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## INVESTIGATING THE FOUNDATIONS OF CREATIVE THINKING AND GOAL ORIENTATION AMONG STUDENTS

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### ABSTRACT

*Creative thinking is a most important skill that students can gain and develop even during the early years of their lives and use them in many learning contexts in order to enrich their knowledge and other skills. Another important educational issue of students, which is directly associated with academic progress, is students' goal orientation. Orientation in educational situations shows a person's motivation to study and affects his tendencies, actions and responses in learning situations. Thus, this research investigates the foundations of creative thinking and goal orientation among students. The research is descriptive and analytical through library resources. Creative thinking and goal orientation in all human fields can appear for improvement and excellence, not only as an advantage in education but also as a necessity, firstly because the emergence of different trends at least includes alternative solutions for a problem. A characteristic of the learners in the new millennial generation is actually their multi-tasking functions, doing work quickly with low cost and energy, and gaining information in non-linear ways.*

**Keywords:** *Creative thinking, Goal orientation, Cognitive theory, Psychoanalytic perspective.*

### INTRODUCTION

Creative thinking plays a vital role in the improvement and evolution of human life as an important factor in the survival of societies in the current competitive environment, full of issues and problems. Real-life problems seem to be multifaceted and with multiple options with probable subsequent problems. Many of the problems the students face in university are abstracted from reality and have different answers. Asking students to find multiple solutions requires thinking, exploration, and self-examination. Creative thinking as an ability for students to solve problems will be a key to success in their lives (Brophy, 2017). Several theories have been proposed so far about creative thinking. It is an ability to extract past thoughts and experiences and combine them in innovative ways (Gibson, Foley, and Park, 2009). Guilford (1986, quoted by Kim, 2006) proposes two types of convergent and divergent thinking regarding the difference between intelligence and creative thinking. Convergent thinking is associated with intelligence, but divergent thinking is an important feature of creative thinking. Convergent and divergent thinking are two major aspects of human thinking. Guilford believes that creative thinking requires divergent thinking that emphasizes fluidity, flexibility, originality and expansion.



Azlam et al. (2020) in a study in India showed that students with higher socio-economic status had significantly higher scores in creative thinking than students from the upper middle class, lower middle class, and lowest class in the socio-economic status. Other researchers achieved similar results. Chang and Feng (2020) reported that students from very high socioeconomic classes outperformed students from high, middle and lower classes in flexibility, originality, and creative thinking, while students from high classes were better than the students of very high, middle and low classes in fluidity. As Swinicky (2005) shows, socio-economic status is the most important means of developing creative thinking or hindering it among children. Studies on the socio-economic status of creative individuals show that the middle socio-economic classes motivate children to be creative and encourages them to create original things.

Radha et al. (2020) found that a group with high creative thinking had parents who had higher education compared to the parents of students with lower creative thinking. Scott (2004) observed that children with parents with high education had scores on creative thinking test significantly higher than children with parents with less education. A recent study showed that parents' higher educational level is a favorable factor in the development of creative thinking of their children. Shafer et al. (2019) observed in a study a significant difference between the average students in the educational level of their parents. This difference in verbal creative thinking was statistically significant between groups of students based on the educational status of their fathers.

One of the interesting subjects in psychology on the personal and academic progress of students is goal orientation (Ross et al., 2022). Goal orientation assumes that human behavior is purposeful. Therefore, the goals determine and direct behavior path, knowledge and motivation of students so that they become involved in academic activities and assignments. Goal orientation is a coherent pattern of beliefs and emotions of a person; it determines the behavioral intentions of a person, and causes him to be more inclined towards some situations, and act in those situations specially (Vandewalle et al., 2019). Some researchers believe in the constancy of goal orientations in learning situations and course materials, but other studies that have manipulated learners' progress goals have confirmed the effect of the environment and situational characteristics toward progress goals (Kaplan and Mahler, 2000). Recently, researches have presented several integrated models, which consider the interaction of situational, background and personal factors to be prominent and important in facilitating the selection of goal orientations. Thus, this research investigates the foundations of creative thinking and goal orientation among students.

### *Theoretical foundations of research*

#### *Creative Thinking*

The concept of creative thinking has been of varied definitions over time, and different researchers have provided several definitions with more or less similar meaning. For example, Torrance considered creative thinking as a kind of problem solving. Creative thinking for him is sensing problems or deficiencies in information, making hypotheses about solving problems and eliminating deficiencies, evaluating and testing hypotheses, revising and retesting them, and finally transferring the results to others (Soleimani, 2010). Creative thinking comprises a



production of something that is both original and valuable and originates from the conscious and unconscious processes of humans. Of course, some believe that the essence of creative thinking is the production of an idea, and its value has been manifested in commercialization, culture, science, technology, and other fields. The ability (as an almost established skill) of making new ideas is psychologically the entire essence of creative thinking (Baron and Harrington, 2019). The products of creative thinking are scientifically sometimes referred to as divergent thinking. There is no single view or definition of creative thinking like other phenomena in science, and it has been variously attributed to cognitive process, social environment, individual characteristics, luck, and things like genius, mental illnesses, and humor.

It is, as another suitable definition, a process of breaking assumptions. Creative thinking is produced when a person abandons preconceptions and seeks a new perspective that others have not seen. Creative thinking requires the simultaneous presence of several characteristics, such as intelligence, perseverance, unconventionality and specific thinking style. It is automatic and effortless and often arises as spontaneous mental images. Helmholtz and Wallace proposed stages for it: 1- Preparation 2- Incubation period 3- Inspiration 4- Realization. Creative thinking is the use of mental abilities to create a new thought or concept (Zangiabadi, 2018).

Creative thinker is not necessarily an exceptional or intelligent person in its special sense, but someone who achieves new results with a lot of work and concentration and hard work on a problem. As a look at the literature of creative thinking shows, it originate from the type and method of human thinking. More precisely, a creative person is someone who has a searching, creative and dynamic mind. A thinker is someone who looks at the phenomena and current affairs of life, thinks about them, sees things that ordinary people do not see, and finally creates a combination of resources and facilities that others do not see them possible (Mohsenpour, 2019). Creative thinker can focus his mind on one thing and give it so much energy that the matter becomes completely clear in his mind and finally he solves the problem (Wheeler et al., 2002).



### *Types of creative thinking*

Divergent thinking comes first. Creative thinking is directly associated with divergent thinking. Individuals with divergent thinking try not to accept phenomena, affairs, and thoughts easily as they are. They have a different view and avoid similar thought patterns. They look at the phenomena with a different perspective. Divergent thinking as creative thinking focuses on different solutions for a problem, and one characteristic of divergent thinking is innovation, fluidity, flexibility and expansion (Guilford, 1964, quoted by Kaufman et al., 2008). Collaborative thinking comes second. Convergent thinking rarely finds new thoughts, sees and accepts things and phenomena as they are. Convergent thinking is the same reasoning or logical thinking that looks for a correct answer. Table (1) gives a comparison of the characteristics of normal thinking with creative thinking from the perspective of Hicks (1991).

**Table 1.** Comparison of normal thinking and creative thinking

Normal thinking	Creative thinking
A set of reasonably attainable wishes.	A set of not necessarily achievable wishes.

Modifications suitable for all situations.	Modifications not necessarily suitable for all situations.
It requires few changes.	It requires a lot of changes.
Comparisons that result in explicit situations, and are logical and accurate.	Comparisons that lead to more wishes, changes and improvements.
It is accompanied by a feeling of calmness and confidence.	It is irrational and approximate.
No learning takes place, or little if at all.	It is accompanied by confusion, uncertainty, anxiety, excitement and fear.
It is of high accuracy.	It seeks to learn at a high level.
There is little storable or detained things for learning.	Mistakes and errors are probable for it.

### *Psychological theories of creative thinking*

The connection between two ideas leads to thinking according to the associationist theory. An idea in the mind follows a similar idea. Therefore, when a person faces a problem, he gets a new idea to solve the problem by associating the previous information he has in his mind. Medink (1962, Kaufman, Plucker-Baer, 2008) believes that creative thinking comprises forming associations into new and useful combinations that meet specific requirements. Although the elements of the new composition are more dissimilar to each other, the relevant process will be more creative. Associationists believe associations are organized hierarchically according to a voluntary motivation. They say that the greater the association, the greater the chance of finding a creative solution. Thus, a person chooses an innovative solution from among the many combinations of elements he has created. The associationists' definition of creative thinking is summarily: Creative thinking comprises connecting thoughts of empirical origin to each other according to the laws of abundance, novelty, and clarity. Associationists believe new thoughts arise from past thoughts and their mechanism is trial and error. A creative person is, therefore, someone who has a greater ability to connect distant thoughts together (Dasta, 2009).

The foundation of the behaviorist school is also derived from associationism. Behaviorists have also emphasized, in the analysis of creative thinking, the external manifestation of creative thinking, namely its "production". Creative behavior for behaviorists is a response or a pattern of responses that acts on an external or internal differential stimulus that is usually called words, symbols, etc. It leads to a unique combination that strengthens a response or a pattern of responses (Taylor, 1972, quoted by Baron and Harrington, 1981). As behaviorists see, the creative behavior is a behavior that is learned through environmental reinforcements. They believe the individual has a minimal role in creative production. They say that a creative product is achieved through random changes that are chosen because of their positive consequences.

Theory of cognitivism sees a creative person, someone who is actively involved with his environment and is not a passive recipient of events. Different individuals adopt different ways



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of understanding and receiving the external world. They receive information specifically, interpret it individualistically and remember information according to all that has been processed in the past. The more a person treats seemingly unrelated data as if they were related, the more it is probable that an unconventional and creative combination of data will emerge. The tendency to manipulate information that is not immediately connected to each other seems to be exactly equivalent to a creative action. Creative thinking is associated with broad and irrelevant categorization (Vijai et al., 2021). The views of creative cognition are infinitely different. A relationship exists between primary cognitive processes (for example, attention, perception, memory, information processing) and creative problem solving. There is also a relationship between intelligence, problem solving, language, and other indicators of individual differences. These basic processes are permanent and natural; they are universal and common to all human beings.

One viewpoint of creative cognition is that of Gestalt psychology, which has focused on interpreting problem solving in the creative thinking; it not only did not consider creative thinking a separate phenomenon from problem solving, but also saw this as its essential element. This group of psychologists saw the problem solving (creative thinking) as dependent on perception, hence as a cognitive phenomenon. Gestalt psychologists clearly did not differentiate, in their analysis of problem solving (creative thinking), between generative thinking that requires the production and recall of experiences and productive thinking that requires the creation of some things originally. Productive or creative thinking has, according to them, the property of moving beyond a person's previous experiences to solve a fresh problem (Wang et al., 2019). The foundation of creative thinking is holistic in Gestalt's view, which explains phenomena based on their general characteristics. The basic theories of this school about creative thinking are that problem-solving thinking should have a general form, the situation should be considered as a whole (Jokar, 2022). The teacher, in the educational system, should present the problem as a whole situation and the learner sees the whole problem to find the answer. Therefore, the totality of the problem should prevail over its components, and different aspects of the problem should be presented in relation to the general structure of the situation. If the teacher presents the problems in such a way that their components have a meaningful general structure, the learner can solve it with insight.

Gestalt psychologists distinguished problem solving through trial and error from problem solving with insight. One in trial and error uses what s/he knows and makes mistakes until finally s/he discovers the solution to the problem, while one can find a sudden solution to a fresh problem in insight without trial and error. This solution is independent of the individual's specific knowledge and experience around the problem. Insight comes when we suddenly experience an "aha" after a successful attempt. Experience often hinders creative thinking, and if a person only relies on experience, the problem remains unsolved. Creative thinking and creative problem solving, according to cognitive theory, is a new way of solving fresh problems, which means solving problems for which a person does not have an obvious answer and has not learned its solving. Cognitivists believe that creative education is realizable when the teacher helps the learner to transfer the experiences he has already learned to the new subject in learning new material (Teong, 2003).



Creative thinking results psychoanalytically from a conflict in the unconscious mind. The unconscious mind tries to find a solution for this conflict. If the solution is in harmony with the conscious part or "self", it will usually be a creative solution, but if it conflicts with the conscious part, it will probably lead to psychological abnormality. This view considers creative thinking as a kind of regressive return from logical thought processes. Freud, the founder of psychoanalytic theory, believed that creative thinking arises from the conflicts in the unconscious, and as a person tries to solve physiological needs, he also tries to solve these conflicts through creative thinking. This perspective has assumed creative thinking as a tension-relieving mechanism. Freud believes that creative behavior will not occur if the chosen solutions do not match the "self" criteria, and so a neurotic person will emerge. Therefore, Freud sees a creative person, someone who reduces the power of "self" control over "id" and allows unconscious thoughts to pass. A sick or uncreative person does not have this ability. Neo-Freudians emphasize, unlike Freud, the semi-conscious mind. This mind has no limitations in remembering according to them. Therefore, creative thinking emerges when self-control is deliberately removed from the semi-conscious mind because this semi-conscious mind can gather thoughts, compare and rearrange them (Yousefvand and Alavi, 2017). New psychologists reject this theory that creative thinking is accompanied by mental-emotional disturbance and believe that creative individuals are often anxious about others' judgment regarding their works, and because they depend on their works, they need their works to be offered and accepted.

Thus, creative thinking and psychological abnormality originate, from the perspective of psychoanalysis, from the same source. There is a difference: a creative person controls his conscious program, but a mentally ill person experiences severe excesses in controlling his unconscious behavior. This view sees creative thinking as a consequence of a conflict in the unconscious mind or the id, and the unconscious mind tries to find a solution for this conflict. If the desired solution is in harmony with the conscious part, it can be a creative solution. But if it conflicts with the conscious part, it leads to mental illness; but a creative person controls reasonably his unconscious, but a mentally ill person has severe excesses in controlling unconscious behavior. Freud believes that creative thinking, especially artistic creative thinking, replaces childhood play. The suppressed needs of childhood manifest themselves as the work and art. Creative thinking is a defensive behavior and comprises unsatisfied desires that have been transformed into a higher goal. New psychoanalysts believe that creative thinking originates from the semi-conscious mind. When the "self" is not active, the semi-conscious mind is engaged. The semi-conscious should be free from the conscious and unconscious for a while to collect new ideas and creative thinking emerges (Hosseini and Latifian, 2019).

The psychometric approach measures creative thinking in individuals with quantitative scales. Creative thinking in this school is divergent thinking. Divergent thinking is a mental search that looks for all solutions to a problem. It suggests new solutions for the problem, and the criteria of success in this thinking are general and vague and mostly depend on the variety of proposed solutions. Guilford stated (1950) that psychologists have neglected creative thinking and this neglect was because of their great interest in studying learning in low-order animals. Gilford presented his theory in stimulating the interest of psychologists, which included a set of assumptions regarding very special abilities in creative thinking. Guilford's assumption was that



individuals have traits, some of which are associated with creative capacity. Guilford's first theory is that individuals differ in their sensitivity to the problem. He also assumed that individuals differ in the ease of generating data. Guilford invented tests based on his theoretical view of the elements of creative thinking, fluidity, flexibility, and initiative; they helped to construct a theory of intelligence. Several indicators, from among the important factors in Guilford's theory of intelligence, seem to play a significant role in creative thinking. These indicators include: ability for divergent thinking, ability for convergent thinking, ability to evaluate information and ability to draw results (Khademi and Noshad, 2007). Gilford believes that divergent thinking mainly includes fluidity, flexibility, innovation and expansion. The divergent thinking does not have the normal thinking process and is like the first thinking process in Freud's theory. Its major feature is "being free from the constraints of conventions". Divergent thinking is attracted to the unknown, and is risky and skeptical. It can provide several solutions for a problem (Dastgheyb et al., 2011). In contrast, convergent thinking is conservative, method-based, and cautious. This thought can solve the new in the old, but it cannot present a new pattern. This thinking has a supervisory role on divergent thinking; so it determines which idea is suitable (Valkeri, 2006).

#### *Stages of the creative thinking process from Osborn's point of view*

The process of creative thinking comprises three main stages and the following six stages:

**Truth-seeking:** The truth-seeking is to know what we are looking for and what is our problem? We must seek the truth of the relevant subject before researching any innovation, invention, and discovery.

**Search for ideas:** This stage proposes various and many ideas, and the association of meanings plays a special role in it. Thus, one thought leads to another thought, which is possible by connecting imagination with memory.

**Problem-Solving Orientation:** This step requires evaluating and testing the selected ideas in the previous step and finally selecting the ultimate solution. Often, the final solution results from combining different ideas. This stage is in harmony with the two final stages of the five stages of the problem-solving method: testing hypothesis and conclusion. Therefore, the process of creative thinking from Osborn's point of view is the problem-solving that Dewey raised, but here the problem-solving helps to stimulate creative thinking as much as possible.

#### *Goal orientation*

The concept of goal orientation was proposed in the 1980s during the research of Carol Dweck and his colleagues on elementary school children. Children in these researches worked on a set of problem-solving tasks. These problems in the first stage were simple and children could solve them successfully. They were given a set of more hard problems in the second stage. Here, the researchers observed two distinct patterns of responses. A group of these children showed a pattern of helplessness along with maladaptive behavior. They quickly gave up, lost their self-confidence, and the feeling of anxiety and despair overcame them in such a way that they resorted to random and uncreative solutions. Thus, they, as failed individuals, did not show interest in continuing the activity. Another group of these children revealed a consistent model.



They enjoyed challenges, were confident that they could solve these problems, and used constructive and innovative solutions to solve problems (Pain et al., 2007).

Duke realized that children have different goals in learning situations and opportunities. Some of them are trying to show their abilities and get favorable judgments and avoid being blamed by others. These choose performance goals, their goal is to get the desired performance, and their fear and worry of failure in the assignment may lead them to inappropriate response patterns. Some others, who had a suitable response pattern, focused on the goal of learning the material, in order to increase their abilities and knowledge. They considered the mistakes and obstacles as a normal part of the learning process. In short, Duke concluded that children pursue two fundamental goals by dealing with activities, one of which is to develop and expand their abilities and the other is to show their abilities. Adopting each of these goals leaves a deep impact on behavior and performance in challenges (Abedi, 1996).

Goal orientation shows a different behavioral framework that affects cognition, emotion and behavior (Gerhardt and Brown, 2016). This theory argues that learners are involved in educational activities to fulfill different goals. These goals may appear as improving and promoting competence, proving competence and avoiding proving incompetence. Progress goal orientation includes an approach that individuals adopt to progress situations and is rooted in a person's beliefs about whether a person's abilities are fixed or flexible (Gerhardt and Brown, 2016).

#### *Competency and performance goals*

The distinction between competency and performance goals is parallel to the distinction between intrinsic and extrinsic motivation. Competency goals have some features of intrinsic motivation in common, but performance goals are like certain aspects of extrinsic motivation. It is also noteworthy that goal orientation compared to intrinsic and external motivation constructs focuses more on specific cognitive goals, which are mainly situational and context-dependent, while internal and external motivation are more characteristic and orient to an organic approach (Mohid et al., 2020).

When learners choose competency goals, they are motivated to learn the material. They focus on tasks and ask themselves, how can I understand them? Or how can I do them? These students actively search their memory for suitable previous knowledge, such as content and metacognitive knowledge on the assignment and strategies that are suitable for mastering the educational materials. They also direct their organizing processes to produce information to advance their learning (Tuchi, 2019).

Individuals who have a competency orientation will spend much effort and work hard to master a concept. They persist and take risks and try things they hardly know how to do them in hardships and deprivations. All these actions aim to get competency in the work they are doing. Students with performance goals like to reveal their competence or at least avoid revealing their incompetence. If they make a mistake, they are less likely to persist or try harder, because they are labeled as incompetent. They prefer tasks they know they can do and are not willing to take risks to be better than other individuals (Svinicki, 2005).



Competency orientation, according to Desoet et al. (2022), leads to an adaptive behavior pattern; a person who is looking for challenging tasks, insists on mastering those tasks, even if he faces an obstacle. Individuals with a competency orientation believe that their abilities and skills are flexible. Such a view of competency-oriented individuals leads them to master new skills and materials because they believe competency is possible through effort and persistence. Performance orientation includes prioritizing goals that allow individuals to show their competence and receive favorable judgments about their competence. These individuals avoid challenges and insisting on pursuing goals in facing problems and believe that their abilities and skills are fixed; their effort and persistence do not lead to mastering new skills or improving their competence and talent; so they choose their goals in such a way that they can easily prove their competence with reason and evidence and avoid failure and receiving negative feedback.

#### *Performance goals and performance-avoiding goals*

The performance goals lead students to standard comparison and proving high ability. The learning process is a method to advance desired goals; accuracy and attention are used to achieve promotion and advancement as the best standard definition of success. In contrast, learners, in the performance-avoiding goals, worry about the possibility of achieving negative results and seeming clumsy, and think of evaluation and examination as threatening and distressing phenomena (Grant and Duke, 2003).

Individuals with performance goals want to be the best and look the most worthy; they like to work hard and try hard to get ahead of their peers. They do not choose learning as a goal per se, but they learn to be unique. Individuals with the performance-avoiding goal try to avoid making mistakes and appearing incompetent. They only do what they know is right and consider failure so bad that they want to avoid it at any cost. Failure is not for them as an opportunity to learn, but it is a sign of a lack of ability and behavior that should be hidden. Therefore, they do not take risks to reduce the probability of failure (Svinicki, 2016).

#### *Competency Goals and competency-avoiding goals*

Students with the competency goal try to achieve positive results, such as gaining knowledge and skills, while a competency-avoiding student avoids negative results, such as losing skills or becoming disabled. Therefore, while a student with the competency goal tries to learn as much as possible, the student with the competency-avoiding goal avoids mishandling learning materials or forgetting what he has almost learned (Coutinho and Newman, 2018). Indeed, those who avoid competency act as they are forced to. They spend the least effort on what they know they can do, and use a method to get exactly the least scores necessary to get a passing grade. If they spend a lot of effort in real learning, their attention to details and their understanding of course requirements is often more than teachers (Svinicki, 2015).

Students with the competency and competency-avoiding goal are both common in mastering the course materials and developing their own knowledge and skills. But the students with the competency goal are trying to increase their knowledge and potential skills, while the students with the competency-avoiding goal are trying not to lose their previous knowledge and skills and to avoid misunderstandings in the course material (Coutinho and Newman, 2019).



**CONCLUSION**

As studies have shown, theories on creative thinking have focused on different aspects. They usually specify the dominant factors in four areas: process, product, individual and environment. Focusing on the process highlights cognitive approaches that describe the mechanisms and techniques of creative thinking. Theory of divergent thinking (such as Guilford's theory), or theories that describe the stages of the creative process (such as Wallace's theory) are the primary theories of the creative process. Focusing on creative output, which usually attempts to measure creative thinking (psychometrics), shows this approach is of more abilities. Focusing on the creative individual comprehends more general habits of intelligence, such as openness to experience, levels of thinking, independence, expertise, exploratory behavior, etc. Focusing on the environment comprises the flourishing conditions of creative thinking, such as the independence, access to resources, and the parents, etc.; the creative lifestyle is characterized by non-traditional attitudes and flexible behaviors. Therefore, the views and theories of creative thinking have revealed that new ideas are achievable by thinking, during which the mind deeply gets involved with a problem, visualizes it, and helps to clarify the new thought by removing or combining the existing facts. The gotten insight feeds the imagination in finding new thoughts. The origin of new thought is the power of imagination and not the logical power of man. The gotten different clues are evaluated and related to each other in order to gain a best idea. Human thoughts are associated with each other and form an interconnected fabric; that is why the power of association is very efficient and effective in creating and emerging a new thought. It is not enough to only teach suitable materials or plan for the development of creative talents in order to realize and cultivate creative thinking, but individuals should also recognize the motivations and skills of creative thinking, know the steps and processes of creative thinking, pay attention to the process of forming creative solutions and recognizing the issues and steps that are taken in these processes.

Creative thinking and goal orientation can improve all human fields. This is not only an advantage in education, but a necessity, firstly because the emergence of different trends at least includes alternative solutions for a problem, at least in a way that learners learn to think. The learners of the new millennial generation are actually characterized by multi-tasking functions, quick performance with low cost and energy, and gaining information in non-linear ways. As the research review showed, teaching metacognitive skills for knowledge students improves students' academic performance and attitude.

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