Teaching for Creativity through the Use of the Creative Reversal Act

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Abstract
For the last two years I have thought over and over again about a theory of thinking, called the janusian process, a theory about creative thinking and invention proposed by Albert Rothenberg. I have worked to develop a teaching technique based on this theory that could be applied in teaching and learning practices concerning creative thinking. Fortunately, my effort has resulted in a new creative thinking technique titled the Creative Reversal Act (CREACT) that could be used both in the classroom and real life. In this article, I first review the theory of the janusian process shortly, and then I discuss the CREACT model in detail.

What is the Janusian Process?
Janusian process is a specific type of thinking defined by Rothenberg as, “actively conceiving multiple opposites simultaneously – of concepts, objects or theories” (Rothenberg, 1996, 207). During the course of idea generation through the use of the janusian process, opposite ideas or propositions are developed or identified purposefully. Opposite ideas produced through the use of the janusian process coexist simultaneously in conflict in a new conception; they are symmetrically structured, reversed but equal; they possess high degrees of specificity; both previous ideas and opposite ideas are accepted as equally valid; and they encapsulate the entire dimension of a new conception.

Rothenberg proposes that the janusian process consists of four phases. The first phase, motivation to create, implies a strong personal and emotional involvement to produce new solutions or products whereby problem-relevant knowledge is accumulated. It is the second phase, deviation, creators depart from what commonly is accepted as true by identifying one or both of oppositional ideas. Simultaneous opposition is the third phase during which chains of opposites are formed. Then, these opposites are put simultaneously together to form a new conception that reflects paradoxes. Modification, elaboration, and refinement are the intellectual tasks of the fourth phase, construction. In this phase, the configuration or formation of the simultaneous opposition is examined and refined thoroughly.

The janusian process plays a role in many creative accomplishments, such as the theory of natural selection proposed by Darwin and the general theory of relativity put forward by Einstein. In the theory of natural selection, for example, pairs of opposite ideas, such as adaptive variants-maladaptive variants encapsulate the entire dimension of evolution. Likewise, the opposite propositions, motion in gravitational field and rest in gravitational field sums up the general theory of relativity.

Creative Reversal Act (CREACT)
I believe that the janusian process does not belong to geniuses only. Many people who have the potential and like to be creative can learn how to use janusian thinking in their life. Creative ideas holding oppositions or paradoxes can be produced through the use of five steps of the CREACT. The use of the CREACT includes a series of construction-segregation–opposition–combination–elaboration processes, resulting in creative paradoxical products (Sak, 2007). The rest of this article deals with a description of the CREACT and its use in teaching practices.
Step 1: Construction
The purpose of this step is to stimulate students’ interest and raise their motivation about a particular concept or topic; thereby students construct motivation and knowledge to be able to produce creative results. At this step, teachers and/or students identify a theory, thesis, concept, or problem that has complex meaning. It also is useful that teachers generate a list of concepts students might like to investigate and discuss further. The investigation should be carried out prior to the discussion in the classroom if students do not have sufficient knowledge or like to learn more about the subject under discussion. Following the investigation, the teacher should ask one or all of the following questions (see table 1): What do we know about this concept? What does this concept mean to you? What are the uses of it for us? Teachers and/or students should write students’ responses on the board, or students themselves can record their responses in their own journals. For example, in the example given in Table two, students discussed the concept of space with references from such disciplines as science, philosophy, astrology, and the like.

Step 2: Segregation
This step involves identifying critical thematic elements of the concept, theory or thesis discussed in the first step. The step can include two sub-steps: 1) Segregation of components, and 2) segregation of elements of these components. The teacher should ask the following questions to direct students to segregate major components of the concept or theory: What are some components of this theory, concept, or idea? What makes this theory? Can we separate out this component further? What are some elements of this component? At this step too, students’ responses should be recorded. Their responses should be transformed into short statements or phrases if they express their ideas in complex and disorganized sentences. For instance, in the “space” example in Table two, students first identified components and/or elements of and ideas and theses about space, such as, “space is existence” and “space is a collection of interconnected entities.”

Step 3: Opposition
At this step, opposites of the thematic elements identified in the segregation step should be identified or otherwise new ones should be formulated. One opposite, if possible, should be generated for each thematic element. Opposites should be specific and should represent definite points on a scale, such as visible and invisible, or parts of a dichotomy, such as north and south. They should be reversed but equal. A variety of thinking processes, such as modification, combination, adaptation, reflection, rotation, minifying or magnifying, can be used to generate definite opposites to increase the number of opposites. Opposites generated by students should be written across each thematic element, as seen in Table two. At this step, the teacher should ask the following question to help students generate as many and appropriate opposites as possible: What is the opposite(s) of this element/component? The teacher should ask students the following questions to evaluate the degree of specificity and the validity of opposites: How are they opposite to each other on a scale, category, plane, or space? How is this opposite you just have identified as valid or true as its opposite? For example, as seen in Table two, the opposite thesis “space is the light of everything in universe” was generated by a student as opposite to the previous thesis “darkness is the main characteristics of space,” defining the opposite dimensions of space on a scale and the thesis “space is a symbol of nonexistence” as opposite to the previous thesis “space is a fact of existence,” defining a context on a dichotomy.

Step 4: Combination

Creative Reversal Act
This step involves bringing simultaneously together the element(s) separated out in the second step and the opposites of these elements identified or formulated in the third step. This combination process should result in a new conception, thesis, or theory. Opposites to be selected for the development of the new theory or conception should be distinct and identifiable in a way that encapsulates the entire aspect of the new conception in a polarity or dichotomy. The teacher should ask students the following questions to bring opposite ideas together and their reasons for such combinations: Which opposites can be used together in a new conception? Why can these opposites go together in a new conception? For example, as seen in Table two, the simultaneous combination of the opposite theses “space is a fact of existence” and “space is the symbol of nonexistence” yielded a new paradoxical conception, “space is the existing nonexistence.”

Step 5: Elaboration

It is at this step that the configuration of simultaneous conception is revised and elaborated in a way the new conception sounds originality even if it looks self-contradictory. If multiple opposites in different categories or aspects of the conception are combined in the previous step, these opposites can be brought together in this step. Opposites should be distinct, identifiable but uncompromised, explaining the entire dimension of the new conception. The teacher should ask students the following questions to evaluate and revise the new conception: How is this new conception comprehensive enough to sum up the entire dimension of the conception? How does the contradiction of the new conception represent symmetry? In what ways can we revise this new conception? For example, as seen in Table two, paradoxical combinations generated in the previous step are further brought together and slightly revised. This further combination, “space is the dark light of the relative existing nonexistence,” was made because the new combination explains “space” both on a scale and in a dichotomy.

Conclusion

In this article, I described and discussed the Creative Reversal Act (CREACT), a technique that could be used for improving creative capacity. It was developed based on the theory of the janusian process. Consisting of five steps, the CREACT can be used in a variety of settings, including classrooms and workplaces. Although it might seem to be a specific technique based mainly on opposite idea generation and opposite aggregation, an examination of each step of the CREACT shows that its use involves a variety of cognitive processes, such as components of analytical ability and divergent thinking. It should be noted that many creative breakthroughs are some results of paradoxical, metaphorical, or opposite idea generation and combination.

References


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<tr>
<th>Steps</th>
<th>Focus Question</th>
<th>Behavior/Action</th>
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<tbody>
<tr>
<td>1. Construction</td>
<td>What do we know about this theory, idea, or concept? What are the uses of it</td>
<td>Explore the theory from multiple perspectives.</td>
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<tr>
<td></td>
<td>for us? What else should we know about it?</td>
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<tr>
<td>2. Segregation</td>
<td>a) Segregate a concept into components What are some components of this theory,</td>
<td>1. Identify and separate out major components of… 2. Give reasons for answers.</td>
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<td></td>
<td>idea, or concept? What makes this theory, idea or concept? Why do you think it</td>
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<td>is a component of…?</td>
<td></td>
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<td></td>
<td>b) Segregate components into elements Can we separate out this component further?</td>
<td>1. Identify and segregate distinct elements of a component. 2. Give reasons for</td>
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<td></td>
<td>What are some elements of this component? Why do you think it is an element of</td>
<td>answers.</td>
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<td>…?</td>
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<tr>
<td>3. Opposition</td>
<td>a. What is the opposite(s) of this element/component? b. How are they opposite</td>
<td>1. Generate opposite(s) of each element if possible. 2. Give reasons for answers.</td>
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<td>to each other on a scale/category/plane/space? c. How is this opposite you just</td>
<td>3. Evaluate specificity of opposites. 4. Determine whether opposites are as true</td>
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<td>have identified as valid/true as its opposite?</td>
<td>as previous ideas.</td>
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<tr>
<td>4. Combination</td>
<td>a. Which opposites can be used together in a new conception? b. Why can these</td>
<td>Identify whether two or more opposites can be used together in a new conception.</td>
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<td>opposites go together in a new conception?</td>
<td></td>
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<tr>
<td>5. Elaboration</td>
<td>a. How is this new conception comprehensive enough to sum up the entire dimension</td>
<td>Evaluate whether the opposites hold symmetry, specificity and sum up the entire</td>
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<td></td>
<td>b. In what ways can we revise this new conception?</td>
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### Table 2
**A Conception of Space Created Through the Use of the CREACT**

<table>
<thead>
<tr>
<th><strong>Step I-Construction</strong></th>
<th><strong>Step II-Segregation</strong></th>
<th><strong>Step III-Opposition</strong></th>
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<tbody>
<tr>
<td>What does space mean to you/What can you tell about space?</td>
<td>What constitutes space/What are some theses/ideas about space?</td>
<td>What are the opposites of the elements/theses you identified in the previous step?</td>
</tr>
<tr>
<td>▪ Space is an infinite emptiness.</td>
<td>▪ Space contains tremendous objects.</td>
<td>▪ What space consists of are micro particles.</td>
</tr>
<tr>
<td>▪ Space is dark.</td>
<td>▪ Darkness is the main characteristics of space.</td>
<td>▪ Space is the light of everything in universe.</td>
</tr>
<tr>
<td>▪ Space is an unknown emptiness.</td>
<td>▪ Unknown number of systems makes up space.</td>
<td>▪ A certain number of systems make up space.</td>
</tr>
<tr>
<td>▪ Space is mysterious.</td>
<td>▪ Space is of three linear dimensions.</td>
<td>▪ Space is the boundless four-dimensional continuum.</td>
</tr>
<tr>
<td>▪ Space is scary.</td>
<td>▪ Space is a vast energy.</td>
<td>▪ Space is a micro energy.</td>
</tr>
<tr>
<td>▪ Space is a body of galaxies.</td>
<td>▪ Space consists of matters and energy with positive charges.</td>
<td>▪ Space consists of matters and energy with negative charges.</td>
</tr>
<tr>
<td>▪ Infinity makes up the entire space.</td>
<td>▪ Space is composed of interconnected entities.</td>
<td>▪ Space consists of disconnected entities.</td>
</tr>
<tr>
<td>▪ Space is a collection of relations between objects.</td>
<td></td>
<td>▪ Space is a symbol of nonexistence.</td>
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</tbody>
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<thead>
<tr>
<th><strong>Step IV-Combination</strong></th>
<th><strong>Step V-Elaboration</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Which opposites can be used together to form a new thesis about space?</td>
<td>In what ways can we revise the new theses?</td>
</tr>
<tr>
<td>▪ Space is a dark light.</td>
<td>▪ Space is a dark light of the relative existing nonexistence.</td>
</tr>
<tr>
<td>▪ Space is a fact of existing nonexistence.</td>
<td></td>
</tr>
<tr>
<td>▪ Space is a product of positive and negative forces.</td>
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