



ECOLINGUA

Principles of Vocabulary Instruction During the Integration of Environmental Issues into English Language Teaching (ELT) Curriculum

The EcoLingua project intends to integrate environmental and climate issues into English Language Teaching (ELT) curriculum by means of digital tools and gamification. One of the crucial cornerstones of this strategic project is enhancing the environmental literacy skills of English as a foreign language (EFL) learners. The development of EFL learners' lexical competence in environmental matters plays an indispensable role in increasing their knowledge of the key concepts of ecology, climate change and sustainability, thereby fostering their ecological literacy. In other words, the successful integration of eco-friendly matters into ELT curricula cannot be achieved and the ecological awareness of EFL learners cannot be raised without extending the breadth and the depth of their specialized vocabulary knowledge in the field of ecology and environmental science.

It should be kept in mind that there is no best method of vocabulary instruction, which fits all educational contexts, sheds light on all dimensions of lexical development and satisfies all needs of second language (L2) learners. However, some pedagogical principles and guidelines can be followed for teaching and learning the technical vocabulary (jargon) of ecology and environmental science during the integration of environmental issues into ELT curricula:

1. A context-embedded approach should be embraced in teaching specialized words of ecology and environmental science. The new vocabulary items are suggested to be learned and taught in a meaningful context (Sternberg, 1987), rather than being mastered through decontextualized language samples in isolation. The target words should be presented as a part of clear, appropriate, comprehensible and contextualized L2 input. The contextualized vocabulary instruction of ecology terms can be given to EFL learners by means of various supplementary materials and tools such as the use of different example sentences, several



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reading or listening texts, a range of meaning-based and communicative activities, a series of competitive tasks, games, songs, movies or videos, some types of interactive tasks and materials, a variety of computer-assisted or online software and numerous digital learning platforms.

2. *A realistic goal should be set as to how many words to teach per lesson by considering the learning burden of the target vocabulary items* (Sarioğlu, 2014). The decision on the number of words to be mastered relies heavily on several factors such as the levels of the students, their prior familiarity of the word, the length of word, the correspondence between its spelling and its pronunciation, its similarity to L1 equivalent, other structural and semantic features of the word (e.g., whether it is abstract or concrete), and so on. Nonetheless, the studies in the relevant literature recommend presenting 8 to 12 new L2 words per sixty-minute lesson as an ideal vocabulary load for language learners (e.g., Gairns & Redman, 1986; Sarioğlu, 2014; Sarioğlu & Karatepe, 2024; Schmitt, 2000; Thornbury, 2002). All in all, EFL teachers should decide on the ideal number of ecology-related words to be learned per lesson in the light of the needs, interests, proficiency levels and cognitive loads of their students.

3. *Second language (L2) learners should be exposed to multiple encounters with a target word* (Sarioğlu, 2014). Knowing a word is an incremental and multifaceted process. The knowledge of a word usually requires recognizing more than its basic meaning(s). L2 learners should also be aware of at least its basic forms (pronunciation, spelling, word parts) as well as its main uses in various contexts. Only one-time exposure to a target word will not be sufficient for EFL learners to have a complete control of the given word. Hence, they should get a maximum level of exposure to meaningful input, by means of which they can repeat, recycle and revise the eco-friendly words in various contexts to master the multiple aspects of knowing and using those words.

4. *L2 teachers are advised to make use of “dual coding” as much as possible so that EFL learners can attain better learning, longer retention and easier recall of target words* (Sarioğlu, 2020). Dual coding theory suggests using both verbal and visual means simultaneously to convey the meaning of a certain word since human mind is thought to process and store information through both verbal and visual mental pathways (Paivio, 1991). If language teachers benefit from both visual and verbal techniques together to communicate the



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word meanings, it will lead to stronger semantic networks in learners' minds and will smooth the path for more effective learning and storage of the newly-encountered words in the field of ecology and environmental science.

5. *L2 teachers should employ multiple methods and techniques in teaching vocabulary items to appeal to the majority of the learners with different learning styles, divergent intelligence types and various interests* (Sarioğlu, 2014). The more different strategies and techniques EFL teachers put to use in L2 classrooms to convey the meanings of words, the greater number of students acquire the higher number of target terms of ecology and environmental science.

6. *EFL vocabulary instruction of eco-friendly concepts should be given in meaning-oriented and/or communicative contexts, which promote a deeper level of information processing* (Sarioğlu, 2014). Information that is learned with greater mental effort is more likely to be retained longer in mind and to be recalled more easily from memory (Craik & Lockhart, 1972; Craik & Tulving, 1975). By the same token, ecology-related words will be learned better, kept longer in mind, and remembered much more easily by EFL learners if L2 teachers design and offer vocabulary instruction through communicative tasks or activities that require a deeper level of semantic processing with the target words.

7. *EFL teachers are recommended to teach “word families” rather than “individual words”* (Sarioğlu, 2014; Schmitt, 2000). During the instruction of a new individual word (e.g., ‘ecology’), it may be useful for L2 teachers to mention other members of the same word family (e.g., ‘ecologist’ ‘ecological’, ‘ecologically’), which will take little time and effort. Recognizing the complete word family will also raise EFL learners' awareness of inflectional and derivative morphemes in English (Sarioğlu, 2014).

8. *L2 teachers should also train their students in word-part analysis and lexical rules of the target words* (Sarioğlu, 2014). Knowing the common word roots and most frequently used affixes will pave the way for EFL learners to guess the meanings of unknown words from context, thereby making them more autonomous vocabulary learners that can tackle low-frequency words on their own.



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9. *EFL teachers should provide good exemplification of the concept to which a target word refers and encourage their students to personalise the newly-acquired words* (Sarioğlu, 2014). Sometimes the concept of a word might be mental image of that word or an abstract idea. Under these circumstances, the effective instruction of that word heavily relies on delivering good examples of its concept. Nation (2022) states that “examples help bring a message alive” (p. 317). On the other hand, EFL learners’ personalisation of newly-learned words will facilitate their acquisition, retention and recall of those words. Students can be asked to relate new words to their life by giving personal examples about the word concepts or personalizing new vocabulary items might involve building a relationship between these items and their experiences (Sökmen, 1997).

10. A “**harmony model**” can be adopted to present EFL learners with a well-planned and structured vocabulary instruction program, which constitutes 6 key components: (a) “explicit teaching”, (b) “incidental learning”, (c) “strategy training”, (d) “recycling and revision”, (e) “communicative tasks”, and (f) “awareness raising” (Sarioğlu, 2024, pp. 115-124).

(a) *Explicit teaching*: If EFL teachers consider that it is essential, certain critically-important words of ecology and environmental science can be taught explicitly. Some crucial words pave the way for further learning of the key concepts of environment, ecology, climate science and sustainability. Therefore, they should not be left to chance. More direct attention should be paid to teach these fundamental words by using various vocabulary teaching techniques such as verbal, visual, auidial, audio-visual and interactive techniques and with the help from the digitally-enhanced technological tools. A wide range of lists, glossaries and dictionaries of specialized vocabulary on ecology and environmental science are available both online and as a published material (e.g., Ahad & Ferdous, 2019; Allaby, 2010; Gilpin, 1996; Kemp, 1998; Parveen, 2023; Robertson, 2017). The relevant environmental terms and texts of some key concepts can intentionally be chosen from these glossaries, dictionaries and encyclopaedias to pay explicit attention in EFL contexts to raise ecological awareness and green literacy of L2 learners.

(b) *Incidental learning*: Due to the time constraints or the tight schedule, all the specialized words of ecology and environmental science cannot be learned or taught explicitly



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in EFL classrooms. L2 learners may also not become thoroughly proficient in all aspects of some environmental concepts with one-time exposure. Therefore, EFL teachers try to do their best to repeatedly provide their students with a wealth of clear and understandable L2 input, by means of which they can learn new ecology-related words incidentally from the context of reading and listening.

(c) *Strategy training*: There is no doubt that EFL teachers cannot directly teach all the words and terminology with regard to ecology and environment. However, they can help their students to become independent and lifelong vocabulary learners by training them in the most beneficial vocabulary learning strategies such as mnemonics, contextual guessing, semantic mapping, morphological analysis and dictionary skills. Through the agency of strategy training, EFL learners proceed to develop their lexicon of ecology and environment on their own, thereby enhancing their eco-literacy autonomously. Please see Gu and Johnson (1996), Sarioğlu (2014), Sarioğlu (2020), Sarioğlu and Karatepe (2024), Schmitt (1997) and Van de Wege (2018) for a detailed information about vocabulary learning strategies and strategy training.

(d) *Recycling and revision*: A well-structured vocabulary instruction program should consider the multi-dimensional nature of lexical competence. The mastery of a word usually requires knowing more than its basic meaning(s). L2 learners should also be familiar with at least its basic forms (pronunciation, spelling, word parts) as well as its uses in various contexts. It should be noted that only one-time exposure to a target word will not be sufficient for EFL learners to have a complete control of the given word. Through a maximum level of exposure to meaningful input, EFL learners should recycle and revise the given target word in various contexts to master the multiple aspects of knowing and using that word. Thus, EFL teachers are suggested to plan and design a variety of in-class and out-of-class exercises and activities so that L2 learners can re-encounter, practise, recycle, and revise the newly-learned ecological jargon at various intervals.

(e) *Communicative tasks*: The “receptive knowledge” of the technical vocabulary of ecology and environmental science is only one side of the coin. EFL learners should also be given other opportunities to use the recently-acquired words for communicative purposes, which is known as the “productive knowledge”. In other words, L2 learners should also be able



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to use the jargon of environment actively to communicate their eco-friendly ideas and suggestions through various tasks apart from the receptive understanding and learning about the nature.

(f) *Awareness raising*: The last component of “harmony model” is the integration of awareness-raising and motivation-enhancing activities into the systematic vocabulary instruction program. EFL teachers and learners should be aware of the substantial contribution of lexical competence and proficiency in ecology and environmental science to their environmental literacy skills.

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