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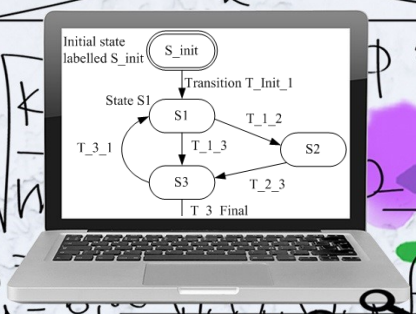
Creativity in Education



Inside

"I believe that the school must represent present life – life as real and vital to the child as that which he carries on in the home, in the neighborhood, or on the playground." *John Dewey*

LUCUBRATE MAGAZINE

The world is changing all around us. A skilled population is the key to a country's sustainable development and stability. We know that obtaining a quality education is the foundation to improving people's lives and sustainable development. To contribute to skill people over the next ten years and beyond, we must look ahead, understand the trends and forces that will shape our business in the future and move swiftly to prepare for what has to come. We must get ready for tomorrow today. We will make it possible for youth and young adults all over the world to gain skills they can use in the labour marked or to create their own jobs. We will make it possible for every person to have lifelong learning opportunities to acquire the knowledge and skills they need to fulfil their aspirations and contribute to their societies.

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The Concept of Creativity in Education

By Karl Skaar

Creativity is an important subject in business management, economics, psychology, sociology and philosophy, fields that deal with creating and identifying new ideas. Each of these disciplines uses a discipline-specific language and theoretical framework. The entrepreneur applies these new ideas to innovation in products, services, organizations and markets.

Vigeland Park, Oslo, Norway.
Photo Karl Skaar

Creativity is the fuel for innovation and new thinking. It is the raw ideas and the mess that turns into something new and different. In addition, creativity has a lot of different facets. It is not just about groups getting together. In fact, the creative process must include time for reflection and quiet—moments of rumination and time for ideas to be on our brains' back-burners. The individual needs time alone to make creative ideas to grow.

Karl Skaar, Editor

Is a highly successful professional, with a high degree of entrepreneurial flair. Among the many different roles, he is the chief editor of the Lucubrate Magazine.

What is Creativity?

Creativity has traditionally been defined as the ability to respond adaptively to the needs for new approaches and new products, or as the ability to bring something new and valuable into existence purposefully. The Modern concept of creativity emerged in the Renaissance and has expanded and changed in the last few decades. Postmodern scholars have problematized such basic concepts as originality, and "the author" or creative person. The rise in networked information technology, among other factors, has led to an increased awareness of collaborative and networked creative processes. In the sciences, the machine/

clockwork view of the Universe was unable to account for creativity. Today creativity is increasingly viewed as a fundamental characteristic of existence. There is an emphasis on interactions and emergence rather than essentialism and an exclusive focus on the individual. A new emphasis on "everyday, everywhere, everyone" and "networked" creativity is shifting the focus from creativity as a phenomenon confined to the rare individual genius to one that also includes collaborative creativity in everyday life (1).

Should we use Creativity in Education?

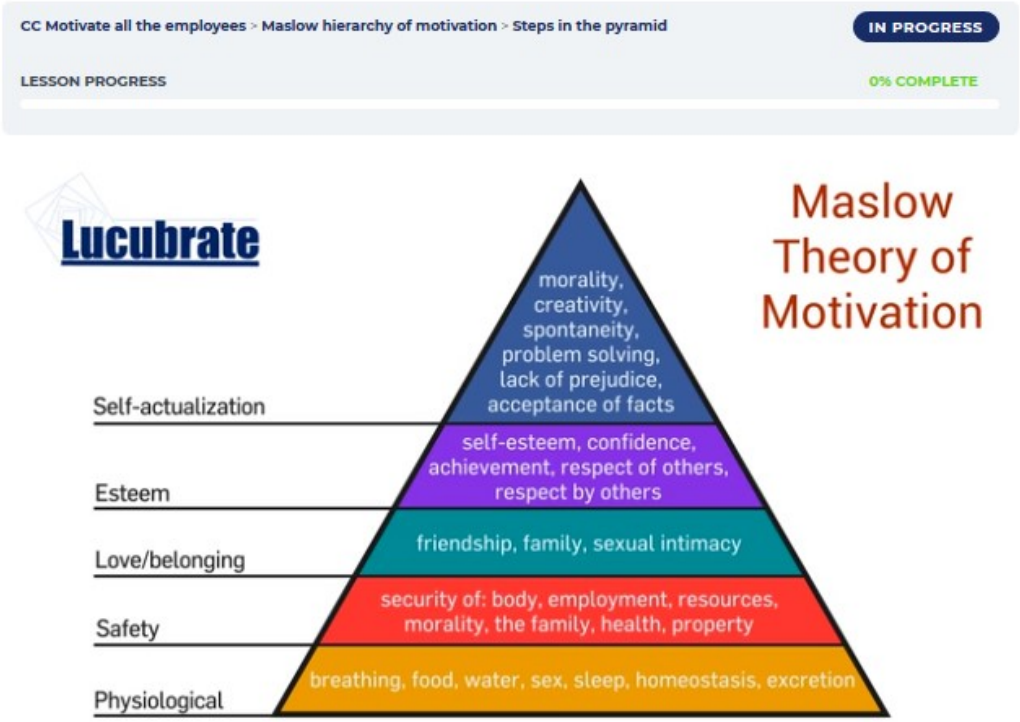
Perhaps a nation's technological development may lie in the ability to tailor the educational system toward acquiring and applying creativity knowledge. This may contribute to a sustainable economy and to survive in the competitive global market. We can ask to what extent this has come into practice in Technical Vocational Education and Training (TVET). This education should in addition to the technological skills, train the students in competencies to create, design, repair and modify technological products.

How to Promote Creativity in Education?

The way we organize TVET can inhibit or promote creativity. An article from 2019 points out that for teachers who want to encourage creativity in their classrooms, understanding the circumstances that lead to its emergence in learning settings is key. One of these circumstances is finding spaces to build creativity through risk and failure (2). The article underlines that creativity happens through iterations of failure that lead toward ultimate success and learning. This approach also allows students to live with uncertainty in ways that support deep learning and teaches them to manage the kinds of ambiguity and complexity that abound in the real world.

Sir Ken Robinson, Professor at Warwick, UK, argues that a problem schools from around the world are facing today is that their curriculums are designed in a standardised manner in a similar way that factories have been set up since the Industrial Revolution — that is, schools are focusing on delivering a certain set of facts and values to a mass body of students irrespective of their individual needs. This makes little room for creativity and imagination (3).

Everyday creativity is about an ongoing willingness to be open to small or interesting changes and, gradually, these small changes add up to creative confidence. Indeed, research has shown that the most effective creative teachers cultivate a personal mindset of openness and seek opportunities to put their own spin on the curriculum. For instance, this technique may involve weaving in unique cross-curricular connections, finding real-world applications of ideas, and viewing all students as creative, articulate, and able to play with ideas. Classrooms can become spaces where teachers incrementally make small changes and foster creative practices through modelling, as well as allow a safe space for positive risk-taking and failure (2).



Creative Individuals.

Environments that support creativity encourage creative dissent. They allow for vigorous exchanges of ideas, challenging assumptions, and discourage conformity. Creative individuals may not, and often do not, fully share the goals and interests of upper management. What sets them apart is that they are open to listening, and will take direction, if they know they are also being listened to and respected for their opinions. At the same time, in order to support creativity, it is also important to be able to allow ideas to emerge and not attack them and test them before they are fully formed. Creative ideas may initially seem bizarre or wrong-headed (1).

References:

1. Alfonso Montuori, Nature of Creativity, ResearchGate 2017
2. Danah Henriksen, Edwin Creely & Michael Henderson; Failing in Creativity: The Problem of Policy and Practice in Australia and the United States, ResearchGate 2019
3. Samir Salama, Gulf News, November 02, 2017

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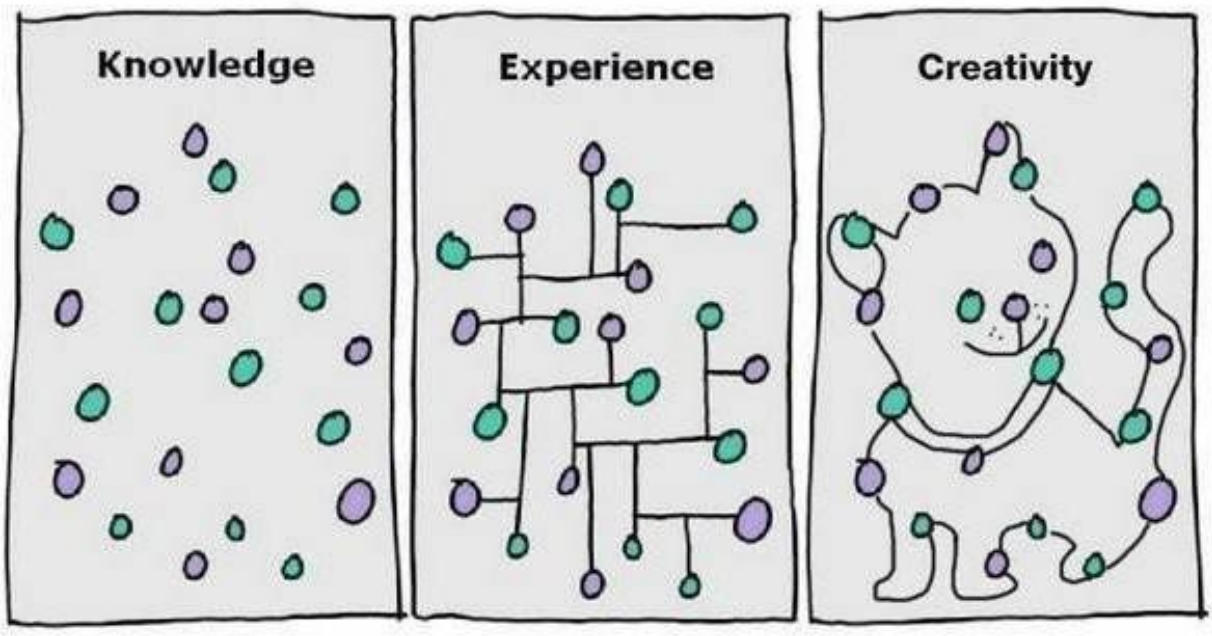


The most important skill in the future will be the ability to "connect the dots" in your own way!

Creativity is the act of turning new and imaginative ideas into reality. Creativity is characterised by the ability to perceive the world in new ways, to find hidden patterns, to make connections between seemingly unrelated phenomena, and to generate solutions. Creativity involves two processes: thinking, then producing.

Creativity is a combinatorial force: it's our ability to tap into our 'inner' pool of resources – knowledge, insight, information, inspiration and all the fragments populating our minds – that we've accumulated over the years just by being present and alive and awake to the world and to combine them in extraordinary new ways.

Creativity is the process of bringing something new into being. Creativity requires passion and commitment. Is this possible in business? I believe so, but you have to be willing to take risks and progress through discomfort to get to the finish line.

By: Fabio Moioli, Head Consulting & Services

Lucubrate Magazine

Teaching for Creativity in the Classrooms

The ability to produce new ideas is referred to as creative potential. Creative potential refers to the individual's possibilities considering the cognitive capacity, personality, motivation, and the environment. Considering the development of creative potential, it can change over time and the potential will vary depending on the domain and the task.

Does education include critical thinking, creativity, cooperation, or metacognition? How are the teachers in the classroom when they try to introduce new practices? What is needed to succeed and what makes them fail?

Children and students may need some abilities to adapt themselves to an uncertain future. More specifically, developing new competencies is needed [1], allowing them to offer new solutions for a peaceful future. Creativity seems to be one of the core components of these new abilities and is considered as an asset for societal development [2]. Although creativity is widely recognized as an asset for society, it remains a fuzzy concept and there are many definitions of this competency in the literature [1].

The article discusses different approaches to creativity in education. The article is literature research. The article is the main part of the article "Creativity as a Stepping Stone towards Developing Other Competencies in Classrooms."

Lucubrate Magazine has focused the creativity in education in different articles:

- The Concept of Creativity in Education
- Effective Education is Built on Personal Relationships
- Learning by Practising in Vocational Education
- Global Skills for the Future
- Supporting People Through Transitions
- Prepare the Future of Education to Global Mega-trends
- Increase the Level of Creative Competence in Students
- Creativity and Critical Thinking as Key Human Capabilities Needed in the Workplace of the Future

Nowadays, the benefit of developing creativity in classrooms is widely recognized by education professionals [12]. Introducing creative teaching in classrooms can bring benefits such as developing children's imagination and increase the probability for major discoveries and economic development for the future [1]. Also, creativity is considered as an important component of personal well-being [13] and in a classroom, the context may develop curiosity, openness, and communicational abilities [14].

There are several theories of creativity and numerous variables that are involved in creative potential [11]. These numerous theories or variables can be confusing for teachers [12]. Indeed, this literature study shows that teachers have difficulty understanding and giving a clear definition of creativity even though they can understand the importance of creativity in education. In order to help teachers understand how to introduce creativity in the classroom, the article will first define the theoretical background of this concept through an approach that takes into account individual differences, the multivariate approach [15].

Creativity Multivariate Approach

The multivariate approach defines four main components for creativity:

- cognitive factor (e.g., intelligence or knowledge),
- conative factor (e.g., personality or motivation),
- emotional factor (the impact of emotional traits on creative potential),
- environmental factor (e.g., familial of school environments).

In this article, we chose to put an emphasis essentially on the link between the 21st-century abilities and two factors: the cognitive and environmental ones. This choice is motivated by two considerations, first, the cognitive factors can be trained in the classroom through the school curricula and the environmental school factor can be changed through management made by teachers. The personality and emotional impact on creativity are needed but we considered the cognitive and environmental as a first objective for teachers considering existing evidence and techniques in the literature that can be introduced in everyday teaching. However, in order to help our lecturer to better understand the nature of creativity, we present all four components of the multivariate approach.

Cognitive Factors for Creativity

For the cognitive factors of the multivariate approach, there are many components whose impact on creativity can be studied. First, divergent thinking, consisting of the ability to produce many solutions from a situation [5], is an essential ability involved in creativity; next, there is the convergent thinking defined as the capacity to consider the demands of the environment and produce a unique and original solution based on several ideas. Convergent thinking involves the ability to associate different ideas, evaluate them, and combine them into a new, original production [16]. Also, Lubart et al. [5] specified other skills involved in creative potential such as the evaluation of ideas, the capacity to select the relevant ideas and to put aside the irrelevant ones or mental flexibility defined as the ability to consider an idea through different angles and also to deviate from one idea to consider another to propose creative solutions.

Conative Factors for Creativity

Conative factors have an impact on creativity. Some ways of behaving have been identified and characterized by creative individuals. Lubart and colleagues [5] cite several of them, including personality traits, cognitive styles, and motivation.

Cropley [17] presented a list of common personality traits involved in the creative potential of individual such as independence, openness to experience, flexibility, and tolerance of ambiguity [18, 19]. Concerning the creative personality in youth, Callahan and Missett [20] were able to establish several characteristic traits of creative adolescents such as a rejection of social conformity; desire for independence; attraction for novelty; an important imagination taste for risk; and greater perseverance in the face of obstacles and ambiguous situations. Also, regarding the influence of motivation, Amabile [21] found that creativity is based on intrinsic motivation and children with extrinsic motivation tend to be more conformist.

Emotional Factor for Creativity

Concerning the emotional factor of creativity, emotions have an impact on individual creativity [22]. Shaw [23] indicates various feelings involved in the "joy of creation" such as fascination, self-confidence, frustration, relief, excitement, and satisfaction. Also, Zenasni and Lubart [22] indicate that the emotional intensity (e.g., intense emotional state can enhance creative potential of artist), the nature of the creativity task (the relation between creativity and emotion may vary depending on the task), or the emotional traits of individual (e.g., the ability to identify emotions) modulates the effect of emotions on creativity.

Environmental Factor for Creativity

Finally, the environmental factor of creativity refers to the familial environment (e.g., an open and nourishing environment where children can explore and share ideas) but also to the school environment [11]. The impact of the environment is crucial for developing creativity [2]. Indeed, it is easier to practice creativity when the circumstance allows it [11]. Craft [24] indicates that school environments provide children with a frame for developing creativity by allowing them to ask questions, share opinions, and engage in critical and evaluative thinking practices. In a literature review, Davies et al. [25] also provide some examples of practices for developing creativity in the school environments such as flexible use of space and time; working outside the classroom; respectful relationships between teachers and learners and nonprescriptive planning.

Children Creative Potential

The ability to produce novel ideas is referred to as creative potential. Creative potential refers to the individual's possibilities considering the cognitive capacity, personality, motivation, and the environment [11]. Considering the development of creative potential, it can change over time and the potential will vary depending on the domain and the task [2].

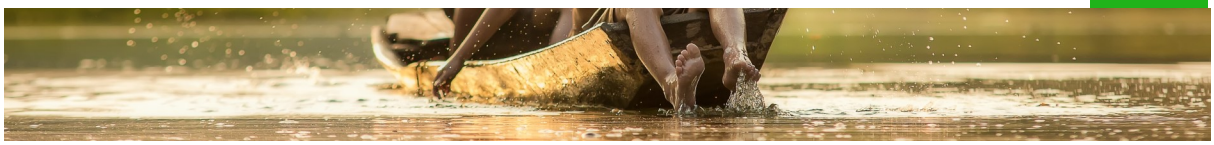
Beghetto and Kaufman [9] proposed four levels of creativity that describe individual's creative productions such as "Big C" level which refers to the eminent creative person (e.g., Einstein) and "Pro C" individuals expert in their fields (e.g., a scientist, a painter). In everyday life, the authors distinguished two levels: "little-c" considered as creative by their peers (e.g., winning a school contest) and "mini-c" individuals who use creativity for learning (e.g., learning insights). Children show mostly "mini-c" or "little-c" [9]. The benefits of "mini-c" or "little-c" activities in education are numerous [26], including meaningful learning, reducing stress, or a better engagement in learning activities.

In an ecological context and considering the variations of the multivariate approach factors in everyday situations, we consider that the main topic regarding creativity in the classroom is not student's performance but mainly their ability to know what creativity is and how to use it in a meaningful way. We saw previously that the school environment can promote the use of creativity and teach children about creativity. Also, a common distinction is made between "teaching creatively" and "teaching creativity" [24]. Teaching creatively refers to the ability of the teacher to make learning more interesting by using creative approaches; teaching creativity is defined as teaching methods with the purpose of developing students' creative thinking [27]. The N.A.C.C.C.E report [28] indicates a close relationship between these terms and also that teachers' creative abilities are engaged when teaching for creative practices. Hence, we chose to develop this article in terms of a "teaching for creativity" perspective considering that it can inspire practices of teaching creatively as well.

The 21st-Century Skills

Binkley et al. [10] suggest a list of the 21st-century skills in order to help teachers and educators to implement it in the classroom context. They divided the "learning and innovation skills" from the P21 Framework into groups. So, creativity, critical thinking, and metacognition (learn to learn) are considered as "ways of thinking" and communication and collaboration as a "way of working." In summary, creativity is a part of the 21st-century skills, alongside critical thinking, metacognition, communication, and collaborative skills [35]. Communication skill, as defined by the P21 Framework, is the ability to use oral, written, and nonverbal skills to share thoughts and ideas in a wide range of situations. Felder and Brent [36] defined collaboration learning as a group of individuals (or students) working in teams under conditions where members of the group will be responsible for the content of their work and are willing to work together. Also, Ras et al. [37] defined collaborative problem solving as an ability to address problems in a collaborative setting. Members of the group will need to exchange knowledge and strategies to fulfil their mission.

Bensley [38] described critical thinking as a multidimensional construct with skills like decision making or problem-solving. There are various definitions of critical thinking skills but a consensus has been reached over its definition [39]. Also, from one author to another, it is possible to observe the absence or presence of certain subskills. These subskills include observing the different facets of a problem [40]; analyzing arguments, evidence, and beliefs [39, 41, 42]; producing inferences [39, 40]; evaluating arguments [39, 43], and making decisions [40, 41, 43]. According to the authors considered, it is possible to observe that the definitions of cognitive abilities may be accompanied by dispositions [44]. The critical thinker dispositions were for the most part considered in a philosophical context although some of them could be used in the cognitive sciences field. Among the frequently observed dispositions in the literature, some are frequently highlighted [39, 41, 42] such as curiosity, openness, and flexibility in considering the opinions of others, valorisation of alternative opinions, and the ability to reconsider its opinion.



Teachers Role in Promoting Creativity

For promoting creativity, the role of teachers is crucial [29]. Indeed, teachers' beliefs towards creativity or students abilities may affect the development of their creativity [9]. Teacher's impact on the development of creative potential is known and their attitudes towards children potential are important (e.g., high expectations, support, open attitude, and tolerance to ambiguity) [30]. However, despite the essential role of teachers and the numerous benefits of creative teaching, creativity is not much integrated into classroom curriculum.

Cachia et al. [12] conducted research on teacher's perception of creativity and the teaching practices that enhance creativity and innovation in the classroom. In their research, they gathered the opinion of (mostly) primary and secondary school teachers from 37 countries in the European Union. To collect their data, they used various means such as interviews with experts in the educational field, analyses of 1200 curricula documents, and online surveys. Results indicate that even if teaching for creativity can be mentioned in school curricula from many countries, it does not mean that schools are developing creative practices. Also, they highlight the fact that teachers do not have a clear understanding on how creativity should be defined or how it should be introduced in classrooms (as learning or assessment), even though teachers recognized the importance and interest of teaching for creativity.

Sternberg [1] provided a brief historical overview of the development of creativity in the research field and in education. Since Dewey's [31] or Guilford's [32] argument for creativity until today, education does not seem to have significantly changed. In fact, Braund and Campbell [33] found that curriculum and assessment goals or time pressurized teachers create a difficult climate to introduce creative practices in classrooms. Also, creative thinking cannot be taught by "showing slides and talking about theory" [34]. It needs specific activities that can be domain-general or domain-specific. Beghetto and Kaufman [9] are well aware of the teacher's fears and to reassure them, they highlight the fact that there are moments and contexts for creativity.

Finally, for Sanz de Acedo Lizarraga and Sanz de Acedo Baquedano [45], metacognition means the knowledge of cognition and the regulation of cognition and action. Flavell [46] defined metacognition as the knowledge that individuals have of their proper cognitive process and their products. According to Flavell [46], metacognition is presented through three phenomena: metacognitive knowledge, metacognitive experiences, and metacognitive skills [47]. These researchers present metacognitive knowledge of the person, task, and strategy; metacognitive experiences as a range of feelings (perception of difficulties, satisfactions, or confidence) and judgements or estimation of effort or quality of learning; metacognition skills as the use of strategies in order to monitor cognition.

Hence, teachers need not only to teach about creativity in the classroom but also to implement other competencies in the same curriculum at the same time, which can put them in a stressful position. Now, we are going to present the theatrical elements of the literature that indicates links between these skills. Also, we choose not to develop communication skills and focus mostly on the thinking skills and the collaborative way of working. This choice is motivated by the fact that communication skills can be developed alongside the other competencies. For example, during the process of problem-solving, pupils can share thoughts, ideas, and their points of view on their task, which is collaborative and critical thinking tasks where pupils are using their communication skills. Also, the use of communication skills depends on children's literacy which is already more developed in the classroom than the other competencies.

Creativity and Critical Thinking

Creative and critical thinking are two competencies that gained more and more attention these past years, especially, since the need to develop information and communication technologies in school. In fact, the digital revolution brings new problematics for education, notably, the impact of new technologies means frequent changes in everyday life and the need for individuals to adapt to these situations. Also, the use of the internet by children means that they need to select information from numerous sources and know how to use the information in a useful way.

Critical thinking has been defined in a philosophical and psychological way by many authors [48]. Because of its numerous definitions, it can be considered as a fuzzy concept [48]. In fact, from a psychological point of view, researchers focus mostly on the cognitive processes involved during the critical thinking procedure whereas philosophers are interested in the value of the critical arguments [49]. The cognitive perspective implies various processes that compose the critical thinking process [49] and that can be observed in an educational context. Bloom's taxonomy of educational objectives [50] organizes instructional mental activities depending on their difficulty level in a classroom context (e.g., going from basic to higher-order mental operations). For high-order level skills, Bloom [50] refers to the analysis, the ability to organize and compare information, synthesis, gathering together information and evaluation, and making judgements on the information.

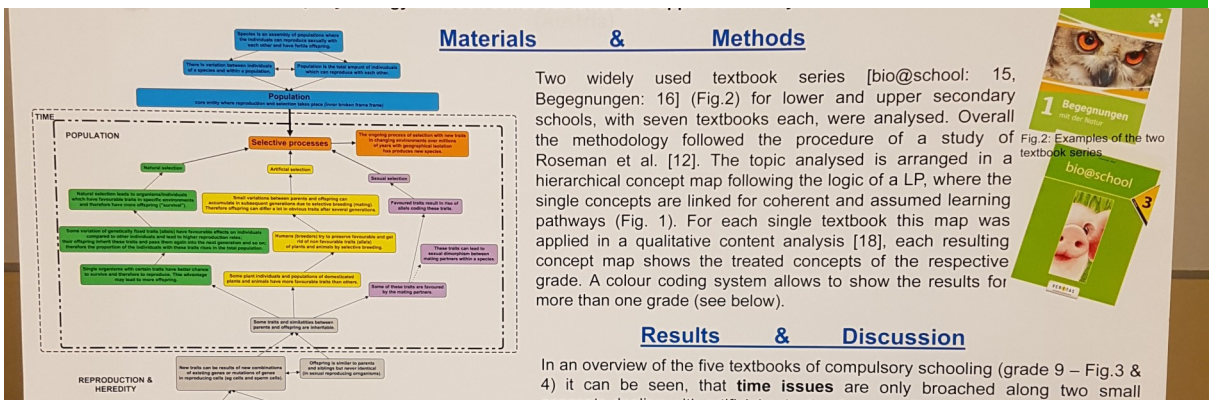
These mental operations can be observed in the literature on creativity. Cropley [17] defined nine conditions where teachers can develop their pupils' creativity. For example, he advises the teacher to let children make their own judgement and evaluate their creative products and by providing them more time for self-evaluation. The main reason lies in the fact that in this way pupils have more time to elaborate, formulate, and adjust their ideas and become more autonomous, a quality needed for creativity to develop. In fact, by being autonomous, children construct their own idea of what they want and make and are more tolerant of ambiguity without strict norms that can lead to nonreactive productions [51]. Also, by allowing children to ask more questions in the

classroom, teachers can guide them to explore the possible answers to their questions alone or with their classmates and lead children to develop more flexibility, collaboration, and a better sense of self-evaluation. Also, mental flexibility is considered as an essential asset for living in the 21st century [51] and as an essential part in creative thinking [11]. As we defined it earlier, cognitive flexibility is essential to find various solutions to one problem or considering one problem through different angles [52]. Additionally, for creative convergent thinking, the ability to evaluate various ideas and choose the more appropriate one (make judgements), critical thinking is needed [11] and some research suggested that critical thinking implicates better judgements [53]. Finally, Dwyer et al. [48] presented critical thinking as a skill that should be more highlighted in an educational setting. In fact, they argued that children should be trained to use more their critical thinking abilities in real-world problem in order to become more adaptable to the rapid development of the 21st century.

Some articles mentioned also the link between creative personality and critical thinking. For instance, Bailin et al. [54] considered that critical thinking in primary schools promotes the development of an open mind. As well, Sternberg [55] described a critical thinker as someone who is open-minded, understands various points of view, and is flexible. Florea and Hurjui [43] exposed the same idea, considering that for developing critical thinking children need to have a tolerant mind.

Finally, considering the classroom context, Blamires and Peterson [56] present various ways of assessing creativity. In the assessment for learning techniques, some strategies to help teachers implement creativity in the classroom involve "questioning, exploring ideas, and having various options or reflecting critically on ideas, actions, and outcomes." Florea and Hurjui [43] defined critical skills as a way of solving problems by "verifying, evaluating, and choosing the right answer to a given task and reasoned rejection of other alternatives solutions." Also, Craft [24] recommends techniques for developing creativity in the classroom. One of them refers to the need for teachers to establish a link between concepts, make children reflect on possibilities and solutions for one problem, and explore and think critically over their ideas.

So, considering these researchers, we argue that creativity and critical thinking are needed and that these two skills are linked. We cannot assume based on the literature that developing one of them (creativity) can be enough for developing the other (critical thinking). However, with the theatrical background presented, it can be possible to consider that they are present alongside in some situations and share some processes, and so maybe using one can contribute to developing, in a certain way, the other.



Creativity and Metacognition

Metacognition skills can develop at the same time as creativity. Indeed, Sanz de Acedo Lizarraga and Sanz de Acedo Baquedano [45] argue that creative thinking can be considered as a part of metacognitive processes because a person has to monitor his thinking skills during the production of a new and useful idea. Also, during the creative process, an individual must check his or her strategies and adjust them if needed in order to increase creative output. Sanz de Acedo Lizarraga and Sanz de Acedo Baquedano [45] referred to Jausovec [57] who described metacognition as an ability needed mostly for convergent thinking which is part of creative problem-solving. Sanz de Acedo Lizarraga and Sanz de Acedo Baquedano [45] explained that the link between creativity and metacognition is less explored because of the difficulty to assess it; this is mostly due to the measure of the incubation stage of the creative process, a stage where ideas are associated unconsciously. Sanz de Acedo Lizarraga and Sanz de Acedo Baquedano [45] conducted a study to measure the link between creativity and metacognition. To assess it, they used a divergent thinking task combined with a metacognition scale for creativity. This scale measures the knowledge participants had on their thinking process or the task and their regulation of cognition that refers to the regulation of their behaviour during the creative task. The result of the study shows a positive correlation between total creative potential and total creative metacognition and presents metacognition as a predictor of total creative potential (, the coefficient of determination () indicates that metacognition explained 45% of the variance of total creative potential). So, this research contributes to showing a positive link between creativity and metacognition and emphasize the importance of considering metacognition alongside with creativity.

In the classroom context, other authors, like Besançon and Lubart [11], recommend that, in order to develop creative thinking, teachers should encourage children's self-evaluation of their ideas and improvise courses with the purpose of allowing pupils to construct and develop their knowledge and use metacognitive reflection. Also, Sternberg [58] found that metacognition abilities were linked to creative problem-solving. In the arts, a high level of metacognition is correlated with creative production and children's play (a determinant activity for developing children creativity) increases the level of children's metacognition.

Finally, Beghetto and Kaufman [9] argue that children need to know when to be creative. Indeed, these authors highlight the fact that creativity is often seen as totally beneficial. Although this consideration is true regarding the fact that creativity can contribute to innovation and adaptation, there may be a negative impact of using creativity in some circumstances. These negative impacts include personal and social risk. Beghetto and Kaufman [9] defined personal risk as wasting time, bothering others, and being ignored or misunderstood. In the classroom context, creativity can appear anytime during the lesson and bring these negatives impacts as well. Considering these effects, Kaufman and Beghetto [26] propose the concept of creative metacognition (CMC), defined closely to Flavell's one [46]. CMC is seen as a combination of creative knowledge about us (e.g., creative strength and weakness, past experiences) and knowledge about the context in which creativity can occur (in general or in a specific domain). Thus, mastering the concept of creative metacognition in a teaching context can be an effective way to develop at the same time creativity and metacognition.

Creativity and Collaboration

Finally, collaboration refers at the same time to the 21st-century skills but also to a method sometimes used in the classroom [59]. This skill presents an interest mostly because collaborative work is a way of teaching generally appreciated by pupils helping them to find different solutions to a new problem, to express different opinions, and to be more engaged in tasks [60]. Even though collaboration is often cited as an interesting skill for developing creativity, to our knowledge, a few studies exist that highlight the link between these competencies.

Navarro-Pablo and Gallardo-Saborido [61] presented some benefit of cooperative work, such as a deeper understanding of the task and development of interpersonal skills or critical thinking skills. Slavin [59] mentions the fact that collaborative learning may increase cognitive abilities such as their learning abilities and lead to better performance on the task. Lucas et al. [51] add that creativity can develop better social and emotional skills through the practice of collaboration. Yates and Twig [62] review practice enhancing creativity potential in a classroom context. One of them refers to the classroom environment and more specifically to children's communication skills. The authors argue that better communication between children will lead to the production of new ideas and solving problems. Finally, Besançon and Lubart [11] recommend that teachers in order to develop creativity offer the possibility of pupils to work together and to encourage students to help each other as much as possible.

Collaboration skills are almost always considered as interesting skills to develop creativity. However, considering the French education system, the more children are growing up, the less they have the possibility of working together and also French teachers rarely used collaboration techniques (nearly 37% of them) [63]. The main reason concerns the way assessments are made in the classroom and the way the tasks were assigned. For example, although children are asked to work together, we cannot be sure that they fully understand the purpose of this way of working and do not think that collaboration means only working with at least another classmate. Hence, we cannot be sure that children understand the cognitive and social benefits of collaboration and that the practice of collaboration will develop any skills.

Which One Cause and Which One is the Effect of the Creativity

Through this literature review, some limits about the findings can be highlighted. Indeed, most of the studies presented are the theoretical points of view of researchers who have worked on creativity, critical thinking, metacognition, or cooperation. Few empirical shreds of evidence (to our knowledge) about the link between creativity and other skills exist and are drawn from class situations. Also, we know that although these variables can be correlated, we cannot explain a causal relationship between them. So, we do not really know which one cause, and which one is the effect. This is one of the limitations of the actual literature.

This literature review made it possible to elicit the following reflection: in the educational context, it is frequent to target studies working on a competence itself or sometimes two but can we really consider the school environment as one or two variables at a time? The necessity to go out of our laboratories and study in classrooms the everyday life of pupils and their teachers, who alternate or combine situations involving critical thinking, creativity, cooperation, or metacognition, seems paramount..

About the teacher's practices, some limits can be highlighted too. First, Cachia et al.'s [12] study offer another interesting result; teachers who have the greatest interest in creativity or innovation are also the ones with many years of experience in education. This result may be surprising considering Sternberg [1] point of view on teachers training. In fact, Sternberg [1] proposed to change teacher's training for the following reason: the former teachers have become the trainers of the new ones and so the traditional way (e.g., summative assessment, passive learning) of teaching persists, which is not useful for the development of creative practice or other competencies.

Also, even if the new or experienced teachers learn about 21st-century competencies, how can we be sure that they will become efficient in transmitting these 21st-century skills?

Another interesting topic concerns the way of assessing those competencies in classroom contexts and curriculum. First, adding those skills in school curricula will involve the need for teachers to assess the progress of their student and the mastery of these skills. The traditional way of assessing knowledge, the summative assessment, the classical way of assessing by rating student performance, is probably not the optimal way of rating these skills. Mainly, summative assessment is related to significant deficiencies such as superficial learning and the failure of transferring learning over situations. However, formative assessment, assessment by feedback with the aim of helping student progress, is considered as a stimulating practice for pupils' imagination, allowing an open dialogue between teachers and students and more engagement in learning [56].

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TVET is a Powerful Tool for Development

Despite impressive economic growth and reductions in poverty over the past two decades, countries in the Southeast Asian region continue to struggle with inequality, since increased wealth in the region has not been fairly distributed across all segments of society.

Women and Youth is the Most Disadvantaged

While trends in inequality vary across countries in the region, women and young people tend to be the most disadvantaged, with higher unemployment and informal employment rates than other groups, resulting in higher levels of economic disengagement and social marginalisation. Inequality matters, not only in its own right but also because it can hamper growth and decrease the poverty reduction impact of growth. Conversely, the foundations for future growth and poverty reduction can be strengthened if the benefits of development are shared broadly and equitably across populations.

(Is Technical and Vocational Education and Training for Men?)

A powerful tool for developmental challenges and growth

An analysis (1) suggests that Technical Vocational Education and Training (TVET) could be a powerful tool for addressing multiple developmental challenges and fostering inclusive growth at the local level in the region (Read about the Myanmar TVET). The paper concludes:

- that well-designed formal TVET programmes may be more effective than general (or academic) education for integrating marginalised groups (such as women and youth) into the labour market and improving their earnings; and
- that informal and non-formal TVET initiatives can play a role in reducing poverty, inequality and social exclusion by offering disadvantaged and marginalised groups the opportunity to acquire work-relevant skills.

However, TVET has not had a significant positive impact on the economic outcomes and social well-being of disadvantaged and marginalised groups in the region for several reasons. These include;

- low TVET participation rates, primarily due to low public spending on TVET
- poor TVET quality, especially in countries with low national income;
- weak TVET relevance, owing to lack of engagement of key stakeholders, especially the private sector, in local TVET planning, design and implementation.

Yet, despite these issues, recent evidence suggests that TVET is valued and well-regarded by employers in the region and that many of the countries have harnessed TVET's potential to promote economic and social inclusion.

Poor people working in a rubbish dump
Picture: Adobe Stock, by KaYann

Impact on Poverty, Inequality and Social Exclusion for Second-chance Initiatives in TVET

Many studies (1) shows that we can find TVET's impact on poverty, inequality and social exclusion. Second-chance initiatives have the greatest positive economic and social impacts.

- First, comprehensive interventions that combine in-class learning with on-the-job training and labour intermediation services have more positive impacts on employability, earnings and especially job quality than programmes offering in-class training only.
- Second, in terms of course content, programmes that include training in entrepreneurship and emphasise soft skills, as well as technical skills, have a more positive impact on employability. Holistic programmes combining TVET, literacy and life skills training have the greatest positive impacts on participants' economic and social well-being.

- Third, entrepreneurship initiatives that offer start-up grants to mitigate the capital constraints faced by disadvantaged youth have a more positive impact on employability and business performance (profits and sales) than programmes without this feature.
- Fourth, initial TVET programmes with a duration of four months or more, regardless of the number of training components that they include, have been found to have better labour market effects than shorter programmes.
- Fifth, programmes that target specific groups and provide training stipends have been found to be more cost-effective than programmes with looser targeting and no participation incentives.
- Sixth, programmes that engage the private sector in their design and implementation have more positive impacts on employability, earnings and job quality than programmes with no private sector involvement.
- Finally, improving the articulation of second-chance initiatives with the formal education system by developing uniform standards and related testing and certification processes increase and extend programmes' positive impacts.

You can also read the article about how to develop the Core Skills in TVET to Enhance the Employability of Learners and Jobseekers.

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Technical Vocational Education and Training is Important in Myanmar

By Karl Skaar

Myanmar in Southeast Asia has addressed the importance of Technical Vocational Education and Training for creating skilled labour. Many policy reforms have been underway (1).

Myanmar is one of the least developed countries in the world. Economic development is constrained by many factors, such as inadequate infrastructure, low education levels and the ongoing fighting between armed ethnic minority groups and government forces (2). The country, primarily an agriculture-based country, has started a series of economic and social reforms to vigorously develop vocational education over recent years. The Technical Vocational Education and Training (TVET) in Myanmar comes in the two levels of secondary vocational education and higher vocational education. The government technical high schools and the government technical institutes double as public vocational education institutions. Besides, Myanmar cooperates with other countries in establishing a number of international cooperative vocational education institutions. The Government of Myanmar guarantees the quality of vocational education through legislation, the national qualifications framework, and national certification and quality assurance

committee in the main. However, Myanmar still faces grave challenges in management, capital investment, quality assurance, and school-enterprise cooperation in vocational education (3).

The National League for Democracy, which won an absolute majority in the 2015 elections, is continuing the reform process which began in 2011. In the reforms, the promotion of

TVET Will be Critical for Producing a Sustainable and Skilled Workforce

In July 2019 they celebrated World Youth Skills Day in Yangon. Students from the Government Technical Institute and vocational schools across the country unveiled their designs. They showed projects like a remote-controlled robot that detects dangerous chemicals, automated traffic lights, a water-debris cleaning system, and an autonomous lawnmower. The projects focused on current challenges faced throughout the country, including intense motor gridlock, contaminated water supplies and violent conflict. To not only deal with the obstacles of today but also those of the future, the Ministry of Education needs to look beyond mainstream paths to education. Revitalizing the Technical and Vocational Education and Training sector will be critical for producing a sustainable and skilled workforce. (4)

Today the economic growth is strong by regional and global standards but is slowing. Myanmar's economy grew at 6.8 per cent in 2017/18, driven by strong performance in domestic trade and telecommunications, but offset by slowing growth in manufacturing, construction and transport sectors. Economic growth is

set to recover to 6.6 per cent by 2020/21, driven by an expected pickup in foreign and domestic investment responding to recent government policy measures. The government's policy intent was reflected in recent reforms including implementation of the new Myanmar Companies Law, the opening of the insurance sector and wholesale and retail markets to foreign players, services sector liberalization, and loosening restrictions on foreign bank lending (5).

The promotion of Technical Vocational Education and Training is still important for Myanmar for creating income-generating and employment opportunities for the young generation.

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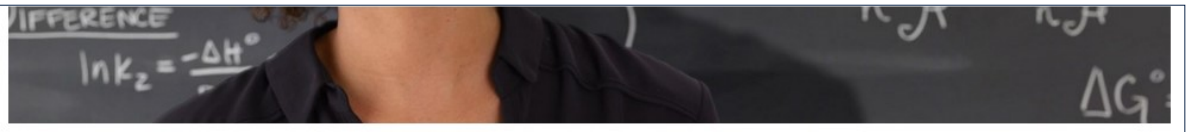

Seventeen effective pedagogical methods in vocational education

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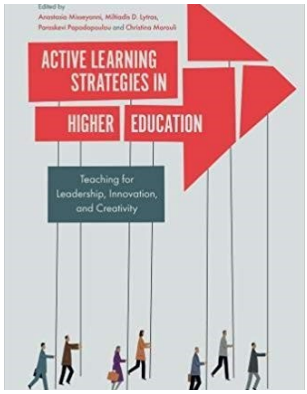
Active Learning Strategies

By Anastasia Misseyanni, Militiades D. Lytras, Paraskevi Papadopoulou, and Christina Marouli



Active Learning Strategies in Higher Education: Teaching for Leadership, Innovation, and Creativity

In the era of the 21st century knowledge society, higher education can play an important role as a driver for innovation, leadership and creativity, as it helps develop not only well informed and knowledgeable citizens but also responsible and creative individuals. The challenges of globalization, tightly linked with rapid developments in Information and Communication Technologies (ICT) and the need to address issues of quality and inclusiveness for a better quality of life and a sustainable future, have become drivers of change in higher education institutions. We are experiencing a shift towards more interdisciplinary curricula and a more integrated and student-centred approach to teaching. Instructors increasingly use active learning and other pedagogies of engagement as a means to increase learning and improve student attitudes. This book explores best practices for effective active learning in higher education. Experienced instructors from different disciplines and countries share their experiences and reflect on best practices, as well as on the theoretical underpinnings of active learning. Contributors share their thinking on strategies based on different active learning methods such as the use of ICTs, collaborative learning and experiential learning, as well as their implications for teaching, assessment, curriculum design and higher education administration. Active learning provides skills for real life problem solving and prepares students to become responsible and active citizens. This book will be a very significant resource for educators who are interested in making a difference in students' lives.

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