International Journal of Foreign Language Teaching and Research
ISSN: 2322-3898-http://jfl.iaun.ac.ir/journal/about

Please cite this paper as follows:
Cheraghpour Samvati, Gh., Maftoon, P., & Rashtchi, M. (2024). Applying the Activity Theory Framework to Raise EFL Learners' Ecological Critical Language Awareness. *International Journal of Foreign Language Teaching and Research, 12* (50), 79-93. http://doi.org/10.30495/JFL.2023.703378

Research Paper

Applying the Activity Theory Framework to Raise EFL Learners' Ecological Critical Language Awareness

Ghazaleh Cheraghpour Samvati[1], Parviz Maftoon[2]*, Mojgan Rashtchi[3]

[1]Ph.D. Candidate, Department of English, Science and Research Branch, Islamic Azad University, Tehran, Iran
cheraghpour.ghazaleh@gmail.com

[2]Associate Professor, Department of English, Science and Research Branch, Islamic Azad University, Tehran, Iran
pmaftoon@gmail.com

[3]Associate Professor, TEFL Department, North Tehran Branch, Islamic Azad University, Tehran, Iran
mojgan.rashtchi@gmail.com

Received: May 25, 2024 **Accepted: June 27, 2024**

Abstract

Our planet faces major environmental issues that must be addressed through ecological initiatives, education, and awareness raising. In language education, ecolinguistics has grown substantially during the last decade and has taken a cognitive step toward fostering and improving people's ecological awareness; however, there was no mention of pedagogical practices of ecolinguistics rooted in theories of second language teaching and learning. Thus, the present study sought to apply a framework of English teaching based on the Activity Theory to raise EFL learners' ecological critical language awareness. The researchers of the current quasi-experimental study employed a non-equivalent pretest and posttest control-group design to assess the effectiveness of using an AT-based framework in EFL classes to foster learners' critical language awareness of ecological issues. An experimental group (n=45) and a control group (n=45) with intermediate-level members selected through convenience sampling took part in the study. The experimental group was taught with the AT-based framework, while the control group was not. The result of the independent samples t-test indicated that the ECLA of the experimental group had risen significantly compared to the control group. Also, the results of a series of paired samples t-tests comparing the pretest and posttest of the experimental group's score on each domain of the ECLA showed that the learners' awareness of all six domains had significantly improved. The study suggests that implementing the AT-based framework to teach ecolinguistics in language classes can be a promising way to raise learners' ECLA.

Keywords: Activity theory, Ecolinguistics, Ecological critical language awareness, nvironmental studies, Second language acquisition

استفاده از چارچوب تئوری فعالیت برای افزایش آگاهی زبان‌آموزان زبان انگلیسی انتقادی زیست‌محیطی

سیاره ما با مسائل زیست محیطی بزرگی مواجه است که باید از طریق ابتکارات زیست محیطی، آموزش و افزایش آگاهی به آنها پرداخت. در آموزش زبان، زبان شناسی زیست محیطی در دهه گذشته رشد قابل توجهی داشته است و گامی شناختی در جهت تقویت و بهبود آگاهی اکولوژیکی مردم برداشته است. با این حال، هیچ اشاره ای به شیوه های آموزشی بوم شناسی که ریشه در تئوری های آموزش و یادگیری زبان دوم داشته باشد، وجود نداشت. بنابراین، مطالعه حاضر به دنبال استفاده از چارچوبی از آموزش زبان انگلیسی بر اساس تئوری فعالیت برای افزایش آگاهی زبان‌آموزان زبان انگلیسی انتقادی اکولوژیکی است. محققان مطالعه شبه تجربی کنونی از یک طرح گروه کنترل پیش‌آزمون و پس‌آزمون غیرمعادل برای ارزیابی اثربخشی استفاده از چارچوب مبتنی بر AT در کلاس‌های EFL برای تقویت آگاهی زبان انتقادی زبان‌آموزان از مسائل زیست‌محیطی استفاده کردند. یک گروه آزمایش (45 نفر) و یک گروه کنترل (45 نفر) با اعضای سطح متوسط که به روش نمونه گیری در دسترس انتخاب شدند در مطالعه شرکت کردند. گروه آزمایش با چارچوب مبتنی بر AT آموزش داده شد، در حالی که گروه کنترل نه. نتایج آزمون t نمونه های مستقل نشان داد که ECLA گروه آزمایش نسبت به گروه کنترل به طور معنی داری افزایش یافته است. همچنین، نتایج مجموعه‌ای از آزمون‌های t زوجی با مقایسه پیش‌آزمون و پس‌آزمون نمرات گروه آزمایش در هر حوزه ECLA نشان داد که آگاهی فراگیران از هر شش حیطه به‌طور معناداری بهبود یافته است. این مطالعه نشان می‌دهد که پیاده‌سازی چارچوب مبتنی بر AT برای آموزش زبان‌شناسی زیست محیطی در کلاس‌های زبان می‌تواند راهی امیدوارکننده برای افزایش ECLA زبان‌آموزان باشد.

واژگان کلیدی: نظریه فعالیت، زبان شناسی، آگاهی از زبان انتقادی بوم شناختی، مطالعات محیطی، فراگیری زبان دوم

Introduction

Environmental issues, especially climate change, have been in dire straits for some time. Environmental concerns ebb and flow as people get caught in the ever-changing tide of the day-to-day world. On the heels of the COVID-19 pandemic, a survey of more than 3,000 people across eight countries found that people became more concerned and aware of environmental challenges and more committed to changing their behavior to advance sustainability (Kachaner et al., 2020). However, more recently, The Guardian reported that the concern for environmental issues is going unheeded and being overshadowed in the wake of the war in Ukraine, which has caused international turmoil and rising energy prices (Harvey, 2022).

Providing individuals with environmental knowledge through education is indispensable to sparking steady and genuine environmental concern and awareness. Research has repeatedly shown how individuals' environmental knowledge and concern have impacted their behavior and perceived environmental responsibility (Bi et al., 2010; Heo & Muralidharan, 2019; Mansoor & Wijaksana, 2021). Therefore, education is the key to instilling environmental concern and awareness into individuals and, in turn, expecting them to be proactive and responsible citizens.

In language education, ecolinguistics is as close as the field of Applied Linguistics to acknowledging the environmental and ecological issues concerning language use. As Halliday (1992, p. 65) argued, issues such as classism, growthism, species extinction, and pollution are not solely the concern of biologists and physicists; however, they also pose significant challenges for those in Applied Linguistics. Ecolinguistics is a branch of linguistics that studies the impact of language on the life-sustaining relationships among humans, other organisms, and the physical environment. The field of ecolinguistics has grown substantially during the last decade and has taken a cognitive step toward fostering and improving people's ecological awareness (Zhao & Liu, 2020).

Ecolinguistics' ultimate goal is to attain what Fairclough (2013) stated as critical language awareness: noticing how language is used to maintain power relations by unmasking the ecologically wrong norms of discourse (Stibbe, 2015). Such a goal is achieved via techniques that have been specified in the areas of linguistics and discourse analysis studies that reveal the ecologically wrong norms of discourse. What is missing from the literature on ecolinguistics is any mention of pedagogical practices of ecolinguistics rooted in theories of second language teaching and learning. In other words, if one wants to extend the practice of ecolinguistics beyond discourse analysis and bring about the aforementioned critical language awareness of ecological issues through language education by employing the premises of ecolinguistics, there are no accounts of how to do so.

Ecolinguistics provides valuable insights into raising individuals' environmental knowledge and ecological critical language awareness in Applied Linguistics. However, it requires relying on a tried-and-true theory of second language acquisition and teaching methodology to go beyond a linguistic practice and become a pedagogical practice. Thus, the researchers of the present study proposed working by the principles of a sociocultural theory, namely the Activity Theory (AT), and delineated the operationalization of such theory in a four-skill integrated English language classroom. The application of AT was tested with Iranian EFL learners to examine whether it helped to raise the learners' ecological critical language awareness (ECLA). The researchers believe using the AT within its theoretical and methodological framework can be a breakthrough in introducing ecolinguistics to language classes through solid theoretical and methodological grounds.

Literature Review

Ecological Critical Language Awareness

A practical definition of ecolinguistic discourse analysis drawn from the works of Halliday (1992) and Stibbe (2012, 2014) refers to the analysis of the destructive discourse promoting ecologically destructive behavior by projecting positive connotations on the word growth in economic growth or other positive connotations in discourses of consumerism, advertising, and the like. Besides, how resources are grammatically considered as mass nouns, such as water and soil, indicates that they are unbounded. The anthropocentric speech takes agency away from trees, forests, and rivers, making it hard to express them as doing things like protecting from floods or providing food.

Likewise, ecolinguistic discourse analysis refers to the analysis of the use of counter-discourses that aim to mitigate some of the destruction caused by destructive discourses, such as those of environmentalism, ecology, and sustainability. Moreover, the analysis of alternative discourses that construct the world in new ways can potentially contribute to protecting and preserving the systems that support life, which can comprise a definition of ecolinguistics discourse analysis.

As mentioned earlier, what is ideally expected to be brought about by the practice of ecolinguistics is what Fairclough (2013) called critical language awareness. Critical language awareness is noticing how language is used to maintain power relations by unmasking the ecologically wrong norms of discourse through the steps mentioned above. This view could be achieved through education by endowing language learners with the skills to expose hidden messages within the discourses surrounding them and resist discourses that encourage socially and ecologically damaging behavior, thus raising their ecological critical language awareness (Stibbe, 2015).

The only mention of the term ecological critical language awareness was in Haig's (2003) study, where he used the term "ecological critical language awareness pedagogy" to refer to a confluence of the four pedagogical trends of global issues teaching, content-based learning, critical language awareness, and learner autonomy (p. 201). However, his study focused more on textual analysis of the textbook from the ecological critical language awareness perspective. Later, Cheraghpour et al. (2023) developed the ECLA construct from scratch and validated an instrument based on the construct. This construct had six domains (i.e., the power of language, anthropocentrism, awareness of global environmental issues, the impact of ecolinguistics, responsibility toward our actions, and responsibility toward our language). The present study uses the ECLA instrument to determine learners' level of critical language awareness regarding ecological issues.

The Activity Theory

Activity theory provides a unit of analysis for understanding human consciousness by highlighting society's role in shaping the individual's mind (Lantolf & Appel, 1994). Its central claim is that the existence and understanding of the human mind are deeply rooted in its interaction with the world. This interaction, or activity, is shaped by social and cultural factors (Kaptelinin et al., 1999).

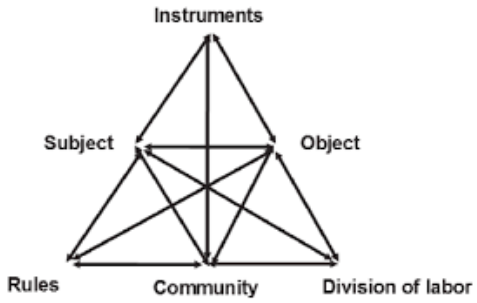
Three distinct generations can represent the history of activity theory (Engeström, 2001). Vygotsky's work on mediation characterized the first generation; the second generation, based on the works of Leont'ev and later Engeström, expanded the unit of analysis to include the social; and the third generation, also developed by Engeström, expanded the minimal unit of analysis to include two activity systems.

Engeström (1987) proposed an activity theory approach by defining activity systems using six components: subject, object, mediating artifacts (tools and signs), community, rules, and division

of labor. The subject is the actor in the activity system. It is a part of a community with an objective that translates into achieving an outcome. Artifacts and rules mediate the relationship between the subject and the object. The division of labor comes from the relationship between the community and the object, which connects individual actions to the collective activity. An activity system's organization is represented in Figure 1.

Figure 1

Activity theory system



Note. AT system (Adopted from Engeström, 1987, p. 78)

In this study, the subject refers to learners and the class instructor. Object refers to the performance objective of the course, which is instilling ecological critical language awareness into learners. Mediating artifacts refer to the instructor's and learners' computers, smartphones, and emails. It also includes using websites, namely Mentimeter.com, Google Docs, Google Slides, Ted.com, Kahoot.com, Grammarly, Edublogs.com, and other online shared materials. Pecha Kucha presentations were also among the course's mediating artifacts. Community refers to the instructor, learners, university classroom, academic context, and ultimately outside the classroom and society. Rules refer to the guidelines for performing the class objectives, such as using multiple online sources to prepare class presentations, observing the time limit of Pecha Kucha presentations, avoiding plagiarism, and restraining from using ecologically destructive discourse. Last, division of labor refers to learners' roles and responsibilities in their assigned groups.

The researchers of this quasi-experimental study adopted a non-equivalent pretest-posttest control-group design to investigate the effect of using the Activity Theory framework on raising EFL learners' ECLA. The researchers formulated the following research questions to fulfill the study's objectives.

RQ1. Does applying the AT-based framework affect Iranian EFL learners' ECLA?

RQ2. Which ECLA domains of the EFL learners were affected by the AT-based framework?

Method

Participants

The participants were 90 English language learners selected through the convenience sampling method. They were in two classes of 45, each randomly assigned to an experimental group, the Activity Theory-Based (ATB) group, and the control group, the Formal Teaching Method (FTM) group. They were undergraduate students majoring in English Translation or TEFL at Islamic Azad University, Science and Research Branch. The participants were at the intermediate level. Their proficiency level was determined through the Oxford Placement Test (OPT) available at https://books.google.com/books/about/Oxford_Placement_Test_1.html?id=Toc0RgAACAAJ.

The ATB group comprised 38 female and seven male learners between 18 and 30 years old. The FTM group comprised 35 female and 10 male learners, two aged between 30 and 40 years and others between 18 and 30 years. The groups attended a Listening and Speaking course, which can also be taught as a four-skill integrated course in English with a little focus on reading and writing. The course lasted fourteen sessions, and it was a two-credit hour lesson, so the classes met once weekly for 90 minutes.

The current study followed some ethical principles during the different stages. The participants signed informed consent forms and were assured they could quit at any stage. A visible note was included in the questionnaire, which assured the respondents' agreement to participate in the program and let their responses be used for the study.

Instruments

The researchers used the Oxford Placement Test (OPT) and a questionnaire to assess learners' Ecological Critical Language Awareness (ECLA). The OPT used in this study was Allan's (2004) version and had two sections (Listening and Grammar), each with 100 items. The first section tested reading, listening, and vocabulary; the second tested grammar, vocabulary, and reading. The two sections produced a total score of 200. The reliability estimate of the test calculated through Cronbach's alpha was 0.84.

The ECLA questionnaire (Cheraghpour et al., 2023) was administered to the two groups as the pretest and posttest to assess the effectiveness of the treatment in making language learners aware of the role of language concerning ecological issues. The questionnaire was a five-point Likert-type scale with 42 close-ended items. It covered six domains, each having seven pertaining questions. These domains were the power of language (questions 1-7), anthropocentrism (questions 8-14), awareness of global environmental issues (questions 15-21), ecolinguistics (questions 22-28), responsibility for our actions (questions 29- 35), and responsibility for our language (questions 36-42). The overall reliability estimate of the questionnaire calculated through Cronbach's alpha was 0.77.

Procedure

In this study, the first session was allotted to administering the OPT and the ECLA questionnaire for the ATB and the FTM group. The OPT was given to all the learners through a pen-and-paper examination. The ECLA questionnaire was filled out online on the Google Forms platform. The last session of both classes was also allotted to administering the ECLA questionnaire as the posttest.

All participants were informed that the information provided would be treated cautiously and that no one except the researchers would have access to the collected data. Learners would not be identifiable once the study results were made public. It was emphasized that the provision of names was voluntary. However, since a form of identification was needed to match the pretest and posttest data, learners could provide their name, email address, or student ID number to make the second questionnaire identifiable.

The Activity Theory-Based (ATB) Group

During the second and third sessions, the ATB group was informed about the course requirements, objectives, and the class procedure. The instructor introduced the class objectives via a laptop computer connected to a big screen. First, the instructor asked the learners to create a Google account if they did not have one and install Grammarly to help them with their grammatical errors while writing. Using a Google account, the instructor explained how to log in to Google and use Google Docs. Then, she explained the Pecha Kucha presentation, showed the class a sample Pecha Kucha style presentation, and taught them how to make a Pecha Kucha

using Google Slides. A Pecha Kucha presentation is a format that uses 20 slides or images that are displayed for 20 seconds each and move automatically as the presenter is speaking to ensure brevity and flow.

The instructor also explained how to work with the mentimeter.com website. Then, the learners formed groups of five, brainstormed, and did online searches to find environmental threats and the most urgent ecological issues. The learners also received instructions on how to perform advanced searches online. They were strictly guided on how to avoid plagiarism while using authentic online resources. Each group posted their results online by creating a word cloud on mentimeter.com.

Once the results were posted online, the groups were assigned topics according to the majority's preference, as each group voted for a topic on mentimeter.com. The groups were instructed to determine five aspects of their chosen topic, each to be presented by a group member. After discussing these aspects in groups, one group member presented a summary of findings to the class, and the rest of the learners gave feedback. Each group received their peers' reflections and refined the aspects of their topic. Table 1 shows the topics and the five aspects chosen by each group.

Table 1

Groups' Presentation Topics and Sub-topics

Group	Topic	Aspects of the Topic
1	Climate change	Introduction, definition
		Problems caused by climate change
		Consequences of not acting upon climate change
		Causes of climate change
		Solutions to this problem
2	Water scarcity	Introduction, definition, water scarcity types
		Reasons for water scarcity
		Consequences of water scarcity
		Top 10 countries most affected by water scarcity
		Solutions to this problem
3	Water pollution	Introduction, definition, water pollution types
		Water pollution causes
		Effects of water pollution on humans
		Effects of water pollution on animals
		Prevention of water pollution
4	Air pollution	Introduction, air quality measurement and index, definition
		Causes of air pollution
		Health issues caused by air pollution
		Air pollution, acid rain, and ozone depletion
		Ways to control air pollution
5	Deforestation	Introduction and definition, why deforestation matters
		Causes of deforestation
		Effects of deforestation on humans
		Effects of deforestation on animals and the environment
		Solutions to deforestation
6	Overpopulation	What overpopulation is
		Why overpopulation is a problem for humans

		How overpopulation impacts the environment
		Most overpopulated countries
		How we can solve overpopulation
7	Biodiversity loss	Definition of biodiversity loss and examples
		Biodiversity loss and species extinction
		Causes of biodiversity loss
		Impacts of biodiversity loss on humans
		Solutions to biodiversity loss
8	Urbanization	Definition of urbanization and examples
		Positive effects of urbanization
		Negative effects of urbanization
		Causes of urbanization
		Urbanization and environmental sustainability
9	Waste	Introduction, different types of waste overview
		Plastic waste
		Food waste
		Hazardous waste
		Waste management and recycling

Hence, each group covered five aspects of one environmental issue in the subsequent class sessions by giving Pecha Kucha-style presentations using Google Slides. The members had access to Google Docs files to upload a written summary of their presentations, which the instructor checked later. After the instructor corrected the summaries, the files were uploaded as a blog entry to the class website on Edublogs.com, where the learners could access and study for the final exam. The instructor created a quiz for each session based on the group's presentations using the Kahoot.com website. The learners took the quizzes to get involved with the topic and ensure they paid attention to the presentations.

During the fourth session, the instructor played some videos chosen from the Ted.com website to shed light on the gravity of the situation with environmental issues. The premises of ecolinguistics and how language is involved in building beneficial or destructive discourse regarding the environment were also taught, and learners were encouraged to prepare their presentations and written group projects following those premises. A short recap of the instructions for the previous sessions regarding using Google Docs and Slides was also provided. The instructor answered learners' questions regarding the course. From the fifth session on to the thirteenth session, each session, one group had a series of five Pecha Kucha presentations, followed by Kahoot quizzes and class discussions.

The Formal Teaching Method (FTM) Group

The FTM group was not exposed to the AT-based framework. Thus, their class objectives followed the standard curriculum for listening and speaking classes, fostering these two skills by providing ample listening exercises and speaking opportunities.

In the second session of the course, the instructor gave the learners a predetermined course syllabus. The topics in the syllabus included but were not limited to ecological issues. The learners were asked to each give a presentation on the topics of the syllabus.

Then, five individuals gave a presentation on a topic of their choice in each session. Presentations lasted about five minutes, and a post-discussion questions-and-answer was held after each presentation to involve other learners. The instructor highlighted the premises of

ecolinguistics each time a topic of ecological issues was presented. The instructor also included some videos and podcasts from online sources in the course.

Results

The researchers formulated the following null hypothesis to answer the first research question.

H01. There is no statistically significant difference in the ECLA of the Iranian EFL learners exposed to the AT-based framework and those not exposed to it.

Initially, the distribution of data collected from the pre-and posttests of the experimental and control groups was checked through the Kolmogorov-Smirnov test, indicating the normal distribution of the scores. Then, descriptive statistics for the pre and posttests of the experimental and control groups were computed. The experimental group's mean scores (M = 102.22, SD = 15.56) and the control group's (M = 101.71, SD = 16.47) in the pretest were different since the experimental group seemed to act better than the control group before the treatment sessions.

As Table 2 shows, to determine whether there was a significant difference between the pretests of the experimental and control groups, an independent samples t-test was performed.

Table 2

Independent Samples T-Test for the Pretests of the Experimental and Control Groups

Levene's Test for Equality of Variances		t-test for Equality of Means						
						Std. Error	95% Confidence Interval of the Difference	
f	Sig	t	df	Sig. (2-tailed)	Mean Difference	Difference	Lower	Upper
.137	.712	.151	88	.880	.511	3.378	-6.203	7.225

Table 2 reveals the equality of variance (p = .712). As shown, there was no significant difference in the experimental group's pretest (M = 102.22, SD = 15.56) and the control group's pretest (M = 101.71, SD = 16.47; t (88) = .151, p = .88, two-tailed). Thus, another independent samples t-test was performed to determine whether there was a significant difference between the posttests of the experimental and control groups. Descriptive statistics demonstrate that the experimental group (M = 138.44, SD = 7.71) performed better than the control group (M = 103.98, SD = 16.39) after the treatment sessions. An independent samples T-test was run to highlight the difference between the mean scores of the groups' posttests of ECLA (Table 3).

Table 3

Independent Samples T-test for the Posttest of the Experimental and Control Groups

Levene's Test for Equality of Variance		t-test for Equality of Means						
						Std. Error	95% Confidence Interval of the Difference	
f	Sig	t	df	Sig. (2-tailed)	Mean Difference	Difference	Lower	Upper
.409	.350	12.760	88	.000	34.467	2.701	29.099	39.835

Table 3 shows the equality of variance (p = .350). There was also a significant difference in the experimental group's posttest (M = 138.44, SD = 7.715) and the control group's posttest (M = 103.98, SD = 16.39; t (88) = 12.76, p< .001, two-tailed). Besides, the eta squared statistic was calculated to determine the strength of the intervention's effect, that is, to evaluate the stability of the research findings across samples since the effect size is not dependent on sample size and can, thus, allow for meta-analysis across a range of different studies with different sample sizes. The

magnitude of the differences in the means (mean difference = 34.467, 95% CI: 29.099 to 39.835) was (eta squared = .649), which implies a large effect size according to Cohen's standard (Pallant, 2013). Thus, the first null hypothesis is rejected since the data showed that the ATB group outperformed the FTM group after being exposed to the AT-based framework.

The second null hypothesis formulated to answer the second research question was:

H02. The AT-based framework has no statistically significant effect on Iranian EFL learners' awareness of each of the six domains of ECLA.

First, the descriptive statistics for the pretest and posttest of the six domains of ECLA in the ATB group were calculated, and then a series of paired samples t-tests were run (see Tables 4 and 5).

Table 4

Descriptive Statistics for Pretest and Posttest of the Six Domains of ECLA in the ATB Group

	Mean	N	Std. Deviation	Std. Error Mean
POST -Power of Language	23.36	45	4.344	0.648
PRE-Power of Language	17.36	45	2.613	0.389
POST -Anthropocentrism	25.93	45	2.481	0.370
PRE -Anthropocentrism	19.24	45	2.917	0.435
POST – Global Environmental Issues	20.20	45	2.408	0.359
PRE – Global Environmental Issues	15.33	45	2.403	0.358
POST -Ecolinguistics	20.91	45	4.284	0.639
PRE -Ecolinguistics	16.33	45	2.495	0.372
POST -Responsibility for Our Actions	24.91	45	2.618	0.390
PRE -Responsibility for Our Actions	18.47	45	2.849	0.425
POST-Responsibility for Our Language	19.33	45	3.418	0.510
PRE -Responsibility for Our Language	15.33	45	2.403	0.358

Table 5

Paired Samples T-test for the Pre and Posttest of the Six Domains of ECLA in the ATB Group

	t	df	Sig. (2-tailed)					
					95% Confidence Interval of the Difference			
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
POST Power of Language-PRE Power of Language	6.000	5.633	0.840	4.308	7.692	7.146	44	0.000

POST Anthropocentrism- PRE Anthropocentrism	6.689	4.016	0.599	5.482	7.895	11.173	44	0.000
POST Global environmental Issues- PRE Global Environmental issues	4.867	3.461	0.516	3.827	5.907	9.431	44	0.000
POST Ecolinguistics- PRE Ecolinguistics	4.578	4.961	0.740	3.087	6.068	6.190	44	0.000
POST Responsibility for our actions- PRE Responsibility for our actions	6.444	3.702	0.552	5.332	7.557	11.677	44	0.000
POST Responsibility for our language- PRE Responsibility for our language	4.000	4.205	0.627	2.737	5.263	6.381	44	0.000

Regarding the 'power of language' domain, the results of the paired samples t-test revealed that the participants' mean score was significantly higher on the posttest (M = 23.36, SD = 4.34) than that of the pretest (M = 17.36, SD = 2.61), t (44) = 7.14, p < .05 (two-tailed). The eta squared statistic (.53) indicated a large effect size.

Learners' awareness of 'anthropocentrism' was outstandingly better on the posttest (M = 25.93, SD = 2.48), t (44) = 11.17, p < .05 (two-tailed). The eta squared statistic (.73) signaled a large effect size.

Also, the result of the paired-sample t-test comparing the participants' performance on the pretest and posttest of 'global environmental issues' revealed that the mean score of the posttest (M = 20.20, SD = 2.40) was considerably higher than that of the pretest (M = 15.33, SD = 2.40). The t (44) = 9.43, p < .05 (two-tailed) implied that the participants performed significantly better on the posttest than on the pretest. The eta squared statistic was estimated at .66, indicating a large effect size.

The AT-based framework had a significant effect on Iranian EFL learners' awareness of 'ecolinguistics' as the results of the paired samples t-test comparing the participants' mean scores on the pretest and posttest pointed out that the participants' mean score on the posttest (M = 20.91, SD = 4.28) significantly surpassed that on the pretest (M = 16.33, SD = 2.49), t (44) = 6.19, p < .05 (two-tailed). The eta squared statistic (.46) signified a large effect size.

The learners' awareness of the 'responsibility for our actions' domain had considerably improved as the result of the intervention on the posttest (M = 24.91, SD = 2.61), t (44) = 11.67, p < .05 (two-tailed). The eta squared statistic (.75) showed a large effect size.

Finally, the AT-based framework improved learners' awareness of the 'responsibility for our language' domain as the participants' performance was better on the posttest (M = 19.33, SD = 3.41), t (44) = 6.38, p < .05 (two-tailed). The eta squared statistic (.48) signaled a large effect size.

Discussion

The urgency of ecological and environmental problems is increasing more than ever. Overlooking these issues in educational contexts is narrow-minded. To integrate this area into

language education by employing ecolinguistics, teachers need pedagogical practices rooted in theories of second language teaching and learning. Without any operationalized methods to implement ecolinguistics into language classes, the current study's researchers theoretically and methodologically introduced an AT-based framework to raise the EFL learners' ECLA. As Jonassen and Rohrer-Murphy (1999) explain, AT provides a lens for examining learning processes and outcomes that can assist educators in designing instruction by focusing on the activities in which people are engaged, the instruments they use in those activities, the social and contextual relationships among the collaborators and division of labor, the objectives, and the rules of those activities.

AT has been extensively researched and used as a conceptual framework for education, for example, within the context of teaching writing (Hajimaghsoodi & Maftoon, 2020), reading comprehension (Aryanjam et al., 2021; Bolghari et al., 2019), technology education (Dakers, 2011; Stevenson, 2004), introducing educational technology into the classroom (Benson et al., 2008; Murphy & Manzanares, 2008; Schmidt & Tawfik, 2022), mobile learning (Cowan & Butler, 2013), and online learning (Tsai et al., 2010). However, the application of AT in raising EFL learners' awareness of ecological issues has never been studied. Therefore, the researchers detailed the operationalization of a pedagogical framework by relying on the principles of AT. Then, to assess the effectiveness of applying the framework in instilling ECLA in EFL learners, they employed a non-equivalent pretest-posttest control-group design with two groups of 45, the ATB and FTM groups.

The findings revealed that the AT-based framework had a statistically significant effect on raising learners' ECLA in general and promoting awareness of the power of language, anthropocentrism, global environmental issues, ecolinguistics, responsibility for our actions, and responsibility for our language in particular. Based on the results, the effect size was large; therefore, the data strongly suggested that employing the AT-based framework in language classes can significantly raise the learners' ECLA. The study's findings could be considered strong enough for generalization. Several studies have emphasized the importance of raising awareness as one of the outcomes of environmental education (Ardoin et al., 2015; Stern et al., 2014), and this study was successful in doing so through the AT-based framework.

These findings can be justified by what the literature review theoretically shows regarding the nature and influence of AT on raising language awareness. As Vandebrouck et al. (2012) highlight, the essence of AT is the dialectical change in individuals' mental and behavioral attitudes during the activity.

Furthermore, in this study, both the medium of instruction and the content contributed to learners' raised ECLA. Concerning the medium of instruction, the researchers operationalized the AT by using different applications, websites, and e-learning platforms. In such a learning environment, learners found working with technology collaborative and engaging; as a result, they were invested in the course and followed the content closely, which, in turn, promoted ECLA in them. This finding is in line with Wang and Liao's (2017) study, which found that students who used CALL in an innovative, collaborative learning environment had significantly better learning performance than those who did not. Moreover, Su and Zou (2022) highlighted the benefits of technology-enhanced collaborative language learning in a meta-analysis.

Damico et al. (2020) hold literacy educators accountable for helping students identify and examine ecologically destructive and beneficial discourses about climate change and making climate justice more central in their classrooms. Ecolinguistics can be baked into language learners' curricula or general knowledge courses to foster ECLA in learners using this study's AT-based framework. In other words, educators can benefit from adopting innovative and technologically enhanced interactive approaches to teaching language and ecolinguistics, using authentic materials, and promoting critical thinking. Ideally, education should endow language

learners with the skills to expose hidden messages within the discourses surrounding them and resist discourses that encourage socially and ecologically damaging behavior (Stibbe, 2015).

Conclusion

The present study successfully implemented ecolinguistics as a pedagogical practice and raised EFL learners' ECLA using the AT-based framework. Teachers can widely benefit from incorporating the AT-based framework in their classes because it is a holistic approach that emphasizes the interconnectedness of all aspects of learning about the environment and can encourage teachers to consider the content of their lessons and the medium of their instruction. In this learner-centered teaching framework, teachers can tailor their instruction to be more engaging. Implementing this framework may require professional development for teachers and can help them understand the principles of ecolinguistics and how to apply them in their teaching. Moreover, this framework encourages innovation in teaching strategies. Incorporating technology into language teaching and using multiple online resources keeps the teachers and learners up-to-date.

This framework is also favorable to EFL learners since it sheds light on the issues of the real world; therefore, it can help make learning more relevant and meaningful by connecting classroom activities to real-world contexts and increasing student motivation and engagement. This framework emphasizes collaborative learning, which can help students develop essential skills such as teamwork, communication, and problem-solving. It instills political autonomy in learners and helps them be active constructors of their reality. Learners can experience an interactive learning environment where their voices are heard, and their opinions matter. While the learners can become familiarized with the world's current environmental issues, they can effectively use technology.

As pointed out by Ardoin et al. (2020), in environmental education, researchers should document tangible ecological outcomes such as observable individual behavior changes, or in the case of this study, long-term sustained awareness of language impact on ecological issues, rather than relying on self-reported measures. Hence, future research can be longitudinal and shed light on the effect of the AT-based framework in sustaining the ECLA.

Last, the introduction of the ECLA constructs into the literature of English language pedagogy is in its infancy. Therefore, the researchers could not find any empirical research investigating the effect of different teaching methods on raising the ECLA. Moreover, the AT-based framework's compound effect has never been studied empirically. Relying on the firm grounds of theory hence, the results, though limited in scope, suggest that employing the AT-based framework is helpful for English language learners to raise their ECLA. However, further research is needed to bolster the conclusion and fine-tune the proposed framework to meet specific language needs.

References

Alexander, R., & Stibbe, A. (2014). From the analysis of ecological discourse to the ecological analysis of discourse. *Language Sciences*, *41*, 104-110. https://doi.org/10.1016/j.langsci.2013. 08.011

Ardoin, N. M., Biedenweg, K., & O'Connor, K. (2015). Evaluation in residential environmental education: An applied literature review of intermediary outcomes. *Applied Environmental Education & Communication*, *14*(1), 43-56. https : //doi.Org /10.1080/1533015X.2015. 1013225

Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). Environmental education outcomes for conservation: A systematic review. *Biological Conservation*, *241*, 108224. https: // doi. org/ 10.1016/j.biocon.2019.108224

Aryanjam, L., Rashtchi, M., & Maftoon, P. (2021). Boosting reading achievement by employing learner autonomy curriculum: Effects of strategy instruction. *Iranian Journal of English for Academic Purposes*, *10*(3), 51-70. https://dorl.Net/dor/20.1001.1.24763187.2021.10.3.4.2.

Benson, A., Lawler, C., & Whitworth, A. (2008). Rules, roles and tools: Activity theory and the comparative study of e-learning. *British Journal of Educational Technology*, *39*(3), 456-467. https://doi.org/10.1111/j.1467-8535.2008.00838.x

Bi, J., Zhang, Y., & Zhang, B. (2010). Public perception of environmental issues across socioeconomic characteristics: A survey study in Wujin, China. *Frontiers of Environmental Science & Engineering in China*, *4*(3), 361-372. https://doi.org/10.1007/s11783-010-0017-4

Bolghari, M., Birjandi, P., & Maftoon, P. (2019). An activity theory perspective on the role of cooperative assessment in the reading comprehension of Iranian EFL learners. *Issues in Language Teaching*, *8*(1), 129-163. https://doi.org/10.22054/ilt.2019.39946.375

Cheraghpour Samvati, G., Maftoon, P., & Rashtchi, M. (2023). Shedding light on ecological critical language awareness construct: A questionnaire development and validation study in the Iranian EFL context. *Research in English Language Pedagogy*, *11*(3), 444-468. https://doi.org/10.30486/RELP.2023.1973610.1417

Cowan, P., & Butler, R. (2013). Using activity theory to problematize the role of the teacher during mobile learning. *SAGE Open*, *3*(4), 1-13. https://doi.org/10.1177/2158244013516155

Dakers, J. (2011). Activity theory as a pedagogical framework for the delivery of technology education. In M. Barak & M. Hacker (Eds.), *Fostering human development through engineering and technology education (ETE)* (pp. 19-34). Rotterdam. http://dx.doi.org/10.1007/978-94-6091-549-9_2

Damico, J. S., Baildon, M., & Panos, A. (2020). Climate justice literacy: Stories-we-live-by, ecolinguistics, and classroom practice. *Journal of Adolescent & Adult Literacy*, *63*(6), 683-691. https://doi.org/10.1002/jaal.1051

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research.* Orienta-Konsultit.

Engeström, Y. (2001). Expansive learning at work: Toward an activity-theoretical conceptualization. *Journal of Education and Work*, *14*, 133-156. https:// doi. org/ 10. 10 8 0 / 13639080020028747

Fairclough, N. (2013). *Language and power* (2nd ed.). Routledge. https :// doi. Org /10 .43 24 /97 81315838250

Haig, E. (2003). How green was my textbook? Towards an ecological critical language awareness pedagogy. *Studies in Language and Culture (Nagoya University, Faculty of Language and Culture)*, *24*(2), 189-222.

Hajimaghsoodi, A., & Maftoon, P. (2020). The effect of activity theory-based computer-assisted language learning on EFL learners' writing achievement. *Language Teaching Research Quarterly*, *16*, 1-21.

Halliday, M.A.K. (1992). New ways of analyzing meaning: The challenge to applied linguistics. In M. Pütz (Ed.), *Thirty years of linguistic evolution* (pp.59-95). John Benjamins. https://doi.org/10.1075/z.61.09hal

Harvey, F. (2022, April 3). *Dire warning on climate change 'is being ignored' amid war and economic turmoil.* The Guardian. https:// www. theguardian. com/ environment /2022/ apr/03/dire-warning-on-climate-change-is-being-ignored-amid-war-and-economic-turmoil

Heo, J., & Muralidharan, S. (2019). What triggers young Millennials to purchase eco-friendly products?: The interrelationships among knowledge, perceived consumer effectiveness,

and environmental concern. *Journal of Marketing Communications*, *25*(4), 421-437. https://doi.org/10.1080/13527266.2017.130362

Jonassen, D. H., & Rohrer-Murphy, L. (1999). Activity theory as a framework for designing constructivist learning environments. *Educational Technology Research and Development*, *47*(1), 61-79. https://doi.org/10.1007/BF02299477

Kachaner, N., Nielsen, J., Portafaix, A., & Rodzko, F. (2020, July 14). *The pandemic is heightening environmental awareness*. BCG. https: //www. bcg. com/ publications/ 2020/ pandemic - is-heightening-environmental-awareness

Kaptelinin, V., Nardi, B., & Macaulay, C. (1999). The activity checklist: A tool for representing the space of context. *Interactions*, *6*(4), 27-39. Retrieved from http://interactions.acm.org

Lantolf, J. P., & Appel, G. (1994). Theoretical framework: An introduction to Vygotskian perspectives on second language research. In J. P. Lantolf & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 1-32). Ablex.

Mansoor, M., & Wijaksana, T. I. (2021). Predictors of pro-environmental behavior: Moderating role of knowledge sharing and mediatory role of perceived environmental responsibility. *Journal of Environmental Planning and Management*, 1-19. https://doi.org/10.1080/09640568.2021.2016380

Murphy, E., & Manzanares, M. A. R. (2008). Contradictions between the virtual and physical high school classroom: A third-generation activity theory perspective. *British Journal of Educational Technology*, *39*(6), 1061-1072. https://doi.org/10.1111/j.1467-8535.2007.00776.x

Pallant, J. (2013). *SPSS survival manual: A step-by-step guide to data analysis using IBM SPSS* (5th ed.). McGraw-Hill.

Schmidt, M., & Tawfik, A. A. (2022). Activity theory as a lens for developing and applying personas and scenarios in learning experience design. *The Journal of Applied Instructional Design*, *11*(1), 55-73. https://doi.org/10.59668/354.5904

Stern, M. J., Powell, R. B., & Hill, D. (2014). Environmental education program evaluation in the new millennium: What do we measure and what have we learned? *Environmental Education Research*, *20*(5), 581-611. https://doi.org/10.1080/13504622.2013.838749

Stevenson, J. (2004). Developing technological knowledge. *International Journal of Technology and Design Education*, *14*(1), 5-19. https: // doi. Org /10 .10 23 /B: IT DE .00 00 00 73 61.62177.07

Stibbe, A. (2014). An ecolinguistic approach to critical discourse studies. *Critical Discourse Studies*, *11*(1), 117-128. https://doi.org/10.1080/17405904.2013.845789

Stibbe, A. (2015). *Ecolinguistics: Language, ecology and the stories we live by*. Routledge.

Su, F., & Zou, D. (2022). Technology-enhanced collaborative language learning: Theoretical foundations, technologies, and implications. *Computer Assisted Language Learning*, *35*(8), 1754–1788. https://doi.org/10.1080/09588221.2020.1831545

Tsai, I. C., Galyen, K., Xie, X., & Laffey, J. (2010). Using activity theory to examine social interaction of online learning. In J. Herrington & C. Montgomerie (Eds.), *Proceedings of ED-MEDIA 2010 World Conference on Educational Multimedia, Hypermedia & Telecommunications* (pp. 1202-1211). Association for the Advancement of Computing in Education (AACE). Retrieved from https://www.learntechlib.org/primary/p/34785

Vandebrouck, F., Chiappini, G., Jaworski, B., Lagrange, J. B., Monaghan, J., & Psycharis, G. (2012). Activity theoretical approaches to mathematics classroom practices with the use of technology. *International Journal for Technology in Mathematics Education*, *19*(4), 127-134.

Wang, Y. H., & Liao, H. C. (2017). Learning performance enhancement using computer-assisted language learning by collaborative learning groups. *Symmetry, 9*(8), 141. https://doi.org/10.3390/sym908014

Zhao, C. Y., & Liu, C. Y. (2020). Ecological study of language and two turns in ecolinguistics. *Journal of Northeastern University (Social Science), 22*(2), 112-119. http:// doi.org/10.15936/j.cnki.1008-3758.2020.02.015

Biodata

Ghazaleh Cheraghpour Samvati is a Ph.D. candidate in TEFL at Islamic Azad University, Science and Research Branch. She has been teaching English in language institutes and universities. She has taught courses in English language teaching methodology and English literature. She has participated in various national and international conferences in second language education. Her areas of research interest include CALL, ecolinguistics, and second language acquisition theories.
Email: *cheraghpour.ghazaleh@gmail.com*

Parviz Maftoon is an associate professor of teaching English at Islamic Azad University, Science and Research Branch, Tehran, Iran. He received his Ph.D. from New York University in Teaching English to Speakers of Other Languages (TESOL). He has taught M.A. and Ph.D. courses at different Iranian universities. His primary research interests concern second language acquisition, SL/FL language teaching methodology, and language curriculum development. He has published nationally and internationally and has written and edited several English books. He is currently on the editorial board of several language journals in Iran.
Email: *pmaftoon@gmail.com*

Mojgan Rashtchi is an associate professor of Applied Linguistics in the faculty of Foreign Languages of Islamic Azad University, North Tehran Branch, Iran. She has taught various courses to students at B.A., M.A., and Ph.D. levels. She has published several articles and books and has participated in several local and international conferences. Her primary areas of interest include English language teaching methodology, first and second language acquisition theories, CALL, and research in education. She has also translated books related to Philosophy for Children (P4C) from English into Persian.
Email: *mojgan.rashtchi@gmail.com*