

# Reading through Earth Based Learning

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*Abstract— English for environment Education was changing in digital age. The research aimed to improve English reading skill of environment learners in Thailand through the Earth-Based Learning (EBL). There was experimental research design with one group samplings for 15 modules of 15 weeks. The sampling was 63 environment undergraduate students at faculty of environment and resource studies at Maharakham University, Thailand. There were five phases of research. Phase I, analysis the learners and reading earth contents. Phase II, design the reading earth web-based learning. Phase III, develop the reading earth web-based learning that access at <http://www.nadoon.online/indexeng 2023.html>. Phase IV, implement the reading earth web-based learning in environment English classroom. Phase V, evaluate the reading earth web-based learning by 15 exercises from 15 modules. The tools were the reading earth web-based learning, the reading tests, and the attitude questionnaire. The result found that the reading earth web-based learning was effective. The reading skills of learners improve posttest higher than pretest and the learners had positive satisfaction after learning.*

**Index Terms—** adult education, environment, reading, second language, technology-based instruction

## I. BACKGROUND

Language means a system of communication through persons in each country that consisting of sounds, words, and grammar.[7] English was the most commonly used language for international communication that estimated about two billion people use English.[6] Besides, English used for the official language in 53 countries and currently the language for the estimated 565 million people in virtual community.[25] Especially the websites were about 52% presented in English. Most media as films, TV shows, books and music were produced in English.[11] As this reason, English was important language that Thailand tried to improve English skills to all citizenship.

Thailand was located in the middle of Southeast Asia. It was the 50th largest country in the and had an area of 513,120. square kilometre. The King was the head of the country. Besides, Thailand had a democratic government with the Prime Minister is the head of the government. Even though Thailand had small area, it had the 20th largest population in the world. There were approximately 66 million people and being adults 44.97% and teenager about 12.48% (8 million). Most of half of Thai learners are still using English language.[17]

English influenced Thailand because Thai groups used English for long existence in the country. Generally English used as a compulsory subject to be taught in Grade 1-12. Besides, English was a required subject for all fields of learners in university. Moreover, English training institutes offered English courses to all people. Including, technology was applied to use in English language classroom.[28]

Thai learners found that there were four English skills, listening, speaking, reading and writing.[16] Reading became important skills for learning of English as a Foreign Language (EFL).[10] Reading impacted writing skills. If learners' reading skills were poor, they could not improve the progress of study. From the Program for International Student Assessment (PISA) (2018) presented Thai learners were weak readers because they lacked of interest in reading, low motivation, and poor reading habits. [25] Mostly Thai learners did not comprehensively while they were reading of text.[8] Besides, the passive class as

traditional teaching that teachers read aloud did not encourages leaners.<sup>14</sup>

There were many strategies for improving English reading of learners for second language classroom around the world. In Thailand, ER contributes was applied for 10 weeks to increase reading comprehensive and motivation of university learners in Thailand. All learners had reading comprehension improved after taking program.[26] Besides, the English reading problems of Thai learner was English difficult text. Thai students suggested reading instructions including guided reading, improving vocabulary knowledge, critical and comprehension reading, and technology-blended classroom. <sup>3</sup>The main reading factors affected Thai students were the anxiety of English journals and knowledge of vocabulary. The other factors were the difficult of vocabulary, unable to translate, too lazy to read, misunderstanding the content, journals are difficult, journals have too many pages, and students not interested in reading, and the content was not related the previously learned.[24]

In United State of America, American Sign Language (ASL) was applied on English reading achievement and comprehension and further applied for Deaf and hard of hearing children and adolescents.[21] In Philippine, Filipino students were learning English as a second language. Data were from 6,766 students who spoke a Philippine language at home. The research showed significant positive relationship between growth mindset and reading proficiency.[5] In Iran, cognitive strategies on the reading performance were applied for Iranian graduate students while reading a scientific article in English (L2) during a 16-week course. The participants' reading comprehension significantly improved. Moreover, teachers in English for specific purposes (ESP) applied comprehension strategies for mathematics and psychology students while reading specialized and nonspecialized English texts. Mathematics students used a greater number of comprehension strategies than psychology students. Keywords, summarizing, skipping and general idea were the least frequent strategies used.[4] In China, the training of English reading and writing were used to improve the low English proficiency students' competence of English reading and writing during a 24-lesson period in 6 weeks. There was a significant

improvement in English reading and writing skills. [30] Moreover, Mandarin-speaking was applied with Audio-assisted reading English texts in three modes. (reading-while-listening). A pedagogical method in English (L2) learning reported efficacy in reading. [29] In Sweden, academic L1 Swedish and L2 English reading comprehension ability among Swedish adolescents decreased in academic Swedish reading comprehension and related to results of the PISA-studies. [18] In Saudi Arabia, Saudi health science university students were conducted for Reading in English as a foreign language (EFL) by engaging with written materials. Positive reading attitudes among students. [1] In Indonesia, South Jakarta student were applied with 11 domains of motivation for reading English text. Reading curiosity was the highest domain of motivation. [9] Finally, the researcher tried to improve English reading skills among Thai learners because reading skills was the important skills for writing and Thai teachers must try new teaching methods, and applying technology for classroom of learning English as a foreign language (EFL).

## II. OBJECTIVE

The research aimed to improve English reading skill of environment learners in Thailand through the Earth-Based Learning (EBL).

## III. METHODS

The reading skills of learners improve posttest higher than pretest and the learners had positive satisfaction after learning. There was experimental research design with one group samplings for 15 modules of 15 weeks. The sampling was 63 environment undergraduate students at faculty of environment and resource studies at Mahasarakham University, Thailand. The tools were the reading earth web-based learning, the reading tests, and the attitude questionnaire. There were five phases of research. Phase I, analysis the learners and reading earth contents. Phase II, design the reading earth web-based learning. Phase III, develop the reading earth web-based learning that access at <https://www.nadoon.online/indexeng2023.html>. Phase IV, implement the reading earth web-based learning in environment English classroom. Phase V, evaluate the reading earth web-based learning by 15 exercises from 15 modules.

## IV. RESULTS

The result found that the reading earth web-based learning was effective. The earth reading skills of learners improve posttest higher than pretest and the learners had positive satisfaction after learning. There were three parts of results as follow.

### A. Learning Modules of Earth Based Learning (EBL)

The results of Table I provided information on the 15 modules of the reading earth web-based learning for adult environment learner. The modules presented earth concepts such as Environment, Waste, Pollution, Global warming, Population, Energy, Climate change, Disaster, Biodiversity, Genetic Modification, Deforestation, Health, Business, and Technology. There were five vocabularies in each module

for checking skill of reading in each adult learner. Finally, learner should read the passage and answer the questions.

### For example1: Module of Global Warming (2 hours)

Learners should read the passage about global warming and answer the questions.

Glossary: Greenhouse gases, Carbon dioxide, China, Reforestation, Carbon credit, green roof

- What is Global Warming?
- What are cause of Global Warming?
- What are effects of Global Warming?
- What are Negative Impacts of Global Warming?
- How to stop Global Warming?

### For example2: Module of Deforestation (2 hours)

Learners should read the passage about deforestation and answer the questions.

Glossary: Cutting down, Taiga, Tropical rainforest, Coffee, Fossil fuels, Soil erosion

- What is deforestation?
- What are types of forest?
- Which are the effects of Deforestation?
- Which countries do not have forest?
- How to stop Deforestation?

### For example3: Module of Biodiversity (2 hours)

Learners should read the passage about Biodiversity and answer the questions.

Glossary: Biodiversity, Fish, Wetlands, Australia, National parks, destruction, overexploitation

- What is biodiversity?
- What are types of biodiversity?
- Which countries have top biodiversity?
- What are the risks of biodiversity?
- How to save biodiversity?

**Table I. Reading Modules of Earth-Based learning**

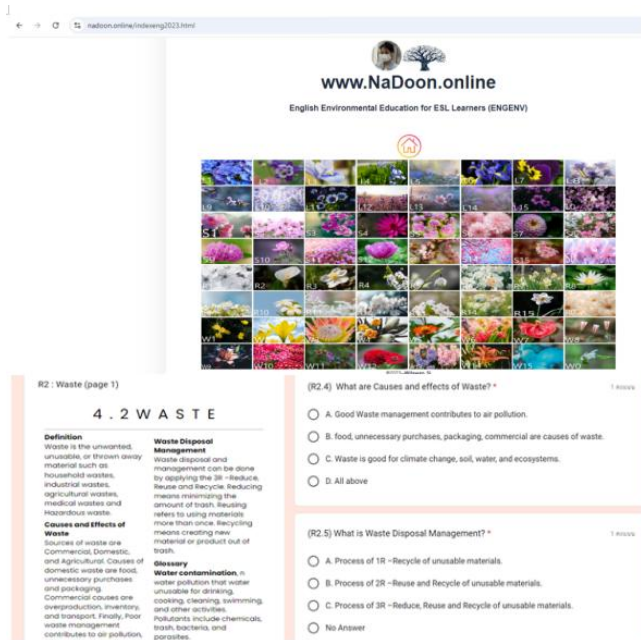
Week	Glossary	Questions
1	Environment	
	Geographical environment, Man-made environment, Environmentalist, Environmental issues, Environment education	<ul style="list-style-type: none"> <li>● What is Environment?</li> <li>● What are Types of Environment?</li> <li>● What is Benefits of Environment?</li> <li>● Who is Environmentalist?</li> <li>● What is Environment Education?</li> </ul>
2	Waste	
	Packaging, Agricultural waste, Pesticide, Waste disposal, 3R	<ul style="list-style-type: none"> <li>● What is Waste?</li> <li>● How many types of waste?</li> <li>● What are types of waste?</li> <li>● What are Causes and effects of Waste?</li> <li>● What is Waste Disposal Management?</li> </ul>
3	Pollution	
	Radioactive, Carbon monoxide, Land pollution, decibels (dB), Pollution control	<ul style="list-style-type: none"> <li>● What is Pollution?</li> <li>● How many types of pollution?</li> <li>● What are type of Pollution?</li> <li>● What are Negative Impacts of Pollution?</li> <li>● What is Pollution Management?</li> </ul>

Week	Glossary	Questions
4	Global Warming	
	Greenhouse gases, Carbon dioxide, China, Reforestation, Carbon credit	<ul style="list-style-type: none"> <li>● What is Global Warming?</li> <li>● What are cause of Global Warming?</li> <li>● What are effects of Global Warming?</li> <li>● What are Negative Impacts of Global Warming?</li> <li>● How to stop Global Warming?</li> </ul>
5	Population	
	People, Demography, China, Overpopulation, Population control	<ul style="list-style-type: none"> <li>● What is population?</li> <li>● What are types of population?</li> <li>● Which are the most populous countries?</li> <li>● What is demography?</li> <li>● How to manage about population control?</li> </ul>
6	Energy	
	Power, Renewable energy, Geothermal, Dam, Nonrenewable energy	<ul style="list-style-type: none"> <li>● What is Energy?</li> <li>● What are types of Energy?</li> <li>● What are Renewable Energies?</li> <li>● What are effects of Energy?</li> <li>● How to save Energy?</li> </ul>
7	Extinction	
	Parkinson, Animal, Brazil, Risk, Conservation legislation	<ul style="list-style-type: none"> <li>● What is Extinction?</li> <li>● What are main causes of Extinction?</li> <li>● What are effects of Extinction to human?</li> <li>● Which countries are in extinction situation?</li> <li>● How to save Endangered plant and animal?</li> </ul>
8	Climate change	
	Temperatures, Carbon dioxide, Heatwaves, Global Sea Level, Clean energy	<ul style="list-style-type: none"> <li>● What is Climate Change?</li> <li>● What are causes of Climate Change?</li> <li>● What is impacts of Climate Change in Japan?</li> <li>● Which countries are in Climate Change situation?</li> <li>● How to stop Climate Change?</li> </ul>
9	Disaster	
	Natural disaster, Human-caused disaster, United States, 3 golden rules, Dehydration	<ul style="list-style-type: none"> <li>● What is Disaster?</li> <li>● What are types of disaster?</li> <li>● Which top five countries have natural disaster?</li> <li>● What are the deadliest natural disasters?</li> <li>● How to survive from disaster?</li> </ul>
10	Biodiversity	
	Biodiversity, Fish, Wetlands, Australia, National parks	<ul style="list-style-type: none"> <li>● What is biodiversity?</li> <li>● What are types of biodiversity?</li> <li>● Which countries have top biodiversity?</li> <li>● What are the risks of biodiversity?</li> <li>● How to save biodiversity?</li> </ul>

Week	Glossary	Questions
11	Genetic Modification	
	GMOs, Scientific process, Genome editing, Pink pineapples, Argentina	<ul style="list-style-type: none"> <li>● What is Genetic Modification?</li> <li>● What are types of Genetic Modification?</li> <li>● What are GMO Plants?</li> <li>● What are GMO Cons?</li> <li>● Which top countries have GM of crops?</li> </ul>
12	Deforestation	
	Cutting down, Taiga, Tropical rainforest, Coffee, Fossil fuels	<ul style="list-style-type: none"> <li>● What is deforestation?</li> <li>● What are types of forest?</li> <li>● Which are the effects of Deforestation?</li> <li>● Which countries do not have forest?</li> <li>● How to stop Deforestation?</li> </ul>
13	Health	
	Health, Four pillars, Happiest countries, Swiss, Tulip	<ul style="list-style-type: none"> <li>● What is Health?</li> <li>● What are types of Health?</li> <li>● What are Four Pillars of Health?</li> <li>● What are Causes of Diseases?</li> <li>● Which countries are the Happiest Countries?</li> </ul>
14	Business	
	Business, Beef, Singapore, Petroleum, Switzerland	<ul style="list-style-type: none"> <li>● What is business?</li> <li>● What are types of Business?</li> <li>● What are Business activities?</li> <li>● What are richest countries?</li> <li>● Which are top countries of agricultural product?</li> </ul>
15	Technology	
	Solar energy, Green technology, Sustainability, Organic Agriculture, Global warming	<ul style="list-style-type: none"> <li>● What is Technology?</li> <li>● What are types of Technology?</li> <li>● What is Green Technology?</li> <li>● What are benefits of Green Technology?</li> <li>● Which countries have Green Tech projects?</li> </ul>

### B. Reading Access of Earth Based Learning (EBL)

The results of Fig.I presented the front page of the reading earth web-based learning. The learners can access by self-directed learning at <https://www.nadoon.online/indexeng2023.html>. There were 15 units of reading earth. When the learner entered the website, they can select the earth reading exercises from R1-R15 (15 Units). Finally, they can evaluate reading test with RO unit.



**Fig.1 Reading Access of Earth Based Learning at <https://www.nadoon.online/indexeng2023.html>**

**C. Reading Evaluation of Earth Based Learning (EBL)**

Improvement of Environmental learners’ Reading Ability through The Earth Based Learning (EBL), a paired t-test was used to compare the overall mean scores of the pre-test and post-test. The results of the analysis are reported in Table 2.

The reading skill means a score of the 63 Environment learners at pre-test was 51.88 (SD=41.88) while their post-test mean score was 60.59 (SD = 38.99) for an increase in reading skill level of 8.71 (SD = 40.43). This increase was statistically significant ( $t(63) = 3.79, p < 0.05$ ).

**Table II. Evaluation of Earth Based Learning**

Measure	M	SD	t	df	p
Pre-test	51.88	41.88	3.79	62	0.00*
Post-test	60.59	38.99			

Note: \* $p < 0.05$

**D. Reading Satisfaction of Earth Based Learning (EBL)**

The environment learners had positive satisfaction of The Echo Earth Reading Web-Based Learning. The results of the satisfactory analysis are reported as Fig. II.

**Environment learner 1:**

“Website provides English test and measure proficiency in reading. The website allowed to gain more knowledge.”

**Environment learner 2:**

“Technology increases the efficiency of Thai education activities to build knowledge.”

**Environment learner 3:**

“I gained knowledge and vocabulary from the website. I feel English is not difficult. I am impressed and happy.”

**Environment learner 4:**

“Website has interesting content. There are beautiful pictures. The website is easily accessible and usable to practice reading.”

**Environment learner 5:**

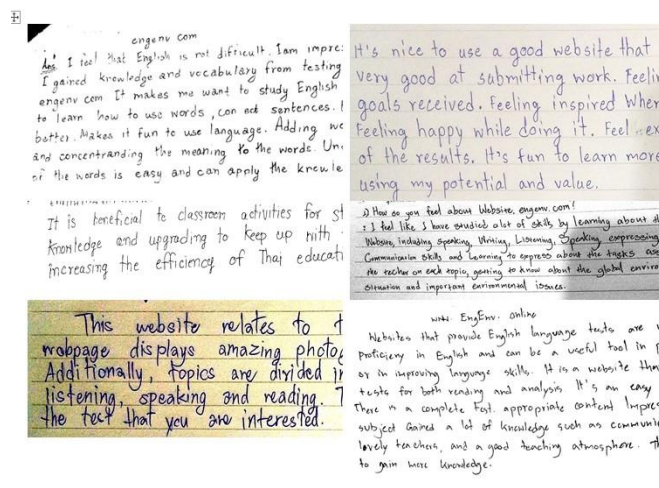
“English ENV website make me know about the global environmental situation and important issue.”

**Environment learner 6:**

“The website displays amazing photographs of beautiful flowers. Categories of topics as reading easy to choose.”

**Environment learner 7:**

“It is good website that is fast, easy to access and very good to submit work. I feel happy to do exercise and feel excited while seeing the progress of the results.”



**Fig.II Satisfaction of Earth Based Learning at <https://www.nadoon.online/indexeng2023.html>**

**V. DISCUSSION AND CONCLUSIONS**

The result found that the Echo Earth reading web-based learning was effective. The Echo Earth reading skills of learners improve posttest higher than pretest and the learners had positive satisfaction after learning. The results were confirmed as applying technology for improving English reading skills in many research for example Negoescu & Mitulescu used online technology to improve English reading with collaborative and independent learning.[20] In China, Guo, Wentao used Mobile-Learning-Based for English reading because traditional Chinese teaching model of college English reading courses can no longer meet the needs of the times, and needs to be reformed urgently.[13] In Indonesia, Iftanti, Erna applied teaching reading comprehension online due to COVID-19 pandemic for the EFL students' anxiety and attitude toward reading at a state Islamic University in Tulungagung East Java Indonesia. Students attended reading courses online mode and their reading anxiety and attitude after the pandemic implicates reducing their performance reading for some conditions. The research results are pedagogically implemented to build a positive attitude and reduce anxiety in online or offline reading.[15] Besides, Rianto used metacognitive strategy among Indonesian EFL students in relation to online reading abilities and English proficiency for students from the University of Borneo Tarakan. The self-assessed online reading ability and online English proficiency had no gender difference was identified.[23] In Ireland, technology was utilized in second-level English education for psychometric analysis of Irish students. Males had significantly more positive attitudes with learning English with technology. 17. Finally, Andoko and et.al Applied reading comprehension

for English as foreign language (EFL) students from non-English-speaking countries with the help of the kit-build concept map as a graphical strategy. Students used the kit-build concept map with better performance in English reading compared with traditional method.[2]

As this research of ESL in Thailand, technology aid for ESL was the benefit tool to improve English for environment Education in digital age. The research applied Web-based technology for improving English reading skills for learners of Thailand. This tool called “the Echo Earth reading” with reading for 15 modules in 30 hours. There were five phases of research. Phase I, analysis the learners and the Echo Earth reading contents. Phase II, design the Echo Earth reading web-based learning. Phase III, develop the Echo Earth reading web-based learning that access at <http://www.nadoon.online/indexeng2023.html>. Phase IV, implement the Echo Earth reading web-based learning in environment English classroom. Phase V, evaluate the Echo Earth reading web-based learning by 15 exercises from 15 modules. The result found that the Echo Earth reading web-based learning was effective. The reading skills of learners improve posttest higher than pretest and the learners had positive satisfaction after learning. This activity was benefit for ESL learners in many countries.

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