected” (Baer, 1996). Personally, I agree with the last two definitions, but I also wonder . . . can creativity really be defined? If the answer is “Yes,” then how can we identify and enhance creativity in the classroom? More importantly, what is our responsibility as teachers to the students in our classrooms who exhibit outstanding creative thinking ability?

“Mia” is a fifth-grader. She disrupts class often to ask “off the wall” questions. She develops her own plan of working a problem, rather than doing it like she is told. Mia
daydreams sometimes and refuses to conform to the class routines. She questions almost everything the teacher says. She often voices phrases such as: “But I think that we could do it this way.” “I do not agree with that.” “Why do you think that will happen?” “That is not the only answer for number six.” “Wow, this is really neat! Let’s see what happens if I do this.” She refuses to believe that only one right answer exists to any question.

“Carrie” is a fifth-grader in the same class. She sits near the front of the room. Even though she does not talk much, she always raises her hand before speaking. She usually speaks only when asked a question or when the teacher urges her to give her opinion. Carrie always completes her work beautifully, just as instructed. She has made all As every year since first grade. She never disrupts class. She follows all of the class rules and routines. Carrie often voices phrases like: “How would you like me to do this?” “I was not sure which way you wanted me to do this assignment, so I did it both ways.” “What is the correct answer for number six?”

Which child, Mia or Carrie, gets in more trouble in the classroom? (Mia) Which child often unnerves the teacher? (Mia) Which child seems “untamable?” (Mia) Which child exemplifies creativity? (Mia) Which child is referred for placement in the school’s gifted program? (Carrie)

In examining Mia and Carrie closely, Mia is a highly creative individual. Carrie, on the other hand, probably has a more difficult time thinking “outside the box.” Most of us as teachers recognize the noticeable ability that Carrie demonstrates in her work. Her work is very neat, organized, and easy to interpret. It is understandably more difficult to recognize and encourage the ability that Mia reveals in her work. Her work is often messy, disorganized, and full of a variety of solutions and answers.

This masking of ability is why teachers must work to put a greater emphasis on recognizing and advocating the importance of creative thinking in the classroom. Mia’s ability to think divergently, to question the seemingly unquestionable, to take a simple idea and turn it into an explosion of possibilities, and to remain brave enough to take risks is exactly what teachers must welcome, invite, and nurture in the classroom. Children like Mia need freedom of expression, and they will express things in divergent ways.

Thinking of the children I have taught during my eight months as a first year teacher and during my 14 weeks of student teaching, I firmly believe that creative children are crying out for more from their schools and teachers. I, just as all teachers, have encountered some Mias in my classroom. I have witnessed the distinct style used by highly creative children in expressing himself or herself through music or art. Others express themselves in their creations and in problem-solving situations. There are also children who express themselves in their questions, feelings, thoughts, or high levels of imagination. Each of these children has separate and unique needs. I notice that the creative child’s high levels of energy often overshadow these needs.
Therefore, I set a new goal for myself as a teacher: I challenge myself on a daily basis to ignite the creative spirits in my students!

In teaching sixth grade, I see children undergoing many changes. During these changes, the creative child’s spirit can be crushed. In elementary grades, almost every child is viewed as evoking creativity of some nature. During the middle school years, many of these creative thinkers seem to vanish, right? I do not think so. These creative thinkers are there. They are in my classroom. They are even more creative in sixth grade than they were before. The problem is that their creativity unleashes itself onto everything that they do. Why is that a problem? Simply because what was once known as their creative spirit has become known as “disruptive behavior” instead. It is our responsibility as teachers to encourage our students to utilize their creative thinking abilities, otherwise they will be in danger of losing them. If we let them lose it, we are failing them and our future society.

I decided to become Ms. Hudson, “Creativity Curator.” A curator is a person in charge of a museum or art collection. As we all know, museums and art galleries are full of unique and amazing works of genius. I see creativity as a priceless, unique, and inspiring work of art in children. When properly nurtured, the creative child becomes the entire museum, rather than one piece in it. As Creativity Curator, I believe that creativity can be taught to children. I do not mean that children can be given a book and told, “Here. Learn to be more creative!” Children can be taught to think creatively in every learning situation; they simply need guidance.

One of the most important and beneficial teaching methods to help children develop their creative thinking abilities is for teachers to be models of creativity themselves. As teachers, we must welcome new ideas, try different and even unusual teaching techniques in our classrooms, refrain from doing the same thing the same way time after time, demonstrate spontaneity, laugh often, and brainstorm aloud regularly. As children see their teachers take exciting risks in learning and observe how they appreciate searching for new ways to solve problems, then children grow to see the same things in themselves. Their creative spirits really begin to bubble.

In order to keep them bubbling, teachers must incorporate a variety of creative thinking activities in the classroom. Creativity can and should be integrated into all areas of a child’s learning experience. Some children, like Mia, have no problem tossing out new ideas and creating unique possibilities to solve problems. Other children, like Carrie, need more encouragement and direction. How can we teach creativity so that all students will benefit? The possibilities are endless. Here are some excellent creativity boosters that can be integrated into any learning environment:

Design and Define. I love to create strange, new words for my students to define. For example, I may ask my students to write their own definition for the word smaglywozzle and to use it in a sentence. Then, I encourage my students to create
their own new words. This helps students see that there is more than one way to respond to a situation or problem.

Problems to Ponder. I utilize open-ended problem-solving situations to encourage my students to think creatively. For example, I present my students with a problem and entice them to discover unique solutions. I start off with a simple problem, such as “Ms. Hudson has a difficult time finding her car keys,” and I encourage the students to develop original, yet different, ways to solve the problem. Then, I gradually present the students with more in-depth and even “strange” situations. This helps students realize ways to approach problems creatively by attempting a variety of solutions.

Invention Convention. This unit is a wonderful way to incorporate creative thinking skills into science and social studies lessons. After an exploration into the world of inventions, I explain to the students that they are inventors. We have a brainstorming session to help spark ideas and visualize possibilities. Then, the students let their imaginations fly as they design an original invention to present at our “Invention Convention.”

What If . . . Questions. Presenting students with “what if” situations is a great way to get them to think “outside the box.” Examples include: What if your hands changed places with your feet for a day? What if your eyes were on your knees? What if sidewalks were made of rubber? What if you could travel in a time machine? What if the color blue did not exist? These types of open-ended questions give students freedom of imagination and expression. Students love to answer them because the possibilities are endless, and they know that whatever they imagine is exactly right.

Abstractions and Divergent Thinking Tasks. Any kind of activity that requires students to think abstractly or divergently is a wonderful creativity booster. Examples of such activities include: creating metaphors that form connections between unrelated ideas; illustrating a piece of classical music; developing new uses for common everyday objects; and giving a “voice” to an abstract term or emotion, such as joy. Activities such as these invite students to create connections among unlikely ideas or objects.

All of these activities and open-ended tasks urge students to awaken and stimulate their creative spirits. These types of activities can be integrated into every classroom. When students learn how to use their creative thinking abilities and, more importantly, are allowed to use them in the classroom, then joy, excitement, and significant learning experiences will occur. As teachers, we must strive to invite originality, diversity, imagination, and change in our classrooms. It is our responsibility to open the door to creativity in our classrooms and close the door to conformity. In other words, we should stop trying to make Mia be exactly like Carrie. We should start encouraging Carrie to let the “Mia” that is in her come out to play.
As Creativity Curator, the essential question is in what ways might I ensure that the creative spirits of the students in my classroom are supported appropriately? I believe that any teacher can do this by helping students discover their own creative abilities. I work hard to give my students choices so they can guide their own learning and discovery. I encourage them to question things. I let them dance to the rhythm of their own band. I encourage risk-taking. I ask them challenging questions and implore them to search for answers. I urge them to look at things differently, and I smile as they do the same for me. Most importantly, I realize they need to express themselves in their own individual ways. Otherwise, I fear their creative spirits will gradually grow dim.

Does this work? From the looks on their faces and the words in their journals, I feel that this little bit of encouragement, understanding, and challenge helps. But I feel that it is only a small step. I have so much more to do. It is my mission as Creativity Curator.

I believe that when we all look back to our elementary school years, we will find our own Creativity Curator. I consider Mrs. Henderson and Mrs. Dobbs to have been mine. They did for me just what I strive to do for my students. I only hope that my students will not have to wait seven years to meet another curator after they leave the sixth grade, like I had to do when I left the second grade. That is why I am challenging every teacher to become a Creativity Curator along with me.

Of course, I have a long way to go. I have definitely made mistakes as a first-year teacher, but I have also learned from them and will continue to learn. I am just beginning this journey. I expect to have a few flat tires and run out of gas once or twice along the way. But, I expect the company, the view, and the scenic route to be absolutely amazing the entire way.

References


Abstract

In “Creative Approaches to Problem Solving,” Isaksen, Dorval, and Treffinger provide 12 suggestions for maintaining a climate for creativity. The twelve suggestions, such as reinforcing unusual ideas and responses, are listed. Copyright Prufrock Press Fall 2001

Full Text:

In Creative Approaches to Problem Solving, Isaksen, Dorval, and Treffinger provide these 12 suggestions for maintaining a climate for creativity (pp. 17-18):

1. Encourage divergent ways of performing tasks by providing resources and room.
2. Value individual differences, styles, and points of view by varying activities or other means for being different.
3. Reinforce unusual ideas and responses.
4. Encourage choices and involve students in goal setting to build a feeling of individual control.
5. Support the learning and application of specific creative problem-solving tools and skills in the workplace.
6. Provide a realistic time frame for work.
7. Communicate confidence in the students, reducing concern of failure by using mistakes as positives.
8. Challenge students to solve problems in new ways; ask provocative questions.
9. Encourage self-initiated projects by respecting an individual’s need to work alone or in groups.
10. Tolerate complexity and disorder.
11. Create a climate of mutual respect and acceptance among students.
12. Encourage a spirit of cooperation, open confrontation and resolution of conflicts, and the expression of ideas.

For more information about creative problem solving and other products that address creativity, contact The Creative Problem Solving Group, 1325 N. Forest Rd., Suite 340, Williamsville, NY 14221; phone (716) 689-2176; fax (716) 689-6441.
TOPIC 7 – IMPLEMENTING CREATIVITY (II):
NURTURING AND DEVELOPING CREATIVITY

Key Question: How can creativity be nurtured and developed?

Objectives:
• Examine organizational and managerial structures and practices that facilitate or inhibit the development and expression of creativity.
• Discuss the nature of innovation and the process of change relative to creative outcomes.
• Identify examples of how creative thinking can be used to address problems in society.
• Identify tools for generating ideas and focusing thought with overview of relevant programs.

Key Concepts:
• Planning / Developing / Implementing Creativity

Materials: pdf
• HO 1: “Find the Numbers”
• HO 2: “Creative Problem Solving”
  (http://www.creativelearning.com/freepdfs.htm)
• HO 3: “Effective Problem Solving Relies Upon” (with HO 3)
• HO 4: “Guidelines for Generating” (with HO 4)
• HO 5: “Guidelines for Focusing”
• Thinking Tools Lessons: A Collection of Lessons for Teaching Creative & Critical Thinking
• HO 6: “Creative and Critical Thinking Questionnaire”
• HO 7: “The P2 Project: Partners in Problem Solving” (with HO 7)
• HO 8: “Problem Solving Stages in FPS” (with HO 8)
• HO 9: “Synectics—Making Metaphors”

Quotes: “Much of our educational system has taught us to look for the one right answer. This approach is fine for some situations, but many of us have a tendency to stop looking for alternative right answers after the first one has been found. This is unfortunate because it’s often the second, third or tenth right answer which is what we need to solve a problem in an innovative way."

Roger VonOech, Ph.D.

“Look around you, take hold of the things that are here. Let them talk to you, and you will learn to talk to them.”

Unknown
There is something mechanical, as it were, in the art of finding solutions. The truly original mind is that which finds problems.

Paul Souriau

Vision is the art of seeing things invisible

Jonathan Swift

Empires of the future are empires of the mind.

Winston Churchill

Session Opener(s):

- Activity: “Here Today, Gone Tomorrow!”
  o Illustrate the changing environment in which we live and the need for creative and critical thinking.
  o Participants do a quick write (1 – 2 minute written reflection) on the following prompt: “My grandparents used these items/tools that no longer exist today.”
  o Group discussion of the many changes that have occurred and why these changes actually occurred.
  o Group should then reflect on what changes have occurred since they were young children and what changes could be expected within the next 20 years.

- Activity: “Find the Numbers” (HO 1 and HO 1 pdf)
  o Illustrate the need for the teaching of real life problem solving skills. While being timed, the participants circle the numbers from “1” to “48” consecutively and indicate when they are finished with the task. Each participant will write down the time taken to complete the task. Next, the participants are asked to observe the arrangement of the numbers until someone notices that the obvious pattern of odds on the left and evens of the right and that the numbers are arranged on the top and then the bottom in sets of six. After each pattern is stated, the participants again take the timed test, noting the difference in time it takes to complete the task. The goal of the lesson is to illustrate that once a person understands the process of the act, the procedure becomes easier. (Comprehensive directions and additional options found in “Thinking Tools Lesson 3—Generating and Focusing Options” in Thinking Tools Lessons.)

Recommended Reading Assignments:


**Learning Options and Activities:**

• Creative Problem Solving Packet – (HO 2 Master) overview of the Creative Problem Solving framework. This four-page document provides an overview of the Creative Problem Solving (CPS) framework, featuring Version 6.1™, the latest update of CPS, building on more than seven years of new research and field experience, and drawing on a tradition of more than five decades of work. This document offers a summary of CPS, with a concise description of every CPS component and state and their important benefits for individuals or groups of all ages. CPS can be applied in education, business, or any other organizational setting. From http://www.creativelearning.com/freepdfs.htm. Web page includes more intensive covering of the topic:
  o “Creative Problem Solving (CPS Version 6.1™)—A Contemporary Framework for Managing Change”
  o “Creative Problem Solving (CPS)—Components and Stages”
  o Understanding the Challenge
  o Generating Ideas
  o Preparing for Action
  o Planning Your Approach

• Creative & Critical Thinking – demonstrate that both types of thinking are essential for creative problem solving:
  o “Creative and Critical Thinking Questionnaire” (HO 6 pdf)
  o “Effective Problem Solving Relies Upon” (HO 3 pdf)
  o “Guidelines for Generating” (HO 4 pdf)
  o “Guidelines for Focusing” (HO 5 pdf)

• “Future Problem Solving Program – a program that utilizes the creative problem solving process (following HOs):
  o “The P2 Project: Partners in Problem Solving” (HO 7 pdf)
  o “Future Problem Solving Program: Program Components” (HO 7 pdf)
  o “Problem Solving Stages in FPSP” (HO 8 pdf)
  o “Future Problem Solving Program: The Six-Step Model” (HO 8 pdf)
• Extension through application:
  o *AbPS Guide (Action Based Problem Solving)*
  o *Practice Problems for Creative Problem Solving*, (3rd ed.)

• Synetics (found in HO 9):
  o “Synectics – Making Metaphors”
  o “Stretching Exercises: Warm-Ups for Metaphoric Activity”
  o Responsibility Synectics
  o Rain Synectics

• Discuss the concepts of learning and systems free of boundaries:
  o What would it look like?
  o What would it feel like?
  o What else would be needed?

• Creative Reflection #3, “Creativity and World Affairs” (see Topic 6 HO 3):
  o Research newspapers, journals and the Internet to locate examples of creative thinking used to address current societal problems or challenges

• Plan and develop creativity centers or demonstrations that emphasize creative strategies. Share the results with the group.

**Evidence of Mastery:**

• Compile a list of descriptors found within a creative learning community: compassion, courage, wisdom and forgiveness.

• Address what behaviors facilitate creative problem solving? (Portfolio entry)

• Share lessons and/or centers that generate creativity within the classroom.

• Conduct Synectics Activity: Chicken Problem (part of HO 9).

• Generate a list of some ideas and practices in your school that have been successful in the past but are now limiting your productivity and growth. How can you get rid of them? Develop an action plan.

• Use analogical thinking to produce a comic strip (see p. 151-152 *Creativity is forever*).

• Present a newscast in which a current problem of the world is creatively solved.
Additional Resources:

Creative Problem Solving (CPS Version 6.1™)
A Contemporary Framework for Managing Change

Donald J. Treffinger, Scott G. Isaksen, & K. Brian Dorval

Creative Problem Solving is…

… a model to help you solve problems and manage change creatively. It gives you a set of easy-to-use tools to help translate your goals and dreams into reality. CPS Version 6.1™ is:

Proven. CPS has been used for more than 50 years by organizations throughout the world and is supported by research, with hundreds of published studies on its effectiveness and impact.

Portable. CPS links your natural creativity and problem-solving approaches. It is an easy-to-learn process that can be readily applied by individuals and groups of many ages, in many organizations, settings, and cultures.

Powerful. CPS can be integrated with many organizational activities, providing new or additional tools for making a real difference. It can stimulate important and lasting changes in your life and work.

Practical. CPS can be used for dealing with everyday problems as well as long-term challenges and opportunities.

Positive. CPS helps you to unleash your creative talent and to focus your thinking constructively. When applied by groups, CPS promotes teamwork, collaboration, and constructive diversity when dealing with complex opportunities and challenges.

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Creative Problem Solving (CPS) — Components and Stages

This pamphlet provides a concise summary of and guide to Creative Problem Solving (CPS Version 6.1™) — the latest version of our framework for solving problems and managing change. This summary of CPS Version 6.1™ includes our latest work and draws upon our texts Creative Problem Solving: An Introduction, Third Edition (Treffinger, Isaksen, & Dorval, 2000) and Creative Approaches to Problem Solving, Second Edition (Isaksen, Dorval, & Treffinger, 2000).

CPS Version 6.1™ guides you in using both your creative and critical thinking skills in harmony, on your own or in a group, to understand challenges and opportunities, generate ideas, and develop effective plans for solving problems and managing change. CPS Version 6.1™ includes the four main components and eight specific stages illustrated in the figure below and described on the following pages.

The Creative Problem Solving Framework (CPS Version 6.1™)
© 2003, Center for Creative Learning, Inc. and Creative Problem Solving Group, Inc.
Understanding the Challenge

Understanding the Challenge involves investigating a broad goal, opportunity, or challenge, and clarifying, formulating, or focusing your thinking to set the principal direction for your work. Use one or more of the three stages in Understanding the Challenge when you need to explore and focus your thinking about your goals, objectives, or directions you hope to pursue.

Constructing Opportunities. Stating broad, brief, and beneficial opportunities and goals. Considering possible opportunities and challenges, and identifying a constructive goal to pursue.

Benefit for you: Constructing Opportunities helps you focus your attention and energy on positive directions — goals that will help you move forward with confidence and enthusiasm!

Exploring Data. Examining many sources of data from different points of view, and focusing on the most important elements of the task or situation. Considering what you know about the situation and what you need or want to know, to get to the “heart” of the matter.

Benefit for you: Exploring Data helps you to locate the key elements in the current realities of your task — factors that help you understand the situation, instead of distracting you from your real goal!

Framing Problems. Generating many, varied, and unusual ways to pose the problem, and then focusing on a specific statement that will “open the door” for and invite creative ideas. It helps you to think about, “How might we…” rather than “We can’t because….”

Benefit for you: Framing Problems helps you to express your problems or challenges in ways that build motivation, excitement, and enthusiasm for discovering and constructing creative ideas!

Generating Ideas

Generating Ideas, which has one stage, involves coming up with many new possibilities. Generating Ideas is viewed by many people as “creative,” and is sometimes (in error) equated with “brainstorming.” We view Generating Ideas as one important component and stage among several in CPS, and we use brainstorming as one specific tool (among many) for generating options. Use this component and stage when you need to generate many, varied, and unusual ideas for a clearly stated problem, and then identify the promising possibilities.

Generating Ideas. An open, exploration or search for ideas, in which you generate many ideas (fluency in thinking), varied ideas and new perspectives (flexibility), and unusual or novel ideas (originality), and then focus your thinking by identifying ideas with interesting or exciting potential to refine, develop, and put to use.

Benefit for you: Generating Ideas helps you to “stretch” your thinking, and to break away from the limitations or assumptions that might hold you back. CPS tools give you practical help for thinking that is “inside the box in new ways” as well as “outside the box.”
Preparing for Action

Preparing for Action involves exploring ways to make promising options into workable solutions and preparing for successful implementation. It helps you to take promising solutions and develop them so they’re as strong as you can possibly make them, and to consider ways to create the best possible chance of success. **Use one or more of the two stages in this component when you need to move promising new possibilities towards successful action or implementation.**

**Developing Solutions.** Applying deliberate strategies and tools to analyze, develop, and refine promising possibilities, and to transform them into promising solutions.

*Benefit for you:* Developing Solutions helps you to use practical tools to turn “good ideas” into powerful new solutions.

**Building Acceptance.** Considering ways to build support and to decrease or overcome resistance to possible solutions, and planning specific ways to carry out and evaluate your results and effectiveness.

*Benefit for you:* Building Acceptance helps you to implement creative ideas successfully!

Planning Your Approach

Planning Your Approach involves keeping track of your thinking while it is happening, to insure that you’re moving in the direction you want to go. It also guides you in “customizing” or personalizing your approach to applying CPS. **Use these stages when you need to decide whether to use CPS or to monitor, manage, and modify your activities as you apply CPS.**

**Appraising Tasks.** Determining whether CPS is a promising choice for dealing with a particular task, and taking stock of the commitments, constraints, and conditions you must consider to apply CPS effectively (the *people* involved, the *results* you desire, the *context* in which you are working, and the *methods* available).

*Benefit for you:* Appraising Tasks helps you to get the best from people, resources, and methods—enabling you to decide wisely about applying the method and increasing your chances of success.

**Designing Process.** Using your knowledge of the task and your needs to plan the CPS components, stages, or tools that will be best-suited to help you reach your goals.

*Benefit for you:* Designing Process helps you choose and use the components, stages, or tools that you really need—increasing the relevance and efficiency of your efforts.

For More Information:


Effective Problem Solving Relies Upon

<table>
<thead>
<tr>
<th>Creative Thinking</th>
<th>Critical Thinking</th>
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</thead>
<tbody>
<tr>
<td>Making and expressing meaningful new connections.</td>
<td>Analyzing, refining, developing and choosing options.</td>
</tr>
<tr>
<td>It is a process in which we</td>
<td>It is a process in which we</td>
</tr>
<tr>
<td>Perceive gaps, paradoxes, challenges, concerns or oppor-</td>
<td>Screen, support and select possibilities;</td>
</tr>
<tr>
<td>tunities;</td>
<td></td>
</tr>
<tr>
<td>* and then generate by--</td>
<td>* and then focus by--</td>
</tr>
<tr>
<td>♦ Thinking of many possibilities;</td>
<td>♦ Making inferences and deductions;</td>
</tr>
<tr>
<td>♦ Thinking and experiencing in varied ways, with different</td>
<td>♦ Comparing and contrasting options;</td>
</tr>
<tr>
<td>viewpoints;</td>
<td>♦ Categorizing and sequencing options;</td>
</tr>
<tr>
<td>♦ Thinking of new and unusual possibilities and;</td>
<td>♦ Improving and refining promising alternatives;</td>
</tr>
<tr>
<td>♦ Extending and elaborating alternatives.</td>
<td>♦ Making effective judgments and decisions.</td>
</tr>
</tbody>
</table>

When generating possibilities, your creative thinking is activated; refrain from judging while you are generating possibilities.

When generating...

<table>
<thead>
<tr>
<th>Use Deferred Judgment</th>
<th>Use Affirmative Judgment</th>
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</thead>
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<tr>
<td>and</td>
<td>and</td>
</tr>
<tr>
<td>Seek Quantity</td>
<td>Be Deliberate</td>
</tr>
<tr>
<td>Freewheel</td>
<td>Consider Novelty</td>
</tr>
<tr>
<td>Look for Combinations</td>
<td>Stay on Course</td>
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</tbody>
</table>

When analyzing, refining or developing possibilities, your critical thinking is activated; examine possibilities constructively to enhance or strengthen them.

When focusing...

Preparing a New Generation of Problem Solvers

Guidelines for Generating

1. We rule out Criticism and Praise... Don’t say “yes” to an idea, and don’t say “no” to an idea.

2. We want quantity. The larger the number of ideas, the greater the chance of reaching the best solutions.

It is very important students learn to withhold criticism whenever generating ideas. The goal is to generate as many ideas as possible in as short a time as possible. This won’t happen if the process is delayed by either criticism or comments on the ideas as they are being generated.

Guidelines for Generating

3. We seek combinations and improvements. We encourage group members to combine and “hitchhike” ideas.

4. We welcome freewheeling. The wilder the ideas, the better. Offbeat and silly ideas may trigger practical breakthroughs that might not otherwise occur.

Scraps of paper are excellent for use by students when generating. By jotting a note about each idea, then placing the note in a pile, the team can keep all ideas for reference when writing. They may place them in piles by category to keep a check on flexibility.

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Creativity Topic 7, HO 4
Guidelines for Focusing

1. We are thorough, but positive, when we are analyzing, refining, or choosing possibilities.

2. We follow a plan, and we know and use tools to help us focus possibilities efficiently.

These guidelines are adapted from Treffinger, Jackson, and Darval (1984)

Guidelines for Focusing

3. We keep our eye on our goal. We focus on what we really want and need to accomplish.

4. We remember to stay open to all ideas, and to look deliberately for new and unusual possibilities.

These guidelines are adapted from Treffinger, Jackson, and Darval (2000)
Creative and Critical Thinking Questionnaire

Directions. Read each of the following ten items. Put an “X” after “True” if the statement is true, or an “X” after “False” if the statement is false.

1. Critical thinking means evaluating ideas to find the one best answer. True___ False___

2. Creative thinking is very rare, and can only be done by a few very special people. True___ False___

3. Critical thinking is something we can learn. True___ False___

4. Most creative people are artists. True___ False___

5. Critical thinking means telling people what’s wrong with their ideas. True___ False___

6. Creative thinking involves thinking of many ideas. True___ False___

7. People use creative thinking to look at problems in new or different ways. True___ False___

8. Critical thinking involves being fair in making judgments. True___ False___

9. Critical thinking is criticizing. True___ False___

10. Creative thinking means being very logical. True___ False___

Key to correct responses - “Creative & Critical Thinking Questionnaire”

Item 1.  
False – Critical thinking also involves comparing and contrasting, organizing information, sequencing material, and other skills.

Item 2.  
False – Everyone can think creatively.

Item 3.  
True – We can all improve our critical thinking.

Item 4.  
False – Art is one way to be creative, but people can be creative in anything they do.

Item 5.  
False – Critical thinking is not attacking people or putting down their ideas. It involves analyzing, improving, or choosing ideas.

Item 6.  
True – Seeing many possibilities is one important part of creative thinking.

Item 7.  
True – This is the kind of creative thinking we call flexibility.

Item 8.  
True – Critical thinking does mean examining ideas fairly and thoroughly.

Item 9.  
False – Criticizing usually means telling someone just what’s wrong or what you don’t like; critical thinking involves examining ideas in a thorough and balanced way.

Item 10.  
False – Creative thinking is freely and playfully exploring all kinds of possibilities, and it does not have to be limited by, or restricted to, what seems logical.
The P2 Project: Partners in Problem Solving

A Joint Venture of the Future Problem Solving Program and the Center for Creative Learning

FPSP Structure

Components:
- Team
- Problem Solving
- Individual
- Problem Solving
- Team CmPS
- Individual CmPS
- Scenario
- Action-based
- Problem Solving
- Assessment and Feedback

CPS Process

Three Components
- Six Stages
- Tools:
  - Generating
  - Focusing

Future Problem Solving Program Components

Action-based Problem Solving
- Primary Division
- Junior Division
- Middle Division

Community Problem Solving
- Team and Individual
  - Junior Division
  - Middle Division
  - Senior Division

Scenario Writing
- Junior Division
- Middle Division
- Senior Division

Team and Individual Problem Solving
- Junior Division
- Middle Division
- Senior Division

Assessment
Evaluation and Feedback;
Continuous Improvement and Innovation

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Creativity Topic 7, HO 7
Preparing a New Generation of Problem Solvers

Problem Solving Stages in FPSP

Understanding the Problem
- Research - Future Scene
- Identify Possible Challenges
- Select 16 Key Challenges

Generating Ideas
- Select an Underlying Problem
- Select an Important Concern
- Generate Solution Ideas
- Focus on 16 Most Promising

Planning for Action
- Generate Criteria
- Select 5
- Apply the Criteria
- Complete the Evaluation Grid

Develop an Action Plan

Future Problem Solving Program

The Six-Step Model

UNDERSTANDING THE PROBLEM
- Research the Topic
- Read and Analyze the Future Scene
  1. Identify Challenges
  2. Select an Underlying Problem

GENERATING IDEAS
- Produce Solution Ideas

PLANNING FOR ACTION
- Generate and Select Criteria
- Apply Criteria
- Develop an Action Plan
SYNECTICS—Making Metaphors
by Betty Hartzog

GETTING ORIENTED: SYNECTICS is a derivative of the Greek word “syn” and refers to the joining of unrelated elements. The significance of this concept to creative thinking is the association of facts and ideas into new configurations of interpretation and understanding.

SYNECTICS is a structured approach to problem solving. It is not the intent here to provide the entire process, but to provide some of the operational mechanisms which have immediate application to promoting creative thinking and writing in the classroom.

Two basic processes (Prince, 1976) of SYNECTICS are –

- **Making the Strange Familiar** – combining something familiar with a new or unfamiliar problem to obtain a new perspective on it.
- **Making the Familiar Strange** – combining something strange to something familiar in order to gain a new perspective on it.

There are three operational mechanisms (Synectics, Inc., 1968), which deliberately Make the Familiar Strange:

1. **Direct Analogy** (simple comparison like a simile or metaphor)
2. **Personal Analogy** (being the thing – personification backwards)
3. **Symbolic Analogy** (compressed conflict oxymoron)

Directions: Have students fill in “Responsibility Synectics.” Then let each student share orally each part consecutively without any discussion. (Everyone will say his/her “a,” then “b,” then “c.”). This is “whole brain” thinking because students visualize in their right brain and make sense of it in their left brain. Because of the multiplicity of ideas and left-right, left-right sequence, the students reach the point of high “creativity” very quickly. Go through the process; then have the students produce a product.

Examples: Poem; story; paragraph on responsibility; list of personal responsibilities as a student, teacher, parent, employee and employer; paragraph on the ideal student, teacher, parent, etc.; plan for accepting the responsibilities they project for themselves in the next year or five years; etc.
SYNECTICS: A Brief Overview

Synectics was developed in the 1940s by W. W. Gordon for the purpose of generating new ideas faster in business. It was adapted for education in the late 1960s but has come to the forefront in the 1980s because brain research has become of prime importance in this country. “Syn” comes from the Greek word meaning together. Synectics is a group process whereby the group members arrive at the peak of creativity faster than they would individually because of the multiplicity of ideas; it is a three step metaphorical method that requires individuals to visualize (right brain) and make sense of their visualizations (left brain).

Since creativity involves “whole-brain” thinking, the synectics method, whereby we can foster bi-hemispheric brain activity for extended periods of time, definitely enhances creativity and requires participating group members to look at things from a difference perspective. There are three operational mechanisms, which deliberately bring about increased insight and a unique point of view. A model of these steps follows:

**Synectics Model**

1. **Direct Analogy** (simple metaphoric comparison)
   Example: A car is like a totem pole because…

2. **Personal Analogy** (becoming the thing/problem/person)
   Example: You are a hurricane blowing toward the coast. How do you feel?

3. **Symbolic Analogy** (compressed conflict: looking at positive and negative together)
   Example: A clown is both sad and funny. How is this so?

**Instructions:**
The teacher or group leader allows time for the individuals to write out direct analogies; they then consecutively read out written statements without saying anything else. This causes everyone in the group to visualize, and then reason as each reader speaks, thus forcing whole brain thinking by everyone for the entire time the activity requires. They do the same with personal analogies and with symbolic analogies. After these exercises the students produce products and generate ideas of a more creative nature because of previous bi-hemispheric activity.
THE SYNECTICS MODEL

Stretching Exercises: Warm-Ups for Metaphoric Activity

I. Direct Analogy: A simple comparison of two objects or concepts. It includes, though it is not necessarily identical in all respects to, the conditions of the real problem situation. The direct analogy transposes the original condition to another situation.

Exercises:
A. A teacher is like a blender because

B. A school room is like what nonliving object?

C. How is a cloud like a bear?

II. Personal Analogy: individual identification with a person, plant, animal, or nonliving thing for the purpose of comparison.

Exercises:
A. Be a piece of celery. How do you feel?

B. You are a hurricane blowing in from the ocean. What do you look like? What are you doing? How do you feel? How do you feel when you are seeded by an airplane? What do you dislike the most?

C. You are nice, green, cool grass. That is the way you look. How do you feel? How do you feel when someone steps on you? What are three wishes you have?

III. Compressed Conflict: a description consisting of two words that seem to be opposite or contrary to each other yet can be used to describe an object, person, place, or situation.

Exercises:
A. A clown is funny and sad. On the one hand, a clown is funny because

B. On the other hand, a clown is sad because

C. What phrase could describe a funny and a sad clown?

D. What is angry and helpful at the same time?
RESPONSIBILITY SYNECTICS

PURPOSE: To look at Responsibility from a different angle.

I. Direct Analogy

*Examples:* A student’s job is that of a sponge soaking up knowledge. Geometry is like a puzzle; each theorem adds a piece.

A. A teacher’s duty is that of a _____________ because ______________. 

B. School is like ________________ because ______________. 

C. I feel like a ________________ in class when I do all my assignments because ________________. 

D. I feel like a ________________ in __________________ class when I don’t do my assignments because ________________.

E. Parents are like ________________ because ________________.

F. Responsibilities are like ________________ because ________________.

II. Personal Analogy

Remember to keep your own intellect and personality but imagine that your physical self has been changed to the following:

- You are the school principal. How do you feel?
- You are a mother who has just found out her child is using drugs. How do you feel?
- You are a nurse treating an AIDS patient. How do you feel?
- You are the president of a large tobacco company. How do you feel?
- You are a teacher with an unruly class. How do you feel?
- You are your best friend after you’ve let them down. How do you feel?
III. Compressed Conflict

This is looking at something from both ends of the spectrum—positive and negative. It’s like throwing an idea into the air and seeing it spin and tilt each way.

*Example:* A teacher is both *supportive* and *demanding.*

A. What is both nurturing and destructive?

B. A student is both ____________ and ______________.

C. A parent’s job is both ____________ and ______________.

D. Brothers/sisters are ____________ and ______________.

E. How is being an athlete both rewarding and disappointing?

F. My responsibility to myself is both ____________ and ____________.

G. A friend is ____________ but _______________.

H. Oxymoron – ________________

*Example:* Responsibility = restricted freedom

IV. Draw a symbolic picture or lines (modern art) that represent responsibility in general or your personal responsibility.

V. Write a poem, paragraph, newspaper article, fable, letter, or anecdote that depicts responsibility as you see it.
RAIN SYNECTICS

RAIN is like (FOOD) __________________________________________________________
because ________________________________________________________________

RAIN is like (ANIMAL) ______________________________________________________
because ________________________________________________________________

RAIN is like (MACHINE) __________________________________________________
because ________________________________________________________________

RAIN is like (MUSICAL INSTRUMENT) ______________________________________
because ________________________________________________________________

* * * * * *

Read aloud three (3) times consecutively while group members close their eyes.

Let the rain kiss you.
Let the rain beat upon your head with silver liquid drops.
Let the rain sing you a lullaby.
The rain makes still pools on the sidewalk.
The rain makes running pools in the gutter.
The rain plays a little sleep-song on our roof at night.
And I love the rain.

Langston Hughes

* * * * * *

You are a rain drop.

What size and shape are you?

How do you feel as you leave the cloud headed for earth?

Where and how do you land? How do you feel after landing?

Has your size and shape changed?

How do you react to other raindrops?

As a raindrop, do you mind becoming part of a puddle?

How do raindrops die? Can they live twice?

Creativity Topic 7, HO 9, continued
As a raindrop, would you rather land:

- on a WINDOW PANES or in a PASTURE
- on a GIRL’S NOSE or in a MOUNTAIN MEADOW
- on a SANDY BEACH or on a COW’S TAIL
- on a GARBAGE HEAP or on a MURDERER’S GUN
- on a NEON SIGN or in a PUDDLE

You are one raindrop in a storm that extends from Florida to Washington, D.C. Do you feel POWERFUL or HELPLESS?

You are one raindrop in a hurricane headed for Tampa. Do you feel FULL OF GLEE or FULL OF DESPAIR?

You are a drop on a rose in a city park. Are you more like a CHANDELIER or a PIMPLE?

You are a drop on a dirty factory window. Are you more like an ERASER or a PAINTBRUSH?

You are a drop next to a tear on a small boy’s face. Are you more like a CHAMELEON or a RIVER REACHING THE OCEAN?
You, a tiny raindrop, are floating lazily down towards earth, drifting one way, then another on a gentle breeze.

What one word sums up your feelings? ___________________________________

Why? ___________________________________________________________________
________________________________________________________________________

Before long, you are overtaken by a huge drop that barrels right into you. You are caught up in it and your speed rapidly increases.

How do you feel now? ________________________________________________

What one word describes your feelings? _________________________________

Why? __________________________________________________________________
________________________________________________________________________

As part of that huge drop you've splattered out onto a giant banana leaf on a tropical island. Although you're by yourself again, you sense yourself getting smaller as one after another of your molecules evaporate.

How do you feel now? ________________________________________________

What one word describes how you feel? _________________________________

Why? __________________________________________________________________
________________________________________________________________________

Put your first word together with either of the other two words to get a COMPRESSED CONFLICT, two words that show opposing feelings you've had as a raindrop.

Write a poem about rain.
SYNETICS: CHICKEN PROBLEM

Problem:

An electronics engineer’s job was terminated, but he was told that he would probably be rehired in twelve to eighteen months. In order to make it through the lean times, he sold his present home and rented a house outside the city limits with the intention of having a garden to supplement the food budget.

Everything worked fine except that next door lived some very aggressive neighbors with chickens that roamed the neighborhood.

The engineer talked to the neighbors, but they did not comply with any of his requests to confine the chickens.

The engineer checked out fences, but they were all too expensive.

Here is the problem:

How can the engineer keep the chickens out of his garden or get his neighbors to keep them out without resorting to violence or installing fences himself?

(Remember - he and his family are very ethical, non-violent people.)

Brainstorming Sheet:

- List characteristics of chickens:

- List characteristics of inconsiderate people:
I. Direct Analogy

A. A chicken in a garden is like –

B. An inconsiderate neighbor is like –

C. Keeping chickens out of a garden without violence is like –

D. Your own –

II. Personal Analogy

A. Be a chicken. What would keep you out of someone’s garden besides a fence?

B. Be an inconsiderate person with chickens. How do you feel about the situation? What would make you keep your chickens at home?

C. Be one of the family members who has the garden. How do you feel? What can you do to improve the situation?

III. Concise Conflict
(Devise two conflicts pertaining to any aspect of the situation.)

IV. Brainstorm now and come up with the best solution.
(You will present this to the whole group.)
Creativity reigns (not reined) in the regular classroom

The Education Digest: Ann Arbor, September 2000

Author: Nancy King Mildrum

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Abstract:

For the last eight years, Mildrum has experimented with teaching creativity in elementary and middle school classrooms. In each situation, she adapted a creativity curriculum model designed for use in the regular classroom. The model is called Ten Lessons in Creativity, co-authored with Robin Hands as part of a master’s thesis in gifted education at Johnson State College in Vermont. Mildrum discusses this work. Copyright Prakken Publications, Inc., September 2000

Full Text:

FOR the last eight years, I have experimented with teaching creativity in elementary and middle school classrooms. In each situation, I adapted a creativity curriculum model designed for use in the regular classroom. The model is called Ten Lessons in Creativity (TLC), co-authored with Robin Hands as part of a master’s thesis in gifted education at Johnson State College in Vermont.

The purpose of the research was to determine TLC’s effects on attitudes and abilities related to the creativity of students in the regular classroom. We field tested the model in a self-contained sixth grade classroom and used both qualitative and quantitative pre- and post-treatment measures.

Although creativity is usually part of the curriculum in gifted education, we believed that all children could benefit from this instruction and felt that the field testing of TLC should occur in the regular classroom setting.

The results revealed that the children who participated in the lessons demonstrated increased knowledge of creative abilities and attitudes as evidenced by use of vocabulary, increased meta-creative awareness, increased creative abilities, and increased development of attitudes related to creativity.

Although gifted students are sometimes best served in homogeneous settings specifically tailored to their intellectual and emotional needs, creativity lessons can be transferred to heterogeneous settings without compromising instructional quality for the gifted population.
The Joy of Bringing It Out In Everyone

My conviction that creativity workshops are effective in regular classrooms has strengthened over the years because the original findings are consistently repeated in each new situation. It is a joy to watch creative potential untold in all types of children.

The lessons based on Ten Lessons in Creativity engage students in reflection, production, and presentation. Woven throughout is an emphasis on developing a personal understanding of one’s own creative process and the creative processes of others. There is consistent teacher reinforcement of a working vocabulary of the creative abilities (fluency, flexibility, originality, and elaboration) and of creative attitudes such as persistence, risk taking, independence, and curiosity.

Usually the classes meet once a week for one hour over 6 to 10 weeks. The classroom teacher and I collaborate on the planning and implementation. Everyday household objects, art supplies, biographies of creative people, and some trade books are used for materials. At the beginning of each lesson, the class is told what creative abilities or attitudes they will work with, and the objectives are clearly stated.

In the first lesson, the children compose a class definition of creativity. After a brainstorming session, one fourth grade settled on, “Creativity is cool. It is everything around you. It is thinking, it is learning new things, it is solving problems.” Then we make a class mural; using creativity as a metaphor, we finish the sentence, “Creativity is . . . .”

The students use markers to create a section on mural paper which includes the finished sentence and an illustration. When the mural is completed, each child explains his or her work, and the group responds with questions and comments. Immediately in the first lesson, creative talent jumps off the paper, and recognition is given to the unique ideas that appeal to others in the group.

After establishing the general topic in the first class, following lessons deal directly with specific creative abilities and attitudes. In the flexibility lesson, for example, the children are asked to apply the synectic method of combining two ideas to create a novel idea. As an introduction, flexibility is defined as the ability to look at things differently, or trying a new approach—stretching into something new.

Inventions are then discussed that are combinations, such as clock-radios and snow-boards. In the activity, students pair up and select two things out of a collection of miscellaneous items which might include a flashlight, forks, bottle caps, paper towel rolls, plastic toys, a top, string, etc. They are asked to put their two things together to invent something novel that has a function different from either of the individual items.
When each student pair is ready, they explain their creation. The audience is very interested to see what their peers have come up with, and they always respond enthusiastically to the “stand out” ideas. This simple activity gets them thinking about flexibility as a creative ability.

Although it is a paradox to teach creativity using a rigidly defined structure, many of the techniques are simply sound teaching methods: introduction, practice, reinforcement, review, and evaluation. The students are prompted to notice exceptional interpretations, to learn from each other, and to piggy back on interesting ideas.

*Creativity Improves with Practice*

The classes develop an atmosphere of cooperation, experimentation, and appreciation for outstanding work. As the lessons progress, the children realize that, like any skill, creativity improves with practice.

In gifted education, original thinking, the world of possibilities, and an appreciation of the unusual are often highlighted. In regular education, teachers are primarily focused on getting through a curriculum and student achievement of academic skills. There is an emphasis on convergent rather than divergent thinking and most often, the creative potential of students is not a consideration.

Working on creativity lessons collaboratively with an enrichment teacher gives classroom teachers firsthand experience with child centered philosophies in gifted education such as recognizing and supporting talent and working from areas of strength. During the creativity lessons, classroom teachers see the effects of teaching strategies based on these principles.

In the classes, the students are energetic and motivated because they sense that their ideas are important. Teachers become much more comfortable with supporting individual creative expression as they experience the positive learning environment that develops when each child’s unique abilities are honored.

I believe that many classroom teachers are skeptical about the child-entered nature of gifted education. They are not accustomed to working with students as the center of the process, and are entrenched in a “teacher down” mentality.

In gifted education, one is almost forced to be child-centered because we work with children who need challenges beyond the basics. We have to listen carefully to our students; they are dead serious about their interests and are emphatic about their own learning preferences.

In partnership with our students, we build on strengths and interest to create meaningful experiences that synthesize and integrate information. Many classroom
teachers are afraid to take that leap of faith which gives students more control over their own learning.

As cooperating teachers have observed me in the stance of total respect for each child’s ideas during the creativity lessons, they begin to understand that honoring and respecting each child’s contribution isn’t a threat to education, it’s a catalyst for learning. Maybe the teacher doesn’t always have to be right, maybe there can be more than one way to approach a problem, maybe the children know more than the teacher!

*It Spills Over into Everything*

An extraordinary alchemy occurs when the practical wisdom of a classroom teacher mixes with skills in nurturing the creative potential of students. Sometime after completing a series of lessons with a first grade teacher, she wrote to me saying, “The creativity spills over into everything they do; they have more self-confidence and are much more productive.”

Highly creative children often experience negative social cues in a heterogeneous classroom because of their offbeat approach, and unusual perspective is sometimes misunderstood or not appreciated. Most of the time, their unique ideas have no outlet in a classroom environment geared toward acquisition of basic skills.

When a class is focused on lessons that have creative development as the goal, children with creative ability are given an audience and an opportunity to use their talent! Each lesson has time built in for explanation of work and peer response. The children are generous with positive feedback, knowing instinctively when something is exceptional!

Often the praise takes the form of curiosity and questions: “Where did you get that idea?” “Why did you decide to make it with those materials?” “How did you do that?” Excitement and interest explode when a student’s work captures the group’s imagination.

During the elaboration lesson, students are asked to come up with a novel use for a paper plate. We provide them with a wide array of art materials for elaboration, such as glue, felt squares, pipe cleaners, sequins, yarn, feathers, buttons, wood scraps, and tissue paper. They then create something unique using a paper plate as the base. Typically ordinary responses include masks, flowers, containers, or mobiles, but one-of-a-kind ideas also emerge.
Permanence on a Computer?

One seventh grade boy worked diligently on a computer designed to store the tales of his Native American grandfather. “Each button represents different subjects, like animal stories, tales of the hunt, or tales of ancestors,” he proudly told his classmates. “The idea is to keep the stories in a safe place so that they will never be lost, and can always be found,” he said as he pointed out details for headphones and disk storage.

The other students and his teachers were impressed and asked many questions about his work. This particular child was often disruptive in school and the object of negative attention from teachers and students. Yet during this class, he displayed a sense of pride, he was productive and articulate, and his classmates and teachers demonstrated a new level of respect for him. The experience of being appreciated and respected by age peers strengthens the self-esteem of highly creative children, who often feel alienated by their talent.

As students participate in creativity workshops, they modify their work without fear of failure, learning to trust their own ideas, and developing the ability to reflect on the process. Each child feels successful in the noncompetitive environment where flexibility and cooperation are encouraged.

Abraham Maslow viewed great talent to be irrelevant to the concern of pursuing life in a creative manner and realizing a healthy existence, which he termed “essentially human.” When children have experience with expansive attitudes related to creativity, they begin to feel more confident about who they are and what they have to contribute. When they sense it is safe to be themselves within the structure of a school setting, they demonstrate increased self-confidence.

As students gain experience with creativity lessons, I have seen attitudes of self-respect influencing their behavior. They work with serious determination, they cooperate with each other to refine ideas, and they take pride in presenting and responding to each other’s work.

Creative abilities exist in varying degrees in all students. Unfortunately, as children become socialized in school, they are conditioned to find the correct answer. In their quest to be right, their abilities to experiment with ideas and to trust their instincts are neglected. If they do not learn to distinguish their unique voice, it can be irretrievably lost.

When children define creativity, have opportunities to be creative, and learn the language to articulate their own creativity, they celebrate their individuality. There is no fear of failure because all ideas have value. At the same time, they experience the struggle of working through frustration to arrive at a product that reflects their intention.
An Atmosphere of Mutual Respect

They become aware of outstanding creative contributions by classmates and internalize what they have noticed. As students explain their work at the end of each class, an atmosphere of mutual respect develops and competition gives way to a sense of community. There is always enough creativity for everyone, and every child’s work is validated as he or she gets feedback from the group.

During the course of the creativity lessons, classroom teachers begin to see individual students through a new lens. For example, children who resist structure often demonstrate fluency, flexibility, or original thinking. In many cases, classroom teachers were surprised by the children who emerged as highly creative, because some of them were not successful in school. A classroom teacher who has knowledge of a student’s creative abilities will capitalize on this area of strength to support academics.

My course work in gifted education has helped me acquire the skills necessary to teach creativity with intention. No doubt, gifted education is an essential hot house for originating programs in creativity. However, it is important to bring this information into mainstream education because some students who do not qualify for gifted programs are highly creative, and all children have some degree of creativity that can be developed further.

Every child benefits from learning about creativity and their own creative process, and the lessons learned in creativity workshops relate to all areas of a child’s development. I’ve had many unforgettable experiences teasing out and supporting creative potential in students and teachers in heterogeneous settings, piecing together crazy quilts of creative expression, made more beautiful by the diversity they represent.

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TOPIC 8 – IMPLEMENTING CREATIVITY (III):
IDENTIFYING PROGRAMS

Key Question: How can creativity be nurtured/developed?

Objectives:
• Identify programs or curricula that can serve as initiatives for fostering creativity (Odyssey of the Mind, Future Problem Solving, Invent America, Artifacts Box, mentoring).
• Demonstrate an understanding of the process of invention and identify the steps of moving from an idea through the patent process.
• Using the identified characteristics of the creative individual, plan appropriate teaching strategies and groupings that support the development and expression of creative abilities.
• Explore and analyze the ethical issues surrounding creativity.

Key Concepts:
• Planning / Developing / Implementing Creativity

Materials:
• Video: Apollo 13
• Odyssey of the Mind Activity Books
  o Florida Odyssey of the Mind – A Remarkable Resource for Achieving Florida’s Sunshine State Standards (http://www.floridaodyssey.org/)
  o Problems to Develop Creativity
  o Problems! Problems! Problems!
• Future Problem Solving Connected to the National Gifted Standards (http://www.fpsp.org/)
• Scavenger Hunt (HO 2)
• Invent America resources and materials
• Eberle, B. SCAMPER. D.O.K. Publishing
• Materials related to inventions and inventing
  o The Unconventional Invention Book – A Good Apple Activity Book for grades 3–12

Quotes:
“Inventions reached their limit long ago, and I see no hope for further development.”

Julius Frontinius, 1st century A.D.

“To give a fair chance to creativity is a matter of life and death for any society.”

Arnold Toynbee
“Civilization is a slow process of adopting the ideas of minorities.”

Herbert Prochnow

“If you build castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them.”

Henry David Thoreau

“A genius is a person who, seeing farther and probing deeper than other people, has a different set of ethical valuations from theirs, and has energy enough to give effect to this extra vision and its valuations in whatever manner best fits his or her specific talents.”

George Bernard Shaw

Session Opener:
• Read and discuss A Little Story (HO 1).
• Read and discuss A kick in the seat of the pants, Roger VonOech, Ph.D.
• Identify the roles one must go through in the creative process.
• View the segment from Apollo 13 where NASA must create a CO$^2$ scrubber from available parts to save the lives of the astronauts in the crippled spaceship.

Recommended Reading Assignments:

Learning Options and Activities:
• Hold a mini-fair of Odyssey of the Mind activities.
  o Using the Odyssey of the Mind idea books, select multiple hands-on activities for small groups to perform within the specified time limit.
  o Allow spontaneous verbal activities performed within the group.
• Visit neighborhood sites that support or encourage creativity. Create a list of field trip sites for class use.
• Conduct a Creativity Scavenger Hunt (HO 2).
• Present program overviews with thumbnail lessons and/or guest speakers from multiple programs to capture the essence of each and how creativity is found in each. Examples: Odyssey of the Mind, Future Problem Solving Program, others that are relevant to the group.
• Identify how the steps of SCAMPER (Substitute, Combine, Adapt, Modify-Magnify or Minify, Put to Other Uses, Eliminate, and Rearrange) might provide alternative ways of looking at things, situations, or problems.
• Research the patent process and describe the steps of the process for the development of one invention.
• Search and list Web sites devoted to inventions.
• Develop exemplary lessons that include appropriate teaching strategies and groupings to support the development of creativity. Share the resulting lessons and shape them into a collection for later use.
• List characteristics of creative individuals and teaching strategies that are appropriate for gifted and talented lessons. (Match characteristics and strategies to develop creativity.)
• Conduct individual research on current ethical issues that might interfere with creative thinking.
• Discuss how integrity is enhanced by higher order thinking.
• Review the “Improving” activity (HO 3): Participants choose one of the options on the “Improving” overhead/HO and illustrate ways of improving it.

Evidence of Mastery:
• Make a list of criteria that can be used to select appropriate programs.
• Write a critique of program(s) that can be used to develop creativity.
• Compile examples of patents that demonstrate the inventive process.
• Make a list of annotated Web sites.
• Create exemplary lessons to develop creativity (Portfolio entry).
• Create a learning wheel of matched creative characteristics and teaching strategies.
• Make a list of the three primary powers of higher order learning and the resulting capabilities.
• Schedule a group performance of a creative skit to demonstrate creativity found in the environment.

Resources:
A Little Story

A few years ago, there was a Mensa convention in San Francisco and a group of Mensa members were lunching at a local café. They discovered that their salt shaker contained pepper and their pepper shaker was full of salt.

How could they swap the contents of the bottles without spilling and using only the implements at hand?

Clearly this was a job for Mensa! The group debated and presented ideas, and finally came up with a brilliant solution involving:

- A napkin,
- A straw, and
- An empty saucer.

They called the waitress over to dazzle her with their solution.

“Ma’am,” they said, “We couldn’t help but notice that pepper shaker contains salt and the salt shaker . . . “

“Oh,” the waitress interrupted. “Sorry about that.”

She unscrewed the caps of both bottles, switched them, and said, “Will that be one check or separate?”
Creativity Scavenger Hunt

Here, finally, is your chance to see
The many facets of creativity;
Theories, presentations, lessons and such
Without reality are nothing much.
So with your pals, please proceed
Ingenuity is what you will need
To win the hung—the ultimate test,
Let’s see which team is really the best!

1. Your hunt can take place anywhere. You may decide to use one or two spots or many. Suggestions: beach, park, art gallery, used car lot, woods, cafeteria, busy street corner—any place you choose!

2. Look for the following:
   - Someone doing an ordinary thing in a creative way
   - Three examples of flexibility
   - An art form in an unlikely setting
   - An inanimate object communicating in an original way
   - A problem that has been solved in an ordinary way, yet worth noting
   - Something that Shakespeare would have written about
   - A problem that needs to be solved
   - A basis for a Mozart composition
   - Someone creating (interview him/her about the why, what, & how, when of the project)

3. Share your results with the class in a creative way. (poster paper and markers provided)

4. After the group shares its creative findings, conduct a group discussion on ethical issues of creativity observed while on the hunt. Ask, “Are there ethical implications that are obvious in the creative process?”
Improving

• A grocery cart
• A pair of jeans
• Sunglasses
• Bicycles
• Digital assistants
• Hammers
• Hair dryers
• A method for getting to work
• A way of changing classes

*Consider assigning one of the above to your students.*
TOPIC 9 – IMPLEMENTING CREATIVITY (IV):
EVALUATION PROCEDURES

Key Question: How can the outcomes of creativity be assessed?

Objectives:
• Discuss the value of creativity in an era of educational accountability.
• Examine the role of self-assessment, including portfolio development, in the evaluation of creative processes and products.
• Describe characteristics and appropriate criteria used to assess creative outcomes and products.

Key Concepts:
• Planning/Developing/Implementing Creativity
• Assessment and Evaluation of Creativity

Materials:
• Creative Reflection #4 (HO 1)
• Creativity Celebration (HO 2)

Quotes:
“People seldom see the halting and painful steps by which the most insignificant success is achieved.”
Anonymous

“Whatever you think you can do or believe you can do, begin it. Action has magic, grace, and power in it.”
Johann Goethe

“You have to act to actualize.”
Teddy Fakles

Session Opener:
• Creative Reflection #3 (from Topic 6 HO 3) Note: This may be given as an assignment. After reading the article “Who is creative? Identifying children’s creative abilities,” create a chart that identifies each of the assessment tools and identifies the developer, purpose of the test, distinguishing features (what is assessed and in what way), and comments. If possible, participants should try to find a copy of at least one of the assessments and administer it, score it, and evaluate. Discuss in class.
Recommended Reading Assignments:


Learning Options and Activities:

- Assemble a small work group to explore creativity and nationalism; creativity and equity; creativity of the future; and creativity as human freedom.
- Engage the group in the following activity: “Creativity Around Us and in Front of Us.”
  - Following group discussion of “Creative Reflection #3” initiate small group work to explore creativity and nationalism; creativity and equity; creativity of the future, creativity as human freedom. Each group should generate a list or a future wheel about how we see creativity in each of the multiple areas affecting humans of our existing world and predicting how creativity will be needed in the future.
- Create a rubric or matrix that can be used for assessment of a creative outcome/product.
- Review several examples of INTERACT simulations. These simulations put the student on the scene—solving problems, dealing with issues, taking risks, and making significant decisions—and encourage creative ways of thinking about the topic being studied. After a review of several of the simulations, discuss what they offer and how they differ from studying the same subject from a text. Identify the skills students are expected to use to work through the simulation.
- Reflect on the characteristics identified with creative people and small groups, and create a rubric that will be used in assessing a creative outcome/product.
- Present a long-term project illustrating personal creative problem solving and the product produced: see Creativity Celebration (HO 2).
- Formulate guidelines for creation and maintenance of portfolios for products formed from creative processes.
- Add a more creative component to a pre-existing student assignment and design a rubric for assessing the outcome.
• There are three commonly used methods for assessing creativity, although each is controversial: tests of creative thinking, rating scales, and self-report checklists. One purpose of addressing creativity is to be able to identify the ability to think divergently. The distinction between convergent and divergent thinking was once thought to be the distinction between intelligence and creativity. Using definitions of each term, discuss the type of thinking that may be evidenced by a student with each type of thinking.

• Contemplate the meaning of metacognition—the awareness and analysis of your own thinking process. Metacognition involves abstract reasoning and helps students develop and improve their learning process. Teachers need to recognize the importance of teaching thinking skills, then allow the students to use the skills until they are perfected. Some of the skills are as simple as asking students to think about what the lesson means. The teacher can encourage students to set goals, make good decisions about options, and transfer learning in one subject area to another. For example, the teacher might say, “We have been learning about our own teeth; now, as we begin to learn about animals, let’s consider what we would look at to determine whether animal teeth are similar to human’s teeth.” Teachers should encourage students to take risks, to estimate, to plan ahead, and to set time lines for what needs to be done to complete a long-term assignment. These skills help students to learn how to think about their work. Learning to brainstorm and to SCAMPER can help them think “outside the box” and be willing to take risks. Introduce Edward DeBono’s PMI (“plus,” “minus,” and “interesting”) tool from his CoRT program. One simple way to use this tool is to provide a statement for students such as “Every school should have mandatory school uniforms.” Then allow students to discuss the statement citing the “plus” (good), “minus” (bad), and “interesting” aspects of the idea. All ideas are accepted and listed to encourage thinking objectively.

Evidence of Mastery:

• Summary of the interrelationships of creativity and selective factors
• Self-Assessment Rubric
• Constructs for evaluating creative outcomes
• Assessment of a student creative product using the Student Product Assessment Form (http://www.sp.uconn.edu/~nrctg/sem/spaf.pdf) (HO 4) or another product for assessment (Include aspects of creativity as well as content standards.)
• Presentation of creativity project with assessment rubric applied
• Review of article about assessments and summary of use of at least one instrument for assessment
• Development and presentation of a hands-on activity that could be used in the classroom to encourage creative and critical thinking (Portfolio entry)
Resources:

- INTERACT, P.O. Box 997, Lakeside, CA 92040
Theory and Development of Creativity

CREATIVE REFLECTION

Student’s Name: ____________________________________________

Reflection #4: “Creativity Tools in the Classroom”

After participating in this class for several weeks, you should be learning about various creativity tools and strategies that are helpful in assisting children to use and enhance their own creativity. Focus on one creativity tool or strategy that you have been exposed to and use it with your own students. This may be during a specific activity or assignment or can be a technique you choose to employ often with your students.

Reflect on the outcomes by responding in the space provided below and on the back of this sheet. Include such details as:

• A brief description of the activity (just enough for the reader to understand the situation)
• What you as the instructor were feeling as you used this strategy with students
• How successful the implementation of the creativity tool or strategy was
• Your overall opinion of the usefulness of the creativity tool or strategy
Creativity Celebration Description:
Evidence of personal creativity—a creative endeavor that you’ve always wanted to do but, until now, have lacked the courage, time, or motivation; OR, an invention—you must describe the problem, design an invention to meet the need, and then develop a prototype.

A class session at the end of the course will be a celebration of the personal creativity within each class member. Each participant will share a sample of his/her creativity that has been created within the course.

Each participant will be allowed 10 minutes to share. Please include the following:
- The product or invention (actual item or picture)
- Your process in creating the product or invention
- What you found out about yourself
- Plans for the future in this area, if any

You should set up your project on the tables provided so that others may observe.

The Creativity Project will be shared in a large group session, and an accompanying written explanation will be submitted to the instructor immediately following the presentation.

The written explanation should be one or two well-written, typed pages and should include each of the following:
- Your personal definition of creativity and how the product relates to it
- The process you used to stimulate your ideas and then create the product
- Your assessment of the outcome

*Important Note: If this Creativity Celebration assignment is to be used, introduction of it should begin in the first class, and the descriptive write up should be provided within the syllabus in the opening session. Tools for generating ideas and focusing on best choices are appropriate to use in leading the participants through the process of deciding on what area they would like to address. Modeling of these tools will also assist participants in how the tools can be used within the classroom with the students. Journals should be used to capture the problem solving process the participants utilize as they go through the creativity process.
Who is Creative?
Identifying Children's Creative Abilities

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Full Text:

Some schools use measures of creative abilities in addition to measures of intellectual and academic abilities to identify children of varied talents. The question remains, to what extent can we identify children with high potential to be creatively productive when they have not yet demonstrated creative talent? Can we have confidence in such decisions? This article compares strengths and weaknesses of methods of assessing creativity and lists more than 60 standardized measures used to assess children’s creativity. Procedures for using formal and informal measures in the decision-making process are also discussed.

This article examines assessment instruments, measurement considerations, and factors that impact understanding of a child’s demonstrated and potential creativity. Its purpose is to examine the major categories of standardized measures, and also alternative measures that may be used to assess children’s creativity, and discuss issues of assessing such complex behaviors. In addition, the authors list a variety of commonly used and promising methods of assessment and discuss appropriate practices to incorporate data from multiple measures in order to make eligibility decisions.

**Applying a Definition of Creativity to Youth**

It is important for researchers and educators to first clarify their theoretical position or understanding of creativity prior to selecting assessment instruments. Otherwise, they might select assessments that are inconsistent with their own implicit (Runco, 1993) idea of creativity or inconsistent with needed adjustments to the students’ curriculum (Hunsaker & Callahan, 1995). For example, an educator who implicitly views creativity as talent in the visual arts may plan a program in which children with budding literary or musical talent are overlooked. Likewise, a researcher’s theoretical perspective and definition of creativity influences the behaviors and subjects selected for study as well as methods of data analysis.

Definitions of creativity reflect a host of diverse characteristics of creative adults and creative children. Many definitions recognize the complexity of creativity (e.g., Davis, 1997; Isaksen, 1987; Treffinger, 1987). Isaksen (1987) noted that creativity occurs in many people, in differing degrees and manners, and should be viewed as “a multifaceted phenomenon rather than as a single unitary construct capable of precise definition” (p. 8).
MacKinnon (1961) proposed that clarity may be achieved when a researcher develops an operational definition of creative behavior from one or more of four perspectives: personality, process, press (situation), or product. Rhodes (1961/1987) indicated that it was only in the intertwining and unity of the strands of the four P's of creativity that the complexity of creative behavior occurred. More recently, Murdock and Puccio (1993) recommended that researchers might enhance the generalizability of their findings by studying creative behavior in the combinations or interactions of the four P's. That is, they would reframe their questions to ask how at least one of the four P's would interact meaningfully with at least one other P. “For instance, when considering how person overlaps with press, a researcher can examine the ways in which motivation, abilities, or personality characteristics interact with physical environment, psychological atmosphere, or task demands” (p. 265).

Other recent multidimensional models (e.g., Magyari-Beck, 1993; Hong & Milgram, 1996) and conceptualizations of creativity support its multi-faceted nature, apply to various disciplines, and allow multiple measurements of creative phenomena (Magyari-Beck, 1993; Murdock & Puccio, 1993; Rogers, 1998).

Creative behavior may be viewed as a process resulting in a product unique to the individual who produced it; this product also may be unique and valuable to society (Parnes, 1972). However, when the primary interest is to identify children with the potential to demonstrate significant adult creativity, we must examine evidence of less obviously identifiable creative acts. Fishkin (1998) has proposed the phrase, germinal creativity1, as useful to describe children’s budding creative potential. For example, a young child’s possibly poorly skilled rendition of a creative idea may show promise of later full flowered creativity. The child, however, may not yet have the skill to adequately express or fully communicate the unique idea. In addition, children who show such germinal creativity are likely to display creative behavior only on tasks in which they are interested.

In order to identify children with germinal creativity, those with the potential to be creatively productive adults, it is important to consider information derived from multiple sources. There are unsolved difficulties in determining a child’s likelihood to be a creative producer during the developmental years, and greater uncertainty in predicting potential for future creative productivity. Broad parameters must be used to identify children’s creativity, because creativity is a complex construct. Children’s emerging creativity may not clearly correspond with creative behavior in mature, creatively productive adults. Most important, the degree to which children may exhibit their creativity can vary markedly depending upon numerous factors such as their developing skills, the response requirements of a task, and their interest in the task at a given time. Therefore, it is critical to deliberately examine a variety of methods to assess a child’s creativity and to use a combination of measures to make decisions.
Methods of Assessing Creativity

Methods of assessing creativity may be grouped into categories representing the four P’s: process, personality, product, and press or situation (MacKinnon, 1961). We developed Table 1 to categorize the variety of instruments used to assess creative behaviors and to distinguish the characteristics, uses, strengths, and weaknesses often found in instruments representing each category. Measures in the personality category are further differentiated as self-report or as reported by others. Four additional categories of assessment methods are examined: combination measures, informal or alternative methods, personality measures associated with creativity, and methods used to assess talent. Unlike the preceding categories, a category labeled systems consists of procedures that enable practitioners to make appropriate eligibility decisions by using information from multiple assessments. Examples of a variety of instruments representing each category are listed in Table 2.

Standardized Measures of Creativity

Divergent Thinking Measures – Standardized Measures of Creative Process

Divergent thinking measures yield observable, quantifiable data representing the individual’s likelihood of responding creatively to real life situations (Runco, 1991; Torrance, 1987). These products or ideas as responses to divergent thinking test items are restricted to the behaviors being elicited. Thus, they are not as fully representative of the individual’s creativity as a finished creative product by an artist, scientist, or even a young child. Moreover, performance elicited by divergent thinking measures is unlikely to reflect a high degree of personal commitment that is typical for self-initiated products.

Many of the early measures were developed and normed in the 1960s before the advent of better psychometric procedures (Hong & Milgram, 1991; Michael & Wright, 1989; Runco, 1993a). One of these, the Torrance Tests of Creative Thinking (TTCT, Torrance, 1990; Torrance & Ball, 1984) is the most extensively researched (Cramond, 1994, 1998; Davis, 1997), and provides adequate updated norms. In addition, both the TTCT and the Wallach-Kogan (Wallach & Kogan, 1965) have shown evidence of long-term predictive validity with measures of adult productivity as much as 18 to 22 years later (Milgram & Hong, 1993; Torrance & Safter, 1989).

Measures of divergent thinking have been criticized for sampling only a narrow range of creative behaviors (Borland, 1989). However, reviews of research studies (Runco, 1993b; Torrance, 1987) and two meta-analyses (Rose & Lin, 1984; Pyryt, 1998) show that divergent thinking measures provide quantitative evidence of the effectiveness of varied creativity training programs.

Divergent production scores typically assess quantitative indicators of the theoretical constructs of fluency and originality, and sometimes also elaboration, flexibility, or
examples of transformations (Meeker, Meeker, & Roid, 1985). Resulting scores are heavily dependent on the amount of ideational fluency (the total number of responses). Other promising systems of analyzing the scores assess the quality of the responses, e.g., the TTCT figural streamlined scoring procedures, which includes abstractness of titles, resistance to premature closure, and other creative strengths (Torrance & Ball, 1984) or the Test for Creative Thinking-Drawing Production (Jellen & Urban, 1986), which also assesses a variety of creative strengths. An alternative method, proposed by Hong and Milgram (1991), eliminates the confounding of the fluency and originality categories by scoring each item as either popular or original.

**Attitude, Personality, Interest, and Biographical Measures**

Attitudes and personality, like divergent thinking behaviors, are also observable and measurable. Information about a child’s creativity can be obtained from ratings by teachers and others who have had sufficient opportunity to observe the child in situations when creative behavior may emerge (Ohio Department of Education, 1992; Renzulli, Smith, White, Callahan, & Hartman, 1976).

Self-report measures, such as inventories or autobiographical accounts of past creative accomplishments, or reflective statements may provide a broad perspective related to creative behavior. A typical self-report item might be, “I like to make up new games.” Self-report measures that examine affective behaviors related to creativity include the Group Inventory for Finding Talent (Rimm, 1980), and the two self rating scales of the Khatena-Torrance Creative Perception Inventory, What Kind of Person Are You? and Something About Myself, which measure perception of the creative self for adolescents (Khatena & Torrance, 1990). Biographical inventories are commonly comprised of autobiographical statements of past creative accomplishments. In the case of very young children, anecdotal reports completed by parents are valuable sources of information. However, since young children are less likely to have sufficient opportunities to display significant creative achievements, biographical inventories are less useful for preschool and primary grade students than are ratings or alternative assessments of children’s work.

Interest inventories may yield useful information related to a child’s likelihood to be creative toward specific stimuli or within a given domain (Cohen & Gelbrich, 1998). Other personality constructs, such as learning or thinking style, also may influence creative productivity (Milgram, Dunn, & Price, 1993; Kirschenbaum & Armstrong, 1998). In addition, affective (emotional) states have been linked to creative production (Shaw, 1994).

Although there is general agreement on typical characteristics of creative people (Tardif & Sternberg, 1988), researchers who examine performance on creative and affective measures in relation to creativity training observe stronger effects for the divergent measures (see Johnson & Fishkin, 1998; Vaughn, Feldhusen, &
Asher, 1991). The lack of significant effects of creativity training on related affective behaviors may be due to: lower sensitivity of affective measures; low reliability; or remoteness of content of the measures to creative behavior. Perhaps the instruments were insensitive to change because they measured stable personality traits whereas another instrument may have phrased test items which elicited a person's feelings at the time of response. For some purposes, researchers might prefer attitude or personality measures that are sensitive to changes in the individual's present state; however, those whose primary purpose is to identify creative youth would prefer measures that assess stable personality traits.

**Assessment of Creative Products**

Product assessment reflects an emerging trend in program evaluation and identification of students for creatively gifted programs. Product assessments typically use rating scales that require judgments of specific indicators of creativity. Concerns with product evaluation relate to the appropriateness of the judging criteria and the judges' competence for accurate assessment. A promising modification to product assessment is the "consensual assessment technique" (Amabile, in press) that uses judges who are familiar with the domain to independently evaluate products and then reach consensus.

Complex creative products have been assessed by product evaluation scales. Besemer and O'Quin (1987) developed procedures to assess sophisticated creative products in many domains. Their methods of rating complex creative products use three clearly defined criteria: novelty, resolution of the problem to be solved, and synthesis/evaluation. The Student Product Assessment Form (Reis & Renzulli, 1991) provides ratings of the quality of a child's process of working, such as early statement of purpose and appropriateness of resources used. It also rates excellence of the final product on such variables as originality of the idea, quality beyond grade level, and time and effort invested in the work.

**Alternative Assessment Procedures**

Standardized measures have recently been supplemented and replaced by the use of informal, alternative (or authentic) methods of assessing student achievement. Performance assessment techniques are often recommended as alternatives to traditional fixed-response rating scales and to standardized tests of achievement (Aschbacher, 1991) and creativity (Baer, 1994). Performance assessment has been defined to consist of such measures of understanding and skill of higher-order, complex tasks as "direct writing assessments, open-ended written questions, hands-on experiments, performances or exhibits, and portfolios" (Aschbacher, 1991, p. 277). Other alternative or performance procedures have been developed to measure process and product in situations where students have generated complex and varied responses (Lazear, 1994; Piirto, 1994). These procedures include assessments of responses to real world tasks and check lists or other reliable
informal measures to report children’s actual performances (Jatko, 1995; Runco, 1993a).

Alternative assessments must be based upon sufficient and representative samples of the subject’s work to insure reliability of such informal observational procedures. When evaluating students’ work, accurate, stable, and consistent ratings require clear standards and knowledgeable judges (Amabile, in press; Baer, 1994). Children’s creativity may be reliably evaluated by informal measures that sample a broad variety of behaviors and complex work (Frasier, 1994; Jatko, 1995; Ohio Department of Education, 1992; Runco, 1993a; Treffinger, 1987; 1995) if there have been enough opportunities to fully elicit creative production.

Assessments that include engaging materials and activities that are very similar to the child’s actual working conditions are termed “ecologically valid” (Ramos-Ford & Gardner, 1997). For example, Jatko (1995) used a “whole classroom tryout technique” to give every child an equal opportunity to display creative traits such as eagerness, imagination, and ability to solve problems. Children selected to work on Future Problem Solving teams by this alternative approach performed as well as others selected for the gifted program by the school district’s academic achievement criteria. The tryout procedure was consistent with the activities in the gifted program and was an “effective tool for increasing the number of economically disadvantaged children in the school system’s talented and gifted program” (p.101).

Portfolio assessment procedures are increasingly recommended to document student performance in school and in extra-curricular activities. During the past decade, the use of portfolios to assess creativity and giftedness has become more widely accepted due to the development of explicit, well-defined procedures for their use (Johnsen & Ryser, 1997; Ohio Department of Education, 1992).

Recent performance assessments consistently assess the creativity and complexity of children’s work (Plucker, Callahan, & Tomchin, 1996). However, Plucker et al. (1996) caution that the reliability, validity and appropriateness of norms of performance assessments are not sufficient for “high-stake purposes such as identifying potentially talented students” (p. 87). Because such difficulties are common to measures of creativity and similar complex behaviors (e.g., Wakefield, 1987), any single procedure is an insufficient source of information about the child.

Assessment of Talent

This section briefly addresses issues and procedures useful in identifying youth who are talented in specific domains, e.g., writing, art, music, or dance. Examples of the student’s work are typically reviewed by knowledgeable individuals (Davis, 1997). Authentic measures such as portfolios, work samples, and biographical information are essential components in identifying talent, for example, in the visual arts. Indicators of interest, learning styles, motivation, and performance on divergent
thinking measures have also been used to support the domain specific measures and provide additional data for the identification process (Clark & Zimmerman, 1993).

Nonstandardized observation and nomination measures are also used to identify children who are talented in the performing arts (Haroutounian, 1993). These procedures include nomination instruments similar to the music and drama scales of the Scales for Rating the Behavioral Characteristics of Superior Students (Renzulli et al., 1976) or assessments that use Gardner’s (1983) multiple intelligences model (e.g., Lazear, 1994). Talent assessment instruments recommended by others (e.g., Abeel, Callahan, & Hunsaker, 1994; Davis, 1992; Piirto, 1994) are among the measures listed in Table 2.

**Systems or Procedures for Identifying Creative Youth**

Decision makers must select specific instruments and informal procedures and also determine how to integrate the data to identify children who may show high creative potential. The use of a single creativity measure based on a restricted definition of giftedness will not adequately represent the child’s range of creative behaviors. Similarly, systems that collect data from multiple measures while relying mainly on a cut score from one measure fail to effectively use all the available data to determine student eligibility for gifted or talented programs (Hunsaker, 1994). A system to assist educators to consider and to use the information from observations and scores from multiple measures is an equitable method for making decisions about children. Ample opportunities should be provided for creative behaviors to emerge, to be observed, and to be considered in determining children’s potential for creative productivity (Frasier, 1994; Lazear, 1994; Ohio Department of Education, 1992; Renzulli, 1978).

Matrix systems assign numerical values to discrete M scores obtained from multiple and varied measures. However, when matrix scores from diverse measures are combined to yield a simplified, single numerical score, problems frequently occur. Matrix procedures that compress the full range of scores from standardized tests to a simpler scale substantially reduce the sensitivity of the scale to distinguish among students. Moreover, this cumulative matrix score does not adequately reflect contributions of the different measures to indicate a child’s specific and varied strengths (Borland, 1989). Indefensible identification and placement decisions are likely to result if the scores are compressed into a restricted range and information necessary for decision making is lost.

The Frasier Talent Assessment Profile (Frasier, 1994) is a promising system that relies on teacher training in its screening phases to insure that teachers provide opportunities to elicit and to observe children’s creativity and to consistently describe gifted behaviors in anecdotal records. Renzulli’s (1978) approach to selecting students for a talent pool also assesses a child’s intellectual, academic, and
creative abilities. This approach uses data from standardized (formal) measures and informal parent, teacher, or self-ratings, performance assessments, and teacher observations.

Gardner’s (1983) multiple intelligence perspective provides the structure for some commonly used authentic assessment procedures. These procedures use many methods for eliciting, observing, and systematically recording a wide range of children’s complex behaviors. The multiple intelligences approach also suggests that teachers focus on describing children’s interests and strengths (Lazear, 1994). The Ohio Performance-Based Assessment for Gifted Identification is another model that uses authentic assessments in the screening and eligibility phases of decision making including data from activities at home and at school such as participation in Future Problem Solving or Odyssey of the Mind (Ohio Department of Education, 1992).

**Technical Issues in Creativity Assessment**

Some issues pertinent to creativity assessment relate to reliability, validity, usability, and normative data (Treffinger, 1987). The unique technical concerns for measuring creative behaviors are discussed elsewhere (e.g., Johnson & Fishkin, 1998; Michael & Wright, 1989; Runco, 1993a). Given the complex nature of creative behavior that is commonly expressed in a variety of ways (e.g., by writers, musicians, dancers, engineers), it is not surprising that measures of these behaviors are seldom adequate as the primary basis for decisions about individuals. Creativity instruments have been criticized for weak evidence of reliability and validity and inadequate norms. For many of the instruments presented in Table 2, the norm population is poorly described, is not representative of the grade/age level nor of the specific subpopulation with whom the measure will be used, and is frequently not current. Norming procedures should be based upon a representative sample throughout the age/grade range (floor to ceiling) of each subtest (Michael & Wright, 1989). Despite these limitations, Wakefield (1987) stated that creativity instruments should be evaluated by the quality of existing creativity measures and should not be judged by the standards applied to intelligence or achievement tests.

Since instruments differ widely in the scores they yield, test users must also have sufficient knowledge of the meaning and value of available scores in order to select those scores most appropriate to their purposes. For example, Chase (1985) recommended that researchers use an average of the separate fluency, flexibility, and originality scores of the verbal TTCT to avoid the confounding effects that occur with such excessively high intercorrelations. However, these subscales are sufficiently reliable for diagnosticians and educators to interpret the pattern of a child’s abilities on the individual subscale scores (Cramond, 1998).
**Sources of Variability on Divergent Thinking Measures**

The testing environment affects test scores and scores on divergent thinking measures are sensitive to such influences (Torrance, 1987). Variations in instructions and other administration conditions, task unfamiliarity, and differences in the richness of cues in the testing environment have all been shown to affect optimal performance.

An individual’s level of motivation, persistence, and self-confidence, and the perceived relevance of testing tasks to real life activity also may influence test scores. Other studies indicate that higher scores are attained when warm-up exercises set a climate for reflection and incubation of ideas (Torrance, 1987). Scores on a divergent production test are viewed as measures of a person’s creative potential (Runco, 1993a). However, such scores on a one-time set of responses to a standardized task should not be construed as the upper limits of a person’s native creativity. Even with individuals who possess the ability and skill to behave creatively, without motivation they are unlikely to do so (Torrance, 1979).

**Validity and Reliability**

“Validity of creativity assessment is the single most important consideration” when selecting a test (Michael & Wright, 1989, p. 34). Concurrent validity coefficients are generally lower for creativity measures than validity coefficients found in other domains, such as achievement or intelligence. However, this is not surprising given the many facets of creativity and the variety of definitions from which creativity measures are derived (Davis, 1997; Michael & Wright, 1989). Moreover, a threshold level of the relationship between creativity and intelligence has been interpreted to indicate that other variables contribute to these two constructs differently throughout the range of abilities (e.g., Davis, 1997; Haensley & Reynolds, 1989). For example, motivational influences, suprarational and intuitive thought, and different domains of talent contribute differentially at the highest ranges of creative abilities.

When tests are the major source of data to identify students for gifted programs, procedures must be in place to establish a high degree of consistency between multiple scorers of student performance. For example, consistent use of a single rater or a scoring service that maintains high inter-rater reliability would insure consistency of scores within a single study or school district (Rosenthal, DeMers, Stillwell, Graybeal, & Zins, 1983).
A Sampling of Varied Instruments

Table 2 presents a selection of 60 well-known and varied instruments. The list is limited to measures that have been used for creativity research with school-aged children. These include commercially published measures and a variety of instruments available in the public domain from journal articles, books, dissertations, or other sources of nonpublished tests. Most have been reviewed by at least one of the referenced sources: Mental Measurements Yearbook, (e.g., Kramer & Conoley, 1992); Test Critique (e.g., Keyser & Sweetland, 1992); Callahan (1991); Isaksen, Fierstien, Murdock, Puccio and Treffinger (1994); or Davis (1989). However, inclusion in this list should not be construed as a recommendation of any of these measures for identification of creative youth. Some are older measures, some may be outdated or without norms, and some are of limited validity. Despite such limitations, many have been useful for research purposes, and, in conjunction with other measures, some have been useful as one of several indicators to estimate a child’s potential for creative productivity. The table provides a sampling of the variety of measures available in each of the categories established in the review.

Conclusions

As is true for any situation requiring decisions regarding placement and programming, selection and use of assessment instruments and procedures should depend on the purpose of measuring child performance or achievement (Treffinger, 1987). Implicit and explicit definitions of creativity will greatly influence the user’s decisions about procedures for assessing creativity (Hunsaker & Callahan, 1995; Runco, 1993a). The intended use of instruments influences selection of procedures and measures for eligibility decisions, research, or diagnostic purposes (see Cramond, 1998).

In conclusion, any single measure of creativity is rarely sufficient by itself. Hocevar and Bachelor (1989) recommended use of past activities and achievement, as evidenced in inventories or past products, as the most valid method of predicting future creativity for older subjects. Personality inventories, self-report instruments, and ratings by others (teachers, peers, or parents) are highly subjective measures whose results depend on accuracy of perceptions of the respondents, on their understanding of creativity and its manifestations, and on their willingness to give thoughtful responses. The validity of teacher ratings is greatly improved by providing adequate training (Frasier, 1994; Renzulli et al., 1976). However, because teachers and parents vary widely in their ability to evaluate students’ creativity (Dawson, 1997), reliance on ratings as the only source of information is not recommended. A child’s potential as a creative producer may be predicted by divergent thinking tasks (Runco, 1993a; Torrance & Safter, 1989), particularly when these measures are used to determine strengths of children who earn high scores rather than to exclude those who earn lower scores (Treffinger, 1987).
The use of one single measure to predict an individual’s potential to engage in complex creative behavior is overly simplistic (Feldhusen & Goh, 1995; Hunsaker & Callahan, 1995). Responsible decisions to assess children's potential for creative behavior require a minimum of two measures, such as an attitude and a divergent thinking measure (Davis, 1989), or a divergent thinking and an alternative assessment procedure, that together show evidence of creative productivity (Ohio Department of Education, 1992). The most defensible identification practice is to use a systems approach based on information from multiple measures in order to make eligibility decisions.

1 This use of the term “germinal” differs from Besemer and O’Quin’s (1987) term used to describe one of nine dimensions of a creative product.

2 See (a) Mental Measurements Yearbook, (b) Test Critiques, (c) and/or Isaksen et al. (1994) for a review of the respective measures.

Note: Many of these measures have been recommended only for research uses and may not be appropriate for identification purposes (see discussion in text).

References


Understanding and recognizing Creativity: The emergence of a discipline (pp. 48-82). Norwood, NJ: Ablex.


Educational Assessment Service.

Anne S. Fishkin, Aileen S. Johnson (Anne S. Fishkin, a research specialist education at Marshall University Graduate College, South Charleston, West Virginia, is director of its Community Clinical Service Center. Aileen S. Johnson is professor and chair of the reading department at the University of Texas at Brownsville).
<table>
<thead>
<tr>
<th>Category</th>
<th>Uses</th>
<th>Strengths</th>
<th>Weaknesses</th>
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<tr>
<td><strong>Process</strong></td>
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<tr>
<td>Divergent thinking</td>
<td>estimate creative potential; use recognized constructs (fluency,</td>
<td>yield quantifiable data; some measures use broad scoring categories, and have current norms; considerable validity evidence</td>
<td>influenced by other variables; measured under contrived circumstances; may not reflect personal commitment; scores may be interdependent</td>
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<tr>
<td></td>
<td>originality, flexibility, elaboration); used to measure effects of</td>
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<td></td>
<td>creativity training</td>
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<tr>
<td><strong>Personality</strong></td>
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<tr>
<td>(Self-Report)</td>
<td>examine affect related to creativity, supplement data from other</td>
<td>evidence of children’s selfperception and feelings toward their own</td>
<td>subjective; limited sensitivity to influences of creativity training over</td>
</tr>
<tr>
<td>Self-Perception / Attitude</td>
<td>sources; different instruments assess traits or affective states</td>
<td>creativity</td>
<td>time; limited evidence of validity</td>
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<tr>
<td><strong>Personality</strong></td>
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<tr>
<td>(Self-Report)</td>
<td>assess accomplishments and performance; trait measures</td>
<td>high predictive validity for adults; based on data representing observable behaviors</td>
<td>more useful with adolescents and adults</td>
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<tr>
<td>Biographical / Interest</td>
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<tr>
<td><strong>Personality</strong></td>
<td>examine affect related to creativity; used to measure effectiveness</td>
<td>may be standardized, group administered; frequently uses a forced choice or likert-type scale</td>
<td>information reflects opinions of persons who may not be well-acquainted with the construct; limited evidence of validity</td>
</tr>
<tr>
<td>(Report by others)</td>
<td>of creativity training; supplement data from other sources</td>
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</tr>
<tr>
<td>Personality, Attitude,</td>
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<tr>
<td>Biographical</td>
<td></td>
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<tr>
<td><strong>Products</strong></td>
<td>assess quality of self-initiated, complex product, non-test</td>
<td>assess products in varied domains</td>
<td>often lack a well-designed matrix, agreed-upon criteria, and interrater training/reliability</td>
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<tr>
<td><strong>Press</strong></td>
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<tr>
<td>(Situation)</td>
<td>assess creativity of environment</td>
<td>research tool to study creativity of classroom</td>
<td>lack of well-researched instruments and procedures</td>
</tr>
<tr>
<td><strong>Combination Measures</strong></td>
<td>a single instrument incorporates divergent thinking, self-report,</td>
<td>input from diverse sources regarding the child’s likelihood to be creative</td>
<td>available combination measure is based on few observations; has inadequate reliability</td>
</tr>
<tr>
<td></td>
<td>and ratings by others</td>
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<tr>
<td><strong>Alternative Measures</strong></td>
<td>performance-based observations, product measures/scales, complex</td>
<td>input from informal observations, portfolios, teacher anecdotes, etc.,</td>
<td>classroom opportunities for creative behavior are prerequisite; few validity studies of performance measures of creativity</td>
</tr>
<tr>
<td></td>
<td>and open-ended behaviors</td>
<td>responsive to real world tasks</td>
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</tr>
<tr>
<td><strong>Personality or Attitude</strong></td>
<td>study changes in constructs such as self-concept, locus of control,</td>
<td>reflect changes in divergent thinking resulting from creativity training</td>
<td>limited evidence of degree of relationship between personality/attitude and creativity; not normed</td>
</tr>
<tr>
<td>Indirectly Related to</td>
<td>leadership</td>
<td></td>
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<tr>
<td>Creativity</td>
<td></td>
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<tr>
<td><strong>Talent - Visual and</strong></td>
<td>identify giftedness in specific domain</td>
<td></td>
<td>expertise of judges’ and consistency of judgments may be variable</td>
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<tr>
<td>Performing Arts</td>
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<tr>
<td><strong>Systems for Decision</strong></td>
<td>mechanisms to examine information from several of the above measures</td>
<td>eligibility decisions use data from multiple sources of information; utilizes a broad definition of creativity</td>
<td>time consuming, users often prefer a simpler solution, e.g., a single measure and narrow definition of creativity; users must be trained</td>
</tr>
<tr>
<td>Making</td>
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Table 1
Some Measures Used to Assess Creativity in School-Aged Children

Table 2

<table>
<thead>
<tr>
<th>Measure</th>
<th>Author(s) and Source</th>
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<tbody>
<tr>
<td><strong>Process</strong></td>
<td></td>
</tr>
<tr>
<td>Divergent Thinking Measures</td>
<td>Geitz &amp; Jackson (1962) <em>Creativity and Intelligence</em> (Davis, 1989)</td>
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<tr>
<td></td>
<td>Meeker et al. (1975, 1985) <em>Structure of Intellectual Learning Abilities Test-Creativity Scales</em> (Suher, 1979)</td>
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<td></td>
<td>Schafer (1975) <em>Sufer</em> (Schafer, 1975)</td>
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<tr>
<td></td>
<td>Torrance (1960) <em>Torrance Tests of Creative Thinking: Verbal and Figural</em></td>
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<td></td>
<td>Torrance (1981) <em>Thinking Creatively in Actions and Movements</em></td>
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<td></td>
<td>Torrance et al. (1973) <em>Thinking Creatively With Sounds and Words</em></td>
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<td></td>
<td>Wallach &amp; Kogan (1965) <em>Medias of thinking in young children</em> (Davis, 1982; Milgram &amp; Heng, 1993; Runco, 1993)</td>
</tr>
<tr>
<td><strong>Attitude, Personality, or Biographical Measures</strong></td>
<td></td>
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<tr>
<td></td>
<td>Gough &amp; Heilbrun (1983) <em>Adjective Check List</em> (Domino Key of ACL)</td>
</tr>
<tr>
<td></td>
<td>Davis (1989) <em>Some</em></td>
</tr>
<tr>
<td></td>
<td>Kline &amp; Torrance (1976) <em>Kline-Torrance Creative Perception Inventory</em></td>
</tr>
<tr>
<td></td>
<td>Kirschenbaum (1989) <em>Creative Behavior Inventory</em> (Callahan, 1992)</td>
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<td></td>
<td>Ritten (1980) <em>Group Inventory for Finding Creative Talent</em></td>
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<tr>
<td></td>
<td>Torrance et al. (1983) <em>Style of Learning and Thinking</em></td>
</tr>
<tr>
<td></td>
<td>Torrance (no date) <em>Creative Motivation Scale</em> (1989)</td>
</tr>
<tr>
<td></td>
<td>versions Grades 3-8, used by the Creative Scholars Program (G. Lewis, personal communication, January 26, 1996)</td>
</tr>
<tr>
<td><strong>Autobiographical and Self-Report Interest Measures</strong></td>
<td>Davis &amp; Remi (1985) <em>Group Inventory for Finding Interests</em></td>
</tr>
<tr>
<td></td>
<td>[most recent research version is the Student Development System]</td>
</tr>
<tr>
<td></td>
<td>Milgram (1988) <em>Tel-Aviv Activities Inventory: Primary Grades</em> (Hong, Milgram, &amp; Gorsky, 1995)</td>
</tr>
<tr>
<td></td>
<td>Milgram (1993, 1990) *Tel-Aviv Activities and Accomplishments Inventory: Adolescent Form (Hong, Whitson, &amp; Milgram, 1993; Milgram, Dunn, &amp; Price, 1993)</td>
</tr>
<tr>
<td></td>
<td>Rousseau (1977) <em>Inventar</em></td>
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<tr>
<td></td>
<td>Schafer (1976) <em>Biographical Inventory-Creativity</em> (Callahan, 1991; Treffinger, 1995)</td>
</tr>
<tr>
<td><strong>Attitude, Personality, or Biographical Measures - Report by Others</strong></td>
<td>Eichenberger (1978) <em>Judging Criteria Instrument</em> (Callahan, 1991)</td>
</tr>
</tbody>
</table>
|                                                                       | Johnson (1976) *Gifited and Talented Screening Form* (see Lavinon, 1984; Tallent, 1987)
|                                                                       | Kingore (1990) *Kingore Observation Inventory* (Vanglah-Neely, no date)               |
|                                                                       | Ohio Department of Education (1992) *Rating scales*                                  |
|                                                                       | Renautt et al. (1976) *Scale for Rating the Behavioral Characteristics of Superior Students* |
|                                                                       | Ulrich (1987) *Peer Nomination Form* (Cummingham, Callahan, Roberson, & Rapkin, 1994) |
| **Assessment of Self-Initiated Creative Products**                    | also see Systems below and discussion in text of consensus assessment procedures, as in Amabile, 1990 |
|                                                                       | Bensamer & O'Muir (1986) *Creative Product Semantic Scale*                           |
|                                                                       | Bensamer & Treffinger (1981) *Creative Product Analysis Matrix*                      |
|                                                                       | Kingore (1992) *Portraits: Enriching and assessing all students, identifying the gifted, grades K-8 |
|                                                                       | Reis (1991) *Student Product Assessment Form* (Reis & Renautt, 1991; Sayler, 1993)     |
|                                                                       | Treffinger (1988) *Student Invention Evaluation Kit*                                |

**Press (or Situation)**

- Renshaw & Smith (1978) *Learning styles inventory: A measure of student preference for instructional techniques (teacher form)*
- Shaw (1986) *SCALE: Scales of Creativity and Learning Environment*

**Personality/Attitude Indirectly Related to Creativity**

- Sears (1975) *Sears Self-Concept Inventory* (Fiskin, 1990)

**Talent in Visual and Performing Arts**

- Note: Non-test procedures as alternatives to standardized art tests, e.g. portfolios, work samples, and biographical inventories are essential components of identification procedures for talented students (Ciolk & Zimmerman, 1993)
- Parke & Byrnes (1984) *Dorset Public Schools Creativity Scales* (Byrnes et al., 1982; Callahan, 1991)

**Systems for Decision Making**

- (see text for discussion of these procedures)
  - Fruestr Talien Assessment Profile (Fruestr, 1994)
  - Laefer (1994) *Multiple Intelligence Approaches to Assessment* (Laefer, 1994)
  - Model for the Identification of Creative-Thinking Ability (Ohio Department of Education, 1992)
  - Profiling for Creative Problem Solving (Baikian et al., 1993)
  - Reznick Talien Pool (Reznick, 1978)

Note: A complete list of references for Table 2, published in Johnson and Fishkin (1986), is available from A. S. Fishkin, Marshall University Graduate College, 130 Angus E. Peyton Drive, South Charleston, WV, 25503.
Student Product Assessment Form (SPAF)

Joseph S. Renzulli
Sally M. Reis

Rationale Underlying This Assessment Form

The purpose of this form is to guide your judgment in the qualitative assessment of various types of products developed by students in enrichment programs. In using the instrument three major considerations should always be kept in mind. First, the evaluation of more complex and creative types of products is always a function of human judgment. We do not think in terms of percentiles or standard scores when we evaluate paintings, architectural designs or the usefulness of a labor-saving device. We must consider these products in terms of our own values and certain characteristics that indicate the quality, esthetics, utility, and function of the overall contribution. In other words, we must trust our own judgment and learn to rely upon our guided subjective opinions when making assessments about complex products.

A second consideration relates to the individual worth of the product as a function of the student's age/grade level and experiential background. For example, a research project that reflects an advanced level investigation and subsequent product by a first grader might not be considered an equally advanced level of involvement on the part of a sixth grader. Similarly, the work of a youngster from a disadvantaged background must be considered in light of the student's overall educational experiences, opportunities and availability of advanced level resource persons, materials and equipment.

The third consideration relates to the most important purpose of any evaluation—student growth and improvement. This assessment instrument should be used to guide students toward excellence and therefore we strongly believe that it should be shared and discussed with students before the product is started. In other words, we believe the instrument should be reviewed with students during the early planning stages of the product. Students should have the opportunity to know and fully understand on what basis their final products will be assessed.

Instructions for Using the Assessment Form

Although most of the items included in the form relate directly to characteristics of the final product, it will be helpful if you also have access to any planning devices that have been used in the development of the product. Such planning devices might consist of logs, contracts, management plans, proposals or any other record keeping system. A planning device can help you to determine if pre-stated objectives have been met by comparing statements of objectives from the planning device with the final product. If such a planning device has not been utilized or is unavailable, you may want to request that the student complete a form that will provide you with the necessary background information. It is recommended that some type of planning device accompany all products that are submitted for rating. If it can be arranged, you may also want to interview the student who completed the product.
Student Product Assessment Form (SPAF)

In using the Student Product Assessment Form it will sometimes be necessary for you to do some detective work! For example, in determining the diversity of resources, you may need to examine footnotes, bibliographies or references and materials listed on the planning device. You may also want to have the student complete a self-evaluation form relating to the completed product. This form may help to assess task commitment and student interest.

The Student Product Assessment Form can be used in a variety of ways. Individual teachers, resource persons or subject matter specialists can evaluate products independently or collectively as members of a team. When two or more persons evaluate the same product independently, the average rating for each scale item can be calculated and entered on the Summary Form. When used in a research setting or formal evaluation situation, it is recommended that products be independently evaluated by three raters. One of these ratings should be completed by the teacher under whose direction the product was developed. A second form should be completed by a person who has familiarity with the subject matter area of the product. For example, a high school science teacher might be asked to rate the work of an elementary grade student who has completed a science-related product. The third rater might be someone who is independent of the school system or program in which the work was carried out.

Item Format

At first glance the items on the assessment form may seem to be long and complicated, but they are actually quite concise. Each item represents a single characteristic that is designed to focus your attention. The items are divided into the following three related parts:

1. **The Key Concept.** This concept is always present first and is printed in large type. It should serve to focus your attention on the main idea or characteristic being evaluated.
2. **The Item Description.** Following the Key Concept are one or more descriptive statements about how the characteristic might be reflected in the student’s product. These statements are listed under the Key Concept.
3. **Examples.** In order to help clarify the meanings of the items, an actual example of students’ work is provided. The examples are intended to elaborate upon the meaning of both the Key Concept and the Item Description. The examples are presented following each item description.

Important Note: The last item (No. 9) deals with an overall assessment of the product. In this case we have chosen a somewhat different format and examples have not been provided. When completing the ratings for Item No. 9 you should consider the product as a whole (globally) rather than evaluating its separate components in an analytic fashion.
Student Product Assessment Form (SPAF)

Some of the items may appear to be unusually long or “detailish” for a rating scale but our purpose here is to improve the clarity and thus inter-rater reliability for the respective items. After you have used the scales a few times, you will probably only need to read the Key Concepts and Item Descriptions in order to refresh your memory about the meaning of an item. Research has shown inter-rater reliability is improved when items are more descriptive and when brief examples are provided in order to help clarify any misunderstanding that may exist on the parts of different raters.

Non-Applicable Items

Because of the difficulty of developing a single instrument that will be universally applicable to all types of products, there will occasionally be instances when some of the items do not apply to specific products. For example, in a creative writing project (poem, play, story) either the Level of Resources (No. 3) or Diversity of Resources (No. 4) might not apply if the student is writing directly from his/her own experiences. It should be emphasized however, that the non-applicable category should be used very rarely in most rating situations.

How to Rate Student Products

1. Fill out the information requested at the top of the Summary Sheet that accompanies the Student Product Assessment Form. A separate Summary Sheet should be filled out for each product that is evaluated.
2. Review the nine items on the Student Product Assessment Form. This review will help to give you a “mind set” for the things you will be looking for as you examine each product.
3. Examine the product by first doing a “quick overview” of the entire piece of work. Then do a careful and detailed examination of the product. Check (√) pages or places that you might want to reexamine and jot down brief notes and comments about any strengths, weaknesses or questions that occur as you review the product.
4. Turn to the first item on the Student Product Assessment Form. Read the Key Concept, Item Description and Example. Enter the number that best represents your assessment in the “Rating” column on the Summary Sheet. Enter only whole numbers. In other words, do not enter ratings of 3 1/2 or 2 1/4. On those rare occasions when you feel an item does not apply, please check the N/A column on the Summary Sheet. Please note that we have only included an N/A response option for Item 9a on the Overall Assessment.
5. Turn to the second item and repeat the above process. If you feel you cannot render a judgment immediately, skip the item and return to it at a later time. Upon completion of the assessment process, you should have entered a number (or a check in the N/A column) for all items on the Summary Sheet.
6. Any comments you would like to make about the product can be entered at the bottom of the Summary Sheet.
**Student Product Assessment Form**

**Summary Sheet**

Name(s) _____________________________________ Date __________________

District ____________________________ School ___________________________

Teacher ___________________________ Grade ________________ Sex ______

Product (Title and/or Brief Description) ______________________________________

____________________________________________________________________

Number of weeks students worked on product______________________________

<table>
<thead>
<tr>
<th>Factors</th>
<th>Rating*</th>
<th>Not Applicable</th>
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<tbody>
<tr>
<td>1. Early Statement of Purpose</td>
<td>______</td>
<td>______</td>
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<tr>
<td>2. Problem Focusing</td>
<td>______</td>
<td>______</td>
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<tr>
<td>3. Level of Resources</td>
<td>______</td>
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<tr>
<td>4. Diversity of Resources</td>
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<td>5. Appropriateness of Resources</td>
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<tr>
<td>6. Logic, Sequence and Transition</td>
<td>______</td>
<td>______</td>
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<td>7. Action Orientation</td>
<td>______</td>
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<tr>
<td>8. Audience</td>
<td>______</td>
<td>______</td>
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<tr>
<td>9. Overall Assessment</td>
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<tr>
<td>A. Originality of the Idea</td>
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<td></td>
</tr>
<tr>
<td>B. Achieved Objectives Stated in the Plan</td>
<td>______</td>
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<tr>
<td>C. Advanced Familiarity with the Subject</td>
<td>______</td>
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<tr>
<td>D. Quality Beyond Age/Grade Level</td>
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<tr>
<td>E. Care, Attention to Detail, etc.</td>
<td>______</td>
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<tr>
<td>F. Time, Effort, Energy</td>
<td>______</td>
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<tr>
<td>G. Original Contribution</td>
<td>______</td>
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</table>

Comments:

Person completing this form: _______________________________________

*Rating Scales: Factors 1-8: 5-To a great extent 3-Somewhat 1-To a limited extent

Factors 9A-9G: 5=Outstanding 4=Above average 3=Average 2=Below average 1=Poor
Student Product Assessment Form

Joseph S. Renzulli
Sally M. Reis

1. EARLY STATEMENT OF PURPOSE
Is the purpose (theme, thesis, research question) readily apparent in the early stages of the student’s product? In other words, did the student define the topic or problem in such a manner that a clear understanding about the nature of the product emerges shortly after a review of the material?

For example, in a research project dealing with skunks of northwestern Connecticut completed by a first grade student, the overall purpose and scope of the product were readily apparent after reading the introductory paragraphs.

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<th>5</th>
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<th>3</th>
<th>2</th>
<th>1</th>
<th>N/A</th>
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<tbody>
<tr>
<td>1.</td>
<td>To a great extent</td>
<td>Somewhat</td>
<td>To a limited extent</td>
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</table>

2. PROBLEM FOCUSING
Did the student focus or clearly define the topic so that it represents a relatively specific problem within a larger area of study?

For example, a study of “Drama in Elizabethan England” would be more focused than “A Study of Drama.”

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<tr>
<td>2.</td>
<td>To a great extent</td>
<td>Somewhat</td>
<td>To a limited extent</td>
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</table>

3. LEVEL OF RESOURCES
Is there evidence that the student used resource materials or equipment that are more advanced, technical, or complex than materials ordinarily used by students at this age/grade level?

For example, a sixth grade student utilized a nearby university library to locate information about the history of clowns in the twelfth through sixteenth century in the major European countries.

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<tr>
<td>3.</td>
<td>To a great extent</td>
<td>Somewhat</td>
<td>To a limited extent</td>
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</table>
# Student Product Assessment Form

4. **DIVERSITY OF RESOURCES**
Has the student made an effort to use several different types of resource materials in the development of the product? Has the student used any of the following information sources in addition to the standard use of encyclopedias: textbooks, record/statistic books, biographies, how-to books, periodicals, films and filmstrips, letters, phone calls, personal interviews, surveys or polls, catalogs and/or others?

For example, a fourth grade student interested in the weapons and vehicles used in World War II read several adult-level books on this subject which included biographies, autobiographies, periodicals, and record books. He also conducted oral history interviews with local veterans of World War II, previewed films and film strips about the period and collected letters from elderly citizens sent to them from their sons stationed overseas.

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<tbody>
<tr>
<td>To a great extent</td>
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</table>

5. **APPROPRIATENESS OF RESOURCES**
Did the student select appropriate reference materials, resource persons, or equipment for the topic or area of study?

For example, a student who was interested in why so much food is thrown away in the school cafeteria had to contact state officials to learn about state requirements and regulations which govern what must and can be served in public school cafeterias. With the aid of her teacher, she also had to locate resource books on how to design, conduct and analyze a survey.

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6. **LOGIC, SEQUENCE, AND TRANSITION**
Does the product reflect a logical sequence of steps or events that ordinarily would be followed when carrying out an investigation in this area of study? Are the ideas presented clearly and logically and is there a smooth transition from one idea or subtopic to another?

For example, a student decided to investigate whether or not a section of his city needs a new fire station with a salaried staff rather than the present volunteer staff. First the student needed to research different methods of investigative reporting such as appropriate interview skills. Next the student conducted interviews with both salaried and volunteer fire station staff. He then needed to learn about methods of survey design and reporting in order to analyze local resident opposition or support for the new fire station. After other logical steps in his research were completed, his accumulated findings led him to interviews with the Mayor and the Board of Safety in the city and then to several construction companies that specialized in bids on such buildings. His final product was an editorial in the local newspaper which reflected his research and conclusions.

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</table>
### Student Product Assessment Form

#### 7. ACTION ORIENTATION

Is it clear that the major goal of this study was for purposes other than merely reporting on or reproducing existing information, ideas, or knowledge? In other words, the student’s purpose is clearly directed toward some kind of action (e.g., teaching ways to improve bicycle safety, presenting a lecture on salt pond life); some type of literary or artistic product (e.g., poem, painting, costume design); a scientific device or research study (e.g., building a robot, measuring plant growth as a function of controlled heat, light and moisture); or some type of leadership or managerial endeavor (e.g., editing a newspaper, producing/directing a movie).

For example, a student decided to study the history of his city. After an extensive investigation, the student realized that other history books had been written about the city. He found, instead, that no one had ever isolated specific spots of historical significance in the city which were easily located and accessible. He began this task and decided to focus his research on producing an original historical walking tour of the city.

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#### 8. AUDIENCE

Is an appropriate audience specified or readily apparent in the product or Management Plan?

For example, the student who researched the history of his city to produce an original walking tour presented his tour to the city council and the mayor. They, in turn, adopted it as the official walking tour of the city. It was reproduced in the city newspaper and distributed by the local historical society, library and given out to registered guests in the city’s hotels and motels.

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#### 9. OVERALL ASSESSMENT

Considering the product as a whole, provide a general rating for each of the following factors and mark the space provided to the right of the item:

<table>
<thead>
<tr>
<th>SCALE</th>
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<tbody>
<tr>
<td>5 = Outstanding</td>
</tr>
<tr>
<td>4 = Above Average</td>
</tr>
<tr>
<td>3 = Average</td>
</tr>
<tr>
<td>2 = Below Average</td>
</tr>
<tr>
<td>1 = Poor</td>
</tr>
</tbody>
</table>

A. Originality of the idea. _____
B. Achieved objectives stated in plan. _____
C. Reflects advanced familiarity with the subject matter for a youngster of this age/grade level. _____
D. Reflects a level of quality beyond what is normally expected of a student of this age and grade. _____
E. Reflects care, attention to detail, and overall pride on the part of the student. _____
F. Reflects a commitment of time, effort and energy. _____
G. Reflects an original contribution for a youngster of this age/grade level. _____
TOPIC 10 – PERSONALIZATION, ACTUALIZATION, AND COMMITMENT OF CREATIVITY

Key Question: How will you commit to nurturing creativity in your students and in yourself?

Objectives:
- Develop plans to integrate creativity within and across the content areas focusing on process and product.
- Design and implement a personal plan for establishing a classroom environment to nurture and develop creativity.
- Create pathways/opportunities for developing individual student creativity (mentorship, community resources, contests, clubs, special lessons/classes, dual enrollment, distance learning).

Key Concepts:
- Personalization, Actualization, and Commitment of Creativity

Materials:
- Seven Steps to Creative Growth (HO 1)
- Personalizing Creativity Within My Classroom (and My Life!) (HO 2)
- Creativity Reflection #4: Creativity tools in the classroom. (from Topic 9 HO 1)
- Course Evaluation (HO 3)

Quote: “I don’t like work—no man does—but I like what is in work—the chance to find yourself. Your own reality—for yourself—not for others—what no other man can ever know.”

Joseph Conrad

“Even if you’re on the right track, you’ll get run over if you just sit there!”

Will Rogers

Session Opener:
- Handout: Seven Steps to Creative Growth (HO 1), E. Paul Torrance

Recommended Reading Assignments:
  Chapter 3, Integrated interdisciplinary model
  Chapter 5, Tips for teachers: Creating concept, process, integrated units
Learning Options and Activities:
  • Presentations of Final Course Products and Performances (Assigned during an earlier session)
    o Creativity Celebration
    o Journal of Reflective Commentary
    o Book Talk & Performance Evaluation Rubric
    o Case Study & Creativity Development Plan
    o Creativity Search
    o Creative Unit: Select one area (language arts, science, etc.) and develop a unit of multiple lessons that integrate creativity.
  • Creativity Reflection #4: Creativity tools in the classroom. (from Topic 9 HO 1) Give examples of how an assessment of creative growth could be used with your students.
  • Activity (HO 2): Personalizing Creativity Within My Classroom (and My Life!)

Evidence of Mastery:
  • Final Course Products and Performances
  • Creativity Reflection #4: Creativity tools in the classroom. (from Topic 9 HO 1)
  • Course Evaluation (HO 3)

Resources:
Seven Steps to Creative Growth
E. Paul Torrance

1. Don’t be afraid to “fall in love with” something and pursue it with intensity. (You will do best what you like to do most.)

2. Know, understand, take pride in, practice, develop, use, exploit, and enjoy your greatest strengths.

3. Learn to free yourself from the expectations of others and to walk away from the games they try to impose upon you.

4. Free yourself to “play your own game” in such a way as to make good use of your gifts.

5. Find a great teacher or mentor who will help you.

6. Don’t waste a lot of expensive, unproductive energy trying to be well-rounded. (Don’t try to do everything; do what you can do well and what you love.)

7. Learn the skills of interdependence. (Learn to depend upon one another, giving freely of your greatest strengths and most intense loves.)
Personalizing Creativity within My Classroom (and My Life!)

- WIBAI (Wouldn’t it be awful if) after finishing this creativity course I did not make my classes and my life more creative?

- WIBNI (Wouldn’t it be nice if) after finishing this creativity class I incorporated more creativity into my classroom?

Problem Statement:
In what way(s) might I incorporate more creativity into my classroom?
(or a variation of this statement, if you prefer)

Tool for generating solutions to problem statement:

Brainwriting Activity (generating ideas):
Using the above stated problem statement, use the brainwriting technique with three people in your area to receive and give possible solutions. You begin on your sheet by writing three ideas for dealing with the stated problem and entering them in boxes 1, 2, and 3. Next, place your sheet in the middle of the group and take another sheet from the pile. After reading the ideas written, add three more new ideas to the sheet, and then return it to the center of the table. Take another new sheet and repeat the process. Read the ideas on the sheet and use them to make new connections.

Tool for focusing on best solution(s):

- Evaluation Grid: Decide on the criteria that would help you focus in on your best solutions. Choose a number of your best ideas generated through brainwriting. Complete the grid, following the provided instructions on handout.

- Assisters & Resisters: Before beginning to work on an Action Plan consider both the assisters and resisters that are present. Complete the form “Assisters & Resisters” as they relate to your problem statement.

- A-L-U: Use the A-L-U form to capture the advantages, limitations, and unique potentials for your ideas. This form assists in identification of strong points and areas that need clarification or additional details.

- Personal Plan of Action: Complete the “Plan of Action” provided in the packet. Using your original problem statement and the solutions you devised, write a personal action plan to bring creativity into your classroom.
Theory and Development of Creativity of the Gifted

Course Evaluation

How will you include creativity in your classroom? (Give an example.)

What tools or strategies will be most helpful in bringing creativity to your classroom and life?

What did you learn about yourself in regards to your personal creativity during this class?

What did you enjoy most about this class?

How useful was this class to your professional growth?

How could this Gifted Endorsement class be improved?

Please make any additional comments you would like to share.