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Artificial Intelligence-Powered Green English Language Teaching

ABSTRACT

This article aims to illustrate how Artificial Intelligence (AI) can be integrated in Green English Language Teaching (GELT). It consists of three main sections: First, GELT approach, pedagogy, characteristics, strategies, activities and exercises are analytically presented. Second section presents AI and language learning, applications, how AI is applied to language learning, and benefits and challenges of AI in language learning. Finally, the integration of AI in GELT is delineated. Ways of integration, how AI supports GELT, AI applications and platforms for GELT and challenges that may face this integration.

Prof. Dr. Aly Abdul Samea Qoura

Mansoura Faculty of Education

Email: alykoura@mans.edu.eg

Section One: Green Language Teaching Approach (GLTA)

The global climate crisis and environmental degradation have necessitated a shift in how we approach education. Green ELT is an innovative pedagogical framework that combines language teaching with environmental education. It aims to equip learners with the linguistic skills necessary for effective communication while fostering a deep understanding of environmental issues and sustainable practices. This article delves into the theoretical foundations, practical applications, and implications of Green ELT for educators, learners, and policymakers.

Seraj (2024) explained the Green Language Teaching Approach (GLTA) and Green Pedagogy (GP) as integrating environmental education and consciousness into the English language curriculum is called "Green English language Teaching".

This approach aims to establish a connection between language proficiency and ecological comprehension. It attempts to connect the realms of education and environmentally conscious conduct. The instruction of green languages emphasizes the significance of ecological education within the language curriculum. It advocates for environmental literacy initiatives at both the primary and tertiary levels of education. This method teaches vocabulary terms associated with the environment and ecological issues in order to instill in young minds the value of eco-friendly behavior while simultaneously supplementing their lexicon. It is a revolutionary method of language learning and environmental consciousness promotion. By implementing this innovative strategy, learners can become more involved in local issues and ecosystems. This entire strategy is designed to facilitate language learning while fostering students' ability to discuss ecological issues. Green language instruction transforms the function of language from that of a simple means of communication to one that addresses environmental concerns.

The green language teaching approach primarily relies on three key areas such as language curriculum, learning tools and resources. Curriculum plays a vital role in ensuring the success of green language instruction. The English language curriculum should be structured in order to tackle environmental issues effectively. Consider devoting a few chapters of the English language textbook to topics such as sustainable development, climate change, and so forth. It is imperative that the instructor proficiently elucidate each of these chapters, require the students to peruse them, and assign essay-writing tasks at home. In the light of learning tools, Content-based instruction (CBI) and content and language-integrated learning (CLIL) are the foundations of green language teaching. For Green Language Teaching to be successful, certain pedagogical imperatives, including digital photovoice, vodcasting, digital poster creation, and presentation, can be adhered to. Additionally, teacher-student collaboration projects are strongly encouraged in environmental English courses. Lastly, textbooks play a crucial and indispensable role in fostering environmental consciousness among students and enhancing their ecological literacy . The foundation of Green Language Teaching is the introduction of specialized vocabulary associated with environmental issues. This includes phrases and terms such as "conservation," "sustainable development," and "ozone depletion," among others. By incorporating these terms into the language curriculum, educators can enable students to delve into a wide range of environmental concerns. The students will acquire a novel term to supplement their current vocabulary repertoire while also being directed towards the environment.

Teaching Strategies for Green ELT

Here are some effective teaching strategies for Green ELT:

Incorporate Environmental Themes into Lessons

- Use topics like climate change, recycling, renewable energy, and conservation as the basis for reading, writing, speaking, and listening activities. Example: Discuss environmental issues in debates, write essays on sustainability, or read articles about green initiatives.

Use Authentic Materials

- Incorporate real-world materials such as news articles, documentaries, podcasts, and infographics about environmental issues. Example: Analyze a news report on deforestation or watch a TED Talk about ocean conservation.

Project-Based Learning (PBL)

- Assign projects that require students to research and present on environmental topics. Example: Create a group project on reducing carbon footprints or designing a sustainable city.

Promote Critical Thinking

- Encourage students to analyze and discuss the causes and effects of environmental problems and propose solutions. Example: Debate the pros and cons of plastic bags or discuss the impact of fast fashion.

Research on Integrating of Environmental Issues and English Language Teaching

Numerous researchers have investigated the integration of environmental themes in EFL textbooks. Seraj (2024) concluded that the results of this study identified different conceptual frameworks for integrating green technology in language pedagogies, e.g., Green Social Media in Language Teaching (GSMLT) and Green Language Teaching Approach (GLTA). Context-aware ubiquitous language learning (CAULL), Green Pedagogy (GP), Project-based Language Learning with Technology (PBLLT), Green Screens (GS), and Online Language Pedagogy (OLP). The findings also emphasized increasing awareness of GT among ELT stakeholders. In a nutshell, the study's findings will contribute to the literature on GT in ELT (English language teaching and learning).

Raphael and Nandanan (2024) concluded that Falling within the interdisciplinary sphere of ecolinguistics and applied linguistics, GELT has a great scope for enhanced language learning that fosters eco-responsibility.

The analysis of EFL textbooks and the subsequent survey have helped in discussing the potential advantages of GELT, such as increased learner engagement and critical thinking skills, along with challenges like resource limitations and cultural considerations. Therefore, it is of paramount importance to incorporate environmental consciousness into English language education. There is a need for collaborative efforts among educators, publishers, and policymakers to create a sustainable and eco-conscious learning environment for EFL learners. As such, further research is necessary for the continuous evolution of GELT to address the dynamic challenges of the 21st century.

Abdel Latif (2024) found out that a considerable improvement of the descriptive writing the environmental awareness ensued from teaching the participants through the green English language teaching approach.

Ibrahim (2024) explored how environmental issues are represented in an EFL textbook for secondary school. The study obtained the data from the English for Nusantara book for 8th grade.

By administering a qualitative textual analysis with a multimodal approach, the study analyzed verbal and visual complementarity of three worksheets. The findings showed that the verbal and visual texts represent flood-related environmental issue that, encouraged students' comprehension of the module.

Haggag (2023) investigated the effect of a program that is based on Green Pedagogy approach for enhancing inferential reading skills and eco-literacy-oriented incidental and intentional English vocabulary of pre-service teachers of science. Results provided positive gains in reading and vocabulary.

Pal, Bhattacharya, Mustafi, Mitra (2023) contended that if education is getting assembled with techno-savvy approaches putting a bird 's eye on green conversion, the world again rejuvenates with all its blooms. Machine learning and deep learning can be utilized for mining acquainted knowledge from natural unpolished circumstances to provide necessary inputs in the teaching-learning process to bring out the most desirable outcomes to transfer society into green and habitable one. The main aim of this paper is to anatomies to understand the interconnection between machine learning and green education to effectuate sustainability.

Of the opinion that ELT professionals have a responsibility to equip learners with the language they need to take part in global discussions on themes of sustainability. A huge number of these discussions occur in English. As David Crystal wrote, 'Englishes are used in a multitude of contexts to express a diversity of views and narratives in global discourse, and are the medium for emerging ideas.' (Crystal, 2003). She, further indicated that Whatever the context, ELT provides a unique opportunity for sustainability to be woven through curricula, materials, assessments, and teacher training and professional development programs, not only addressed discretely or as an afterthought. In this way, educators can help normalize a routine focus on sustainability, increase and improve opportunities for the development of necessary knowledge, skills and attitudes, and deepen learners' connection with English as a tool for sustainability.

Nur, Anas, & Pilu (2022) proposed:

1. including environmental issues in language curriculum, syllabus, and textbook development,
2. providing environmentally relevant materials and resources,
3. providing environmental language teacher professional development, and
4. accelerating environmental literacy programs at all levels of education. In other words, the inclusion of green pedagogy and environmental sustainability initiatives in ELT should be well-acknowledged.

Section Two: Artificial Intelligence in Education

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the 21st century, reshaping industries, societies, and scientific research. From its early conceptualization in the mid-20th century to its current state as a cornerstone of modern innovation, AI has evolved through multiple generations, each marked by significant advancements in algorithms, computing power, and data utilization. This article explores the nature of AI, its historical development, current applications, and future prospects, while addressing the ethical and societal implications of its rapid growth.

Zhang (2025) states that mastering a new language can be difficult. Especially when traditional methods of teaching have limitations that make it harder for students to succeed. Textbooks, videos, and audio recordings include useful content but lack personalization. Occasionally, this may result in students progressing to the next level before they thoroughly understand the material.

Although a teacher or other professional may tailor the curriculum to each student, language learners (both adults and children) often experience anxiety when speaking a new language. In schools, speaking in front of classmates increases this anxiety and can hinder the process for students who may otherwise be successful.

AI technology can solve these issues. Language learning apps and online programs can be used in privacy and at a pace that suits each student. However, many apps and programs apply a one-size-fits-all approach that doesn't customize the content, goals, or schedule to each learner.

AI and Language Learning

Artificial intelligence (AI) has made significant strides in a number of fields recently, and it is starting to have a big impact on education, especially English language teaching (ELT). AI technologies provide creative answers that improve language learning procedures, adjust to the needs of each individual, and give tailored feedback. The ability of AI to deliver individualized learning experiences is one of the main advantages of ELT. AI-powered adaptive learning systems assess students' learning preferences, areas of strength, and weaknesses to customize lessons. In addition to encouraging increased engagement, this individualized approach makes language acquisition more effective. This study examines the various ways that AI is influencing English Language Teaching (ELT), looking at the advantages, disadvantages, and implications for both teachers and students.

The relationship between Artificial Intelligence (AI) and English Language Teaching (ELT) is dynamic and multifaceted, characterized by the integration of AI technologies into language learning and teaching processes. This relationship manifests in several ways, each contributing to the transformation of traditional ELT approaches and enhancing the overall language learning experience.

Below are some key aspects that illustrate the relationship between AI and ELT:

- **Personalized Learning:** AI technologies enable personalized learning experiences by adapting instruction to individual learners' needs, preferences, and proficiency levels. Through intelligent tutoring systems and adaptive learning platforms, AI analyzes learners' interactions and performance data to deliver tailored instruction, ensuring that each student receives targeted support and feedback.

- **Immediate Feedback and Assessment:** AI-powered tools provide immediate feedback and assessment, offering students timely guidance on grammar, vocabulary, pronunciation, and other language skills. Automated grading systems, interactive chatbots, and language assessment software enable learners to identify and correct errors in real-time, accelerating the language learning process and enhancing self-directed learning. Teacher Support and Professional Development: AI technologies support English language teachers by providing tools for lesson planning, instructional design, and student assessment. AI-driven analytics offer insights into students' learning progress and performance, enabling teachers to adapt their teaching strategies and provide targeted interventions. Moreover, AI can facilitate professional development for teachers through personalized training modules and resources tailored to their specific needs and interests.

- **Innovative Pedagogical Approaches:** The integration of AI in ELT encourages the exploration of innovative pedagogical approaches that foster active learning, collaboration, and creativity. AI-driven collaborative learning environments, project-based activities, and peer tutoring systems promote student engagement and autonomy, transforming traditional classroom dynamics and enriching the learning experience.

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AI Language Learning Applications

In recent years, with the emergence of new technologies, the methods of language teaching and learning have been fundamentally transformed. This shift has opened new opportunities for both language learners and educators. The use of Artificial Intelligence (AI) in education has become widespread, leading to the replacement of traditional educational methods with new approaches.

There are some examples of language learning apps that use various techniques based on AI-generated content:

Duolingo uses a combination of gamification and spaced repetition. Learners progress through levels, earn points for correct answers, and can compete with friends. The app also adapts to users' strengths and weaknesses, adjusting lessons accordingly.

Babbel focuses on conversational language learning and offers personalized lessons. It uses a "Review" feature where learners study words or phrases repeatedly, but at specific and spaced intervals of time.

Rosetta Stone emphasizes immersion, using visuals and audio to teach without translation. Users learn by associating words with images and context, mimicking how we learn our native language.

Busuu combines learning with social interaction, allowing users to practice with native speakers through writing and speaking exercises.

Talkpal creates immersive real-life scenarios, allowing users to acquire new phrases and vocabulary while applying them in context, similar to interacting with a native speaker.

Lingvist is a language learning app powered by AI, designed to help users improve their speaking, writing, and reading skills in their chosen language.

ChatGPT offers a wide range of topics to explore. If you're looking to practice natural conversations.

Pimsleur offers a unique approach to language learning, claiming you can sound like a near-native in just 30 days by dedicating 30 minutes a day.

Drops uses fast-paced, engaging games to help users build their vocabulary and improve their language skills in a fun and efficient way.
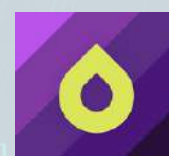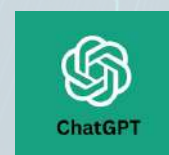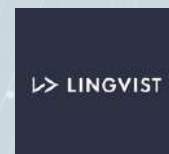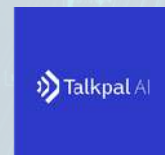
Section Three:
Integrating AI and Green English Language Teaching

How can AI enhance Green ELT

AI can significantly enhance Green English Language Teaching (GELT) by promoting sustainability, reducing environmental impact, and improving learning outcomes. Here are several ways AI can contribute to Green ELT:

Digital Learning Materials
- Reduced Paper Usage: AI can facilitate the creation and distribution of digital textbooks, worksheets, and other learning materials, reducing the need for paper and printing.
- Interactive Content: AI-powered platforms can offer interactive and engaging digital content, such as quizzes, games, and simulations, which can replace traditional paper-based activities.

Virtual Classrooms and Online Learning
- Reduced Carbon Footprint: AI-powered virtual classrooms and online learning platforms can reduce the need for physical travel, thereby lowering carbon emissions associated with commuting.
- Global Collaboration: AI can facilitate global collaboration and communication among students and teachers, promoting cross-cultural understanding and reducing the need for physical travel.

Automated Assessment and Feedback
- Efficient Grading: AI can automate the grading of assignments, quizzes, and exams, reducing the time and resources needed for manual grading.
- Instant Feedback: AI can provide instant feedback to students, helping them improve their skills more efficiently and reducing the need for printed feedback or additional resources.

Environmental Awareness
- Sustainability-Themed Content: AI can help integrate sustainability-themed content into ELT curricula, raising awareness about environmental issues and promoting eco-friendly practices among students.
- Gamification of Sustainability: AI can create gamified learning experiences that teach students about sustainability and environmental responsibility in an engaging way.

Teacher Support and Professional Development
- AI-Assisted Lesson Planning: AI can assist teachers in creating lesson plans that incorporate green practices and sustainability themes.
- Professional Development: AI can provide teachers with resources and training on how to integrate sustainability into their teaching practices, promoting a culture of environmental responsibility.

By leveraging AI in these ways, Green ELT can become more efficient, effective, and environmentally friendly, contributing to a more sustainable future for education.

AI apps and platforms that can support Green ELT

Green ELT (English Language Teaching) focuses on promoting sustainability and environmental awareness through language education. AI apps and platforms can play a significant role in supporting Green ELT by providing eco-friendly, digital, and innovative solutions. Here are some AI-powered tools and platforms that can support Green ELT:

AI-Powered Language Learning Platforms
These platforms reduce the need for physical materials, making learning more sustainable:
- **Duolingo:** Uses AI to personalize language learning, reducing the need for paper-based resources.
- **Babbel:** Offers eco-friendly digital lessons with AI-driven adaptive learning.
- **Lingvist:** Uses AI to optimize vocabulary learning, minimizing waste associated with traditional textbooks.

Virtual Classrooms and Collaboration Tools
These tools reduce the carbon footprint associated with physical classrooms:
- **Zoom or Microsoft Teams:** Enable remote learning, reducing the need for travel and physical infrastructure.
- **Google Classroom:** A paperless platform for assigning and grading work, promoting sustainability.
- **Flip (formerly Flipgrid):** Encourages video-based discussions, reducing the need for printed materials.

AI Content Generators for Green Themes
These tools help create eco-friendly and sustainability-focused content:
- **ChatGPT (OpenAI):** Can generate lesson plans, dialogues, and activities centered on environmental topics.
- **Canva (with AI features):** Helps create visually engaging, digital materials for Green ELT.
- **QuillBot:** An AI paraphrasing tool that can help teachers create eco-themed content.

Apps for Eco-Friendly Vocabulary and Practice
These apps integrate environmental themes into language learning:
- **Memrise:** Offers user-generated courses on sustainability and environmental vocabulary.
- **Quizlet:** Allows teachers to create digital flashcards for eco-themed language practice.
- **Busuu:** Includes lessons on global issues, including sustainability.

AI-Powered Assessment Tools
These tools reduce paper usage and provide efficient, eco-friendly assessment options:
- **Grammarly:** Helps students improve their writing skills digitally, reducing the need for printed drafts.
- **Turnitin:** Provides AI-driven plagiarism checks and feedback without paper.
- **Edmodo:** A platform for digital assignments and assessments.

Platforms for Environmental Storytelling and Projects
These tools encourage students to engage with environmental issues:
- **Book Creator:** Allows students to create digital books on sustainability topics.
- **Padlet:** A collaborative platform for sharing ideas and projects on Green ELT themes.
- **StoryJumper:** Enables students to write and publish digital stories about the environment.

AI Tools for Eco-Friendly Translation and Localization
These tools support multilingual Green ELT initiatives:
- **DeepL:** Provides accurate translations for eco-themed materials.
- **Google Translate:** Helps bridge language gaps in global sustainability discussions.

Gamified Learning for Sustainability
Gamification can make Green ELT engaging and impactful:
- **EcoChains:** A climate change-themed card game that can be adapted for digital use.
- **Kahoot!:** Allows teachers to create eco-themed quizzes and games.
- **Minecraft:** Education Edition**: Includes sustainability lessons and projects.

By leveraging these AI apps and platforms, educators can create a more sustainable and impactful learning experience while fostering environmental awareness among students.

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