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RESEARCH ARTICLE

Examining the relationship between teachers' creativity and students' critical thinking in the context of EFL learning in Iran

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ABSTRACT

The present study aimed to investigate the possible relationship between teachers' creativity and students' critical thinking among intermediate English as a foreign language learner in Iran. The study involved 100 university students majoring in English translation and teaching English as a foreign language and three of their teachers. The researchers recruited participants randomly and used two instruments, Honey's critical thinking questionnaire, and Torrance Test of Creative Thinking (TTCT) to collect data. The findings revealed that there was a moderate positive correlation between teachers' creativity and students' critical thinking, indicating that teachers who are more creative tend to promote critical thinking skills in their students. The study has several pedagogical implications, including classroom instruction for enhancing critical thinking skills among students. Moreover, the study highlights the importance of promoting creativity among English language teachers to facilitate critical thinking skills in their students. This can be done through teacher training programs that emphasize creativity and critical thinking. Additionally, the study suggests that creating a classroom environment that encourages creativity and critical thinking could lead to expected effective learning for students. In conclusion, this study adds to the existing literature on the relationship between creativity and critical thinking and provides insights for English language teaching in Iran.

Keywords: critical thinking; teachers' creativity; Iranian English as a foreign language learners

1. Introduction

Critical thinking entails analytical, synthesis, and evaluative questioning and replying, which are difficult cognitive abilities that are frequently disregarded in traditional language education, which is characterized by rote learning without active self-reflection[1].

According to Greenstein[2], there are five critical thinking skills aspects: (1) application, which entails locating and utilizing information and data from various sources; (2) evaluation, which entails comparing and differentiating between criteria and points of view; (3) using data to develop critical insight and to produce correct conclusions based on available data; (4) identifying and analysing the main problem, determining priorities, seeing implications that are not mentioned, and comprehending complex ideas from various perspectives; and (5) synthesizing, which entails combining.

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Critical thinking, according to Brookfield[3], entails two interconnected processes: recognizing and questioning assumptions, and examining other views. This notion emphasizes the significance of creative and imaginative thinking in identifying implicit intents and assessing them against specified criteria. Furthermore, Ku[4] contends that in order to think critically, humans must have a strong will and the initiative to participate in important cognitive processes. A critical thinker should not only be able to participate in cognitive processes, but also have a strong desire to value critical thinking and the initiative to seek improved judgment., before educators can effectively improve students' critical thinking skills, they must first ensure that these students understand the importance of critical thinking. Students will be encouraged to engage in the cognitive processes necessary for critical thinking, and they will grasp what they stand to gain as a result. As a result, introducing a fundamental grasp of the importance of critical thinking in educational programs may encourage pupils to use it.

On the other hand, the idea of creativity is widely debated[5,6] and there is no commonly accepted definition of this elusive term. Despite this dispute, Alemida et al.[7] defined creativity as a person's capacity to generate ideas and objects that fit the following criteria: (a) they are distinctive and unusual, (b) they are of high quality, and (c) they are suited for the work at hand. Creativity is frequently related with invention, discovery, diverse types of thinking, and adaptable problem-solving strategies[5,8]. Penick[9] provides a detailed description of creativity as a process that includes being aware of issues, discovering gaps in knowledge, seeking for answers, developing hypotheses, performing experiments, and presenting outcomes.

Greenstein[2] identified six aspects of creative thinking skills: (1) curiosity, an active interest in discovering new elements and ideas; (2) fluency, being able to see things from multiple perspectives; (3) originality in the production of new ideas; (4) elaboration, students find it simple and enjoyable to improve anything by adding details; (5) flexibility, adapting to new situations well; and (6) divergence, as demonstrated by combining, modifying, and adapting ideas towards interdisciplinary goals.

Furthermore, Nwazuoke et al.[10] said that a child's creative potential may be nourished or inhibited by the circumstances in which they find themselves. As a result, even if children have a natural or genetic tendency for creativity, parents and instructors may play a critical role in nurturing and improving their creative ability. Nwazuoke et al.'s[10] view of creativity from the perspective of children echoes Vygotsky's cultural-historical theory of creativity[11] and Csiksentmihalyi's[12] perspective on the processes that facilitate creative 'flow', with both indicating that creativity is essentially a collaborative and social endeavor and creativity is the product of the interplay between an individual's personal thoughts and their socio-cultural context. This viewpoint contrasts starkly with previous notions that creativity is a natural characteristic of brilliant persons[13]. In line with this concept, Amabile[14] claimed that creativity should be viewed as an attitude that emerges through the combination of individual traits, cognitive skills, and environmental factors rather than as an intrinsic personality trait or generic talent. As a result, basic tactics and strategies may be used to teach it.

Critical thinking and creativity are both seen as essential qualities in 21st-century education[15]. Critical thinking and creativity have been linked by researchers[16–20]. According to Bailin[16], critical thinking requires some element of creativity. Furthermore, according to Paul and Elder[19], both critical thinking and creativity are crucial components of purposeful and excellent thinking, and hence are fundamentally the same thing. Effective critical thinking requires the creation of intellectual content, which is related with creativity. Successful thinking, on the other hand, necessitates awareness, strategic thinking, and critical examination of intellectual products. According to Paul and Elder[19], the two notions are intertwined in practice and grow concurrently.

As a result, classroom learning should incorporate both creativity and critical thinking. Some empirical researches have revealed a beneficial relationship between creativity and critical thinking. For example, Akpur[21] found a moderate association between them among college students ($r = 0.27$, $p < 0.05$). Similarly, Qiang et al.[22] investigated the association between creativity and critical thinking in a large sample of high school students ($n = 1.153$) and discovered a positive relationship ($r = 0.045$, $p < 0.001$). Similarly, Wechsler et al.[23] discovered that creativity and critical thinking were marginally associated. Furthermore, Ling and Loh[24] discovered that creativity and critical thinking are relatively independent, with creativity being a poor predictive pattern of recognition and critical thinking being a good predictor. Critical thinking abilities and creative thinking skills, according to Ülger[25] cannot be separated.

Finally, various researchers[16–20] have shown a link between critical thinking and creativity. Critical thinking and creativity may appear to be different, if not incompatible, notions at first. However, according to Bailin[16] critical thinking necessitates a certain level of inventiveness. Meanwhile, Paul and Elder[19] argue that creativity and critical thinking are both necessary components of successful and meaningful thinking. Thus, critical thinking and creativity are polar opposites. The capacity to develop intellectual output, which requires creativity, is required for effective thinking. Nonetheless, successful thinking necessitates being aware, strategic, and critical of the quality of those intellectual outputs. "Critical thinking without creativity reduces to mere skepticism and negativity", write Paul and Elder[19], while "creativity without critical thought reduces to mere novelty." According to Paul and Elder[19], these two notions are interrelated and evolve in tandem in practice.

Despite the above studies on the relationship between creativity and critical thinking in general, the two concepts have been investigated separately in the available literature, and additional research efforts on the relationship between teachers' performance in terms of creativity and the influence on students' critical thinking capacity are required[21,23]. As a result, the current study aims to serve as an extra research effort by answering the following research question: is there any link between teachers' creativity and students' critical thinking?

2. Methodology

In general, to address the above research question, a quantitative investigation in a correlational approach was used in this study.

2.1. Participants

A total number of 100 Iranian English majors participated in this study. Among them, 50 were male and 50 were female; and their ages ranged between 20–25. These students majoring in English translation and teaching English as a foreign language were chosen on voluntary basis through convenience sampling along with their three teachers, ages between 40–45 from two universities based in Iran.

2.2. Instruments

To examine the research question of this study, the researchers used two sets of instruments: a critical thinking questionnaire and Torrance Test of Creative Thinking.

2.2.1. Critical thinking questionnaire

A critical thinking questionnaire adapted from Naeini[26] was employed to study learners' critical thinking beliefs. The scale was originally developed by Honey[27]. The researchers invited two experts in linguistics for back translation for the readability of the instrument among the participants. Moreover, the reliability of the scale was reported a high consistency 0.86. The questionnaire consists of 30 questions to evaluate the skills of

analysis, inference, evaluation, and reasoning. Students were asked to read items and select an option ranging from never to always in terms of their critical thinking beliefs.

2.2.2. Torrance Test of Creative Thinking (TTCT)

The Torrance Test of Creative Thinking, developed by Torrance in 1962, measures four creativity scales, namely fluency, originality, elaboration, and flexibility. Fluency measures the number of ideas and solutions generated, while originality assesses the rarity of ideas. Elaboration evaluates the ability to develop and elaborate on ideas, whereas flexibility measures the number of different categories of relevant responses used. This instrument was also back-translated by two experts in linguistics for the readability of the instrument to be administered among the participants. The Persian translation of the instrument was used in this study to investigate the correlation between teachers' creativity beliefs. Abedi[28] validated and confirmed the reliability of the Persian version of the Torrance Test of Creative Thinking for the context of Iran.

2.3. Procedures

The study included two phases. In the first phase, three teachers answered 60 questions via Torrance Test of Creative Thinking, and in the second phase, 100 students answered 30 questions in Honey's critical thinking questionnaire. 100 participants were recruited via convenience sampling. Data collected were tabulated and analysed to provide answers to the research question. The statistical analysis involved comparing the scores of the participants and computing the amount of correlation of the scores. During the procedure, ethical issues were dealt with appropriately in light of the rules set by the human ethics committee of the universities where data collection was conducted.

2.4. Data analysis

Descriptive statistics were employed for the means of the teachers' and the students' responses to the test and the questionnaire, respectively. Based on the means, Pearson product moment correlations was used to examine the relationship between teachers' creativity and students' critical thinking. The statistics analysis was conducted on the software program of the statistical package for social sciences

3. Results

As shown in **Table 1**, the result of the Pearson correlation testing ($r = 0.376$, $p < 0.001$) suggests a moderate effect size, indicating that there was a significant but moderate relationship between teachers' creativity and students' critical thinking. This result answered the research question.

Table 1. Pearson correlations: Creativity with critical thinking.

		Critical thinking
Creativity	Pearson correlation	0.376**
	Sig. (2-tailed)	0.001
-	N	103

**. Correlation is significant at the 0.001 level (2-tailed).

4. Discussion

The current study investigated the connection between EFL teachers' creativity and their students' critical thinking in Iran. Data analysis showed that there was a positive moderate relationship between the two concepts. In light of Paul and Elder[19], creativity and critical thinking are quite related to each other. It is, therefore, quite understandable that in this study, higher teachers' creativity results in higher students' critical thinking, which also borrows support from existing literature[22,24]. For instance, in Akpur's[21] study where he collected data

from 227 students in a state university preparatory class in İstanbul, Turkey, the research found critical thinking and creativity are correlated with each other in a positive and negative way. Another study by Wechsler et al.[23] who collected data from 291 undergraduate students from Brazil (41.2%) and Spain (58.8%), reveals that creativity and critical thinking are moderated each other which lends support to the present study. In fact, as reviewed earlier, the result of this present study shows a moderate correlation between teachers' creativity and students' critical thinking, which is in line with the existing literature in that creativity and critical thinking skills are dependent on together, which is also documented in the study by Ling and Loh[24].

5. Conclusion and implication

This study reveals a moderate and positive correlation between teachers' creativity and EFL learners' critical thinking in Iran. The result is expected to provide some insights for improving critical thinking and creativity in language lessons and can have a significant impact on language teaching and learning. The findings suggest that teachers' creativity can facilitate students' critical thinking development. Teacher education programs can implement strategies that help teachers enhance their creativity and critical thinking skills. In addition, language testing can incorporate tasks that promote intentional thinking, which can improve students' performance on higher-order thinking tasks. Curriculum developers can design syllabi that provide opportunities for students to engage in creative and critical thinking activities. Further, the findings of the current research can be utilized to promote critical thinking and creativity in language classes by teacher educators. Moreover, these findings can be used in language testing to increase purposeful thinking or higher order thinking. Finally, curriculum developers and syllabus designers can integrate these techniques to foster critical thinking and creativity in EFL/ESL classes.

In spite of the implication, the study's limited sample size and use of quantitative data call for further research to investigate the relationship between teachers' creativity and students' critical thinking. Future studies can adopt mixed-methods research designs to provide a more comprehensive understanding of the topic. Overall, this study's findings are insightful and can contribute to the development of effective language teaching and learning practices.

Author contributions

Conceptualization, MK; methodology, MK; software validation, MK; formal analysis, MK; investigation, resources, MK; data curation, MK; writing—original draft preparation, MK; writing—review and editing, DH; visualization, WL; supervision, NAHO; project administration, MK. All authors have read and agreed to the published version of the manuscript.

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Conflict of interest

The authors declare no conflict of interest.

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