

The impact of the English language On the development of creativity and innovation skills

تأثير اللغة الإنجليزية في تنمية مهارات الإبداع والابتكار

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Abstract:

English is regarded as one of the most widely spoken languages in the world, serving as a primary means of communication in various scientific, academic, and technological fields. With the non-stop growth of reliance on this language at work and educational environments, it has taken on a pivotal role in enhancing creative thinking and innovation skills. Language is not just a means of communication; it is a means of shaping ideas and developing new solutions, making it an influential element in creativity and innovation, both at the individual and institutional levels.

Despite the widespread use of the English language, its impact on the development of creativity and innovation skills remains a subject of academic debate. Does the English language serve as a catalyst for creativity and innovation, or is it merely a tool for transferring knowledge without any significant influence on the creative process? From this perspective, the research seeks to answer the main question: What is the impact of the English language on the development of creativity and innovation skills?

The importance of this research lies in highlighting the relationship between English language acquisition and the development of creative abilities, contributing to the understanding of how this language is employed in the fields of scientific research, entrepreneurship, and technology. It also helps in guiding educational policies towards promoting English language learning as a means to support innovative thinking.

The research aims to analyze the relationship between proficiency in English and the development of creativity and innovation skills by studying the impact of using English on critical thinking, problem-solving, and the development of new ideas.

The research relies on the descriptive-analytical method through reviewing previous studies and analyzing data related to the impact of the English language in the fields of creativity and innovation. The research has been divided into two sections: the first section: English as a tool for fostering creativity, where we discuss the role of the English language in developing critical and creative thinking skills, and the impact of the language on generating innovative ideas in various fields. The second section: the impact of the English language in innovation and entrepreneurship environments, where we discuss the role of the language in supporting scientific research and technological innovation, and the effect of English proficiency on entrepreneurship and the development of creative solutions.

Key words: The English language; innovation; creativity; critical thinking; scientific research.

الملخص:

تُعد اللغة الإنجليزية واحدة من أكثر اللغات انتشارًا في العالم، حيث تمثل وسيلة رئيسية للاتصال في مختلف المجالات العلمية والأكاديمية والتكنولوجية، ومع تزايد الاعتماد على هذه اللغة في بيئات العمل والتعليم أصبح لها دورٌ محوري في تعزيز مهارات التفكير الإبداعي والابتكار، فاللغة ليست مجرد أداة تواصل بل هي وسيلة لصياغة الأفكار وتطوير الحلول الجديدة مما يجعلها عنصرًا مؤثرًا في الإبداع والابتكار، سواء على المستوى الفردي أو المؤسسي.

رغم الانتشار الواسع للغة الإنجليزية لا يزال تأثيرها على تنمية مهارات الإبداع والابتكار محل جدل أكاديمي، فهل تمثل اللغة الإنجليزية عاملًا محفزًا للإبداع والابتكار أم أنها مجرد أداة لنقل المعرفة دون تأثير جوهري على العملية الإبداعية؟ ومن هذا المنطلق يسعى البحث للإجابة عن السؤال الرئيسي: ما هو تأثير اللغة الإنجليزية في تنمية مهارات الإبداع والابتكار؟

وتكمن أهمية هذا البحث في تسليط الضوء على العلاقة بين اكتساب اللغة الإنجليزية وتطوير القدرات الإبداعية، مما يساهم في فهم كيفية توظيف هذه اللغة في مجالات البحث العلمي، ريادة الأعمال، والتكنولوجيا. كما يساعد في توجيه السياسات التعليمية نحو تعزيز تعلم اللغة الإنجليزية كوسيلة لدعم التفكير الابتكاري.

ويهدف البحث إلى تحليل العلاقة بين إتقان اللغة الإنجليزية وتنمية مهارات الإبداع والابتكار من خلال دراسة تأثير استخدام اللغة الإنجليزية على التفكير النقدي، حل المشكلات، وتطوير الأفكار الجديدة.

ويعتمد البحث على المنهج الوصفي التحليلي من خلال مراجعة الدراسات السابقة وتحليل البيانات المتعلقة بتأثير اللغة الإنجليزية في مجالات الإبداع والابتكار، وقد تم تقسيم البحث إلى مبحثين، المبحث الأول: اللغة الإنجليزية كأداة لتنمية الإبداع، المبحث الثاني: تأثير اللغة الإنجليزية في بيئات الابتكار.

الكلمات المفتاحية: اللغة الإنجليزية؛ الإبداع؛ الابتكار؛ التفكير النقدي؛ البحث العلمي.

1. Introduction:

Language is a major tool for communication and thinking, and its importance is not only limited to transferring knowledge, but rather plays a pivotal role in shaping thought and developing creative skills. With the increasing reliance on the English language - as a global language in the fields of education, scientific research, and technology - the need has emerged to study its relationship to the development of creativity and innovation. The English language is not just a means of communication, but rather allows individuals to access diverse sources of knowledge and interact with multicultural environments, which contributes to enhancing critical thinking and innovation. Hence, this research seeks to analyze the extent of the impact of acquiring the English language on the development of creative skills, and to explore its role, In supporting innovation in various fields.

1.1. Research problem:

With the increasing importance of the English language as a global language used in the fields of education, scientific research has become necessary to study its impact on the development of creativity and innovation skills. While some see that learning English opens new horizons for creativity by facilitating access to knowledge and interaction with different cultures, others see that its impact is limited to improving communication skills

without having a direct role in promoting innovation. Hence, the research problem is represented in the following main question: To what extent does the English language affect the development of creativity and innovation skills? This problem branches out into sub-questions:

- a) How can the English language contribute to developing critical and creative thinking skills?
- b) What is the relationship between mastering the English language and promoting innovation in scientific research?
- c) What are the most prominent challenges facing individuals in using the English language as a tool for creativity and innovation?
- d) What are the effective strategies for using the English language to develop creativity and innovation in work and educational environments?

1.2. Importance of research:

The importance of this research is highlighted in highlighting the role that the English language plays in developing creativity and innovation skills, especially in light of globalization and openness to modern knowledge and technology. Its importance also lies in the following:

- a) Illustrate how proficiency in the English language enables individuals to access diverse scientific and academic resources, promoting critical and creative thinking.
- b) Understand the relationship between learning English and the ability to develop innovative solutions, especially in the areas of technology.
- c) The research provides insights that help educational institutions develop more effective curricula that integrate English in ways that enhance students' creative thinking.
- d) The research contributes to identifying the obstacles that individuals may face when using the English language as a tool for creativity, and proposing practical solutions to overcome them.
- e) The research is an important addition to the academic field, providing a new framework for understanding the role of language in stimulating innovation and creative thinking.

1.3. Research objectives:

This research aims to study the relationship between the English language and developing creativity and innovation skills, by achieving the following objectives:

- a) Analyzing the role of the English language in developing critical and creative thinking skills, and the extent of its impact on individuals' ability to solve problems and create new ideas.
- b) Exploring the relationship between English language proficiency and innovation in the fields of scientific research, and determining the extent of its contribution to improving productivity and creativity.
- c) Identify the challenges that individuals may face when using the English language as a tool for creativity and innovation, whether in academic or professional settings.

- d) Proposing effective strategies to enhance the use of the English language in developing creativity and innovation, through educational curricula and advanced learning methods.
- e) Enriching academic studies on the role of foreign languages in stimulating creative thinking, and providing recommendations that help in developing educational programs that support innovation.

1.4. Research Methodology:

This research is based on the descriptive analytical approach, where the role of the English language in developing creativity and innovation skills is analyzed through a review of relevant literature and previous studies. In addition, the inductive approach will be applied to draw conclusions and recommendations based on the analysis of data and available scientific sources.

1.5. Search structure:

The research is divided into an introduction that contains the problem, importance, objectives, and methodology of the research, and two sections. The first section: The English language as a tool for developing creativity, in which we discuss the role of the English language in developing critical and creative thinking skills, and the impact of the language on producing innovative ideas in various fields. The second section: The effect of the English language in innovation environments, in which we address the role of the language in supporting scientific research and technological innovation, the effect of mastering English on entrepreneurship and developing creative solutions.

2. The first topic: The English language as a tool for developing creativity

Language is one of the most important tools that contribute to shaping thought and enhancing human abilities to analyze and express ideas in innovative ways. With the widespread spread of the English language as the language of science and technology, it has become one of the effective means of developing individuals' creativity skills. Mastery of this language gives the opportunity to access diverse sources of knowledge and openness to different cultures and ways of thinking, which enriches the ability to innovate.

The use of the English language in academic and research fields also allows individuals to see the latest developments and interact with global trends in various disciplines, which enhances critical and creative thinking. Accordingly, this research discusses the role of The English language in developing creativity through its relationship with critical thinking and innovation in scientific research.

2.1. The first requirement: The relationship of the English language to critical thinking

The relationship between the English language and thinking is reciprocal, as each one affects the other.

2.1.1. First: The effect of using the English language on critical thinking

Critical thinking is one of the most important mental skills that allow the individual to analyze information objectively, verify the validity of arguments, and the ability to evaluate ideas to make informed decisions. With the increasing dominance of the English language - as a primary language in the fields of research and education - its use has become an influential factor in developing this skill, as it allows individuals to access

various sources of knowledge and interact with different ideas and methods of thinking, which enhances the ability to analyze, compare, and critically evaluate. The following is an explanation of the most prominent aspects in which the use of the English language is reflected in critical thinking:

- a) **Improve the ability to solve problems and make decisions based on logical analysis:** Critical thinking is closely linked to problem-solving skills and decision-making based on careful analysis of evidence. Through the use of the English language in academic and professional environments, individuals learn how to search for information, evaluate its accuracy and reliability, and reach conclusions based on scientific and logical foundations. This reflects positively on the way they deal with problems in various fields, whether in daily life or in academic and professional work.
- b) **Improving evaluation skills and comparing different opinions:** The English language is widely used in scientific forums and academic discussions that present varying viewpoints on various issues. By studying these texts and participating in academic dialogues, the learner acquires the ability to compare theories, analyze the differences between arguments, and distinguish between strong and weak evidence. This continuous process of critical evaluation contributes to the development of analytical thinking and enhances the ability to make informed decisions.
- c) **Develop the ability to formulate logical arguments and present evidence:** Learning English - especially in academic contexts - requires advanced writing skills that focus on constructing arguments in a logical and coherent manner. When writing analytical or research articles, the learner needs to present hypotheses supported by evidence, use persuasive strategies, and deal with opposing viewpoints in a critical and systematic manner. This process enhances the ability to think critically by focusing on building evidence-based conclusions rather than unsupported opinions (¹).
- d) **Enhance the ability to analyze information from various sources** Mastering the English language opens the way for individuals to access a huge amount of scientific and academic resources published in this language, which gives them a broader opportunity to analyze information from multiple points of view. Critical reading of research articles, specialized studies, and scientific reports requires precise analytical skills to understand the context of ideas, evaluate supporting evidence, and distinguish between facts and personal interpretations.
- e) **Developing abstract thinking skills and dealing with complex concepts:** The English language is characterized by the richness of its academic terminology, and its ability to express abstract ideas and complex concepts in a precise manner, which helps learners develop their ability to think in an abstract and analytical manner, as they are forced to deal with advanced scientific texts, understand specialized terminology, and comprehend multiple meanings of words depending

¹)Abuhabil, S, (2018), The Importance of Using Collaborative, Aswese, S Learning Strategy in Learning English Writing, College of Arts Journal, Issue 12, p. 43

on the context. These linguistic skills enhance critical thinking by encouraging individuals to link information, analyze concepts, and reformulate them according to new situations.

- f) **Expand cultural understanding and openness to global perspectives:** learning and using the English language allows individuals to learn about different cultures and interact with multiple intellectual trends, which enhances their ability to evaluate ideas from various angles. Openness to multiple intellectual systems helps develop critical thinking, as the learner becomes more able to challenge preconceived assumptions and reconsider issues objectively instead of adhering to traditional opinions without analysis ⁽²⁾.

From the above, we see that the impact of using the English language on critical thinking shows how important this language is in developing individuals' analytical and evaluative skills. By enhancing the ability to analyze information, evaluate arguments, formulate logical conclusions, and be open to different cultures, mastery of the English language contributes to building a critical mindset capable of dealing with challenges with flexibility and broader awareness. Therefore, learning English is not just a means of acquiring a new language, but rather an effective tool for developing critical thinking and enhancing the ability to make decisions based on logical and objective analysis.

2.1.2. Second: The effect of using the critical thinking method on learning the English language

Critical thinking is one of the basic mental skills that enhance the ability to analyse, evaluate, and make evidence-based decisions. When this skill is applied to learning the English language, the learner becomes more able to comprehend the language in depth, analyze its structure, and deal with it in a more conscious and systematic manner. Critical thinking not only helps in developing reading and listening skills, but also contributes to improving writing and conversation by enhancing deep understanding and using the language effectively. Below is a breakdown of the most prominent aspects in which critical thinking is reflected in learning and using the English language:

- a. **Develop analytical reading skills:** Critical thinking depends on the ability to analyze texts and infer deep meanings, which contributes to improving reading skills in English. When reading articles, books, or research, critical thinking helps the learner to:
- Distinguish between facts and opinions in texts.
 - Analyze arguments and information and evaluate their logic and reliability.
 - Inferring indirect and symbolic meanings in literary and scientific texts.
 - Compare different points of view and deal with texts objectively
- b. **Improving academic and methodological writing ability:** Writing in English requires organizing ideas logically and building strong arguments supported by evidence, which are skills that rely heavily on critical thinking. The learner who possesses this skill becomes more able to:

²⁾Abdel-Hack, M, (2002), The effectiveness of a task-based learning approach on EFL student's writing production. Occasional papers in the Language Education Centre for Developing of English Language Teaching "CDELT", no. 34,p. 193-231.

- Structuring texts in a clear and coherent way.
- Use persuasion methods and provide evidence to support his opinions.
- Analyze topics from multiple angles and avoid bias in writing.
- Evaluate the validity of sources and information before using them in academic writing ⁽³⁾.
- c. Enhancing effective conversation and discussion skills:** Critical thinking directly affects speaking skills, as it enables the learner to:
 - Present his ideas clearly and confidently when discussing various topics.
 - Ask appropriate questions to clarify different points of view.
 - Evaluate information while listening and respond to it intelligently and logically.
 - Dealing with discussions and negotiations in a deductive and systematic manner.
- d. Develop the ability to understand linguistic rules intelligently** Learning linguistic rules is not just about memorizing theoretical rules, but rather requires understanding the relationship between grammatical structure and meaning, and critical thinking helps in:
 - Analyzing sentence structure and identifying different linguistic patterns.
 - Understand how changing word order affects meaning.
 - Compare different compositions and determine which one is more accurate and smooth.
 - Avoid common mistakes by being aware of the nuances in grammatical usages.
- e. Promoting a deep understanding of linguistic culture** Language is not just a set of words and rules, but rather an expression of a particular culture, and critical thinking helps the learner to:
 - Understand the cultural contexts that influence language use.
 - Interpreting hidden meanings in idiomatic and metaphorical expressions.
 - Interact consciously with cultural differences in the English language and avoid misunderstandings.
 - Analyzing the impact of language on thought and society and how it has developed over time ⁽⁴⁾.
- f. Increase independence in learning** A learner who possesses critical thinking skills becomes more independent in learning the language, as he can:
 - Evaluate learning strategies and determine the best methods that suit them.
 - Search for reliable sources of learning instead of relying on traditional memorization.
 - Analyze his mistakes and develop methods to improve his linguistic level.

³⁾Zhen, Z, (2016),The use of multimedia in English teaching. US-China ForeignLanguage, 14(3), p. 182-189.

⁴⁾Ambusher, B. K, (2012), Developing writing skills of ESL students through the collaborative learning strategy, published pdf

- Use inferential reasoning to discover the meanings of new words from the context without the need for direct translation (⁵).

From the above, we see that the impact of critical thinking on learning the English language shows how important this skill is in enhancing deep understanding and improving the use of the language in an effective manner. By developing the ability to analyse, evaluate, and deduce, the learner becomes more capable of absorbing the English language and using it intelligently in various academic and professional contexts. Therefore, the combination of critical thinking and language learning contributes to building an independent learner capable of interacting with the language logically and creatively, which makes him more competent in communicating and writing in English.

2.2. The second requirement: the English language and innovation in scientific research

Scientific research is one of the basic pillars of the development of societies, as it contributes to the production of knowledge and the development of innovative solutions to various issues. With the transformation of the English language into the language of science and technology, mastery of it has become an essential necessity for researchers who seek to achieve tangible progress in their fields. The ability to access published research, communicate with scientists, and participate in international conferences are all factors that make English a major tool for promoting innovation in scientific research.

- a) Most prestigious scientific journals, such as *Nature* and *Science*, rely on the English language as the primary language of publication, and reading these papers is a necessary condition for staying up to date with modern scientific developments. The English language enables researchers to explore, analyze, and build on previous studies to produce innovative ideas and solutions. The ability to critically read scientific literature enhances the researcher's innovative thinking, as he can link different concepts to develop new theories.
- b) Mastery of the English language enables the researcher to write high-quality scientific papers, which facilitates their publication in highly influential international journals. Advanced language skills help in clarifying research ideas, formulating hypotheses accurately, and writing strong scientific discussions that support the results of the study. Publishing in English also gives researchers the opportunity to reach a wider audience, which increases the impact of their research and the possibility of benefiting from it in developing innovative scientific solutions.
- c) The English language plays a major role in enabling researchers to participate in international scientific conferences, where ideas are exchanged with experts from various countries. Joint research projects between universities and international institutions rely on English as a language of communication, which contributes to the development of more comprehensive and creative research by integrating multiple viewpoints and experiences. English is used as the main language in publishing research and scientific conferences (for example: 90% of PubMed articles are in English). This standardization allows for the smooth exchange of ideas across

⁵)Belinda, H, (2006), Effectiveness of using the process approach to teach writing in six Hong Kong primary classrooms, *Perspectives: Working Papers in English and Communication*,17(1), p. 1-52.

borders, and most scientific innovations are first published in English (in journals). Such as Nature and Science), and mastering the language gives researchers the opportunity to take advantage of the latest discoveries quickly.

- d) Critical and creative thinking are essential elements in scientific research, and learning English helps develop these skills by analyzing foreign studies, discussing various theories, and interacting with modern research trends, which creates a suitable environment for innovation and scientific creativity.
- e) Enabling researchers to use modern research technology. Most advanced scientific research tools, such as data analysis programs (SPSS, MATLAB, R), and applications for managing scientific references (EndNote, Zotero), are provided with interfaces in English, and training courses and workshops on these technologies are often held in English, which makes mastering them essential to fully benefit from these tools and achieve innovative research developments ⁽⁶⁾.
- f) Major scientific projects (such as the Human Genome Project or CERN) rely on effective communication between researchers from different backgrounds, English is used as a bridge for collaboration, and donor institutions (such as the World Bank or UNESCO) often require that research proposals be submitted in English, which motivates researchers to formulate their ideas innovatively.
- g) English is rich in technical terms and scientific metaphors (e.g. quantum entanglement, CRISPR) that allow for precise descriptions of innovations, and its flexibility to create new words (e.g. nanotechnology, bioinformatics) supports the rapid development of emerging scientific fields.
- h) Research submitted by non-native speakers faces rejection for linguistic reasons even if the ideas are innovative, which limits scientific diversity. Many researchers are forced to spend time and effort on language editing instead of focusing on innovation, and tools such as "Grammarly" or "DeepL" make it easier for non-native researchers to accurately formulate their research.
- i) Resources such as "arXiv" or "Google Scholar" provide open access to knowledge in English, reducing the gap between countries, and specialized courses (example: *Academic English Writing*) teach researchers how to present their ideas convincingly and creatively.
- j) As China and other countries grow, languages such as Chinese become increasingly important in publishing science, but English will remain dominant for decades. Some institutions encourage publishing research summaries in multiple languages, but technical details remain in English to ensure accuracy ⁽⁷⁾.

English is not the linguistically best language for innovation, but its historical dominance as a scientific medium has made it an indispensable tool for achieving the following:

⁶⁾El-Koumy, A, (2004), Effect of self-assessment of writing process versus products on EFL students' writing, Online Submission, Paper presented at the Tenth EFL Skills Conference, the American University in Cairo, Center for Adult and Continuing Education (Jan 12-14, 2004).

⁷⁾Amer, ReemTayel Abdel Latif, Abdel Haq, Iman Mohammed, Diab, Iman Ali Al-Sayed& Ibrahim, (2022), Using Deliberation Strategy for Developing Some EFL Writing and Critical Thinking Skills among Secondary School Students. Journal of Education in the 21st Century for Educational and Psychological Studies, No. 21, pp. 29-1

- a) Accelerate the spread of innovations across borders.
- b) Facilitating the building of global research networks.
- c) Providing a unified framework for evaluating scientific quality.

From the above, we see that enhancing English learning among researchers is a necessary step to advance scientific innovation and enhance competitiveness in global academic circles. However, the scientific community must not neglect supporting linguistic diversity to ensure broader participation of innovative ideas from all cultures.

3. The second topic: The impact of the English language in innovation environments

Innovation environments are considered one of the most important fundamental drivers of technological and economic progress, as they depend on creativity, continuous research, and effective communication between individuals with different specializations. In light of globalization and scientific openness, the English language has become an essential element in these environments due to its role in facilitating the exchange of knowledge, enhancing international cooperation, and providing access to the latest technical and scientific developments.

The English language is not limited to being a means of communication, but rather constitutes a gateway to innovation as it enables individuals to access pioneering research, participate in global projects, and use modern tools and technologies that are published and developed primarily in this language ⁽⁸⁾. This research will address the impact of the English language in innovation environments by analyzing its role in promoting scientific cooperation, facilitating access to advanced technology, and developing creative solutions in various fields.

The English language has both a positive and negative impact in innovation environments, as it plays a key role in facilitating access to global knowledge and promoting international cooperation, but at the same time it creates some cultural and cognitive challenges that affect diversity and inclusion.

3.1. The first requirement: The positive effects of the English language in innovation environments

The English language plays a vital role in innovation environments, facilitating global communication and knowledge transfer, but in turn it can create challenges associated with linguistic exclusion and impact on cultural diversity. In order to achieve a more inclusive innovation environment, a balance must be achieved between the use of English and support of local languages to promote innovation based on cognitive and cultural diversity.

- a) **Improving access to funding and sources that support innovation:** Most institutions and bodies supporting innovation, such as investment funds, business incubators, and donors, use English as the main language, which makes it easier for innovators to apply for funding. The English language makes it possible to communicate with global institutions that provide financial and technical support

⁸⁾Abu Steit, S. A. A, (2011), A suggested self-efficacy-based program to develop preparatory school students' EFL writing skills & reduce their writing apprehension (Doctoral dissertation, Master thesis, Faculty of Education, Minoufiya University, Egypt).

for research and development projects, which increases the chances of turning innovative ideas into reality.

- b) **Facilitating knowledge exchange across borders:** The English language helps break down linguistic barriers between innovators from different countries and cultures, which enhances the exchange of innovative ideas and models, and provides access to global training programs, workshops, and specialized courses held in research centers and major companies⁽⁹⁾.
- c) **Its role in developing innovation-based education:** The best universities in the world, which encourage innovation and entrepreneurship, rely on English as the main language of instruction, which makes it easier for students to acquire creative thinking skills. The use of English helps in developing curricula that focus on technology and innovation, which enhances the ability of students and researchers to provide new solutions to global challenges.
- d) **Promoting innovation in technology and software:** Most programming languages, application interfaces, and modern technical curricula are based on the English language, which makes it easier for developers and innovators to understand new technologies and use them in developing innovative solutions, and helps programmers and engineers work within global teams, which accelerates the exchange of ideas and the development of advanced technical applications⁽¹⁰⁾.
- e) **Supporting digital transformations and business innovation:** The use of English contributes to enhancing the ability of companies to embrace digital transformation, as most of the tools and software used in automation and artificial intelligence are available in this language, and it allows startups to enter global markets more easily, as marketing operations, data analysis, and interaction with customers are mostly conducted in English.
- f) **Improving opportunities to participate in international research initiatives:** English helps researchers and innovators join multinational research projects, as many scientific organizations require the use of this language in official reports and communications, and enables them to participate in global challenges related to sustainability, health, and energy, which enhances their role in providing innovative solutions on a large scale.
- g) **Promote access to global innovation communities:** The English language allows innovators to join global platforms such as TED Talks, MIT OpenCourseWare, Coursera, and GitHub, where they can share their ideas and benefit from the experiences of others, and facilitates interaction with major innovation centers in Silicon Valley, London, Berlin, and Tokyo, which helps develop modern business models and technologies.

⁹ -Zaker, A, (2015), EFL learners' language learning strategies and autonomous learning: Which one is a better predictor of L2 skills, *Journal of Applied Linguistics-Dubai*, 1(1), p. 27

¹⁰)Fareed, M, (2016), ESL learners' writing skills: Problems, factors and suggestions. *Journal of Education and Social Sciences*, 4(2), p. 81-92.

- h) **Access to global knowledge:** English is considered the dominant language in scientific research and academic publications, making it easier for researchers and innovators to access the latest global developments and innovations.
- i) **Strengthening international cooperation:** It contributes to facilitating communication between scientists and innovators from different cultural backgrounds, which enhances the exchange of ideas and cooperation in innovative projects.
- j) **Accelerating technology adoption:** Most advanced technical tools and references are available in English, making learning them essential for understanding the latest innovations and developing technical solutions.
- k) **Enabling startups to expand** Using English helps startups communicate with international investors, expand their markets globally, and increase their chances of success ⁽¹¹⁾.

3.2. The second requirement: The negative effects of the English language in innovation environments

There are negative effects of using the English language in innovation environments that may pose challenges for innovators and researchers who do not speak it fluently. The following is a presentation of these effects:

- a) **Exclusion of non-English speaking innovators:** English represents a barrier for many researchers and innovators who do not speak it fluently, which limits their ability to access modern research or participate in global conferences and forums. Innovators from non-English-speaking countries face difficulty in publishing their research in prestigious scientific journals, which often impose English as the primary language for publication, which limits the spread of their ideas globally.
- b) **Reinforcing the knowledge gap and unequal opportunities:** The heavy reliance on English strengthens the gap between developed countries, which have educational systems that rely mainly on English, and developing countries that face difficulties in teaching it effectively. Researchers from non-English-speaking countries are forced to spend additional time and effort to master the language instead of focusing on the innovation itself, which reduces their chances of competing fairly ⁽¹²⁾.
- c) **Poor ability to accurately express innovative ideas:** Researchers find it difficult to express their ideas clearly when using a language that is not their mother tongue, which may lead to misunderstanding or weakness in communicating scientific and technical concepts. This problem causes research papers or innovative projects to be rejected due to weak linguistic formulation and not due to a deficiency in the quality of the idea or innovation it.
- d) **Loss of linguistic and cultural diversity in innovation:** The dominance of English leads to the marginalization of other languages, which reduces the opportunities to benefit from the unique concepts and methods that different

¹¹⁾Ghavifekr, s &Roshdy,W.A.W, (2015),Teaching and learning with technology: Effectiveness of ICT integration in schools. International journal of Research in Education and science (IJRES), 1(2), p. 175-19

¹²⁾Qalaja, M. W. M, (2015),The effectiveness of using Edmodo on developing seventh graders' writing skills and their attitude towards writing in Gaza Governorate.

cultures have in solving problems and developing innovations. This affects intellectual diversity, as innovation environments become more homogeneous in terms of language and culture, which may limit creativity based on multiple viewpoints (¹³).

- e) **Difficulty accessing local knowledge and indigenous sources:** Many local research and innovations are written in languages other than English, yet they do not receive attention or global spread, which leads to the marginalization of non-English knowledge, and this leads to the loss of some innovative solutions that rely on local knowledge, especially in areas such as traditional medicine, sustainable agriculture, and technology appropriate for different communities.
- f) **Imposing a unified Western model of innovation:** The heavy reliance on English leads to the imposition of specific Western concepts about innovation and entrepreneurship, which may not be appropriate for local environments in some countries. This leads to neglecting the unique ways of thinking and creativity developed by different societies, which limits the development of innovative models that suit local contexts.
- g) **Impact on cultural and linguistic identity:** The extensive use of English in innovation environments leads to a decline in the use of local languages, which may weaken cultural identity in some societies. Innovators feel pressure to abandon their mother tongue when communicating at international conferences or writing research papers, which may affect their ability to express their ideas freely and clearly.
- h) **The high cost of learning and mastering English:** Learning English at an advanced academic level requires a significant investment in education and training, which may not be available to everyone, which increases the gap between those who are fluent in English and those who are not. Educational institutions and companies are forced to spend additional resources on language training for their employees, which increases operational costs.
- i) **Risks of poor translation and loss of accuracy in conveying information:** Relying on translation from and into English leads to the loss of some precise meanings, especially in technical and scientific fields, which may cause confusion in understanding innovative concepts, and inaccurate translations cause incorrect information to be transmitted, which may affect the quality of scientific research and technological development.
- j) **Its impact on local languages:** Linguistic dominance may lead to a decline in the use of indigenous languages in scientific research and technology, affecting cultural and cognitive identity (¹⁴).
- k) **Challenges in understanding technical terminology:** Non-English speakers may find it difficult to understand complex terminology, affecting the speed of learning and innovation.

¹³)Keshita, A. S, &Harb, I. I, (2013), The effectiveness of a blended learning program on developing Palestinian tenth graders' English writing skills. *Education Journal*, 2(6), p. 208.

¹⁴)Mugableh, A. I, &Khreisat, M. N, (2019), Employing TBL and 3PS Learning Approaches to Improve Writing Skill among Saudi EFL Students in Jouf University. *Online Submission*, 2(1), p. 217-229

- l) **Tendency towards Western models of innovation:** Using English as the main language may lead to adopting Western innovative models without taking into account the cultural specificities of other societies (¹⁵).

While the English language opens up broad horizons in the world of innovation, it also poses challenges that must be addressed to ensure a more inclusive and diverse environment. It is important to work to promote multilingualism in scientific research, support the dissemination of knowledge in multiple languages, and provide equal opportunities for innovators from all linguistic backgrounds.

4. Conclusion:

This research shows that the English language plays a vital role in developing creativity and innovation skills, as it allows individuals to access advanced sources of knowledge, enhances scientific and cultural communication, and provides an appropriate environment for the development of innovative ideas. However, the increasing reliance on English poses challenges related to equal opportunities, the possibility of marginalizing other languages, and the impact of this on intellectual and creative diversity.

Therefore, it is necessary to work to achieve a balance between benefiting from English as a global language for learning and innovation and supporting multilingualism to ensure a more comprehensive creative environment. This can be achieved by strengthening language education policies, supporting academic translation, and encouraging the dissemination of research and innovations in multiple languages. In this way, the English language can be used as an effective tool to enhance creativity, while reducing its negative effects, which contributes to creating more diverse and inclusive innovative environments at the global level. At the conclusion of this research paper, we reached a set of results and recommendations, as follows:

4.1. First: the results

- a) Enhancing access to global knowledge: The English language contributes to enabling researchers and innovators to access scientific resources and advanced knowledge content, which supports the innovation process.
- b) Stimulating critical and creative thinking: Using the English language helps develop critical and analytical thinking skills, which contributes to finding innovative solutions to problems.
- c) Promoting international cooperation: The English language facilitates communication and cooperation between innovators from different countries, leading to the exchange of experiences and the development of new ideas.
- d) Linguistic challenges for non-native speakers: Reliance on English poses a barrier for individuals who are not proficient in it, which may affect their opportunities to participate in innovation environments.

¹⁵)NURFADILLA, N, (2021),The effectiveness of English movie in improving students' speaking skill at the twelfth-grade students of Man Palopa (Doctoral dissertation, Institut agama islamNegeri (IAIN Palopo).

- e) Impact on cultural and intellectual diversity: The dominance of the English language can lead to a decline in the use of local languages, which may limit linguistic and intellectual diversity in creative fields.
- f) Imposing Western models of innovation: A heavy reliance on English may result in innovation environments being influenced by Western models, which may not be appropriate for all cultural and economic contexts.
- g) The importance of linguistic balance: Achieving an inclusive innovation environment requires supporting multilingualism by promoting translation and dissemination of research in multiple languages.

4.2. Second: Recommendations

- a) Strengthening English language teaching in school curricula: The need to develop English language teaching strategies in a way that focuses on developing critical and creative thinking skills, taking into account the integration between local languages and English.
- b) Stimulating multilingual scientific research: Supporting the publication of scientific research and innovative studies in more than one language, to ensure that the largest segment of researchers and innovators has access to knowledge without a linguistic barrier.
- c) Developing training programs to develop innovation skills in the English language: Creating specialized training courses that enhance the use of English in creative environments, with a focus on specialized terminology and applied skills.
- d) Promoting scientific and technical translation: Supporting translation initiatives between English and other languages, to ensure that innovative ideas are circulated globally without language being a barrier.
- e) Encouraging multilingualism in work and innovation environments: Develop policies that encourage the use of multiple languages in research centers and companies, to ensure a more inclusive and stimulating environment for creativity.
- f) Develop strategies to support non-English speakers: Provide support programs and educational resources for innovators and researchers who are not fluent in English, to ensure that their creativity is not marginalized.
- g) Taking into account cultural diversity in innovation models: Emphasizing the importance of integrating different cultural visions into innovation processes, and not being limited to Western models that are reinforced by the English language.

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