



Lecturer Strategies for Developing Student Creativity in Higher Education

Rahmat Aziz¹(✉), Ali Maksum², Adi Atmoko³, and Fuad Nashori⁴

¹ Department of Psychology, Universitas Islam Negeri Maulana Malik Ibrahim Malang, Malang, East Java, Indonesia

azira@uin-malang.ac.id

² Department of Social and Politics, Universitas Brawijaya Malang, Malang, East Java, Indonesia

³ Department of Guidance and Counseling, State University of Malang, Malang, East Java, Indonesia

⁴ Department of Psychology, Universitas Islam Indonesia Yogyakarta, Special Region of Yogyakarta, Yogyakarta, Indonesia

Abstract. Developing creativity in students is necessary throughout the learning process in higher education. Correspondingly, this study aims to elaborate on the role of lecturers in developing student creativity. This study was conducted through a qualitative approach with a case study design to identify the lecturers' strong role as implemented in three universities. Ninety students and four lecturers purposively obtained the data by establishing the creative personality scale, creative thinking ability test, interviews, and documentation; the data on creative personality and creative thinking were analyzed using descriptive analysis, while the interview data was analyzed through thematic analysis. The results suggest three lecturers' roles in developing creativity, such as providing cognitive and emotional support, using appropriate learning methods, and collaborating with students. The findings, however, signify the importance of improving lecturers' ability to enhance the understanding of lecturers' role as required in developing student creativity. Equally important, further research is expectedly to implement different approaches by elaborating mix-methods between the type of support for students and the kind of collaboration with students. Additionally, an experimental method is eligible to test different learning models in developing creativity.

Keywords: Creative personality and creative thinking · higher education programs · teaching · learning strategy

1 Introduction

Creativity in students is a crucial aspect to be developed in academic culture within higher education. In fact, excluding creativity begets a monotonous life. Therefore, enhancing students' creativity during the learning process in higher education is necessary. In addition, the students' creativity is characterized by a high level of students' creative thinking ability [1]. A high level of creative personality [2], as well as a high level of

creative writing ability [3]. These three characteristics of success indicate the established learning process is applicable to develop student creativity. This statement has been supported by the experts stating that learning in and/or outside the classroom is crucial in developing creativity.

To this point, the development of creativity is conducted in three models. In the first model, creativity is taught directly during learning practice and/or training. In this model, creativity is considered as the goal of the learning process (instructional effect), for instance, training on creative problem solving [4]. In the second model, creativity is developed through lessons. This model considers creativity as an additional goal (nurturant effect) of learning, as pointed out in the development of creative thinking skills through mathematics lessons [5]. In the third model, creativity is developed by creating a learning environment that supports the development of creativity. For instance, a fun environment is an attempt to create an academic atmosphere that supports creativity [6]. Another model of creativity is developed through the fulfillment of physical facilities in higher education buildings to support students' activities [7]. The article, however, reports a development model that elaborates on the optimization of lecturers' role in developing students' creativity.

In general, this study aims to describe and analyze the role of lecturers in accommodating learning activities to develop student creativity. Correspondingly, three specific purposes of the paper are proposed. Which include describing and analyzing lecturers' behaviour in providing support to students; analyzing and evaluating the learning process as accommodated by the lecturers in the classroom; finally, assessing the learning programs outside the classroom, where the lecturers and the students collaborate in terms of academic activities. These three goals are expected to provide the understanding and alternative methods to develop student creativity in higher education.

1.1 Learning Model in Higher Education

Learning model is a design of learning process and implementation that guides lecturers to accommodate learning activities. Following the type and objectives of learning, four models are implemented in learning activities in higher education, including information processing, behavioural, social, and personal approach [8]. Information processing model is a student-oriented learning model which purpose is to transform information into knowledge. On the other hand, behavioural approach model emphasizes on the attempt to modify behaviours affected by the learning process. Nonetheless, social approach model is oriented towards social skills that are expected to be developed through the learning process. Lastly, personal model is a learning model that focuses on individual aspects in the learning process [9].

Amongst the four learning models, information processing model is frequently implemented in developing creativity, particularly problem-based learning model [10]. Problem-based learning model is a learning model that involves students' active involvement in resolving problems through scientific stages. The stages, however, include stating the problem, reviewing theories to propose hypotheses, testing data in the field, and verifying the data to draw conclusions. In this model, students are required to be active during the learning process, while the lecturers act as motivators and facilitators [11].

In developing creativity in higher education, students are required to resolve problems in a scientific way, whereas the lecturers assist the learning process.

Problem-Based Learning is a learning model that begins with giving problems to higher education students, who then solve these problems to discover new knowledge [22]. Students are required to be more active in the teaching and learning process, and lecturers act more as facilitators who guide the effectiveness of the learning process. The problem-based learning model is an innovative learning paradigm that promotes student-centered learning activities using issues as a learning reference [12]. This demonstrates that the selection of lecturers for this learning approach is very suitable for fostering student innovation.

1.2 Approaches in Understanding Creativity

As a psychological construct, creativity comprises of four approaches [13]. The first approach is to understand creativity as a type of thinking. Creativity is a process of thinking characterized by the ability to think flexibly, fluently, originally, and elaboration. The second approach views creativity as a non-cognitive personality characteristic. The third approach identifies creativity as a product of creative activity, for instance, developments in creative advertising, and creative writing. In the fourth approach, creativity is asserted as an environment that supports creativity building [14]. In the first three approaches, creativity is measured by various measurements, while in the last approach, creativity to a larger extent, focused on the environment that potentially develops creativity.

Various psychological measurements identify creativity as a process of creative thinking. Torrance's test on creativity is a measuring tool for creative thinking that reveals the ability to think creatively in terms of fluency, flexibility, originality, and elaboration [15]. Creativity as a creative personality is measured through an innovative personality test. Some measuring instruments are frequently used, such as creative behaviour inventory and the Revised Creative Domain Questionnaire Measuring Tool [16]. Similarly, a specific test measures creativity as an innovative product. In education, creative writing test is frequently utilized to measure innovative products. Unlike the previous three approaches, the fourth approach in higher education practice is performed by creating a learning atmosphere, both in the classroom and outside the classroom, that potentially develops student creativity.

1.3 Creativity Development in Higher Education

Studies on developing creativity in higher education's learning practices are classified into three models. First, a learning model that teaches creativity directly (instructional effect). This model uses creativity as a subject matter that is prepared for students, for instance, a model for developing creative writing skills in students [17]. The other one is a learning model that considers creativity as a side goal (nurturant effect); such as, developing creative thinking skills through mathematics learning [18]. Last is a model that develops creativity by creating a supportive academic atmosphere. In this model, creativity is not taught as a subject matter, instead, creativity is designed as an indirect effect of the environment.

Developing creativity in the third model is conducted by designing physical and social environment. The physical environment is established by providing facilities and infrastructure. Studies have found that providing physical environment affects creativity [19]. The development of social environment is addressed by creating a sound social relationship between parties involved in the educational process, such as leaders, teachers, staff, and students [20]. This study identifies the relationship between lecturers and students during the learning practices where both were performed in and outside the classroom.

This paper is written based on an argument where failure in learning process does not lie entirely on the student's lack of ability in participating the learning process, whereas, the unsuccessfulness is associated with the lecturer's ability to accommodate the learning process. Three arguments were proposed to support this opinion. First, cognitive and emotional supports from lecturers presumably affect students' behaviour. Additionally, selecting appropriate learning model according to the students's demands and needs is assumed to improve the learning process quality. Furthermore, collaboration between lecturers and students potentially elevates students' sense of worth; thus builds students' creative behaviour. These arguments were proposed to understand the lecturers' role in implementing effective learning, and developing students' creativity.

2 Methods

2.1 Research Design

This research implements a qualitative approach with a case study design. The selection of this qualitative approach is adjusted to the research objectives to understand the learning process that presumably develops student creativity. The case study was selected in considering the theme was casuistic, and took place in universities in Malang. Selecting student creativity development in higher education as the case of the study considers three important aspects. First, creativity is an essential aspect of action, thus, research on the theme requires a large degree of elaboration. Second, failure in developing creativity is additional factor, considering that creativity is a crucial point. Third, failure in the learning process in developing creativity suggests alternative learning models to resolve the matter. The three reasons for choosing creativity as a case of the study desirably contribute to resolve problems, particularly in educational psychology.

2.2 Research Subject

The subjects of the research are students and lecturers. A total of 90 (ninety) students were taken from one class in psychology department from three public universities in the city of Malang, where the selection process was in accordance to the students' willingness to participate as the research subjects as expressed in a written form prior to collecting data. Similarly, Four lecturers were selected as research subjects upon willingness to participate as subjects of the research. The selected lecturers were lecturers who lecture the selected students as subjects of the research. Lecturers who lecture the course of the students participated as subject of the research are eligible to partake as subject of the research, and complete a minimum of five year work experience; moreover, actively involve in academic activities.

2.3 Method of Data Collection

Data were collected through interviews, documentation, psychological scales, and psychological tests. Interviews were conducted on lecturers by focusing on questions related to activities performed by the lecturers in developing students' creativity, both in and outside the classroom. Recording data was required to support data attained from the interview, particularly the evidence presenting the lecturers and students' collaboration in academic activities. The recorded data was obtained from digital documents that is accessible online. Further, the researchers created psychological scales as referred to the theory of creative personality developed by Sternberg [21]. Psychological tests, however, are necessary to determine the student's creative thinking ability level. The four data collection techniques were executed to obtain information related to the activities performed by the lecturers and the students in terms of developing creativity in higher education.

2.4 Data Analysis

This study employed descriptive analysis techniques and thematic analysis in analyzing data. Descriptive analysis was utilized to analyze quantitative data derived from the creative personality scale as well as the creative thinking ability test. Analysis of creative personality was performed by categorizing personality characteristics and was divided into three categories: high, medium, and low. Further, the study on creative thinking ability was divided into seven categories: very superior, superior, above average, average, under average, borderline, and low. Additionally, thematic analysis was utilized to analyze data from interviews with lecturers regarding the attempts to develop students' creativity.

3 Result

In this section, three important findings are outlined in regards to the role of lecturers in developing students' creativity. The three roles include lecturers' support in developing creativity, the use of problem-based learning methods, and the involvement of students in the lecturers' academic activities.

3.1 Lecturer's Support in Developing Student Creativity

This section outlines the findings on the support of lecturers to students to encourage student's creativity, as well as conclusions of the high level of student creativity as derived from the interview and the creative personality scale. Reports on the findings of the lecturers' support are presented in the informant's statement in the following interview:

In developing creativity, what I usually do is provide additional insight into the importance of having imagination to equip oneself to live everyday life (Informant 1).

Table 1. The description on student creative personality

No	Creative personality	High		Moderate		Low		Total	
		F	%	F	%	F	%	F	%
1	Perseverance	61	67.8	4	4.4	25	27.8	90	100
2	Take a risk	45	50	12	13.3	33	36.7	90	100
3	Willingness to grow	69	76.7	12	13.3	9	10	90	100
4	Tolerance of ambiguity	60	66.7	13	14.4	17	18.9	90	100
5	Openness to experience	58	64.4	20	22.2	12	13.3	90	100
6	Self-Confidence	66	73.3	19	21.1	5	5.6	90	100

I encouraged my students to develop a sense of curiosity, sensitivity, competitiveness, to be doughty, to be unafraid of failure, be optimistic and teamwork oriented (Informant 2).

I liberated my students to explore their environment, for example, freeing them to select their own research theme as inspired from their surrounding (Informant 3)

As a lecturer, I strive to encourage students by providing comparative examples in everyday life and monitoring what they do (Informant 4)

Statements of the four informants signify two types of lecturers' support for the students, such as cognitive and emotional approvals. The cognitive support was attempted when the lecturers drew insight, developed a sense of curiosity, as well as sensitivity to problems. On the other hand, emotional support was exemplified when the lecturers liberated the students to choose research theme, encouraged risk-taking, to be optimistic when dealing with issues, and when provided practical examples to inspire the students. The supports suggested that the lecturers have attempted to encourage the students to be creative. Support provided by the lecturers implied to the high level of student creativity. Table 1 explains the students' high level of creative personality.

Table 1 describes that the characteristics of students' creative personalities are high. Apparently, among the students' creativity level, willingness to grow is the highest, while the second, third, fourth, fifth, and sixth levels are perseverance, openness to experience, self-confidence, and tolerance of ambiguity, respectively. Out of the six factors, tolerance of ambiguity character is at moderate and low levels. These findings require a more profound study to identify the reasons why these characteristics have different types from other influences.

Table 2. Category of student creative thinking

No	Category	Score	Frequencies	Percentage
1	Very Superior	More than 130	38	42.2
2	Superior	120 to 129	8	8.9
3	Above average	110 to 119	8	8.9
4	Average	90 to 109	18	20
5	Under average	80 to 89	5	5.6
6	Borderline	60 to 79	7	7.8
7	Low	Less than 60	6	6.7
Total			90	100

3.2 The Use of Problem-Based Learning in Developing Creativity

This section describes methods applied by the lecturers in accommodating learning practice following the course of study and the students' needs in developing creativity. The findings are presented in the four informants' statements in Table 2.

I applied a two-way learning model (from lecturers and students). In practice, I implemented project-based learning (Informant 1)

I used various learning methods, including case studies and problem-based learning to support the development of students' creativity (Informant 2).

I designed a learning method that encouraged students to practice literacy and knowledge using problem-based learning (Informant 3).

As a lecturer, I tried to use a learning approach that stimulated the students to think at a high level (HOTS) in resolving problems. Therefore, I implemented problem-based learning during the learning process (Informant 4).

The interview results suggest that the lecturer used a problem-based learning method that was considered helpful in developing students' creativity. In line with these results, students indicated a high level of creativity based on the test on the ability to think creatively. The complete results are presented in Table 2.

Table 2 describes the students' creative thinking ability is in excellent category. Out of 90 students as subjects of the study, 38 students attained very superior criteria (42.22%). This number differs greatly from the students with low standards (6.67%). A high level of creative thinking ability is possible as the lecturers have taught using the appropriate methods to develop creativity.

3.3 Collaboration Between Lecturers and Students in Academic Activities

This section outlines the findings where the lecturers have involved the students in educational activities. The results are presented in the statements of the four informants below:

I involved the students in research activities as well as in community service activities. (Informant 1)

I involved the students in research and service. I also invited the students to create scientific content and blogs that clearly benefit community literacy. (Informant 2)

In addition to involving them in research activities, I also tried to guide and invite discussions to help them organize clearer and more useful ideas. (Informant 3)

Some of the efforts I have made in developing student creativity include applying varied learning methods, interacting intensely with the students when lecturing in the class, applying learning technology as a tool, and involving students in research as well as in community service activities. (Informant 4)

These statements indicate three types of collaborative activities performed by the lecturers and the students. First, the lecturers collaborated in research activities and

Table 3. Lecturer-Student Collaboration in higher education

No	Finding	Links online
1	Collaborative activities between lecturers and students at Universitas Islam Negeri Malang	<p>1. Kegiatan kolaborasi dosen dan mahasiswa Universitas Islam Negeri Malang di desa Gading Kulon. https://www.timesindonesia.co.id/read/news/353751/dosen-dan-mahasiswa-uin-maliki-malang-lakukan-pengabdian-di-desa-gading-kulon</p> <p>2. Juknis penelitian kolaboratif dosen dan mahasiswa. https://fitk.uin-malang.ac.id/download/pedoman-dn-juknis-rekognisi-penelitian-kolaboratif-2022/</p>
2	Collaboration activities between lecturers and students at Universitas Negeri Malang	<p>3. Kolaborasi dosen dan mahasiswa UM dalam mengembangkan potensi wisata air terjun. http://kliping.um.ac.id/index.php/kolaborasi-dosen-dan-mahasiswa-kembangkan-potensi-wisata-air-terjun-pengantin-2/</p> <p>4. Produk berkualitas hasil kerja kolaboratif dosen dan mahasiswa Universitas Negeri Malang. http://kliping.um.ac.id/index.php/kolaborasi-mahasiswa-ft-dan-fe-universitas-negeri-malang-hasilkan-produk-berkualitas-dari-daur-ulang/</p>
3	Collaboration activities between lecturers and students at Universitas Brawijaya	<p>5. Penelitian Kolaborasi Mahasiswa UB Berhasil Raih Silver Prize di Seoul. https://fapet.ub.ac.id/penelitian-kolaborasi-mahasiswa-ub-berhasil-raih-silver-prize-di-seoul/</p> <p>6. Kolaborasi dosen mahasiswa dalam mendongkrak produk UKM https://tip.ub.ac.id/berita/kolaborasi-dosen-dan-mahasiswa-ftp-ub-pada-pengabdian-masyarakat-guna-meningkatkan-kualitas-produk-ukm-sangga-mitra/</p>

regarded the collaboration as the lecturers' projects. In this activity, the students assisted lecturers to collect field data. Second, activities in community service activities. In this activity, the students assisted the lecturers in a community service project, and/or the lecturers assisted the students in practicing real-work lecturing. Third, the lecturers and the students conducted collaborative project activities, such as creating learning content. The three collaboration models signify the importance of collaboration. In addition to data obtained from the interviews, the researchers attained data in digital documentation, and the results are presented in Table 3.

Table 3 describes collaborative activities between the lecturers and the students performed at three state universities in Malang. Evidence of these collaborative activities is presented in collaborative research guidelines and various collaborative work performed by the lecturers and the students.

4 Discussion

Supports from the lecturers, both cognitive and emotional, have encouraged the students to grow and develop; further urged the students' openness to new experiences as motivated by the student self-efficacy. The desire to grow and develop an openness to new experiences is a trait that characterizes a creative person. Studies suggest that this characteristic is positively correlated with a high level of creative thinking ability [22] and creative writing [23]. Openness to new experiences is a characteristic influenced by external and internal factors. External factors include learning environment and family environment, while the internal factor presumably influences an individual's ability.

Self-efficacy is an individual's ability to perform certain tasks. This ability is a psychological quality that affects various other psychological aspects [24]. A research reports that self-efficacy positively correlates with creativity [25]. Creativity is a product that results from interaction between environment and individual. A favourable higher education environment supported by high student self-efficacy potentially develops high creativity. This implies providing cognitive and emotional support in accommodating learning practices, in and outside the classroom, is beneficial for lecturers as one of the attempts to develop creativity.

The use of problem-based learning models has developed a sense of curiosity to something new as induced by high learning motivation. Problem-based learning led the students to think and behave scientifically as performed in certain five stages [26]. Each stage urged the students to question something new. The learning process ended by concluding the problem-solving process performed by the students; in this case, the lecturers acted as facilitators in each stage of the learning practice. Studies suggest that having a sense of curiosity is crucial in developing student's creativity [27]. The sense of curiosity is elicited from learning motivation as stimulated by problem-based learning.

A high level of internal motivation characterizes students with high learning motivation. The passion in producing creative work is an impulse from individual's need instead of others. Studies report a significant relationship between motivation and creative thinking skill [28]. This ensures that developing students' creative thinking skill is potentially constructed by elevating learning motivation. Learning motivation can be increased through the use of problem-based learning.

The collaboration between the lecturers and the students helped the students develop successful and pleasant experiences as a result of the elevating the self-esteem. Gaining a sense of success and worth within the students is an essential model to perform future tasks. This success is an effectual model to resolve problems, including developing creativity. Studies report collaboration between lecturers and students develops students' sense of success [29].

Another point to consider, self-esteem is an important psychological quality in developing creativity. Students with high self-esteem are characterized by two abilities: self-acceptance and self-competence. The two abilities work closely when developing creativity. Studies report creativity is developed by those with high self-esteem [30]. This suggests that developing students' self-esteem is considerably one of the approaches to encourage creativity. Self-esteem can be improved through a collaborative work between lecturers and students.

Three important findings related to the development of creativity in students have shown the urgency of the role of lecturers in learning. The role of lecturers can be in the form of cognitive and emotional support, the use of appropriate learning and in accordance with student needs, as well as collaborative activities with students. The results of this study have strengthened previous research that supports the results of the study [31]. This result implies that policyholders should act that the development of student creativity can be done through the development of insights and abilities of lecturers in carrying out learning.

5 Conclusion

The findings indicate that optimizing the role of lecturers provides clear benefits to develop students' creativity and suggest the importance of developing lecturers' skills in accommodating learning practice, both in and outside the classroom. The results of the study imply two important standpoints in learning process. First, the lecturers' ability to support, accommodating the learning process, and collaborating with students are important in developing creativity, both in and outside the classroom. Second, To facilitate better learning activities, lecturers are required to improve skills in supporting the students, using appropriate method, and collaborating with the students.

Studies on lecturers' role in learning process have been performed to a large degree. However, future studies on developing creativity through learning process in higher education are required to provide an adequate understanding. This research contributes to these shortcomings through findings that suggest the importance of optimizing the role of lecturers in developing students' creativity. The learning process that orients to subject matter to a larger extent should be redesigned while considering student creativity as a goal as the nurturant effect of education. Similarly, in performing academic activities, lecturers are required to involve the students, thus allowing the students experience real-life learning.

This study's findings suggest that the learning process accommodated by lecturers is crucial in developing student creativity. However, this study did not measure the degree of influence of the learning process accommodated by the lecturers on the students' creativity. In future research, considering these aspects through quantitative approaches,

particularly experimental research, is necessary, to measure the learning methods on creativity. Based on four strategies for understanding creativity, this research discloses three types: creative learning environment, creative personality characteristics, and the ability to think creatively. Creativity as a product is a different type of creativity that has not been pointed out. Researchers, however, suggest this creativity in creative writing, and advertising.

Acknowledgments. A lot of gratitude was conveyed to the Directorate General of Islamic Higher Education, Ministry of Islamic Religion for providing research grant assistance through the Institute for Research and Community Service, Maulana Malik Ibrahim State Islamic University of Malang in 2021.

References

1. C. Carbonell-Carrera, "Enhancing creative thinking in STEM with 3D CAD modelling," *Sustainability (Switzerland)*, vol. 11, no. 21, 2019, <https://doi.org/10.3390/su11216036>.
2. O. M. Shentsova, "Modelling students' creativity development in practice of higher education in Russia," *Indian J Sci Technol*, vol. 9, no. 29, 2016, <https://doi.org/10.17485/ijst/2016/v9i29/95393>.
3. W. Ings, "Resonant voices: The poetic register in exegetical writing for creative practice," *Journal of Writing in Creative Practice*, vol. 14, no. 2, pp. 121–141, 2021, https://doi.org/10.1386/JWCP_00018_1.
4. A. Manresa, "The use and determinants of training and development for creativity and innovation," *International Journal of Innovation Management*, vol. 22, no. 7, 2018, <https://doi.org/10.1142/S1363919618500627>.
5. A. Sánchez, "Significance of creativity and its development in mathematics classes for pre-service teachers who are not trained to develop students' creativity," *Mathematics Education Research Journal*, 2021, <https://doi.org/10.1007/s13394-021-00367-w>.
6. C. Nerantzi, "The playground model revisited: A proposition for playfulness to boost creativity in academic development," *The Power of Play in Higher Education: Creativity in Tertiary Learning*. pp. 317–332, 2019. [Online]. Available: https://api.elsevier.com/content/abstract/scopus_id/85083156083
7. E. Grineva, "Creativity-driven ecological thinking development in physical culture and sport university students," *Teoriya i Praktika Fizicheskoy Kultury*, no. 3, pp. 24–26, 2018, [Online]. Available: https://api.elsevier.com/content/abstract/scopus_id/85044523839
8. M. K. Kim, "Models of learning progress in solving complex problems: Expertise development in teaching and learning," *Contemp Educ Psychol*, vol. 42, pp. 1–16, 2015, <https://doi.org/10.1016/j.cedpsych.2015.03.005>.
9. J. Bruce, M. Weil, and E. Calhoun, *Models of Teaching 9th edition*. 2014.
10. K. Ulger, "The effect of problem-based learning on the creative thinking and critical thinking disposition of students in visual arts education," *Interdisciplinary Journal of Problem-based Learning*, vol. 12, no. 1, 2018, <https://doi.org/10.7771/1541-5015.1649>.
11. H. Lee, "Why teach with PBL? Motivational factors underlying middle and high school teachers' use of problem-based learning," *Interdisciplinary Journal of Problem-based Learning*, vol. 13, no. 1, 2019, <https://doi.org/10.7771/1541-5015.1719>.

12. H. Andres, "Active teaching to manage course difficulty and learning motivation," *J Furth High Educ*, vol. 43, no. 2, pp. 220–235, 2019, <https://doi.org/10.1080/0309877X.2017.1357073>.
13. J. A. Héraud, "A New Approach of Innovation: from the Knowledge Economy to the Theory of Creativity Applied to Territorial Development," *Journal of the Knowledge Economy*, vol. 12, no. 1, pp. 201–217, 2021, <https://doi.org/10.1007/s13132-016-0393-5>.
14. L. Kerslake, "Ted Hughes: The Importance of Fostering Creative Writing as Environmental Education," *Children's Literature in Education*, vol. 52, no. 4, pp. 478–492, 2021, <https://doi.org/10.1007/s10583-020-09427-4>.
15. S. Said-Metwaly, "Torrance test of creative thinking-verbal, Arabic version: Measurement invariance and latent mean differences across gender, year of study, and academic major," *Think Skills Creat*, vol. 39, 2021, <https://doi.org/10.1016/j.tsc.2020.100768>.
16. P. Chen, "Development of Chinese Junior High School Students' Creative Potential: Within-Front and Between-Person Effects of Student–Student Support and Need for Cognition," *Front Psychol*, vol. 11, 2020, <https://doi.org/10.3389/fpsyg.2020.552831>.
17. K. Sunjin and I. Choe, "The development and evaluation of the effect of creative problem-solving program on young children's creativity and character," *Think Skills Creat*, vol. 33, no. 3, 2019, <https://doi.org/10.1016/j.tsc.2019.100590>.
18. Suhendri, "Development mathematics modules based on guided discovery learning to improve creativity skills of blind students," *International Journal of Scientific and Technology Research*, vol. 8, no. 10, pp. 1169–1173, 2019, [Online]. Available: https://api.elsevier.com/content/abstract/scopus_id/85074037547
19. D. Faas, "The role of principals in creating inclusive school environments: insights from community national schools in Ireland," *School Leadership and Management*, vol. 38, no. 4, pp. 457–473, 2018, <https://doi.org/10.1080/13632434.2018.1430688>.
20. J. Díez-Palomar, R. García-Carrión, L. Hargreaves, and M. Veites, "Transforming students' attitudes towards learning through the use of successful educational actions," *PLoS One*, vol. 15, no. 10 October, pp. 1–20, 2020, <https://doi.org/10.1371/journal.pone.0240292>.
21. R. J. Sternberg, *The Nature of Human Creativity*. 2018. <https://doi.org/10.1017/9781108185936>.
22. B. Forthmann, "Revisiting the interactive effect of multicultural experience and openness to experience on divergent thinking," *International Journal of Intercultural Relations*, vol. 63, pp. 135–143, 2018, <https://doi.org/10.1016/j.ijintrel.2017.10.002>.
23. L. Biederman, "A sense of openness: Using individual student blogs in online creative writing courses," *Theories and Strategies for Teaching Creative Writing Online*. pp. 129–138, 2021. [Online]. Available: https://api.elsevier.com/content/abstract/scopus_id/85106191029
24. T. C. Hsu, H. Abelson, E. Patton, S. C. Chen, and H. N. Chang, "Self-efficacy and behavior patterns of learners using a real-time collaboration system developed for group programming," *Int J Comput Support Collab Learn*, vol. 16, no. 4, pp. 559–582, 2021, <https://doi.org/10.1007/s11412-021-09357-3>.
25. N. t. Huang, "Effects of creative thinking, psychomotor skills, and creative self-efficacy on engineering design creativity," *Think Skills Creat*, vol. 37, 2020, <https://doi.org/10.1016/j.tsc.2020.100695>.
26. C. Wu, "A two-stage three-machine assembly scheduling problem with a position-based learning effect," *Int J Prod Res*, vol. 56, no. 9, pp. 3064–3079, 2018, <https://doi.org/10.1080/00207543.2017.1401243>.
27. F. Simon, "Creativity within boundaries: Social identity and the development of new ideas in franchise systems," *Creativity and Innovation Management*, vol. 27, no. 4, pp. 444–457, 2018, <https://doi.org/10.1111/caim.12296>.

28. G. E. Corazza and S. Agnoli, *Multidisciplinary Contributions to the Science of Creative Thinking*. Singapore: Springer Singapore, 2016. [Online]. Available: <http://link.springer.com/https://doi.org/10.1007/978-981-287-618-8>
29. S. Murata, "Learning to Achieve Different Levels of Adaptability for Human-Robot Collaboration Utilizing a Neuro-Dynamical System," *IEEE Trans Cogn Dev Syst*, vol. 10, no. 3, pp. 712–725, 2018, <https://doi.org/10.1109/TCDS.2018.2797260>.
30. C. C. Chou, "Moderating Effect of Self-Esteem on the Relationship between Perfectionism and Creative Thinking among Collegiate Dancers," *Creat Res J*, vol. 31, no. 2, pp. 188–197, 2019, <https://doi.org/10.1080/10400419.2019.1606620>.
31. M. I. Mykhnyuk, "Role of Professional Work of a Higher Education Teacher in the Development of Students' Creativity," *Smart Innovation, Systems and Technologies*, vol. 227, pp. 85–93, 2021. https://doi.org/10.1007/978-981-16-0953-4_8

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

