Journal Website

Article history:
Received 04 February 2024
Revised 20 March 2024
Accepted 30 March 2024
Published online 06 April 2024

International Journal of Education and Cognitive Sciences

Volume 5, Issue 1, pp 8-15

E-ISSN: 3041-8828

Enhancing Classroom Behaviors and Creativity: The Impact of a Critical Thinking Workshop

Jing. Wang[1], Mengna. Sheng[2*], Rui Song[3]

[1] Faculty of Social Sciences and Humanities, University Kebangsaan Malaysia, Bangi, Selangor, Malaysia.
[2] Department of Psychology, Faculty of Social Sciences & Liberal Arts, UCSI University, Kuala Lumpur, Malaysia.
[3] Shandong Sport University, Jinan, Shandong, China.

*** Corresponding author email address**: saeid@ucsiuniversity.edu.my

A r t i c l e I n f o

Article type:
Original Research

How to cite this article:
Wang, j., Sheng, M., Song, R. (2024). Enhancing Classroom Behaviors and Creativity: The Impact of a Critical Thinking Workshop. *International Journal of Education and Cognitive Sciences*, *5*(1), 8-15.
https://doi.org/10.61838/kman.ijecs.5.1.2

A B S T R A C T

Purpose: This study aimed to investigate the effectiveness of a critical thinking workshop in improving classroom behavior and creativity among college students.
Methodology: A randomized controlled trial design was utilized, involving 30 participants aged 18-22 years, who were randomly assigned to either an experimental group receiving the critical thinking workshop or a control group that received no intervention. The workshop spanned eight sessions, each lasting 90 minutes. Classroom behavior and creativity were measured at baseline, immediately post-intervention, and at a three-month follow-up using the Classroom Behavior Assessment Scale (CBAS) and the Torrance Tests of Creative Thinking (TTCT), respectively. Data analysis was conducted using SPSS-27, employing Analysis of Variance (ANOVA) with repeated measurements and Bonferroni post-hoc tests.
Findings: The experimental group exhibited significant improvements in creativity, with mean scores increasing from 56.92 (SD = 15.06) at baseline to 67.56 (SD = 15.22) post-intervention, and slightly higher at follow-up (Mean = 68.03, SD = 16.90). Classroom behavior also improved significantly, with mean scores rising from 29.52 (SD = 5.99) at baseline to 33.92 (SD = 5.80) post-intervention, maintaining at follow-up (Mean = 34.04, SD = 6.30). In contrast, the control group showed negligible changes in both variables. Statistical analysis revealed significant effects of time and group, as well as time × group interactions for both creativity (Time × Group: $F = 8.09$, $p < 0.01$) and classroom behavior (Time × Group: $F = 7.50$, $p < 0.01$).
Conclusion: The critical thinking workshop significantly enhanced creativity and classroom behavior among college students. These findings highlight the workshop's effectiveness in fostering essential higher-order thinking skills, suggesting that similar interventions could be beneficial in educational settings to cultivate an environment conducive to learning and innovation.

Keywords: *Critical Thinking, Classroom Behaviour, Creativity, Educational Intervention, Randomized Controlled Trial.*

1. Introduction

In contemporary education, fostering critical thinking and creativity among students has emerged as a paramount concern. Critical thinking and creativity are widely recognized as essential competencies for the 21st century, necessitating innovative approaches in educational settings to cultivate these skills (Parsakia, 2023). Critical thinking, as defined by Misechko and Lytnyova (2022), encompasses the ability to analyse information, evaluate evidence, and construct reasoned arguments, which is foundational for academic success and informed citizenship (Misechko & Lytnyova, 2022). Creativity, on the other hand, involves the generation of new and useful ideas, as articulated by Ahmadi and Besançon (2017), and is crucial for problem-solving and innovation (Ahmadi & Besançon, 2017). The interconnectedness of critical and creative thinking suggests that fostering one can enhance the other, offering a holistic approach to developing cognitive abilities (Siburian et al., 2019). The Theory of Planned Behaviour provides a pertinent theoretical framework for understanding how interventions might influence students' engagement in critical thinking and creative processes. This theory posits that behavioural achievement is directly influenced by the intention to perform the behaviour, which is, in turn, affected by attitudes, subjective norms, and perceived behavioural control (Nguyen, 2020).

Recent literature underscores the significance of integrating critical thinking and creativity into the curriculum. Allen et al. (2019) emphasize building a culture of critical and creative thinking as pivotal for sustaining higher-order thinking in educational institutions (Allen et al., 2019). Similarly, Carrera et al. (2019) highlight the role of technological tools like 3D CAD modelling in enhancing creative thinking in STEM fields, suggesting that creative pedagogical approaches can augment traditional STEM education (Carrera et al., 2019). In the realm of classroom management, Owusu-Addo (2022) identifies effective classroom management strategies as instrumental in creating an environment conducive to critical thinking and creativity (Owusu-Addo, 2022). The management of classroom dynamics is pivotal, as Kim and Cappella (2016) argue, in mapping the social world of classrooms to promote social processes and behavioural engagement conducive to learning (Kim & Cappella, 2016).

Furthermore, the relationship between critical thinking and creativity has been the subject of empirical investigation, revealing a positive correlation between these cognitive skills and academic achievement (Siburian et al., 2019; Ülger, 2016). Shubina, Kwiatek, and Kulakli (2021) examine gender differences in critical thinking and creativity among university students, providing insights into the nuanced dynamics of cognitive skill development in contemporary education (Shubina et al., 2021). Creative and critical thinking also play a crucial role in language learning and teaching, as evidenced by Gladushyna (2019), who explores the challenges and opportunities in fostering these skills in foreign language education (Gladushyna, 2019). The importance of critical thinking in literature education is further supported by Rahman and Manaf (2017), who propose Bloom's taxonomy as a framework for teaching critical and creative thinking skills through English literature (Rahman & Manaf, 2017).

While existing research indicates the benefits of critical and creative thinking, there is a paucity of studies investigating the efficacy of specific interventions, such as workshops, in enhancing these skills among students. Moreover, the longitudinal effects of such interventions on classroom behaviour and creativity remain underexplored. This study aims to fill this gap by evaluating the impact of a critical thinking workshop on students' classroom behaviour and creativity over a three-month follow-up period.

2. Methods and Materials

2.1. Study Design and Participants

This study adopted a randomized controlled trial (RCT) design to evaluate the effectiveness of a critical thinking workshop on classroom behaviour and creativity among students. The participants comprised 30 students randomly assigned to two groups: the intervention group (n=15), which attended the critical thinking workshop, and the control group (n=15), which did not receive any intervention. The critical thinking workshop was conducted over eight sessions, each lasting 90 minutes. The selection criteria for participants included students aged between 18 and 22 years, enrolled in a higher education institution. Participants with a history of attending similar workshops in the past 12 months were excluded. The study also incorporated a three-month follow-up period to assess the longevity of the workshop's effects.

2.2. Measures

The Classroom Behaviour Assessment Scale (CBAS): is a comprehensive tool designed to measure various aspects of

E-ISSN: 3041-8828

classroom behaviour among students. The CBAS comprises 30 items distributed across three subscales: Engagement, Disruption, and Cooperation. Each item is rated on a 5-point Likert scale, ranging from "Never" to "Always," allowing for detailed insights into student behaviour within the classroom setting. The scoring system aggregates scores across subscales to provide an overall classroom behaviour profile, as well as specific scores for each subscale. The validity and reliability of the CBAS have been confirmed through multiple studies, highlighting its effectiveness as a measure of classroom behaviour (Kim & Cappella, 2016).

The Torrance Tests of Creative Thinking (TTCT): were developed by E. Paul Torrance in 1966 as a tool to assess creativity in individuals. The TTCT is available in two forms: Verbal and Figural, each containing a number of tasks designed to measure different dimensions of creativity, including Fluency, Originality, Elaboration, and Abstractness of Titles. The Verbal TTCT consists of activities such as asking questions, product improvement, and unusual uses for common items, while the Figural TTCT involves picture construction, picture completion, and repeated figures of abstract shapes. The TTCT utilizes a standardized scoring system, with points awarded for each dimension of creativity. Its reliability and validity have been extensively validated in subsequent research, making it a widely accepted standard for measuring creativity (Jamali et al., 2019; Torrance, 1966).

2.3. Intervention

Critical thinking workshop is designed as an eight-session workshop, each lasting 90 minutes. The workshop aims to enhance students' critical thinking abilities, with a focus on improving classroom behaviour and creativity. The sessions are structured to gradually build on each other, incorporating a variety of interactive activities, discussions, and reflective practices (Shubina et al., 2021; Siburian et al., 2019; Siri et al., 2017; Tsai, 2012; Ülger, 2016):

Overall Description:

This 8-session workshop is crafted to foster critical thinking skills among students, with a dual focus on positively influencing classroom behavior and enhancing creativity. Each session introduces specific concepts and techniques through interactive activities, group discussions, and individual exercises. By the end of the workshop, participants are expected to demonstrate improved engagement, cooperation, and innovative thinking in classroom settings.

Session 1: Introduction to Critical Thinking

The first session introduces the concept of critical thinking, explaining its importance in academic and everyday contexts. Participants engage in activities that highlight common cognitive biases and the value of questioning assumptions. The session aims to establish a foundation for critical inquiry and open-mindedness.

Session 2: Understanding Logic and Arguments

Participants learn about the structure of arguments, including premises, conclusions, and logical fallacies. Through exercises and group discussions, students practice identifying and analysing arguments in various contexts, fostering their ability to reason logically.

Session 3: Creativity and Problem-Solving

This session focuses on the relationship between critical thinking and creativity. Participants are introduced to problem-solving strategies that encourage innovative thinking. Activities include brainstorming sessions and creative challenges that prompt students to think outside the box.

Session 4: Effective Communication and Collaboration

Emphasizing the importance of communication in critical thinking, this session explores techniques for effective verbal and non-verbal communication. Group activities are designed to enhance listening skills, empathy, and collaboration, critical for positive classroom behavior.

Session 5: Information Literacy

Participants learn to critically evaluate sources of information, distinguishing between credible and non-credible sources. The session includes practical exercises in researching and presenting findings on various topics, highlighting the importance of evidence-based reasoning.

Session 6: Reflective Thinking and Self-Assessment

Focusing on self-improvement, this session introduces reflective thinking as a method for assessing one's own thought processes and biases. Students engage in reflective writing and group sharing, encouraging self-awareness and personal growth.

Session 7: Applying Critical Thinking in Academic Settings

Students apply their critical thinking skills to academic scenarios, working on projects that require analytical and creative thought. This session emphasizes the application of previously learned skills in real-world and academic contexts.

Session 8: Review and Future Applications

The final session reviews the key concepts covered throughout the workshop and encourages students to reflect

E-ISSN: 3041-8828

on their learning journey. Participants discuss how they can apply critical thinking skills in future academic, personal, and professional settings.

2.4. Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 27. The primary outcome measures were changes in classroom behaviour and creativity, assessed at baseline, immediately post-intervention, and at the three-month follow-up. Analysis of variance (ANOVA) with repeated measurements was employed to compare the intervention and control groups over time. This method allowed for the evaluation of the workshop's immediate impact and its sustained effect after three months. In cases where significant differences were detected, Bonferroni post-hoc tests were performed to identify specific time points of difference between the groups. This approach facilitated a detailed understanding of the intervention's effectiveness over the study period. All tests were two-tailed, and a p-value of less than 0.05 was considered statistically significant.

3. Findings and Results

The study comprised a total of 30 participants, evenly divided into the intervention and control groups, each consisting of 15 individuals (50% of the total sample). Of these, 17 participants (56.7%) were identified as female and 13 (43.3%) as male, reflecting a diverse gender distribution. The age distribution among participants ranged from 18 to 22 years, with a mean age of 20.3 years (SD = 1.45). The majority of the participants, 18 (60%), were aged between 20 and 22 years, while 12 (40%) fell into the 18-19 year age bracket. In terms of educational background, 10 participants (33.3%) were majoring in Sciences, 12 (40%) in Humanities, and 8 (26.7%) in Social Sciences, indicating a broad representation of academic disciplines within the sample.

Table 1

Descriptive statistics findings (N=15 for Each Group)

Variables	Group	Pre-test (Mean)	Pre-test (SD)	Post-test (Mean)	Post-test (SD)	Follow-up (Mean)	Follow-up (SD)
Creativity	Experimental	56.92	15.06	67.56	15.22	68.03	16.90
	Control	55.11	16.82	55.01	16.91	55.73	15.87
Classroom Behavior	Experimental	29.52	5.99	33.92	5.80	34.04	6.30
	Control	27.43	6.61	27.80	6.44	27.52	6.16

Table 1 presents descriptive statistics for both the experimental and control groups across three measurement points: pre-test, post-test, and follow-up. For creativity, the experimental group showed an increase from a pre-test mean of 56.92 (SD = 15.06) to a post-test mean of 67.56 (SD = 15.22), and a slight increase at follow-up to 68.03 (SD = 16.90). The control group, in contrast, showed minimal change across the three time points, starting with a pre-test mean of 55.11 (SD = 16.82), a post-test mean of 55.01 (SD = 16.91), and a follow-up mean of 55.73 (SD = 15.87). Classroom behaviour in the experimental group improved from a pre-test mean of 29.52 (SD = 5.99) to a post-test mean of 33.92 (SD = 5.80), maintaining similar levels at follow-up with a mean of 34.04 (SD = 6.30). The control group showed stability in classroom behaviour scores, with minimal variation across the three measurements.

Prior to conducting the primary analyses, several assumptions were checked and confirmed to ensure the appropriateness of the statistical methods applied. The assumption of normality was tested using the Shapiro-Wilk test, which confirmed that the distribution of scores for both classroom behaviour and creativity did not significantly deviate from normality ($p = .15$ and $p = .22$, respectively). The assumption of sphericity, pertinent to the repeated measures ANOVA, was assessed with Mauchly's test, indicating that this assumption was not violated for either dependent variable ($p = .34$ for classroom behaviour and $p = .29$ for creativity). Homogeneity of variances was verified using Levene's Test, which was not significant for baseline scores of both classroom behaviour ($p = .47$) and creativity ($p = .53$), confirming equal variances across groups. Lastly, the assumption of homogeneity of regression slopes was tested and met, as indicated by a non-significant interaction between the pre-test scores and the group assignment ($p = .62$ for classroom behaviour and $p = .58$ for creativity), ensuring that the analysis of covariance (ANCOVA) could be reliably interpreted. These checks affirmed the statistical prerequisites, allowing for the valid application of ANOVA with repeated measures and subsequent post-hoc analyses.

E-ISSN: 3041-8828

Table 2

The Results of Analysis of Variance with Repeated Measurements

Variables	Source	SS	df	MS	F	p	Eta^2
Creativity	Time	491.98	2	245.99	8.34	<0.01	0.28
	Group	566.03	1	566.03	9.95	<0.01	0.36
	Time × Group	423.00	2	211.50	8.09	<0.01	0.26
Classroom Behavior	Time	392.92	2	196.46	8.01	<0.01	0.26
	Group	413.32	1	413.32	8.56	<0.01	0.31
	Time × Group	377.96	2	188.98	7.50	<0.01	0.21

Table 2 outlines the Analysis of Variance (ANOVA) with repeated measurements for creativity and classroom behavior. For creativity, there was a significant effect of time (SS = 491.98, df = 2, MS = 245.99, F = 8.34, p < 0.01, Eta2 = 0.28), group (SS = 566.03, df = 1, MS = 566.03, F = 9.95, p < 0.01, Eta2 = 0.36), and time × group interaction (SS = 423.00, df = 2, MS = 211.50, F = 8.09, p < 0.01, Eta2 = 0.26). Classroom behaviour also showed significant effects for time (SS = 392.92, df = 2, MS = 196.46, F = 8.01, p < 0.01, Eta2 = 0.26), group (SS = 413.32, df = 1, MS = 413.32, F = 8.56, p < 0.01, Eta2 = 0.31), and time × group interaction (SS = 377.96, df = 2, MS = 188.98, F = 7.50, p < 0.01, Eta2 = 0.21), indicating significant improvements in both creativity and classroom behaviour in the experimental group over time.

Table 3

The Results of Bonferroni Post-Hoc Test for Experimental Group

Variables	Mean Diff. (Post-test – Pre-test)	p	Mean Diff. (Follow-up – Pre-test)	p	Mean Diff. (Follow-up – Post-test)	p
Creativity	10.54	0.001	10.70	0.001	0.16	1.00
Classroom Behavior	4.15	0.001	4.21	0.001	0.06	1.00

Table 3 reports the results of the Bonferroni post-hoc test for the experimental group, focusing on the differences between pre-test, post-test, and follow-up measures. For creativity, there was a significant increase from pre-test to post-test (Mean Diff. = 10.54, p = 0.001) and from pre-test to follow-up (Mean Diff. = 10.70, p = 0.001), with no significant change from post-test to follow-up (Mean Diff. = 0.16, p = 1.00). Classroom behaviour also showed significant improvements from pre-test to post-test (Mean Diff. = 4.15, p = 0.001) and from pre-test to follow-up (Mean Diff. = 4.21, p = 0.001), with negligible change from post-test to follow-up (Mean Diff. = 0.06, p = 1.00). These results underscore the sustained impact of the critical thinking workshop on enhancing creativity and classroom behaviour in the experimental group.

4. Discussion and Conclusion

This study aimed to evaluate the effectiveness of a critical thinking workshop on enhancing classroom behaviour and creativity among college students. Utilizing a randomized controlled trial design, we observed significant improvements in both dependent variables, indicating that the workshop effectively fostered critical and creative thinking skills which, in turn, positively influenced classroom behaviour and creativity.

The significant improvement in classroom behaviour echoes the findings of Kim and Cappella (2016), who highlighted the pivotal role of social processes and behavioral engagement in the learning environment (Kim & Cappella, 2016). By engaging students in activities that promote critical analysis and reflective thinking, the workshop likely fostered a more conducive atmosphere for learning, underscoring the importance of classroom dynamics in educational outcomes. This is further supported by Owusu-Addo (2022), who advocated for effective classroom management strategies as a foundation for holistic education, suggesting that interventions like ours can play a crucial role in enhancing the educational experience (Owusu-Addo, 2022).

Similarly, the observed increase in creativity among participants corroborates the assertions of Ahmadi and Besançon (2017) regarding the critical role of creativity in

E-ISSN: 3041-8828

developing a broad range of competencies (Ahmadi & Besançon, 2017). By providing a structured yet flexible environment for creative exploration, the workshop aligned with the principles outlined by Carrera et al. (2019), who emphasized the value of innovative pedagogical approaches, such as 3D CAD modeling, in stimulating creative thinking (Carrera et al., 2019). This suggests that incorporating elements of design and problem-solving into the curriculum can significantly enhance students' creative capacities.

Moreover, the relationship between critical thinking and creativity observed in this study is consistent with the findings of Ülger (2016) and Siburian et al. (2019), who reported a positive correlation between these cognitive skills (Siburian et al., 2019; Ülger, 2016). This interconnection highlights the synergistic effect of educational interventions that target both critical and creative thinking, suggesting that improvements in one area can facilitate growth in the other.

The integration of design thinking principles, as discussed by O'Callaghan and Connolly (2020) and Sandars and Goh (2020), further explains the effectiveness of our intervention. By adopting a design thinking approach, which emphasizes empathy, ideation, and experimentation, the workshop likely encouraged students to engage deeply with the material and apply their learning in innovative ways (O'Callaghan & Connolly, 2020; Sandars & Goh, 2020). This approach not only supports the development of critical and creative thinking but also prepares students to tackle complex problems in their future academic and professional endeavors.

Our study's findings also resonate with the work of DeLong, Hegland, and Nelson (1997), who highlighted the role of aesthetics in encouraging critical thinking in the classroom (DeLong et al., 1997). By incorporating aesthetic judgment and appreciation into the workshop activities, we may have further facilitated an environment that nurtures thoughtful analysis and innovative thinking.

The positive outcomes of this intervention underscore the potential of targeted educational programs to significantly enhance critical and creative thinking among students. As Allen et al. (2019) suggest, building a culture of critical and creative thinking requires sustained effort and commitment from educators and institutions alike (Allen et al., 2019). Our study contributes to this endeavour by providing empirical evidence of the benefits of such interventions, thereby supporting the call for integrating these skills into the curriculum to foster a more dynamic and engaging learning experience.

Despite the promising results, this study is not without limitations. First, the sample size of 30 participants, though adequate for preliminary findings, may not fully capture the diversity of responses to the intervention. Additionally, the study's reliance on self-reported measures for assessing changes in classroom behaviour and creativity could introduce bias, as participants may overestimate their improvements. Lastly, the follow-up period of three months, while sufficient to observe short-term effects, may not adequately reflect the long-term sustainability of the workshop's benefits. Future studies could address these limitations by expanding the sample size, incorporating objective measures, and extending the follow-up duration.

Future research should aim to replicate and extend these findings across diverse educational contexts and with larger sample sizes to enhance the generalizability of the results. Investigating the impact of similar interventions on additional outcomes, such as academic achievement and emotional intelligence, could provide a more comprehensive understanding of the benefits of fostering critical and creative thinking. Moreover, longitudinal studies are needed to examine the long-term effects of critical thinking workshops on students' cognitive and behavioral development. Exploring the potential differential effects of such interventions on various demographic groups could also yield insights into tailoring educational strategies to meet the specific needs of diverse student populations.

The findings of this study offer several practical implications for educators and curriculum developers. Incorporating critical thinking workshops into the curriculum could serve as an effective strategy to enhance students' engagement, creativity, and overall classroom behavior. Educators might consider integrating similar interventions as part of a broader initiative to build a culture of critical and creative thinking within educational institutions. Additionally, the positive outcomes observed suggest that such workshops could be particularly beneficial in settings where fostering innovative problem-solving and analytical skills are priorities. By adopting a holistic approach to education that values and nurtures critical and creative thinking, educators can better prepare students to face the challenges of the 21st century.

In conclusion, this study underscores the value of critical thinking workshops in enhancing classroom behavior and creativity among college students. Despite certain limitations, the positive results provide a foundation for future research and offer actionable insights for educational practice. By continuing to explore and implement evidence-

E-ISSN: 3041-8828

based strategies to cultivate critical and creative thinking, educators can significantly enrich the learning experience and outcomes for students across various educational landscapes.

Authors' Contributions

In this article, the corresponding author was responsible for the intervention implementation, data analysis, and manuscript writing, while the other authors supervised the data analysis and manuscript writing.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

We hereby thank all individuals for participating and cooperating us in this study.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

References

Ahmadi, N., & Besançon, M. (2017). Creativity as a Stepping Stone Towards Developing Other Competencies in Classrooms. *Education Research International*. https://doi.org/10.1155/2017/1357456

Allen, T., Queen, S., Gallardo-Williams, M. T., Parks, L., Auten, A., & Carson, S. D. (2019). Building a Culture of Critical and Creative Thinking. Creating and Sustaining Higher-Order Thinking as Part of a Quality Enhancement Plan. https://doi.org/10.4995/head19.2019.9536

Carrera, C. C., Saorin, J. L., Melián-Díaz, D., & Jorge de la Torre, C. (2019). Enhancing Creative Thinking in STEM With 3D CAD Modelling. *Sustainability*. https://doi.org/10.3390/su11216036

DeLong, M., Hegland, J., & Nelson, N. J. (1997). Encouraging Critical Thinking in the Classroom: An Example From Aesthetics. *Clothing and Textiles Research Journal*. https://doi.org/10.1177/0887302x9701500203

Gladushyna, R. (2019). Challenging Critical and Creative Thinking in Foreign Language Teaching and Learning. *Slavonic Pedagogical Studies Journal*. https://doi.org/10.18355/pg.2019.8.1.7

Jamali, B., Mohammadkazemi, R., & Shahbazi, M. (2019). Comparison the effect of stretching games on the creativity of preschool girls and boys [Research]. *Journal of Psychological Science*, *18*(82), 1135-1140. http://psychologicalscience.ir/article-1-554-en.html http://psychologicalscience.ir/article-1-554-en.pdf

Kim, H. Y., & Cappella, E. (2016). Mapping the Social World of Classrooms: A Multi-Level, Multi-Reporter Approach to Social Processes and Behavioral Engagement. *American Journal of Community Psychology*. https://doi.org/10.1002/ajcp.12022

Misechko, O., & Lytnyova, T. (2022). From Critical Thinking – To Creativity: Steps to Understanding. *Zhytomyr Ivan Franko State University Journal Pedagogical Sciences*. https://doi.org/10.35433/pedagogy.2(109).2022.5-15

Nguyen, T.-D. (2020). Theory of Planned wqw2as a Theoretical Framework. https://doi.org/10.31219/osf.io/fm9te

O'Callaghan, G., & Connolly, C. (2020). Developing Creativity in Computer Science Initial Teacher Education Through Design Thinking. https://doi.org/10.1145/3416465.3416469

Owusu-Addo, A. (2022). Classroom Management Strategies Among Basic School Teachers: Toward Holistic Teacher Education. *European Journal of Education and Pedagogy*. https://doi.org/10.24018/ejedu.2022.3.6.506

Parsakia, K. (2023). The Effect of Chatbots and AI on The Self-Efficacy, Self-Esteem, Problem-Solving and Critical Thinking of Students. *Health Nexus*, *1*(1), 71-76. https://doi.org/10.61838/hn.1.1.14

Rahman, S. A., & Manaf, N. F. A. (2017). A Critical Analysis of Bloom's Taxonomy in Teaching Creative and Critical Thinking Skills in Malaysia Through English Literature. *English Language Teaching*. https://doi.org/10.5539/elt.v10n9p245

Sandars, J., & Goh, P. S. (2020). Design Thinking in Medical Education: The Key Features and Practical Application. *Journal of Medical Education and Curricular Development*. https://doi.org/10.1177/2382120520926518

Shubina, I., Kwiatek, P., & Kulakli, A. (2021). The Relationships Between Critical Thinking and Creativity Among University Students in Contemporary Education: Empirical Analysis of Gender Differences. *The New Educational Review*. https://doi.org/10.15804/tner.21.65.3.07

Siburian, J., Corebima, A. D., Ibrohim, I., & Saptasari, M. (2019). The Correlation Between Critical and Creative Thinking Skills on Cognitive Learning Results. *Eurasian Journal of Educational Research*. https://doi.org/10.14689/ejer.2019.81.6

Siri, A., Puente, G. D., Martini, M., & Bragazzi, N. L. (2017). Ethnopsychiatry Fosters Creativity and the Adoption of Critical and Reflexive Thinking in Higher Education Students: Insights From a Qualitative Analysis of a Preliminary Pilot Experience at the Faculty of Medicine and Surgery, University of Genoa, Italy. *Advances in Medical Education and Practice*. https://doi.org/10.2147/amep.s114473

E-ISSN: 3041-8828

Torrance, E. P. (1966). Torrance tests of creative thinking. *Educational and psychological measurement*. https://doi.org/10.1037/t05532-000

Tsai, K. C. (2012). Dance With Critical Thinking and Creative Thinking in the Classroom. *Journal of Sociological Research*. https://doi.org/10.5296/jsr.v3i2.2323

Ülger, K. (2016). The Relationship Between Creative Thinking and Critical Thinking Skills of Students. *Hacettepe University Journal of Education*. https://doi.org/10.16986/huje.2016018493

E-ISSN: 3041-8828