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Exploring the Interdependence of Thinking, Learning, and Teaching: An Analysis of 20 Creative Instructional Strategies

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Abstract: ***This study investigates the interdependent and intertwined nature of thinking, learning, and teaching. It emphasizes that teaching thinking should be more than just passing on skills; it should instill a drive to think, an attitude of intellectual engagement, and the notion that thinking is both valuable and appropriate. Drawing on the work of notable theorists such as Fisher (1998), Sternberg (1990), and Grigorenko & Sternberg (1997), the study emphasizes the necessity of recognizing the various thinking styles of both students and teachers. The research offers and examines 20 creative teaching tactics, including divergent, convergent, fake imagination, and caring attitude kinds, all of which help to improve the learning process. These tactics are further investigated in the context of practical teaching activities, such as employing all five senses in geography sessions, role-playing in general studies courses, and using visuals to improve mathematical learning. Finally, the paper discusses the tactics' relevance across subjects and their potential to inspire creativity in the classroom.***

Keywords: Creative Teaching Strategies; Thinking and Learning; Student Motivation; Cognitive Development; Classroom Interaction.

1. DESCRIPTION ON "THINKING AND LEARNING & TEACHING"

Thinking, learning and teaching, which don't exist separately, they are interdependent and intertwined. To help our student succeed control over the organization of learning. Once we can elevate our thinking and learning procedures to a cognitive level, we will become more thoughtful [5]. Teaching thinking could not be limited to merely passing on abilities, because skills are useless unless they are put to use. If to teach thinking effectively, what will stimulate and strengthen the desire to think is to evaluate. Educating children not only to teach them thinking skills, but also the desire to think, an ethos of dedication to think, and the belief that their thinking is acceptable, permissible, and useful [6]. Efforts to improve learning and teaching should take into account thinking styles: the most significant aspects were that a considerable difference in teaching and learning styles between teachers and students, and that students' thinking processes were predictive of their academic success [9]. When talking about learning and teaching, we emphasize the teacher should be the teaching character, the student is the thinking one. However, teachers who have worked with kids understand that students think and learn in various modes, depending on how they like to use their ability [21]. Hence, the teaching strategies for creative learning will be explanation on the next part.

2. LITERATURE REVIEW OF 20 TEACHING STRATEGIES

2.1 Divergent Thinking Types

2.1.1 Object Probe

The object probe strategy is that involves using objects as teaching aids and displaying them to students, as well as students' own reflection, experience, and discussion between students and students, so that students can learn information and master the ability to analyze problems, which can increase students' learners' motivation, brighten the atmosphere in the class, and enhance quality of teaching [8].

2.1.2 Metaphor and Analogy

A condensed simile, frequently a replacement of one kind of item for another, to convey a likeness or analogy between them [15]. So, metaphor and analogy in teaching, We employ students' associative power by allowing them to create analogies and metaphors to help them remember the information, and teachers can also make the

classroom environment exciting.

2.1.3 Imitate and Re-Construct

Imitation can be divided into two parts: (1) observation of the modeled behavior and (2) reproduction of that behavior, which can be a skill, a disposition, an intention, a method, a successful match, or any combination of these.[23] With the aid of reference learning materials, students will be directed through the creative process. The ingenuity of the students will be boosted even further.

2.1.4 Modify for Elaboration

Modified for elaborated input has many positive features, especially, that allow students to get new ideas in the output process and build on the input knowledge [12]. Teachers guide students to rewrite a piece of writing in a different way to enhance their adaptability and allow them to come up with new ideas.

2.1.5 Explore through Inquiry

The practice of discovering patterns and observations in the society around us is known as inquiry [24]. Students are motivated to learn independently through their curiosity and desire to explore the nature and truth of things, which allows them to think of many unexpected ideas while increasing their learning efficiency.

2.2 Convergent Thinking Types

2.2.1 Grasp Essence from Complexity

The grasp essence from complexity is a reflective and assumptive strategy in which the teacher takes an article or a piece of news and allows students to simplify and distil the content as much as possible and learn to summarize it in an original way. To summarize and outline the knowledge for student learning, which will allow students to better understand the connections and the ability to develop new ideas within the original knowledge [7].

2.2.2 Forced Connections

Creativity is traditionally defined as the creation of a new thing, giving it new value and meaning [11]. Students discover the characteristics and relevance of two unrelated things by combining them, which are able to derive new concepts from the two previous ones.

2.2.3 Paradoxes

By discussing the views which are conflicting, instead of passively receiving information, students develop these skills by positively evaluating, communication, and applying knowledge in significant respects. (Bonwell and Eison, 1991). Students' attitudes change substantially from a passive to an interactive model as a result of in-class arguments, which place the duty of understanding on their shoulders [20]. The paradoxes discussion in class also can improve students' critical thinking, which can let them think the ideas not too one-sided.

2.2.4 Problem-Solving

Teacher gives the problem to students to solve, the way which students will choose is improtant. To train students' creativity abilities. How to let students know to solve problem well, Good solver might be generate varied and has unusual options, also they can focus on own thinking [25]. Students who are in solving the problem also is the period to train their creativity ability.

2.3 Fictitious Imagination Types

2.3.1 Put Oneself in Role

The word "role" here means we can put ourselves in a given circumstance or scenario to pretend them. The most prevalent instances in which put oneself in role is used are those involving attitudes and sentiments [17]. It can inspire students to have brainstorm of thinking different ideas.

2.3.2 Idea Association through Images

The idea association through images strategy employs live facts, experiments, and photographs as its foundation and premise, which is to form associations when resolving specific problems to conceptualize and consolidate the problems. It is built on the generation of key images based on specific issues and it can help pupils in reducing memory capacity and complexity, as well as breaking down complex issues into facts, procedures, and deeper connections. (zhang, 2011)

2.3.3 Construct Fictitious Plot

Situational learning has been presented as an effective instructional component because it can be controlled by teaching materials and is thus more or less under the direct control of educators, unlike personal interests, which is viewed a stable disposition [10]. students can learn in a situational activity which is set by teacher, they can use their imagination to create some new ideas.

2.3.4 Interpretation through Games

Using games is a beneficial technique to increase kids' social abilities as well as their linguistic skills, which could be discovered to provide instruction in a range of communication styles and for all abilities, whatsoever levels of education and learning [26]. Students acquire knowledge from different games, which can arouse their interests in study.

2.3.5 Abstract to Concrete

Abstract thinking is regarded as a sign of a better mind and a sign of a civilized man. With the advancement of science and technology, as well as the advancement of civilized society, the original perceptual expressions are no longer sufficient to communicate complex rational notions, thus abstraction and generalization methods must be used [14]. The capacity to synthesize and analyze information is an excellent technique to boost creativity. The ability to synthesize and analyze information is an excellent technique to foster creativity.

2.3.6 Hypothesis and Imagination

Imagination is a vital resource in educational ideals and practices, the driving factor behind educational progress [4] and a crucial learning experience for instructors. Creating hypothesis and imagination not only establishes a creative environment for students to study, but it also supports the consistent development of students' thinking skills and explore ability.

2.4 Affectionate Attitude Types

2.4.1 Playfulness and Humour

In any learning or teaching environment, humor is a human phenomenon and a medium of expression that should not be ignored. It is crucial in fostering harmony and cooperation between students and teachers. Humor is beneficial to the learning process and intercultural awareness, which is why it plays such an important role [19].

2.4.2 Group Dynamics

Group Dynamics is a behavior of a small-group game for 4-20 students that helps teachers to create an engaging and vibrant classroom environment. It can lessen the control of teaching and learning, enabling students to actively participate in debates, exercise group collaboration, and promote cohesive group thinking, according to the principles of group dynamics [3].

2.4.3 Deferred Judgment

A hallmark of brainstorm is the postponing of evaluation and assessment during the idealization stage. By managing and using the power of one's intellect to conquer the "judicial" mind, that is able to consider the "creative" mind. Judgement and assessment must be put on hold in order to be creative when in a creative activity [22].

2.4.4 Engage in Risk-taking Tasks

Creative people are tend to face and excited by challenging and risky problems [18]. Teachers design challenging activities so that students can dare to use their sense of adventure to learn.

2.4.5 Use of All sense

Any learning activity that involves two or more sensory techniques to take in or convey knowledge is referred to as use of all sense learning. The strategy that using of all senses is beneficial to memory reinforcement has a rich history in education. Educators have used a variety of the strategy to make learning richer and more inspiring for students since the beginning of time [16].

3. TEACHING STRATEGIES&DESIGNED ACTIVITIES

Here, I choose four creative teaching strategies to discuss their features and the application on lesson activities, which are Use of All Senses, Put Oneself in Role, Modify for Elaboration and Idea Association through Images. As shown in Tables 1, 2, 3, and 4.

Table 1: Creative Teaching Strategies (1)

Strategy	Use of all senses
Features	In general, the Use of All Sense integrates visual, aural, physical, and tactile learners' learning approaches. The interaction of the senses engages both the brain and the body, which aids learning and promotes both long- and short - term remembering.
Activity name	In the subject of Geography, when teaching about weather, teachers can bring students to experience the weather of the day, if there are time and space limitations, to watch videos of weather so that students can really understand what they feel, see and hear.
Weather	

Table 2: Creative Teaching Strategies (2)

Strategy	Put Oneself in Role
Features	The Put Oneself in Role allows us to think from another point of view, to stimulate different ideas, and to put ourselves in the shoes of the participants in the Class sessions offered.
Activity name	In a general study class, the teacher talks about cyberbullying, and let the students go through the given the case: a Chinese volleyball player, Yuan was ridiculed by netizens because she didn't performance well in a match, which caused a lot of stress and affected her normal life. Then teacher lets students to put themselves in that situation, from the bystander and the victim perspective to share feelings.
Stop cyberbullying	

Table 3: Creative Teaching Strategies (3)

Strategy	Hypothesis and Imagination
Features	Creating hypothesis and imagination not only establishes a creative environment for students to study, but it also supports the consistent development of students' thinking skills and explore ability.
Activity name	In history class, teacher teaches the Treaty of Nanking, in 1842, British troops captured Nanjing, at which time the Qing Dynasty was forced to need a foreign minister to negotiate with Britain, and some people said Li Hongzhang should not have signed the treaty, the teacher asked students to discuss in groups: if you were Li Hongzhang, what would you do? Or, if you were a minister of the Qing Dynasty at that time, what would you suggest?
Treaty of Nanjing	

Table 4: Creative Teaching Strategies (4)

Strategy	Idea Association through Images
Features	The idea association through images strategy employs live facts, experiments, and photographs as its foundation and premise, which is to form associations when resolving specific problems to conceptualize and consolidate the problems. It is built on the generation of key images based on specific issues and it aids pupils in reducing memory capacity and complexity, as well as breaking down complex issues into facts, procedures, and deeper connections. (Zhang,2011)
Activity name	In mathematics subjects, when teachers teach three-dimensional geometry, they can ask students to look at the shapes through different perspectives, either geometry in the form of pictures or dynamic geometry, so that they can understand geometry from different points of view and multiple perspectives.
Three-dimensional geometry	

4. PERSONAL VIEW

Based on the choosing activities with four strategies, this part I will sharing my own view on the strategies. First of all, the Use of All Sense strategy, I let students to feel the real weather by using their senses, which requires a combination of students and objective factors. It can be applied in all kinds of courses, also in the class with disability students, which can give them more effective instruction for study [16].

Secondly, for Put Oneself in Role, I apply it in a general study course, which teaches a behavior about let students to know a new topic related real life. Put Oneself in Role encourages classroom interaction and peer learning, which boosts motivation [13]. Put Oneself in Role tends to produce a less nervous and frightening class environment. in essence, aiding in the creation of a "social participation" classroom [1].

Thirdly, it is Hypothesis and Imagination strategy, which I use in a history course, let students imagine that they are in that period to have a discussion and try to share the ideas. The teacher can ask why so that students have enough space to think and create.

Finally, The Idea Association through Images, I apply it in a math course, which let them learn the shape from different pictures, students can also complete their associative representations of the pictures and videos through the group. This will both stimulate students' interest in learning and motivate them to firmly grasp some knowledge, as well as train their creative thinking.

Many academics believe that teaching for creativity is applicable across the course and is not limited to a particular topic educational method [2]. The use of different strategies varies from subject to subject and should be chosen according to the teacher's own teaching style and syllabus, and creative teaching of replenishment continues to require constant research and practice.

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