Exploring potential use of language testing to foster environmental education

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Abstract. Environmental education is commonly integrated into classroom materials of many subjects to support SDGs. The topic on environment is potentially used in language testing. This will allow washback effect of the learning of the environmental issues which, hence, increase the test takers’ awareness. The present study aims to identify the potential benefits of integrating environmental issues into language testing. According to the study, integration of the topics should be done with caution to avoid construct-irrelevant variance. Unfamiliar topics frequently cause some issues in language testing, discouraging the test takers to rely on their background knowledge rather than their mere language competence. Thus, selection of topics should be done by also considering the objectives of the environmental education itself.

1 Introduction

Environment has become the global concern since the early 21st century. The issues related to degradation of environment and climate change have since been widely discussed, along with the preventive actions and solutions [e.g. 1, 2, 3]. U.N. recognizes the environmental issues and includes environment as one of three dimensions in its Sustainable Development Goals (SDGs). The SDGs are treated as a blueprint for nations across the globe to work collaboratively to achieve prosperity and peace [4]. The environmental issues are embedded in several goals in SDGs, among which are clean water and sanitation, affordable and clean energy, sustainable cities and communities, climate action, life below water, and life on land. The environmental issues addressed in the aforementioned goals include climate change and environment degradation. These two issues basically cover all the environmental issues happening in recent years. Furthermore, they are projected to have impact not only for the time being, but also in the future. The infusion of environmental issues into the SDGs is intended to raise people’s awareness about the possible hazard they may face. Hence, the partnership to realize SDGs is not limited to among nation leaders or governments, but also include civil society and corporations [5].

The support from various parties is essential to manifest SDGs. This includes support from education institutions. Universities and schools also take part in the effort to achieve
these goals. Environmental education is integrated in some school and university subjects, not to mention that it is available in STEM (Science, Technology, Engineering, and Mathematics) subjects [6, 7]. Some examples of topics used in the integration of environmental education in school curriculum are disaster mitigation, environmental awareness, environmental conservation, environmental protection, and humans’ behavior toward natural exploration and exploitation [8, 9, 10]. These topics allow students to understand further about the causes, effects, and possible ways to overcome natural disasters such as flood, forest fire, and landslide. The integration aims to expand students’ perspectives on environmental issues and take action on the protection of environment.

The integration of environmental education does not run without challenge. As it is integrated in some subjects other than STEM, the non-STEM teachers should demonstrate mastery of the issues, interest in the issues, and capability to create appropriate learning materials [11]. Such features allow the teachers to have holistic competence on the environment issues. If the teachers are unable to deliver the materials eloquently, there is a possibility that the students will not be able comprehend the materials. Furthermore, it may not be a positive learning experience for the students. Specific to second language (L2) learning, the integration of environmental issues into the teaching materials allow the teachers to promote sustainable living style and foster language learning [12]. Hence, the students have the opportunity to deliver their ideas or discuss issues of environment by using their L2.

Although environmental education seems to be a common topic in L2 classroom, its use in productive language testing (i.e., speaking and writing) may introduce a validity threat to the test. The use of environmental issues may pose construct-irrelevant variance [13]. This may cause a bias if the topic of the test is not equally familiar to test takers. Consequently, some test takers may be disadvantaged by the use of the environmental issues as language testing topic. In other words, they may demonstrate poor performance during the test while others who are familiar with the topic may get higher score. By reviewing some studies on environmental education and language testing, the present study attempts to explore: (1) potential effects of using environmental issues as language testing topic to the test; and (2) possible ways to integrate environmental education into the language testing.

2 Topic familiarity in speaking and writing tests

2.1 Topic familiarity in speaking

In language testing, speaking skills are usually assessed by eliciting speech samples of the test takers on different tasks. It can be a simple task such as personal introduction. However, in some high-stake language testing such as IELTS and TOEFL iBT, the test takers are required to discuss a topic provided by the examiner. This usually requires the individuals to draw on their background knowledge about the topic [14]. When the test takers are familiar with the topic, it facilitates them in demonstrating higher performance. However, when they are not familiar with the topic, they may demonstrate lower performance. This may affect their overall test result. If a particular group of test takers are more advantaged by the topic while others are more disadvantaged, this causes bias which could threaten the fairness of the test [13].

Although it is assumed that the topic used in assessing productive skills is equally familiar for all test takers, several high-stake testing examiners have expressed potential threats of the validity of the test due to effect of unfamiliar topic [15, 16]. This usually happens when the topic requires a special knowledge. For example, if the topic used for the test is about medical procedure, test takers who do not work as medical practitioners may not be able to deliver
their ideas eloquently. On the other hand, the same topic may advantage test takers working as medical practitioners. They do not only have the background knowledge about the topic, but also linguistic repertoire in the field. Hence, it may allow them to express their ideas in the topic more fluently compared to those who are rarely exposed by the same topic.

Similar concerns have been expressed when the test is in a form of integrated speaking test. Unlike independent speaking test which gives the test takers a prompt for eliciting their speech, integrated speaking test usually requires the test takers to read a passage and/or listen to a talk or a lecture [17]. It is followed by the questions on listening comprehension about the talk which should be responded with speech. Similar to the previous illustration, if the test takers may not be familiar with the topic, it will affect their performance. To assess whether or not topic and background knowledge affect the speaking performance, a study was conducted to assess 352 English as a foreign language (EFL) learners’ speaking performance [17]. The topics used in the study included biofuels and air transportation industry. It should be noted that most of the EFL learners majored in business-related program. Hence, the topics of biofuels and air transportation industry were not directly related to their study. The study found that topical knowledge contributed to the discrepancy in speaking performance of the learners in integrated speaking test. However, the effect of topical knowledge depends on the topic. Similar study also indicated the same results [14]. Unfamiliar topic tended to discourage test takers from eliciting a sufficient amount of speech sample. Thus, topic familiarity should be taken into account when using environmental issues for language testing.

2.2 Topic familiarity in writing test

Writing in language testing may have similar tasks as that in speaking test. In high-stake language testing, there are independent writing test and integrated writing test. The writing will be assessed from the writing sample produced by the test takers as a response to a prompt provided. Independent writing test requires test takers to respond to a prompt. In this type of a test, the test takers are usually provided with a statement and a question. Then, the test takers should respond to the prompt. On the other hand, the prompt in an integrated writing test is in a form of a passage or a chart. In the latter type of test, test takers are required to describe or reflect from the prompt [18]. In order to write about a particular topic extensively, topical knowledge or background knowledge is necessary. However, a study conducted to 1,000 test takers indicated a way to minimize the negative impact of topic to the test takers’ writing performance [18]. The study found that general language proficiency tended to facilitate the test takers’ writing performance.

Based on the studies on topic familiarity in both speaking and writing tests, it can be concluded that topic familiarity contributed to test takers’ performance. However, writing performance can be positively affected by the general language proficiency. Topic familiarity should be taken into account in speaking test. Otherwise, the test takers would not be able to deliver their ideas during the test.

3 Washback effect of language testing

Washback has been widely discussed in language testing. The notion itself refers to the influence of the testing toward the teaching and learning activities as a form of preparation for the test [19]. Although it is mostly used to refer to how test takers enhance their language skills through drills, the washback effect should also be credited for allowing the test takers to learn various topics. In other words, the test takers would be able to expand their understanding on a wide array of topics while preparing for the language test itself. The understanding is not only limited to the topics but also to the linguistic resources necessary
relevant to the topics. Thus, the washback effect is not restricted to test takers’ linguistic performance, including reading, listening, speaking, and writing.

Some studies demonstrate that language testing has positive washback effect to the test takers’ learning [20, 21]. The positive effects included the application of testing and learning materials in a more appropriate context, attempt to negotiate, motivation for learning, and enhanced understanding. It is also possible that the washback effect includes the test takers’ social cognitive learning ability. When environmental education is integrated into the language testing, it allows the students to enhance their understanding about the environmental issues, which may lead to their self-regulation to take action [22]. Although the process may not be straightforward, it facilitates that outcome.

4 Environmental education in language testing

To integrate environmental education into language testing, consideration must be taken with regard to what contents should be used. As mentioned earlier, topic familiarity would be better emphasized so that test takers are capable of expressing themselves in L2 [14,17]. The National Environmental Education Foundation suggests the three levels of environmental education, including environmental awareness, knowledge of personal behavior, and environmental literacy [12]. Environmental awareness refers to general familiarity with some key environmental issues. Knowledge of personal behaviour refers to ability to turn awareness to actions to preserve the environment. Environmental literacy refers to ability to acquire skills to carry out their own projects.

Based on these three levels, it can be suggested that environmental awareness may include such topics as natural disasters caused by human factors around the test takers and some ways to maintain healthy environment. The dimension of knowledge of personal behavior may use a topic like some sustainable actions, i.e. reduce, reuse, and recycle. Lastly, environmental literacy may require the test takers to reflect on their personal experience in conducting projects related to environmental conservation. It is expected that when they can refer to their personal experience, it would facilitate their language production as well.

After selecting the topics for the language testing, language choices should be taken into consideration. Some specific terminologies should be avoided to minimize the construct-irrelevant variance. Otherwise, test takers may not be able to elicit their response during the test. It should be noted that if the meaning of that terminologies are implied in the prompt, that would still be acceptable for testing material.

As mentioned earlier, the use of environmental issues in language testing is to foster self-regulation to take action on environmental conservation or tackle climate change [22]. This would contribute to their understanding as to raise their awareness to take action for environment sustainability. Thus, the washback effect of language testing is not only about enhancing the test takers’ linguistic skills.

5 Conclusion

Language testing can be potentially used to foster environmental education. This would support a dimension in SDGs which focuses on tackling climate change and environment degradation. This is made possible because of washback effect of language testing which encourages learning, not only the language skills, but also the contents or topics. Thus, test takers can absorb knowledge on some topics to be tested.

Although the topics on environmental issues may not be familiar for all ranges of test takers, some steps can be taken to make it possible for the topics to be integrated. Among them is selecting the materials of environmental education. Test makers should also match it
with the objective of environmental education that they would manifest. Some references which can be used to formulate the environmental contents for testing materials are SDGs and three dimensions of environmental education. Furthermore, the language choices should also be taken into consideration so that test takers could still understand the prompt provided in the language testing.

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