The Psychological Bases of Creativity

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THE PSYCHOLOGICAL BASES OF CREATIVITY

We are all living in an age when there are too many things to know and at the same time, there are too many ways to think as well. Those of us here concerned with improving students' thinking face an array of many different advice from different quarters. Teachers, principals, curriculum developers and planners are all encouraged to teach learning and thinking skills, to foster moral development, to nourish problem solving abilities, to cultivate reasoning and not least of all to inspire Creativity in the Curriculum.

Our current attention to the development of student's thinking in our schools is a response to a contemporary problem of knowledge glut and obsolescence. Our students need skills to manage the flood of information which face them everyday in the modern world. Ironically we in trying to help our students are also faced with a glut of available philosophies and curriculum packages for developing thinking. How can we make sense of this confusion? Are there principles that reveal some unity among the many current approaches to thinking. And when it comes to creative thinking - we must be careful not to oversimplify. Human creative thinking is very complex and multifaceted. Any instruction designed to foster creative thinking skills may also face the same complexity and difficulty.

Contemporary psychologists seem to agree that creativity should be seen as an universal potential. That is not to say that everyone of us here will find creative activity easy. Blocks to creativity are not permanent and they can be overcome by understanding and sympathetic teachers. Creative ability shall no longer be seen as something special, the province solely of the genius or the prodigy. If the motivation is there, all of us can learn to create. So let us have a look at this important activity.

As might be expected, many people think about creativity as a discrete human activity. There is little agreement amongst researchers about the nature of creativity and the topic can be approached from a wide range of differing philosophical and psychological perspectives. There is not even agreement about how creativity can be identified.

David Jones (1985) summed up 3 approaches to studying creativity. I call then the 3 Ps - in terms of Product, Personality or Process. Under Product, the intention is to find ways of identifying those aesthetic qualities in a work which are thought to indicate creativity. Secondly there are those who see creativity in terms of Personality. The ass umption here is that it is possible to identify a range of behaviors and attitudes indicative of a creative person. Finally we can also identify creativity in terms of Process. Here the notion is that the act of creating is identifiable in 4 terms.

This morning I would like to elaborate on the psychological bases of the creative process. I would like to share with you ideas regarding the different types of creative activity, some

facts and fallacies regarding the creative process and a study done on the psychological variables affecting creativity. Basically it is a look at creativity from a cognitive developmental perspective. I would like to place the creative process alongside other forms of behavior which with practice, can be learned. It is hoped that by analysing the nature of the psychological processes involved, they would be seen as attainable by the average student.

Maslow in 1968 distinguishes 3 types of creative activity based on two types of mental functioning - the primary and secondary thought processes. The primary process is seen by the psycho analyst as the mechanism by which dreams are produced. It functions at the level of the unconscious and as a consequence an individual is not in conscious control of the way the primary process works. On the other hand, the secondary process is a more conscious affair. It is a process which relates more to the design and solution of the dream rather than the act of dreaming.

From this distinction of the 2 mental processes, Maslow describes 3 types of creative activity:

Primary Creativity	-	concerned with the generation of symbolic images and fantasy
Secondary Creativity	-	concerned with developing a novel solution to a problem
Integrated Creativity	-	concerned with a synthesis of the 2 forms of mental functioning

According to Maslow, the primary creativity - the ability to dream, to give up conscious control of the work and to allow unconscious processes to operate is central to the two processes working together. However such an ability (ie. the primary activity) is difficult to develop. It is often inhibited by ego defence mechanism which thankfully can be slowly removed.

A model similar to this but which seems to deal with the secondary creativity has been developed by Patrick who concluded that creative thought passes through several distinct stages:

* Preparation	-	this is where the subject makes himself familiar with the problem situation and its materials
* Incubation	-	at this stage, the unconscious processes of the mind work on the problem
* Illumination	-	here a specific goal is defined and the subject begins to work towards it. It is also a period of spontaneous intuition and insights
* Verification	-	same intuition and insights are tested for validity. The results of the problem are fully worked out, analysed and completed.

By the way, in a book written by Wallas, the same steps are described in the process of gifted thought. Looking at several models and stages of creative thought, we find a lot of references made to both Conscious and Unconscious processes as important mental activities. Other mental operations referred to are intellectual and intuitive, logical and emotional processes. These seem to work together in an ongoing dynamic relationship.

At this juncture let me share something quite related and I think central to any creative activity. At a symposium on the human brain in 1976, Ornstein stated that it is well established that the brain has 2 hemispheres; the left brain operates rationally and the right intuitively.

The right brain seems to be responsible for our orientation in space, artistic talents, body awareness and recognition of faces. It processes information more diffusely than the left and integrates material in a simultaneous fashion. The left brain however is involved with analytical thinking especially language and logic. It processes information sequentially. When these 2 hemispheres work together, it permits us to achieve at our optimum level. That most mysterious element of creativity known as intuition or inspiration may come from the right hemisphere of our brain. The right side of our brain controls creative behavior. In our school system, we tend to ignore the right hemisphere talents which in the long run may prove essential to personal and cultural survival.

Since evidence points to 2 separate systems in our brain, the task is for teachers to promote integration of both approaches to knowledge. Intuition and Intellectual modes can function concurrently and in support of each other and to cultivate creativity, each mode must be developed (we use only 10% of our brains.)

Let us now look at what many research efforts have helped us to deepen our understanding of the psychological variables related to the creative process.

These studies have helped us to overcome the many misconceptions that for so long went on unchallenged. You have undoubtedly been exposed to some of these misconceptions and therefore have developed some false impressions about what creativity is and how it works. I think it is important to replace some of these false impressions:

Eg: Doing Your Own Thing is not necessarily a mark of creativity. For many people, being creative seems to imply nothing more than releasing impulses or relaxing tensions. This is not quite true. Creativity does involve a willingness to break away from established patterns and to try new directions, but it does not mean being different for the sake of being different or an exercise in self indulgence.

Next fallacy to take note - is the idea that highly creative people have some special intellectual ability which is lacking in the general population. However when researchers began studying the lives of creative people and comparing IQ test performance with creativity test performance, they made two discoveries. [1] They found that creativity depends not on the possession of special talents, but on the use of talents that virtually everyone has but most have never learned to use. (So there's lots of hope for lots of us here!) [2] They found that the IQ test was not designed to measure creativity; so a high score is no indication of creative ability and a low score no indication of its absence. In fact, they found that the great majority of creative achievers fell significantly below the genius level (i.e. of IQ 135).

Another impt misconception about creative thinking is that creativity is found in some fields, but not in others; that the arts for example demand imaginativeness and originality, whereas science, business,and the professions demand only logical thinking. This misconception has been widely accepted for decades. Noted psychologist Abraham Maslow describes how he came to realize the error of this notion. After assuming for years that any painter, poet or any composer was leading a creative life ... he found through his experiments (especially one with a poor uneducated housewife) that he was mistaken. "I learned from her and others like her" he explains "that a first rate soup is more creative than a second-rate painting and that generally, cooking or parenthood or making a home could be creative whereas poetry need not be; it could be uncreative." But what of science? Is it a matter of meticulous logic untouched by intuition or inspiration? The Answer is No. Karl Popper eg. writes that every scientific discovery contains a creative intuition and Albert Einstein agreed that the mere formulation of a problem is far more essential than its solution ... to raise new questions, new possibilities, to regard old problems from a new angle - requires creative imagination. The act of creation is the same whether in science or in the arts.

In the light of these clarifications, how might we (as curriculum planners and developers) reasonably explain the role creativity plays in the various disciplines and the relationship of that role to logical thinking?

I think ... that the arts and science roughly classify themselves from the creative aspect not on the basis of content and method, but rather according to the demands they make upon the intuitive faculty.

It is not a question of separating the arts from the sciences because one is imaginative and emotional and the other is logical and technical. Each discipline contains a range of all these elements. It is rather a question of grouping together all forms of either arts or science which are created under the same conditions of insight and then of asking what these have in common. If a careful analysis is made, they will be found to have much in common. I think this is a worthwhile emphasis to take note during your workshop discussions later on.

One important finding that I have learned from the research literature on creativity is that creativity is not some peculiar gift or mysterious process, but something that can be understood in terms of familiar experiences.

If you look to the kinds of mental operations that seem to figure in creative thinking, you can virtually always find similar such operations in more mundane thinking ... Eg. you find that a creative insight occurs by recognising a pattern or by remembering something. Now, not every process of remembering is creative, of course, but the ones that are creative seem to come about by way of the same psychological mechanisms as the ones that are not. So how does one tell the difference between a more creative thinker and a less creative one).

Difference lies in the key word - intentionality - in What one asks one's mind to do! Eg. If I am a poet and I am trying to draw from my memory a good word to use, I probably ask myself to remember an interesting word, a word with a twist and not something usual ... And my memory will oblige. In general creative people call upon their minds questions different from those, less creative people ask of themselves. More creative people seek out more challenging and interesting possibilities. And a lot of creativity comes about because that's what the person is trying to do.

It is therefore another misconception that creative people can achieve without effort (Thomas Edison gave the famous quote that Genius is 99% perspiration 1% inspiration and he was quite right).

There are many examples of many creative people who are very hardworking and persistent and who refuse to give up.

For me I like to look at creativity not so much as an ability but a style or a way of deploying one's abilities. The creative person asks of his or her abilities that they operate in certain direction. Problem is we are all so different from each other. Hence the importance of individual differences in the creative process. Here we see different patterns in our attentional and intentional moves.

We must also take note of the importance of insight in our everyday experiences. Sometimes what seems to come so suddenly does not come as suddenly as it seems. It is probably provoked by some object or some mental wandering. Although you may arrive at an insight in 5 or 10 steps, these steps do not come in from out of the blue, they are actually in line with each other and each step actually makes sense.

For the last few minutes - let us look at creativity from a cognitive developmental perspective. The attempt to verify a cognitive-developmental foundation for the creative-thinking process is not new. Some research work has been done in this area.

Let me share one particular piece of research work looking at the relationship of formal thought and cognitive styles to creativity (Noppe 1985, Journal of Creative Behaviour).

Apparently the constructs of field-dependence (representing an individual's analytic ability to attend to relevant features and problems in the environment) and field-independence (or cognitive style) and formal thought (Piaget definition) alone are reasonably effective predictors of creative ability.

* It was found that while all highly creative subjects were field independent, not all field independent subjects were superior in creativity.

* Also individuals performing highest on creative problem solving, revealed an organized and systematic method characteristic of formal thought.

Creativity is therefore facilitated by mobile (vs fixed) field independence and formal (vs concrete) operational thought. The capacity of the mobile person to function at developmentally different levels was deemed a major component of creativity.

Implications for us (as curriculum planners and developers)

1. The creative thinker is both logical and intuitive: he is a cognitively complex thinker who is interested in possibilities "behind" facts.

2. He is sensitive to perceptual detail; tolerant of ambiguity and not afraid of lower levels of consciousness (ie. mobile field independence)

3. Lastly ... creative thinkers are quite comfortable thinking in different cognitive modes - ie. they have a flexible cognitive style.

Let me end this morning's presentation by telling you the story of Robinson Crusoe. You all know the life of Daniel Defoe's immortal hero.

Robinson Crusoe was an ordinary man. He disappointed his parents by not choosing a safe career and instead chose an unpredictable future of a seafarer. We have read his adventures that brought him through dangerous storms into the pirates' hands and slavery and finally he was thrown shipwrecked as the only survivor ashore of a desolate island.

Now what made Robinson victorious over his horrible and harsh situation?

The answer to this question could teach us something about creativity

First of all, these were those tools he found in the wreck of the ship with which he could build a house ... he found weapons to defend himself against wild animals and to provide him with food by hunting. Before the ocean swallowed the ship's wreck, he secured the compass to be able to take his bearings. But besides these very elementary needs of life, he thought it worthwhile to

save the Bible from the greedy sea and to carve himself a calender in the trunk of a tree to remain conscious of time and seasons.

This shows that Robinson built his new word with the ingredients of his world of old.

He created his environment under very unfavourable circumstances and really out of a minimum, but not out of nothing ... he came along with an education. He was after all quite a civilised man.

In other words, creativity is not a gift of mere nature, looking at Robinson Crusoe's source of creativity - it is based on schooling, learning and education as well. All the psychological processes that I have briefly described are present in Robinson Crusoe who can survive in a nearly impossible situation by virtue of all his intellectual, physical and emotional faculties to create his new world.

Creativity therefore refers to a potential that seeks to achieve the maximum by means of a minimum.

Let us all learn from Robinson Crusoe.

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