
Title	The role of assessment in developing creativity
Author(s)	Rosalind Y. Mau
Source	<i>REACT</i> , 1997(2), 40-46
Published by	National Institute of Education (Singapore)

This document may be used for private study or research purpose only. This document or any part of it may not be duplicated and/or distributed without permission of the copyright owner.

The Singapore Copyright Act applies to the use of this document.

THE ROLE OF ASSESSMENT IN DEVELOPING CREATIVITY

Review by Rosalind Y. Mau

INTRODUCTION

Teachers need to essentially provide training, structures and systematic techniques to raise the general level of creativity among students and to help them reach their full potential (DeBono, 1995). Such techniques can involve using assessment criteria to tap creative potential. Assessment of creativity has focused on personal characteristics (Roussalov & Poltavseva 1997), mechanisms and phases of the process (De Bono, 1995), the environmental situation (Guilford, 1986), and the creative product (Torrance, 1995, Hermann, 1990). Teachers however, are often uncertain of how to use assessment criteria to guide and reinforce the creative process. Indeed, compared to the information on how to teach creativity, few books and journals discuss how to use assessment to develop creativity. This paper introduces ways of linking assessment and creativity based on a review of the literature.

REVIEW OF RESEARCH

Research studies and general observations of classes show that teachers can use assessment to promote and develop creativity (Guilford, 1986; Herrmann, 1990; Torrance, 1995; De Bono, 1995). Hermann in *The Creative Brain* (1990) categorised people into three groups:

- *those who are already creative and are actively creating for pleasure and profit;*
- *those who are sometimes creative;*

- *those who can be creative, but need guidance to tap their potential.*

In Singapore, Mr Wee Heng Tin, Director General of Education, indicated that creative leadership needs to be exercised in schools. In order to develop the third category of people that Hermann mentions, school leaders must "encourage, stimulate and guide the process of innovation from beginning to end" (16 August 1997). How then can teachers help their students with this process and assess their creative output?

Knowledge base is essential for creativity

Students need a knowledge base from which to think creatively. They can then connect their prior knowledge to new information as well as apply their ideas to new situations. Teachers can neither assume that students have the prior knowledge nor the opportunity to acquire content area information. In writing, for example, students need background knowledge on the topic about which they are expected to write. How can students give their position on a current national issue when they are not well versed in current events? (Herman, Aschbacher and Winters, 1992).

Similarly, Redelinguys (1997) asserts that the search for evaluation and acceptance of creative concepts is based on the product-related knowledge of the designer. So students need basic knowledge in a specific area in order to be creative in that area. For example, no matter how creative a group of poets are, they probably will not be able

to design a high performance gearbox. Likewise, an engineering student cannot be expected to produce a presentable violin concerto.

Multiple modes of assessment guide and improve the creative process

Assessment guides the creative process by *setting clear targets* to be achieved, by *providing explicit criteria to follow*, and by *communicating feedback on the process and product* to students (Herman, et al, 1992).

Since basic knowledge is necessary to the creative process, *one achievement target* is for students to learn essential facts, concepts and principles. Paper and pencil assessments in the form of multiple-choice and essay tests are effective in determining how well students have acquired the basic facts and concepts.

Other achievement targets could include solving a problem by generating hypotheses or developing a creative product. Teachers can direct students toward a creative target by not only making sure that they have the knowledge base but also an understanding of what creative products look like. In order for students to achieve the assessment target, they can be given models of creativity so that they can compare standards. Several examples of creative products of low and high standards can be shown. Teachers then discuss the characteristics of the various products pointing out the characteristics of a product of high creative quality (Marzano, Pickering and McTighe, 1993). The assessment mode most suitable for this type of activity would be through personal communication with teachers discussing and questioning students on process and product.

According to Redelinguys (1997) teachers who provide *clear assessment criteria* for students to follow, promote the generation of a number of ideas and the application of ideas in innovative ways. Three possible criteria could be:

- *generating and discussing at least three hypotheses to solve the problem;*
- *selecting the best idea and giving a strong rationale for the decision;*
- *applying the idea in two innovative ways.*

To reiterate during the creative process, three modes of assessment can be used.

1. **Paper and pencil tests** when assessing knowledge and skills learned;
2. **Performance assessment** when assessing the process of learning and creating;
3. **Personal communication** when a teacher discusses the process and product with a student or groups of students.

Real-time and multi-stage creativity

There is a difference between real-time creativity and multi-stage creativity. *Real-time creativity* is spur-of-the-moment, improvisational and demands a product in a short interval of time. In contrast, *multi-stage creativity* requires sufficient time for students to generate and then select ideas. Herrmann (1990) asserts that we can have an idea in a second, but it may take days or weeks to apply that idea. In Singapore, teachers and students are familiar with paper and pencil assessments administered in a given time period. However, based on a review of several books, time is needed for creativity to be fostered (Herrmann, 1990; Torrance, 1995; De Bono, 1995). Other modes of assessment such as

performance assessments and personal communication, or reflective journals, can be used for long-term assignments, such as research papers and science projects. Teachers can assess entries in a reflective journal to see how students think through ideas, how ideas are generated and applied creatively. Singapore schools are in the process of moving towards long-term assignments in the form of project work for the various subject areas.

Self and peer assessment

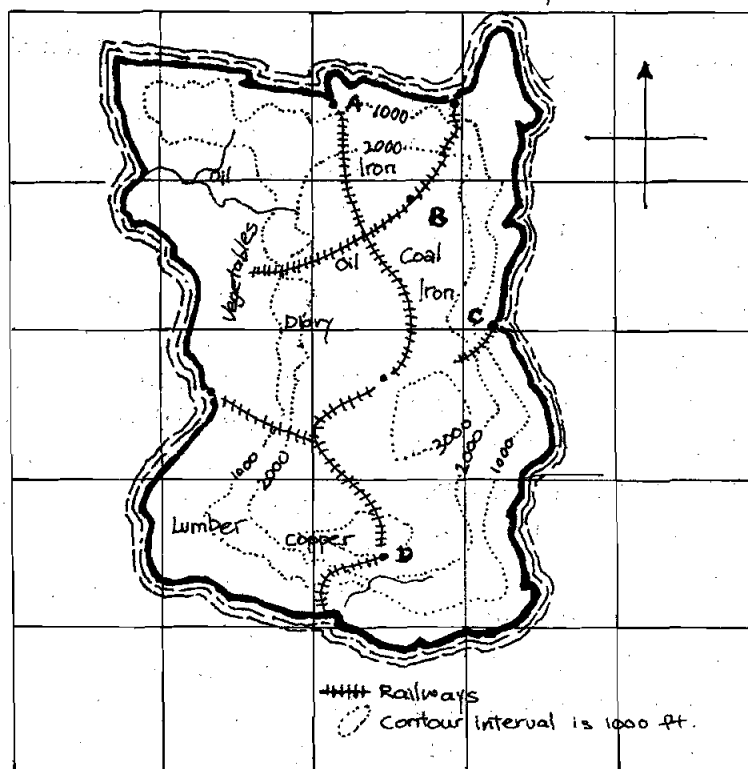
The creative process can be guided through self-assessment as well as peer assessment

techniques. In self-assessment, a checklist is given to students. As they complete each stage of a task, they check that particular item. This checklist can be given as a guide toward more divergent thinking and generation of new ideas. At the same time, a checklist promotes convergent thinking necessary to selecting an innovative idea from several ideas. Peer assessment is yet another way to foster creativity. Peers who understand the assignment may be able to draw new connections and/or stimulate more creative ideas through their examination of another student's progress (Nitko, 1995).

IMPLICATIONS

1. *Use paper and pencil tests, e.g. multiple-choice and essay questions, to ensure that students have prior basic knowledge on which the seeds of creativity take root.*

Example a:



Which of the following areas on the map would be the best location for a steel mill? (2 points)

- _____ 1. At point A
- _____ 2. At point B
- _____ 3. At point D
- _____ 4. At point C

State your reasons for choosing that area (5 points).

Give it a creative name and explain how the name can attract investors to the steel mill (5 points).

2. Use self-assessment checklists that students follow and complete. Give students the criteria to guide them to a creative product. In this way, students are encouraged to think flexibly and divergently and take risks to innovate. Ask them to then make a selection of the ideas presented and further justify their reasons for doing so.

Example b:

Self-Assessment Student Checklist
Criteria to Guide Students to Be More Creative

	Yes	No
I connected one idea to another in a new way	_____	_____
I thought of three new hypotheses	_____	_____
I tested my hypotheses and found unexpected results	_____	_____
I selected this idea because it is innovative	_____	_____

3. Use peer-assessment so peers review other students' progress. In this way, peers can stimulate ideas or suggest other connections.

Example c:

**Peer Assessment of a Mathematics Assignment
Rating Scale**

Check One

Mathematics Area	strongly agree	agree	disagree	strongly disagree
1. The story problem devised for the given answer was creative in the way it was written				
2. The math story problem generated several new ways of looking at the answer				
3. I could see the connection between math and other subjects and in everyday life				
4. I could use more than two strategies to solve the problem				
5. The story problem helped me better understand the mathematical concept because it applied the concept in an innovative way				

4. *Ask students to keep reflective journals where they record their thoughts and ideas and portfolios where they collect evidence of their work. As students write in their journals, they are able to critically reflect on how they progressed through the creative process, and not their successes and frustrations.*

Example d:

Reflective Journal on Project Work

In your journals keep a daily log where you write your reflections for 10 minutes a day on the following areas:

1. How did I explore the various topics for my project work?
 2. What examples of divergent thinking did I use during my exploration?
 3. How and why did I select the topic for my project work?
 4. What are the unique features of my work?
 5. What were some of the interesting ways I used to conduct my work?
 6. What did I reflect upon the most?
 7. How did I overcome problems that I encountered?
 8. How did I know that I had completed a creative piece of project work?
- Portfolio assessment enables students to track their progress as they accumulate their pieces of work from the beginning to the end of the creative process. A portfolio also provides opportunities for students to revise and rethink while creating something or solving a problem (See Ball & Chia, 1995).

SOURCES

- De Bono, E. (1995). *Serious Creativity: Using the Power of Lateral Thinking To Create New Ideas*. London: Harper Collins.
- Ball, J. and Chia, J. (1995). Student profiling: One approach to holistic, participatory assessment, *REACT*, No.2.
- Carr, C. (1994). *The Competitive Power of Constant Creativity*. New York: AMACOM.
- Guilford, J.P. (1986). *Creative Talents: Their Nature, Uses and Development*. Buffalo, N.Y.:Bearly.
- Herman, J.L., Aschbacher, P. and Winters, L. (1992). *A Practical Guide to Alternative Assessment*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Herrmann, N. (1990). *The Creative Brain*. Lake Lure, N. C.: Brain Books.
- Marzano, R.J., Pickering, D. and McTighe, J. (1993). *Assessing Student Outcomes*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Nitko, A.J. (1996). *Educational Assessment of Students*. Englewood Cliffs, NJ: Merrill, an imprint of Prentice Hall.
- Redelinguys, C. (1997). *A Model for the Measurement of Creativity. Part I-Relating Expertise, Quality and Creative Effort*. (Internet)
- Roussalov V.M. and Poltavseva L.I. (1997). The Temperament as a Prerequisite of Creative Abilities. *Neuroscience and Behavioral Physiology*. Plenum Publishing Corporation.
- Torrance, E.P. (1995). *Why Fly?* Norwood, NJ: Ablex Publishing.
- Wee Heng Tin (1997, 16August). *What Is A Thinking School?* Address at Chinese High School in Singapore.