

Report

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# Developing Students' Creativity in Online Education Contexts under Covid-19

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**Abstract:** This report examines how to enhance student creativity in online education. It begins by defining creativity and its significance in today's society, then underscores the unique benefits of online education in nurturing student creativity through diverse courses and resources. Additionally, the report demonstrates how online platforms and social media provide global knowledge access, stimulating creativity and imagination. It further explores how innovative curriculum design and teaching methods in online settings boost creativity via collaboration and tools such as virtual laboratories. Nonetheless, it addresses challenges such as reduced engagement and potential student isolation, which can impede creativity. Finally, the report concludes with strategies for educators to surmount these challenges and improve students' creative abilities.

**Keywords:** online education; student creativity; educational challenges

### 1. Introduction

Creativity has become an area of increasing interest in education, driven by the ongoing global movement for educational change (Sahlberg, 2021). Creativity is referred to in many core disciplines, such as mathematics, engineering, science, and arts, as it is associated with critical thinking, problem-solving, innovation, and challenge (Sang, 2019). At the same time, creativity can address and develop productivity in educational fields such as engineering, teaching, learning, design, production, management, and leadership (Adams, 2009). The ability to innovate can be defined as the ability to solve problems creatively and is one of the critical factors for people to succeed in an environment of constant change and uncertainty (Azizi, 2021). With the worldwide outbreak of COVID-19, schools in many countries and regions have had to turn to online learning to keep students on track and safe (Ratten, 2020). While online learning offers many advantages to students, such as flexibility in time and space, it also presents many challenges, including developing students' creative skills in an online learning environment (Khanal, 2021).

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**Table 1.** Appearance of “Creativity” in School Curricula—If and How Creativity Was Defined. (Patston, 2021, p216).

Country	Subject						
	Math	English	Science	Technology	Social sciences	Physical education	The arts
Australia	CT/PS	SE	CT/PS	CT/PS	CT/PS	SE/CT	SE
England	CT/PS	SE	CT	CT/PS	CT	SE	SE
Hungary	SE/PS	SE	PS	PS	SE/PS	PS	CT
Estonia	CT/PS/SE	SE	CT/PS	CT	SE/CT	SE	SE
Hong Kong	CT/PS/SE	SE	CT/PS	SE	CT/PS/SE	SE	SE
Iceland	CT/PS	SE		CT/PS	CT	SE/CT	SE
Ireland	CT/PS/SE	SE	CT/PS/SE	CT/PS	CT/PS	SE	SE
New Zealand	PS	SE	PS/CT	CT	CT	SE	SE
Scotland	CT/PS	SE	CT	PS	CT	SE	SE
Singapore	CT/PS	SE		CT/PS/SE	CT	SE	SE
South Korea	CT/PS	SE	PS	SE/PS	SE/PS	SE	SE

However, many students need help with being innovative in online learning (Ferri, 2020). Online learning differs from traditional face-to-face teaching. For example, students lack direct contact and interaction in online education, which can limit the development of their creative skills (Morgan, 2020). Requirements for students on self-management can be high, which may weaken their motivation and thus hinder their innovation (Unger, 2020). In addition, students innovative skills are influenced by many other factors, such as teachers' teaching methods, curriculum design, students' learning experiences and learning resources (Brown, 2011). Baylor (2002) argues that to cope with a rapidly changing world, it is necessary to create an environment enabling the cultivation of creativity.

This report explores how to effectively develop students' creative skills in an online learning environment. Firstly, by reviewing the existing literature, this report will analyse the factors in the online learning environment that influence students' creativity skills. Secondly, this report will explore how teachers design lessons and tasks, as well as how students are inspired. Advice will also be provided for educational institutions from the perspective of technical support in a online education environment. Through these explorations, this report aims to provide valuable insights and recommendations to help educators better promote the development of students' creative abilities in online learning environments.

## 2. Creativity in Education

Brem (2016) states that when it comes to the definition and practice of creativity, we need to be aware that it is a diverse concept. Therefore, creativity in education should not fall into a simple, overly narrow interpretation (Baylor, 2002). Sahlberg (2007) argues that the development and assessment of creativity in many traditional schooling contexts may be limited by factors such as standardised testing and assessment of achievement. Standardised testing and achievement assessments may limit students' creativity development (Kohn, 2000). Creativity may also be influenced by different barriers such as personality, environment, situation, motivation, cognitive development and even emotion and perception (Pekrun, 2009), as well as cultural, environmental, intellectual and expressive barriers (Morgan, 2020).

At the same time, Hennessey (1995) argues that creativity development also needs to consider social and environmental factors. The skills and competencies required for creativity constantly change due to many social and environmental factors such as technological advances, globalisation, population growth and resource scarcity (Soosay, 2008). In the covid context, for example, education needs to be adjusted to continually adapt to

these changes to ensure that students are equipped with the creativity and innovation needed to meet future challenges (Unger, 2020).

### **3. Online Education in the Context of Covid-19**

In the beginning, online education has increasingly emerged as a new form of education and an ideal way to meet the new educational needs that have arisen due to the new world economic order (Collins, 2018). Okoye (2021) argues online education is a technology-mediated process in which teachers and students continue to teach and learn while separated in space or time.

Although online education has been a popular topic of interest in education, the exploration of its application is limited (Nordin, 2015). However, with the incredible popularity of COVID-19, educational institutions worldwide have been forced to turn to online education to ensure continuity of education and student safety (Dhawan, 2020). As a result, the scale and scope of online education expanded rapidly after the outbreak of COVID-19 (Pregowska, 2021). During COVID-19, online education has become the dominant form of education. According to Rasiah (2020), the advantages of online education include flexibility, convenience, and scalability, while there are also challenges and limitations such as low student engagement, technical issues, social isolation and lack of interaction (Mahlangu, 2018). Rapanta (2020) argues that the individual differences of students and teachers, the design of the curriculum and the choice of teaching methods need to be taken into account in the implementation of online education (Zhao, 2021). Thus, practical technical support and information security are necessary (Ferri, 2020).

### **4. The Relationship between Online Education and Creativity**

The relationship between online education and creativity has been an essential education research topic (Zhao, 2021). In the last few decades, online education has become an essential mode of teaching and learning as technology develops and globalisation accelerates (Ratten, 2020). Online education can be defined as a form of education achieved through electronic media, which is used widely especially after the impact of covid (Reimers, 2020). Online education contributes to eliminating the time and geographical constraints and allows students and teachers to learn and teach in different places and at different times (Simonson, 2019).

Online education has positive impact on promoting students' creativity and innovation. Pregowska (2021) notes that students in an online education environment are more likely to demonstrate creative thinking and inquiry-based learning. For example, the tools of various online education platforms allow students to be more flexible and creative (Ferri, 2020). In addition, online education can provide students with more opportunities and resources to explore their interests and develop their talents (Wong, 2022). Moreover, through online education, students can gain more autonomy and flexibility in their learning styles, making it easier to demonstrate creative thinking and inquiry-based learning (Rapanta, 2020). Students can complete tasks and assignments in their own time and place, allowing for more opportunities for exploration, experimentation and participation in interactions (Unger, 2020)

However, online education may also harm students' creativity (Shirish, 2021). In online education environment, students may be less engaged and less motivated to participate in interactions. A reduction in communication can affect students' motivation to participate if they are reluctant to engage in creative and interactive learning, which can affect their creativity and innovation (Oke, 2020). Also, in online education environment, students are simpler to fall into passive learning state and cannot learn inquisitively and think independently (Zhao, 2021). Besides, students in online education may also need more opportunities for communication and collaboration, the lack of which may also negatively affect students' creativity (Ratten, 2020).

### 5. The Limitations of Creativity in Online Education

Sepulveda (2020) found that many factors hinder students' creative learning in an online environment in COVID-19. The most notable factors were the lack of opportunities for practice and experimentation and lack of interaction and collaboration with peers and teachers (Almazova, 2021). The lack of focus on innovativeness and creative thinking in online education also has a negative impact on students' creative learning (Serdyukov, 2017).

#### 5.1. Technical Limitations

- Difficulties in using learning tools in a virtual environment (Sepulveda, 2020).
- Lack of learning tools to support interaction and provide a personalised learning experience (Serdyukov, 2017).

#### 5.2. Teachers

- Creating engaging and creative online content may be time-consuming (Dhawan, 2020).
- There may be limitations to the types of teaching and learning methods available in an online environment (Daša, 2021).
- Teachers need to adjust standards for course content and assessment to cope with online education contexts (Ghanbari, 2021).

#### 5.3. For Students

- Learning in an online environment where teachers and students have limited interaction (Sepulveda, 2020).
- Students have more difficulty concentrating (Almazova, 2021)
- Requirement on students' self-discipline can be high due to the lack of monitor (Sathler, 2010).
- Anxiety about the online environment (e.g., fear of speaking online, fear of facing the camera).

**Table 2.** Obstacles to achieving the quality of online education under the Corona pandemic (Lassoued, 2020, p7)

Obstacles category (Groups)	Obstacles
Personal obstacles (self-imposed obstacles)	1-The weak motivation of students to distance learning.
	2-The difficulty of students' understanding of some subjects in the absence of classroom interaction.
	3-Get used to face-to-face learning.
	4.Some professors are not convinced of the usefulness of distance learning
	5-Lack of willingness to implement the distance learning system.
Pedagogical obstacles	1-Difficulty learning some applied courses and remotely oriented work
	2-The lack of clarity of the methods of remote evaluation.
	3-Lack of preparing the university community (administration, professors, etc.) to deal with distance learning.
Technical obstacles	1-Weak internet flow (speed).
	2-Security and confidentiality of data and information.
Financial and organizational obstacles	1-The lack of capabilities to communicate remotely (devices, internet, Apps, etc.)
	2-Lack of training in the use of technology.

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3-Multiple electronic media and the absence of uniform controls between all.

4-The home environment is not suitable for distance learning

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## 6. Recommendations

Pregowska (2021) suggests that the teacher plays an important role in online delivery and in developing students' creative abilities. The online delivery environment allows teachers to stimulate students' creativity and innovative thinking through carefully designed course content, teaching methods and assignment tasks (Ferri, 2020). Teachers can interact with students through online discussions, feedback and guidance to help them solve problems and inspire their imagination and creativity (Rasiah, 2020). As a result, teachers can also design more flexible lesson schedules, pre and post-lesson learning and more varied assignments (Huang, 2019).

When designing lessons and tasks, teachers need to consider how to increase students' engagement and interaction and their initiative in learning (Rapanta, 2020). Firstly, teachers should choose challenging tasks that require students to use creative thinking to solve and collaborative, hands-on work. For example, teachers can organise group work for students to complete a project on a specific topic, encouraging collaborative research and exploration from all subject aspects and ultimately producing new ideas and innovations (Morgan, 2020). Secondly, teachers can use an open-ended approach to teaching and encouraging students to engage in discussion and problem-solving. This approach can help students identify and analyse problems and learn and grow from them (Ali, 2019). For example, in online education, teachers can use online forums and live streaming to develop academic discussion activities on a particular topic, where students can participate and express their views in their own time (Pregowska, 2021).

Aside from curriculum and task design, teachers should create a safe space where students are encouraged to experiment and fail (Gamage, 2020). Students will inevitably encounter difficulties and challenges in their creative process, so teachers need to create a supportive environment where students know that failure is acceptable and can learn from it and continue to improve (Dhawan, 2020). For example, in online education, teachers can communicate with students through instant interaction and online tutorials to answer their questions and confusion timely and encourage them to experiment and discover their innovative thinking (Shin, 2019).

Additionally, students are the main body of online learning, and there are many opportunities to be inspired and develop creative abilities (Azizi, 2021). In the online education environment, rich resources, challenging tasks, and virtual laboratories can support stimulating students' innovative abilities (Pregowska, 2021).

Firstly, online education platforms can provide students with a large number of resources, which can stimulate students' curiosity and stimulate their innovative abilities (Wong, 2022). Students can access these resources by accessing online libraries for academic papers and course videos (Unger, 2020). Online education can also provide social platforms and discussion areas to facilitate interaction and knowledge sharing among students (Sahlberg, 2021).

Secondly, students should exercise their ability to think independently, explore, and cooperate with others to solve problems in challenging tasks (Sang, 2019). For example, in solving open-ended problems, students can solve problems through independent exploration and cooperative learning. Actively participating in such tasks can stimulate creativity and innovation in students (Morgan, 2020).

Thirdly, online education can also provide virtual laboratories, simulators, and other practical tools to help students apply the knowledge and skills they have learned in real scenarios (Okoye, 2021). Such practical experience can help students gain practical experience and stimulate their creativity (Khanal, 2021).

Furthermore, Liu (2020) believes that educational institutions can support students' innovation in online education by providing various technological tools and online collaboration platforms, offering relevant training to students, building online communities and encouraging participation in innovation competitions (Ali, 2019). On one hand, providers can provide various technological tools and online collaboration platforms where students can collaborate, communicate and innovate (Prokopenko, 2018). For example, institutions can train students to help them master and apply these technological tools and online collaboration platforms (Rasiah, 2020). On the other hand, providers can create online communities or social platforms where students can interact and collaborate with other students and professionals (Shirish, 2021). In these communities, students can share their ideas, experiences and results and continuously receive feedback and advice to improve and enhance their innovation skills (Oke, 2020).

Finally, educational institutions can encourage students to participate in innovative competitions and projects through online education platforms by providing support such as funding, equipment, and professional guidance (Liu, 2020). By participating in these activities, students can enhance their creative skills in practice and interact and collaborate with other students and professionals, thus continuously expanding their horizons and capabilities (Alexander, 2017).

## 7. Conclusion

This report discusses how to promote students' creativity in online education. It begins by exploring the concept of creativity and emphasizing its importance in today's society. Subsequently, the advantages of online education in cultivating students' creative abilities are discussed. Online education provides students more opportunities and resources to explore their interests and develop their talents. In traditional education, students may need more than their area's educational resources and curriculum (Collins, 2018). However, online education can give students various course choices and learning resources. Through online teaching platforms and social media, students can access knowledge and experiences worldwide to stimulate their creative inspiration and imagination (Unger, 2019).

Next, online education can stimulate students' creativity through innovative curriculum design and teaching methods. In online education, teachers can promote student creativity and problem-solving skills through online collaboration and student-directed curriculum design. In addition, online education can also use tools such as virtual laboratories and simulators to provide students with practical opportunities and enhance their practical and creative abilities.

However, online education also faces some challenges. Several challenges and issues in a online education environment can negatively impact a student's ability to be creative (Akhter, 2021). Students may experience issues such as reduced engagement and motivation and a lack of opportunities to communicate and collaborate, affecting their ability to be creative. For example, students may feel lonely and isolated, lacking face-to-face interaction with classmates and faculty. In addition, students may need more motivation and self-motivation, which may affect their academic performance and ability to innovate. Therefore, educators need to understand and deal with these challenges and problems better to promote the development of students' creative abilities.

Online education can give students more opportunities and resources to explore their potential (Shin, 2019). However, it also needs to be noted that online education may harm students' creativity. Such as students' reluctance to participate in classroom activities, their attraction to video games and their inability to pay attention (Pregowska, 2021). Therefore, in online education, teachers must stimulate students' creativity and innovation by providing more challenging tasks, encouraging students to communicate and collaborate. At the same time, we also need to pay attention to the challenges and limitations faced by

online education to promote the development of students' creativity and innovation ability and help them better develop their potential and talents.

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