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The Influence of Artificial Intelligence on Fostering Self-Linguistic Inventiveness Amongst Top-Performing Students in Iraqi Universities

Omar Abbas Naithel1. Obaida Chaqmaqchee2
Al-Mustansiryah University, Collage of Education1
University of Baghdad, Continuing Education Center2
obaida.m@dcec.uobaghdad.edu.iq
omar.abbas.n@uomustansiriyah.edu.iq

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ABSTRACT

Self-linguistic inventiveness refers to learners' ability to create original, flexible and context-appropriate language. This paper has explored the role of artificial intelligence tools in developing self-linguistic inventiveness among top-performing students. The study employed a quasi-experimental design. Thirty English-major students participated in this study. Pre- and post-test data showed that overall self-linguistic inventiveness statistically improved after applying artificial intelligence applications. The results indicated that general self-linguistic inventiveness increased significantly when they used AI applications. The changes were observed on all three dimensions, including proficiency, awareness, and inclination. It was statistically proven that the differences were quite significant, and the effect size was very high, indicating that AI tools significantly improved language inventiveness. The results justify introducing artificial intelligence tools and inform of some valuable recommendations.

Keywords: AI Tech, Top-Performing Students, Self-Creativity, Self-Linguistic Inventiveness

الذكاء الاصطناعي في تعزيز الإبداع اللغوي الذاتي لدى الطلبة المتفوقين في الجامعات العراقية

عمر عباس نعيّل، عبيدة محمد چقماقچي
الجامعة المستنصرية، كلية التربية
جامعة بغداد، مركز التعليم المستمر
omar.abbas.n@uomustansiriyah.edu.iq

الملخص

تشير القدرة على الابتكار اللغوي الذاتي إلى قدرة المتعلم على توليد لغة أصلية ومرنة ومناسبة للسياق بشكل مستقل. هدفت هذه الدراسة إلى استكشاف دور تطبيقات الذكاء الاصطناعي في تعزيز الابتكار اللغوي الذاتي لدى الطلاب المتفوقين. ركزت الدراسة على ثلاثة أبعاد رئيسية: الكفاءة في الابتكار اللغوي الذاتي، والوعي بالابتكار اللغوي الذاتي، والميل لاستخدام الابتكار اللغوي الذاتي. تم تطوير قائمة لهذه الأبعاد، إلى جانب مقياس لقياسها. استخدمت الدراسة تصميمًا شبه تجريبي لمجموعة واحدة شملت خمسين طالبًا في السنة الرابعة بكلية اللغة الإنجليزية بجامعة البصرة. أظهرت نتائج الاختبارات قبل وبعد التدخل تحسنًا ملحوظًا في الابتكار اللغوي الذاتي بشكل عام وفي جميع أبعاده الثلاثة، وكانت الفروق ذات دلالة إحصائية عالية، كما كان حجم الأثر للتطبيقات الذكاء الاصطناعي كبيرًا جدًا (0.95)، مما يدل على تأثيرها القوي والملموس. وتدعم هذه النتائج دمج أدوات الذكاء الاصطناعي في السياقات التعليمية، كما قدمت الدراسة مجموعة من التوصيات العملية بناءً على نتائجها.

الكلمات المفتاحية: الإبداع الذاتي، الابتكار اللغوي الذاتي، الطلبة المتفوقون، تقنيات الذكاء الاصطناعي

1. Introduction:

Technological developments have transformed the educational process. Artificial Intelligence (AI) is leading a learning environment transformation process. For language learning, AI can introduce new possibilities for cognitive growth, personalized education, and better engagement (Hamudi, 2025; Ibrahim, 2024). Meanwhile, English Language Teaching (ELT) is also more concerned with creativity, learner agency, and the acquisition of a confident linguistic identity, which are based on the communicative/sociocognitive theories of language learning (Richards and Rodgers, 2014; Kramsch, 2009). Studies have demonstrated that linguistic inventiveness, including motivation, self-efficacy, and linguistic self-awareness, impacts achievement and determines the ability of learners to engage in unique expression in second language learning (Mercer, 2011; Csizér and Dörnyei, 2005; Ryan and Deci, 2000). However, little has been done regarding AI and language creativity by students, especially their capacity to create unique, flexible, and context-specific language. Previous studies aimed at investigating accuracy, grammar, or translation support. However, studies have not focused on profound aspects of the linguistic identity of learners, their metacognitive awareness, and their readiness to generate creative language. Aspects like self-linguistic inventiveness which are indicative of the proficiency, awareness and tendency of learners to apply creative language have not been empirically studied, and there are no existing scales to assess their progress in AI-based settings.

In order to fill this gap, this paper examines the role of AI applications on self-linguistic inventiveness of high-achieving undergraduate learners. The study investigated self-linguistic inventiveness including the three main dimensions of proficiency, awareness, and inclination. It adopts a quasi-experimental single-group study to check pre- and post-intervention changes in learners' linguistic inventiveness. This research, which aims at encouraging the creative linguistic competency of learners instead of just accuracy, provides empirical data on how AI can contribute to the formation of a dynamic linguistic identity that affects learners' readiness to use language.

2. Literature Review

2.1 Artificial Intelligence

Technology has transformed teaching and learning significantly. It provides access to information in real time, cutting down on time and effort spent to deliver the materials. It helps students to navigate and rapidly develop their knowledge (Kalyani, 2024). Due to the rapid pace of change in technology, the study of artificial intelligence, its types, uses, and features has become more significant. The concept of artificial intelligence refers to a wide and constantly growing number of applications commonly referred to as the AI family. Applications that are AI-enabled, in this context, mean the tools/programs

that help learners to provide appropriate responses, track learning behaviors, and monitor students' interactions with their learning material (Sajja et al., 2024). Intelligent content systems, augmented reality, and chatbots are some of the AI tools that are applicable in teaching and improving self-linguistic creativity (Southgate et al., 2019; Almohammadi et al., 2017).

Previous research explored AI as far as personalized learning, academic gains, and learner motivation are concerned. According to Zawacki-Richter et al. (2019), AI is an opportunity in the field that can be used in enhancing online education, in particular, personal feedback. In learning a language, AI-based systems can create meaningful interactions to promote language development.

2.2 Self-Linguistic Inventiveness

Self-linguistic inventiveness is associated with learners' self-concept (Rubio, 2014). It refers to how they see their own feelings, enjoyment, ability and mastery of the English language and how they recognize the causes of their failures and successes (Mercer, 2011). It shows how well a student assesses his or her language skills and how sure he is that he does it well or not. In the given context, self-creativity refers to the fact that a student believes in his or her knowledge, ability, and talents that help in th inking creatively and expressing himself or herself in language (Mohamed, 2020, p. 188).

Self-linguistic inventiveness refers to learners' perceptions about their capacity to utilize language creatively and demonstrate imagination in creative and original modes of expression in fluent, flexible, and creative ways. It also includes their self-review of their language proficiency in reading, writing, and speaking exercises in the form of their points on the given scale (Arens and Jansen, 2016). The formation of a large sense of linguistic self-realization in creative language assignments leads to the feeling of emotional well-being and reduces anxiety, as well as contributes to psychological balance. Students who achieve self-actualization tend to set meaningful goals, maintain high aspirations, and adopt practical life strategies. They are hard-working, they appreciate individual success, and they strive to find satisfaction in long-lasting effort (Al-Rousan, 2023).

It is considered a significant educational variable that helps learners to feel confident in their language skills, promotes a positive attitude towards language acquisition, and facilitates increased levels of success. The high conscious level of linguistic self-concept has always been linked with better academic performance. Increasing self-linguistic inventiveness enables learners to create different, original, and unusual ideas and perceive linguistic activities in ways that might not be shared with the ir peers. For college students with high performance, expectations of success in English classes can be stimulated by the creation of a creative linguistic identity. Schools and teachers are at the forefront of enhancing the creative linguistic sense of students due to its values to academic and individual growth. Students' perceptions of their cognitive and linguistic abilities shape their success or failure. Self-actualized persons are more in control of their education, have clear aims as well as handle difficulties well. They

are also characterized by the quality of minimizing the negative impact and overcoming challenging situations (Salihoglu, 2024).

There is a significant gap in studies that directly investigated aspects of self-linguistic inventiveness as a pedagogical concept. Despite related studies that have covered linguistic self-concept, self-efficacy and creativity, there exists no empirical study which has dealt with self-linguistic inventiveness as a composite variable. Thus, dimensions embraced in this study can be regarded as a result of theoretical debates of the language-related self-perception, creative thought, and judgments made by learners concerning their language performance. The first dimension is Proficiency in Self-Linguistic Inventiveness, which is the learner being sure that he or she is able to perform creative linguistic tasks well. This is how they feel that they are competent in producing rich linguistic as well as their perception that they can carry out such activities in reading, writing and speaking. The perceived competence enhances the desire of learners to engage in complicated and creative language production.

The second dimension is Awareness of Self-Linguistic Inventiveness. It is the learners' knowledge of their ability to engage in creative linguistic activities. This consciousness involves the emotional reaction of pleasure, frustration, satisfaction or discomfort that goes with their speech endeavors. It involves the perception that students have of them in terms of their strengths and weaknesses in interacting with creative language use, and how these perceptions are related to their motivation and engagement. The third dimension is Inclination toward Self-Linguistic Inventiveness. It is the inclination of learners to judge their linguistic performance. This dimension deals with their eagerness to examine their linguistic production, evaluate the novelty and the quality of their thoughts, and evaluate the efficiency of their creative measures. Those learners who are highly motivated towards self-assessment tend to sharpen their language abilities. These dimensions are related to the bigger constructs of competence, emotion, and self-attitude that are generally determined in the study of self-concept.

3. Methodology

3.1 Research Design

The study used a quasi-experimental, single-group pre-test/post-test research design in exploring the impact of artificial intelligence (AI) use on the self-linguistic inventiveness of high-performing undergraduate students. The study measured self-linguistic inventiveness, including proficiency, awareness and tendency before and after an intervention. 30 top-performing fourth-year students in the English Department/College of Arts/University of Basra participated in this study.

3.2 Self-Linguistic Inventiveness

The researchers developed a list of self-linguistic inventiveness suitable for high-performing students, including the three concepts of Proficiency, Awareness, and Inclination. These dimensions were further

subdivided into 27 sub-dimensions. Two experts reviewed the list to ensure content validity. Their feedbacks were integrated, and approval rates of all items were determined by the Cooper equation:

$$\textbf{\textit{Approval Rate}}\ \frac{\textbf{\textit{Approvers Number}}}{\textbf{\textit{Approvers Number}} + \textbf{\textit{Disapprovers Number}}}\textbf{\textit{x}}100$$

Table 1 describes the list in its finalized format. It presents the final structure of the Self-Linguistic Inventiveness list after expert validation and revision. It shows how the 27 sub-dimensions are distributed across the three primary dimensions, Proficiency, Awareness, and Inclination.

Table (1) Relative weights of the self-linguistic inventiveness

Primary Competency	Total Performance Skill	Percentage in total
Proficiency in the Self-Linguistic Inventiveness	**13**	**%44,45**
Awareness of the Self-Linguistic Inventiveness	**9**	**%29,63**
Inclination towards the Self-Linguistic Inventiveness	**5**	**%25,93**
Total	**27**	**%100**

3.3 Developing the Self-Linguistic Inventiveness Scale:

The list was developed by looking into prior studies about learners' self-concept and language proficiency (Boud et al. 2013; Zhao and Lai 2023). These studies investigated the emerging technologies in language learning and their role in enhancing students' language skills and self-concept. Studies (Runco and Acar, 2012; Amabile, 1996) addressing creativity in learning, which explored the impact of creativity in educational environments for problem-solving, were utilized to inform the implemented tools for this study. The scale had 27 statements, categorized into three primary categories. The scale was piloted with 20 fourth-year students from the English Department at the College of Arts, University of Basra, during the first semester on Tuesday, December 21, 2023.

3.4 Procedures

The pre-test was administered on Wednesday, February 23, 2023, to establish a baseline for the learners. Then, the researcher commenced instruction of literary texts utilizing artificial intelligence applications. Then, the post-test was administered to compare the pre-test's results. The scores were documented in tables for further statistical processing using SPSS software for data analysis.

4.5 Data Analysis:

The scale was administered, and the data were statistically analyzed by calculating the mean and standard deviation of the scores and paired-sample "t" value to determine the observed changes (Table 2).

Table (2) PRE-POST of the Self-Linguistic Inventiveness (n = 30)

Primary Dimension	Application	Arithmetic Mean	Standard Deviation	Autonomy Degree		*t*-Value	Significance Level
Proficiency in the Self-Linguistic Inventiveness	PRE	**23.67**	**3.708**	29		54.393	(0.01)
	POST	55.60	1.589				
Awareness of the Self-Linguistic Inventiveness	PRE	**15.47**	**3.501**	29		32.038	(0.01)
	POST	36.90	1.062				
Inclination towards the Self-Linguistic Inventiveness	PRE	**13.23**	1.736	29		41.440	(0.01)
	POST	32.37	1.159				
Comprehensive Self-Linguistic Inventiveness Scale	PRE	**52.37**	6.441	29		62.478	(0.01)
	POST	124.87	2.569				

Table 2 shows both the descriptive and inferential statistics of the pre- and post-test scores. The outcomes illustrate that the general self-linguistic inventiveness has increased significantly after the AI-assisted teaching. In particular, the average score in pre-test was 52.37, and the average score in the post-test was 124.87, which resulted in a mean improvement of 72.50. As the paired-sample t-test proved, this difference was significant at the level of 0.01 ($t = 62.478$), which proves a significant improvement in the self-linguistic inventiveness of the research group in all of its dimensions. These results verify that AI applications use influenced considerably the level of proficiency, awareness, and tendency to use creative linguistic expression among students in a positive manner.

Looking at the three dimensions separately, proficiency experienced significant improvement in terms of pre-test mean of 23.67 to 55.60 with a mean difference of 31.93 and a very significant value of the t-test of 54.393 ($p < 0.01$). Awareness increased by 21.43 on the post-test, as compared to 15.47 on the pre-test, and the t-test significant value of 32.038 ($p < 0.01$). Inclination also exhibited high growth, as the pre-test means were 13.23, which increased to 32.37 in the post-test with the difference in means being 19.14 and the t-value significant amount is 41.440 ($p < 0.01$). These scores suggest statistically significant improvements in all three aspects of self-linguistic inventiveness. The effect size for the three concepts were found to be 0.99, 0.97, and 0.98, respectively, all of which are highly significant. Overall, the effect size was 0.99, further confirming that the AI-supported instructional intervention had a substantial and meaningful impact on the development of self-linguistic inventiveness among the students.

4. Discussions

The results indicate using AI applications in teaching literary texts can revolutionize learning. AI tools motivated students to learn more individually as they had the opportunity to interact with the content provided in individual ways and with regard to individual capabilities and readiness. This environment helped learners to communicate their knowledge in a unique manner, have a wide variety of learning content, and cooperate and collaborate better with AI-enhanced channels of communication. In addition to the development of technical abilities, these experiences increased confidence, self-perception, as well as intrinsic motivation of learners. The engagement with intelligent systems, including chatbots, and continuous support provided by the instructors encouraged not only the linguistic proficiency but also the sense of agency and ownership of the learning process.

The findings support previous studies. They show how AI can be used to improve motivation, self-concept, and creativity. Previous studies, for example, Csizér and Dörnyei (2005) stress the importance of motivation and self-concept on the process of language acquisition. In another study, Gardner and Lambert (1972) highlighted the impact of attitude and engagement on the process of developing creative linguistic skills. This study adds to the literature by demonstrating the fact that AI applications can offer interactive, adaptive, and personalized experiences that could be difficult to accomplish using traditional means. Likewise, the literature (Woolf, 2010; Baker and Yacef, 2009; Hwang et al., 2020) on the intelligent tutoring system and computer-mediated adaptive learning highlights the importance of AI to stimulate the cognitive activity of learners. This study showed that these applications not only facilitate engagement and performance but can also improve self-linguistic inventiveness, an indicator of affective cognitive development for students. This paper demonstrates that AI technologies can improve the creation of learning settings that go beyond the acquisition of knowledge. It shows how students can become original, self-aware, and self-motivated to acquire language.

5. Conclusion

As it is demonstrated in this paper, self-linguistic inventiveness can be improved using AI. The impressive increases in skill, familiarity, and orientation towards linguistic imagination indicate that AI applications are not only facilitative, but also provides conditions in which learners can be influenced to use language creatively, feel sure in their possibilities to express themselves, and have a better sense of linguistic identity. The findings offer a novel perspective of how theories of motivation, self-concept, and creativity that have been applied over many years can be translated into pedagogical activities using AI. It provides a personalised learning experience, significant engagement, and expanded exposure to a wider range of linguistic experiences, which result in a higher level of agency in their learning activities as well as in more original and independent interpretation of a text. These findings are supplemented by the new argument, that technology-based classrooms are capable of building more complex cognitive

interaction and creative expression, which traditional classroom instruction might not easily achieve. This paper shows that one of the elements of communicative competence that is frequently overlooked is self-linguistic inventiveness and can be trained using AI. Long-term effects can be investigated in future studies with other levels of proficiency or even fields.

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