Incorporating Environmental Education in English Language Teaching through Bloom’s Revised Taxonomy

Assist. Prof. Dr. Defne Erdem Mete
Selçuk University Faculty of Letters
Department of English Language and Literature
defnemete@selcuk.edu.tr

Abstract

It has become undeniable that language learners should be aware of global problems. One of the most serious problems of our globe today is the environmental degradation and education practices should have a contribution to ecological conservation. Environmental education, which is a developing field of study, aims to equip learners with the skills to identify and take action against ecological problems. In order to be able to take part in this solution process, English language learners should especially have critical thinking and critical reading skills. This paper suggests using Bloom’s Revised Taxonomy in an environmental education framework for fostering English language learners’ skills required for critical reading of authentic texts related to ecology and increasing their environmental awareness. In this respect, first, an application of the taxonomy in Monroe & Andrews et al.’s (2007) Environmental Education Strategies Framework is presented. Then, in order to exemplify the use of the taxonomy with an environmental education perspective, a set of reading questions which can be used for the critical reading of an authentic text is suggested. Our Iceberg is Melting: Changing and Succeeding Under Any Conditions (2005), written by John Kotter and Holger Rathgeber as a fable, has been chosen as the sample authentic text. It is concluded that environmental education practices can be incorporated in English language teaching by fostering critical reading skills with the suggested approach and authentic texts on ecological issues can be used as classroom material for this purpose.

Keywords: Bloom’s Revised Taxonomy, critical reading, environmental education, authentic text, English language teaching.

İngilizce Öğretiminde Çevre Eğitiminin Uygulanmasında Bloom’un Yenilenen Sınıflandırmasının Kullanımı

Öz

Yabancı dil öğrencilerinin küresel problemlerin farkında olmaları gerektiği inkar edilemez bir gerçektedir. Çevre bozulması bugün dünyanın en önemli problemlerinden biridir ve eğitimcilik uygulamaların çevrenin korunmasına katkı sağlaması gerekmektedir. Gelişmekte olan bir bilim dalı olan çevresel eğitimi, öğrencilerin çevresel ilgili problemleri tespit edip, çevreyi korumak için gerekli girişimlere bulunmalarını sağlayacak becerileri kazandırmayı amaçlamaktadır. Çevresel problemlerin çözümüne yer alabilme yetenekleri için, İngilizce

**Anahtar Kelimeler:** Bloom’un Yenilenen Sınıflandırması, eleştirel okuma, çevre eğitimi, özgün metin, İngilizce öğretimi.
INTRODUCTION

Environmental education is a developing field of study. Having critical thinking skills is an essential part of environmental education because if people do not criticize their thoughts and practices towards nature, they cannot be aware of their mistakes and take the necessary precautions to protect it. The significance of environment on human and nonhuman has been the interest of many disciplines. Altındaş (2017: 15), for example, notes that environmental literature “has the potential to tell us stories in and about nature woven with individual threads that create a multivocal presence consisting of human/nonhuman relations.” This multivocality creates an excellent space in language teaching. It is an unquestionable fact that English language teaching practices should contribute to the promotion of peace and global awareness in the world including conservation of environment (Cates 1990; Jacobs & Cates 1999). Implementations of environmental education have been investigated in different disciplines, however studies on how it can be incorporated in English language teaching are still limited. Gürsoy & Sağlam (2011) have found that prospective English language teachers are willing to integrate environmental education in their classes. Arıkan (2009) recommends contextualizing English grammar by using environmental peace education activities in order to increase learners’ global awareness. Setyowati and Widiati (2014) suggest a genre-based approach for integrating environmental education in writing classes of English language learners.

Authentic texts have been largely used in language teaching to increase learners’ motivation to learn the target language as they provide the opportunity of being exposed to the real life language (Guariento & Morley 2001). According to Crossley & Louwere et al. (2007), literary works such as novels and poems as well as other texts used in daily life such as manuals can be regarded as authentic texts. Language teachers can design different kinds of tasks related to ecological problems by using these kinds of authentic texts. Hence, a genuine purpose, real world targets, classroom interaction and engagement which are the four main elements of task authenticity as discussed by Guariento & Morley (2001) can also be achieved. The fable suggested to be used in this study enables such authentic use by raising awareness and concern on a global problem. Lazar (1993) highlights this point by claiming that literary texts are quite effective for engaging learners with an interest in building a better future and tasks on these texts should be designed to encourage learners to do so.

Content-Based Instruction (CBI) and Content and Language Integrated Learning (CLIL) highlight using authentic texts for teaching a language through content. Studies carried out on the use of content-based instruction in English language teaching have revealed positive findings such as an increase in learners’ motivation (Huang 2011, Arnó-Macià & Mancho Barés 2015). In their discussion on using environmental topics to foster language learning with content-based instruction, Hauschild & Poltavtchenko et al. (2012) emphasize the importance of promoting personal responsibility and encouraging learners to take action for saving the environment. They propose three sample activities that can be adapted for integrating language and content in the classroom. Similarly, Riegerová (2011) provides practical activities on environmental issues to be used with English language learners.

In the present study, the term “authentic text” is used to refer to any kind of text which is thematically related to an ecological issue. Although the sample authentic text is a fable and hence a literary text, “authentic text” is preferred to be used in order not to limit the application of the suggested approach with literary texts.
learners based on content-based instruction. Nkwetisama (2011) discusses the benefits of using not only content-based but also task-based language learning approaches for integrating environmental education in language teaching.

As part of critical thinking, developing critical reading skills is crucial for preparing English language learners to take part in the protection of the environment. Besides, Tsekos & Tsekos et al. (2012) emphasize the significance of experiential learning in environmental education and claim that classroom activities on literary texts which are related to the environment in their theme can be used to add a dimension of experiencing reality that would strengthen the effect of other methods.

Studies on implementing Bloom’s Taxonomy for the development of critical thinking and critical reading skills revealed positive results (Veeravagu & Muthusamy et al. 2010; Minakova 2014; Mulcare & Shwedel 2017). It has been claimed that the taxonomy can be used as an effective educational tool in EFL learners’ critical reading classes (Surjosuseno & Watts 1999; Duc 2008). On the other hand, there is a lack of studies on using the taxonomy for promoting environmental awareness and fostering skills for critical reading of texts related to the environment. Application of the taxonomy in an environmental education framework would provide guidance for language teachers to develop language activities that match with strategies appropriate for the content knowledge, as language teachers need additional preparation time on the subject matter which can be a burden (Massler 2012). Also, an environmental education framework that fits with a reflection from lower-order to higher-order thinking skills would enable a focus on critical thinking skills which is crucial in environmental education. In this respect, the aim of the present study is twofold. First, it offers an application of Bloom’s Revised Taxonomy in an environmental education framework for a critical reading of authentic texts in English language classes. Second, it exemplifies the use of the taxonomy by suggesting reading questions to be used for the critical reading of a sample authentic text titled Our Iceberg is Melting: Changing and Succeeding Under Any Conditions (2005).

Conceptual Framework

One of the conceptual frameworks of the study is Monroe & Andrews et al.’s (2007) Framework of Environmental Education Strategies. At the Tbilisi Intergovernmental Conference in 1977, the aim of environmental education was stated as helping learners develop “the ability to acquire, analyse, synthesize, communicate, apply and evaluate existing knowledge on the environment” (UNESCO 1980: 25). It was also emphasized that this should lead to an ability to actively participate in protecting the environment.

Education for Sustainable Development (ESD) is a term that covers environmental education. In her discussion on the concepts of ‘environmental education’ and ‘environmental education for sustainable development’ Sauvé (1996) suggests including environmental education in a larger model of ‘education for the development of responsible societies’. Although, the term ‘sustainability education’ is still not well interpreted (Scarff Seatter 2011: 32), environmental education is addressed as part of ESD. The following are the main features of ESD:

- Interdisciplinary and holistic: Learning for SD (Sustainable Development) embedded in the whole curriculum, not as a separate subject;
- Values-driven: sharing the values and principles underpinning sustainable development;
• Critical thinking and problem-solving: leading to confidence in addressing the dilemmas and challenges of SD;
• Multi-method: word, art, drama, debate, experience... different pedagogies which model the processes;
• Participatory decision-making: learners participate in decisions on how they are to learn;
• Applicability: learning experiences are integrated in day to day personal and professional life;
• Locally relevant: addressing local as well as global issues, and using the language(s) which learners most commonly use. (UNESCO 2006: 4-5)

One of the characteristics of ESD listed above, which is especially important for the present study, is the multi-method nature of environmental education which requires the application of various pedagogies. Another significant point made is the need to incorporate environmental education in the curriculum rather than a topic on its own. Moreover, as emphasized by Scarff Seatter (2011), critical thinking plays a major role in preparing learners to take action for the protection of the environment.

Monroe & Andrews et al.’s (2007) Framework of Environmental Education Strategies is a modified version of Fien & Scott et al.’s (2001) as well as Scott & Gough’s (2003) frameworks. Monroe & Andrews et al. (ibid.) explain that their framework summarizes and classifies strategies suggested to be used for environmental education. The framework has four sections referring to objectives: convey information, build understanding, improve skills and enable sustainable actions. The subsequent categories of the framework are suggested to cover the preceding categories. It is also acknowledged that the categories are not hierarchical and it depends on the educators to focus on only one category or to include all of the categories when designing a program. Hence, in the case of covering the categories as a whole, learners would be expected to show progress starting from a focus on information to a stage which requires action-taking skills. Such kind of an advancement of skills based on the framework would enable an application of a taxonomy that progresses from lower-order thinking skills to higher-order thinking skills.

Bloom’s Revised Taxonomy, the other conceptual framework of the study, is the revised version of Bloom’s Taxonomy which was developed by Bloom & Engelhart et al. (1956) to identify a hierarchy of thinking skills from lower to higher. The six levels of cognition in the original taxonomy are knowledge, comprehension, application, analysis, synthesis and evaluation. The higher-order cognitive skills cover all the other lower-order levels. Pohl (2000) suggested a revised version of the model by changing the names of the levels from nouns to verbs and shifting the position of the highest two levels. The cognitive levels in this version are remembering, understanding, applying, analyzing, evaluating and creating. The first three levels are identified as lower-order thinking skills while analyzing, evaluating and creating are higher-order cognitive skills. The taxonomy has been used widely to design learning objectives for each cognitive level and promote critical thinking in education. Students can be encouraged to have a more active role in learning when critical thinking skills are fostered in formal and non-formal education settings.

2 Although Andersen & Krathwohl et al. (2001) offered another revised version of the taxonomy by considering ‘evaluating’ and ‘creating’ at the same cognitive level, this study suggests using the revised taxonomy by Pohl (2000) for a critical reading class on environmental issues so that each dimension can be addressed separately with different activities.
Application of Bloom’s Revised Taxonomy in a Framework of Environmental Education Strategies

In this study, it is suggested that Monroe & Andrews et al.’s (2007) Environmental Education Strategies Framework can be implemented to provide the basis for addressing the components of Bloom’s Revised Taxonomy in the critical reading of authentic texts related to an environmental issue. Each component of Bloom’s Revised Taxonomy can be addressed in the four elements of the framework for critical reading of authentic texts in an English language class. As explained by Cates (1990), integrating global education (including environmental education) in language teaching would require an involvement of experiential learning activities. Hence, along with a focus on reading, integrating other language skills with the strategies listed by Monroe & Andrews et al. (ibid.) is suggested.

1. Convey Information: This stage is characterised by Monroe & Andrews et al. (ibid.) as conveying information on unknown facts. In Bloom’s Revised Taxonomy, this category can be claimed to correspond to ‘remembering’, the first lower-order cognitive level. Language learners are expected to recall the factual information, specific details and ideas in the text, as well as remember how information is sequenced. Therefore, suggested reading strategies include surveying, skimming and scanning the text. Language teachers can transmit knowledge about environmental facts and issues which are related to the topic of the authentic texts they use in class and which the learners may not be familiar with. For pre-reading, authentic materials like videos, internet sources, magazines and newspapers on specific ecological issues related to the theme of the text can be used by English language teachers to draw attention to the urgency of some environmental problems. Also, as suggested by Monroe & Andrews et al. (2007), non-formal and free-choice learning strategies such as the use of electronic media, posters and brochures, can be provided by language teachers.

2. Build Understanding: This category can be associated with the ‘understanding’ component of Bloom’s Revised Taxonomy which is a lower-order thinking skill. Language learners should be able to construct meaning from the text at this stage. For critical reading, English language learners are expected to show understanding by being able to rephrase information in the text, explain the content in their own words, use their prior knowledge on similar environmental topics to compare and contrast the information in the text with real life, identify the main idea in the text and give examples. Therefore, reading strategies like paraphrasing, summarizing, comparing and contrasting, exemplifying, classifying can be used at this stage for critical reading. Pair and group discussions, role-plays and simulations are suggested for language learners to enhance comprehension and to relate the information learnt in class with real world experiences. For integrating other language skills, experiential learning activities stated among the formal learning strategies of the framework can be used at this stage. Other strategies included in the framework are workshops, surveys, interviews and guided nature walks (ibid.). Setyowati (2013) recommends designing interviews as group work activities where students can ask their friends in the group how environmentally friendly their daily activities are.

3. Improve Skills: Monroe & Andrews et al. (2007: 213) explain that “in this category, learners apply or implement a skill, or organize and critique information.” In the present study, it is suggested that this stage can be viewed as a combination of ‘applying’, ‘analysing’ and ‘evaluating’ in Bloom’s Revised Taxonomy. While ‘applying’ is a lower-order thinking skill,
‘analysing’ and ‘evaluating’ are higher-order thinking skills. From the perspective of critical reading, the dimension of ‘improving skills’ in the framework can be seen as developing the skills to move from lower-order to higher-order thinking skills in a way that will contribute to taking action for the protection of environment. Hence, English language learners are expected to develop skills for using information in the authentic text in a new context, breaking down information in the text into parts for a better comprehension and making personal judgements about the content of the text by defending their opinions. Developing critical thinking skills is especially necessary for this stage of environmental education. Therefore, strategies like personalization, deconstructing, reconstructing and criticizing information in the text are suggested.

Interactive activities such as role-plays, presentations and debates on environmental issues would be effective for English language learners at this stage. Building skills for change of behaviour and participation in activities in the community for solving environmental problems are emphasized by Monroe & Andrews et al. (2007) for the category of ‘improving skills’. Cooperative learning, project-based education and volunteer service are included in the formal learning strategies in the framework. These are also highlighted by Cates (1990) among the methods and activities suggested for integrating global education in English language teaching including environmental education. Moreover, personal responsibility on environmental issues can be enhanced not only through activities such as organizing field trips and inviting guest speakers (Hauschild & Poltavtchenko et al. 2012), but also with the suggested strategies of the framework like issue investigation and inquiry-based learning.

4. Enable Sustainable Actions: According to Monroe & Andrews et al. (ibid: 213), strategies for this category aim to “transform the learner, the issue, the educator and perhaps the organization through the process of critically addressing problems.” The level of ‘creating’ in Bloom’s Revised Taxonomy is compatible with this stage as the learners are expected to combine information to form a new pattern and develop alternative solutions. Critical reading strategies for this stage include putting elements of the text together to form a new whole and reorganizing parts of the text to form a new structure. This would also enhance learners’ creative thinking and problem-solving skills which is an emphasized strategy in the framework.

Taking action to find creative solutions for environmental problems is encouraged and English language learners should be actively involved in this problem-solving process. After reading a text on an ecological problem, English language learners can propose original ways of dealing with the issue in group-work activities. They can do research on the topic and prepare presentations on how to solve the problem. Project-based and inquiry-based learning opportunities as out-of-class volunteer activities can be arranged by English language teachers as suggested by Cates (1990). In this way, English language learners should be guided to be involved in the community-based projects for the protection of the environment which is strongly recommended by Monroe & Andrews et al. (ibid.). Moreover, they should be encouraged to take part in action research, conflict resolution and mediation processes for solving environmental problems (ibid.).

Suggested Reading Questions on a Sample Authentic Text

Development in creative and critical thinking skills, problem-solving skills, comprehension, attention on meaning rather than form and motivation are among the
benefits of designing reading questions on the basis of Bloom’s Revised Taxonomy (cited in Duc 2008). This part of the study exemplifies the use of the taxonomy for designing reading questions on a sample authentic text about an ecological issue. The suggested text is a fable titled *Our Iceberg is Melting: Changing and Succeeding Under Any Conditions* (2005). The fable tells a story about a colony of penguins facing an environmental problem: the melting of an iceberg. The book was originally written for the business world with the aim of helping organizations manage change. The story starts with how one of the penguins, Fred, finds that the iceberg where the colony lives is about to break apart. It continues with Fred’s efforts to draw attention to the problem and the challenges the colony face in their search for a solution. The fable offers an enjoyable reading and is suggested as an authentic material to be used by English language learners.

The following reading questions for the ‘remembering’ and ‘understanding’ stages of the taxonomy are suggested for the first part of the book titled *Our Iceberg Will Never Melt*, while the questions in the ‘applying’, ‘analysing’, ‘evaluating’ and ‘creating’ levels can be answered based on the rest of the story. Activities can be designed in a content-based or task-based language teaching context depending on the objectives of the class and levels of learners.

1. **Remembering:** Based on the first chapter of the fable, sample reading questions which correspond to the ‘convey information’ category of Monroe & Andrews et al.’s (2007) framework can include:
   - Where does the story take place?
   - When does the story take place?
   - How many characters are mentioned in the story?
   - Who is the main character of the fable?
   - What kind of personality does Fred have?
   - How many penguins usually live in a colony?
   - Who are Emperor Penguins?
   - What is the environmental problem mentioned in the story?
   - What do the pictures in the first part of the fable show?
   - Write down three environmental facts stated in the story.

2. **Understanding:** Suggested reading questions addressing the ‘build understanding’ component of the framework can be listed as:
   - Tell the first part of the story with only five sentences.
   - How did Fred feel at the beginning of the first part of the fable?
   - How did Fred feel at the end of the first part of the fable?
   - Can you compare and contrast Fred’s personality with the other penguins around him?
   - Summarize the first part of the fable.
   - What is the attitude of the penguins towards waste of energy?
   - Can you relate the information in the text to the attitudes of people towards environmental problems by giving examples?
   - Classify the adjectives in the text as ones which can be used only for people and ones that can be used both for people and the environment.
• Can you rephrase the sentence in the text: “They often behaved like a big family (which, of course, can be both good and bad)”

• Why does the writer use opposing titles in the first part of the fable? (Our Iceberg Will Never Melt - The Iceberg Is Melting and Might Break Apart Soon!!)

3. Applying: This level of the taxonomy can be addressed by the following lower-order thinking questions:

• What would you do if you were Fred?
• What would you do as a human being if you could go to the iceberg where the penguins in the story lived?
• What would Fred prefer doing about an environmental problem in your country if he could visit you?
• What would your reaction be in an urgent environmental problem in your country?
• What other approach would you follow to raise awareness on the environmental problem?
• What other way would work best in an ecological problem in your country?
• Explain an environmental problem that you experienced in your life which caused confusion in public.
• Explain an environmental problem which someone you know faced in your country.
• If you had an interview with Fred, what three questions would you ask him?
• Can you think of a literary work or a film with a similar topic or character?

4. Analysing: After reading the whole fable, the following higher-order thinking questions can be asked:

• Who do you think are the most and least important characters in the story?
• Which one of the eight change-management strategies stated in the fable do you think is the most important?
• Based on its plot-structure of the story, which part of the story do you think can be the climax?
• Identify which section of the fable corresponds to which component of its plot-structure.
• Which aspects of the story are likely to be encountered about an environmental problem in your country?
• If you compare this story to another story or text that you read about an environmental problem, how are they similar and different?
• Which parts of the story are the funniest and the saddest for you?
• Identify animals most affected by the melting of ice in the world.
• Identify three ways that your life would be different if you lived in Antarctica.
• Identify three ways your life would be different if you were one of the characters in the story.

5. Evaluating: The following higher-order thinking questions can be asked for the last level of the taxonomy included in the ‘improve skills’ component of the framework:

• Did you like this story? Why or why not?
• Who is your favourite character in the story? Why?
• What is your judgement about the solution found for the environmental problem in the story?
• State which types of approaches for solving the problem you agree or disagree with by giving examples from the text.
• In your opinion, what should be prioritized to raise public awareness on environmental awareness?
• How would you rate the actions of the council members in the fable in terms of their efficiency?
• Did you like the ending of the story? Why or why not?
• Identify the positive and negative influence of human beings on the environment.
• Identify your own contribution to an environmental problem in the world.
• Identify your own impact on the melting of ice in the world.

6. Creating: As the stage that corresponds to the ‘enable sustainable actions’ dimension of Monroe & Andrews et al.’s (2007) framework, students can be asked to:

• Rewrite the story from the viewpoint of a human being who realized the melting of ice and tries to help the colony of penguins.
• Write another ending to the story.
• Write a poem about an environmental problem.
• Write lyrics for a song on an environmental problem.
• Design a poster for raising awareness about an ecological problem in your country.
• Design a three day workshop to raise awareness of an environmental problem in your country.
• Design a questionnaire to find out what kind of eco-friendly behaviours your classmates display in their daily lives.
• Write your own steps of change-management (rather than the ones suggested in the fable) for the protection of the environment in your country.
• Think of a local environmental problem in your neighbourhood and write down an action plan for solving it.
• Write a letter to an environmental organization about your ideas for raising public awareness on an ecological problem.

CONCLUSION

Critical reading of authentic texts related to ecological issues would foster not only critical thinking skills, but also environmental awareness of English language learners. Application of Bloom’s Revised Taxonomy in a framework of environmental education in English language teaching enables addressing environmental problems with a critical perspective which is crucial for promoting active participation of learners in the solution process. Strategies recommended by Monroe & Andrews et al. (2007) for each section of the framework would also help language teachers integrate language skills with a variety of activities. Authentic texts of different kinds should be used for focusing on various aspects of ecological issues and incorporating environmental education practices in English language teaching. As in this study, exploring literary texts on an ecological topic can be argued to be especially advantageous for language learners to increase environmental awareness. This is due to the fact that both cognitive and affective aspects of learning can be addressed by the help of literary texts.
BIBLIOGRAPHY


