Task-Based E-Learning on Students' Cognitive Assonance and Reading Engagement in English Learning Process at Elementary Schools

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Abstract
Elementary school students still need help learning English, resulting in low learning outcomes. The lack of learning facilities and the application of inappropriate learning models impact students' low motivation to learn English. Regarding this matter, this study aims to examine the effectiveness of task-based e-learning on students' cognitive dissonance and reading engagement in learning English at elementary schools. The study was designed in a Quasi-Experimental Design with a posttest-only control group design. The population of the study was 158 4th-grade elementary school students. A random sampling technique was used in this study with a sample size of 55 4th-grade elementary school students. A survey was used to collect the data. The instrument used to collect research data was a questionnaire sheet. Two-way ANOVA was used to test the hypothesis. The results of the study show a significant effect simultaneously and partially with a Sig. value < 0.05, task-based e-learning has an impact on students' cognitive dissonance and reading engagement in learning English at elementary schools. The study implies that applying task-based e-learning can make it easier for students to learn English, which impacts their cognitive dissonance and reading engagement.

Keywords: E-Learning; task-based learning; cognitive dissonance; reading engagement; English; elementary school

Introduction

English learning is an important concern at elementary school since it is perceived as an integral part of the elementary educational curriculum. One of the main objectives in learning English for elementary school students is the introduction of the language basics including the skills; listening, speaking, reading, and writing skills (Ayatiningsih, 2019; Century et al., 2020; Lestari et al., 2020; Meldawati et al., 2023). Students will be introduced to basic vocabularies, simple grammar, and sentence patterns that enable students to communicate in English with an appropriate understanding level based on their cognitive development stage (Ayatiningsih, 2019; Bhatti et al., 2022; Century et al., 2020; Lestari et al., 2020; Usman & Anwar, 2021). Therefore, English language learning at elementary schools is required to be designed to facilitate students' active participation in learning activities. Teachers can adapt various innovative learning models and methods to create an interesting and interactive learning environment (Harahap et al., 2022; Lee et al., 2016; Mauliate et al., 2019; Mohammadi et al., 2020). English learning is supposed to be in a supportive atmosphere for students to feel comfortable expressing themselves in English (Jamil et al., 2019; Vonti & Rahmah, 2019). In this case, the teacher has the task of a learning facilitator guiding students through the learning process by providing constructive feedback and providing the support needed to improve students' language skills (Ristika et al., 2020; Sofiana & Mubarok, 2020). Learning English at elementary schools provides a strong basis for the development of student's language skills, particularly to avoid cognitive dissonance in students.

The phenomenon of cognitive dissonance refers to a mismatch between students' understanding of language concepts and newly received information (Barta et al., 2023; Li & Zhang, 2023). Cognitive dissonance arises when students face differences between what they believe and understand and what is taught by the teacher (Li & Zhang, 2023; Pangesti et al., 2023). In an English learning situation, cognitive dissonance occurs when students have beliefs or understandings about; pronunciation, grammar, or word meaning, which then conflict with new information provided by the teacher. Teachers are expected to be able to recognize and overcome cognitive dissonance in learning English at elementary schools. This can be conducted through clear and consistent explanations of complex language concepts, as well as through providing examples and exercises to strengthen students' understanding (Amini & Kruger, 2022; Lestari et al., 2020; Wene & Muljani, 2020). This kind of learning assists students in resolving conflicts of understanding and gaining a deeper understanding of the structure and use of English (Amini & Kruger, 2022; Lestari et al., 2020; Loo et al., 2019; Padmadewi et al., 2020; Wene & Muljani, 2020). Teachers have to involve students in learning activities to prevent cognitive dissonance from occurring. One activity that can be conducted is reading engagement.

Reading engagement is a concept referring to the level of interest, motivation, and involvement of students in reading activities (Darsih & Asikin, 2020; Ho & Lau, 2018; Kusumawardani et al., 2018). Reading engagement is an essential component in developing students' reading skills including improving their understanding of various English texts (Kristiyanto & Rahayu, 2020; Mak et al., 20219; Yunisah et al., 2023; Ibrahim et al., 2023). engagement in English learning at elementary school is very important. When the students engage in reading with enthusiasm and motivation, they tend to be more active in finding and understanding the information presented (Siregar et al., 2022; Starling-alves & Hirata, 2023). It has a positive contribution to the student's reading skills development including comprehension,

vocabulary, and text analysis skills. Teachers can select the reading materials that are suitable to students' interests and level of understanding, as well as hold discussions and activities that stimulate critical thinking and reflection on the texts that they read (Khofifah & Ramadan, 2021; Suharsiwi et al., 2022). In addition, the integration of technology in English language learning at elementary schools can be an effective means of increasing reading engagement. The use of interactive learning software also motivates students to engage in active reading (Bayu & Wahyuni, 2019; Megawati & Utami, 2020; Wardani & Munir, 2023). Therefore, reading engagement plays an important role in English language learning at elementary schools considering it can promote a deeper and more sustainable understanding of the language.

However, the current problem is that there are still many students who have difficulty learning English. This is supported by previous research findings which state that there are still many elementary school students who achieve low English learning outcomes (Pravitasari & Yulianto, 2018; Saidah et al., 2021; Saraswati et al., 2020). Other research findings also reveal that it is difficult for students to learn English because teachers tend to use conventional methods of learning which makes students feel bored with learning activities (Nasution et al., 2021; Pravitasari & Yulianto, 2018; Santika, 2020). The lack of innovative learning media also have a negative impact on learning activities due to the lack of learning facilities help students to learn (Kristiantari et al., 2022; Kusumawati et al., 2017; Pratama et al., 2019). This problem is also found at the elementary school level.

Based on the results of observations and interviews conducted at Cluster IX of Elementary School, Banjar District, the same problem is also found. The results of the observations reveal the problems regarding limited resources and facilities. Limited resources and facilities can include various things, such as a lack of digital learning media that helps students learn English. Limited resources and facilities can affect various aspects of learning. For example; a lack of textbooks or relevant reading materials can hinder the development of students' reading skills. Limited access to learning software or the internet can also hinder the use of technology in learning which can increase student engagement. The impact of this problem is the potential for hampering student progress in learning English and decreasing student motivation in the learning process. Students feel less motivated if they do not have adequate access to the resources and facilities needed to support learning. It has an impact on students' low English learning outcomes.

In overcoming this problem, the solution offered is facilitating digital learning that can be accessed anywhere and anytime by students. It is reinforced by previous research findings revealing that online learning can improve student's learning outcomes (Aini, Budiarto, et al., 2020; Ja'ashan, 2020; Kertih et al., 2023). One of the learning activities that can be conducted is using task-based e-learning. E-learning is defined as the learning approach utilizing information and communication technology (ICT) as a means for delivering materials, interacting, and collaborating with teachers and students (Garad et al., 2021a; Moustakas & Robrade, 2022; Qiu et al., 2022). E-learning allows students easier access to various learning resources, such as; learning videos, flexible reading, and practice materials without time and space limitation (Agung et al., 2022; Bubou & Job, 2022; Elfeky & Masadeh, 2020). E-learning in English learning has several significant advantages. First, it enables the creation of adaptive learning, because learning materials can be adjusted to students' individual needs and abilities (Ariesta & Olifia, 2019; Rati & Rediani, 2020; Renaldi et al., 2022). Second, E-learning allows collaboration between students and teachers, as well as between fellow students through online discussion forums, study groups, and collaborative projects (Ariesta & Olifia, 2019; Elfeky & Masadeh, 2020; Renaldi et al., 2022).

Third, e-learning expands access to various learning resources and learning materials that are relevant to the development of the English language.

Task-based e-learning is a learning approach integrating the use of technology or digitalization with task-based learning. This approach introduces a contextual language concept that is relevant to the student's daily life with technology utilization as the facility in delivering learning materials, facilitating the learning tasks, interacting and collaborating between teachers and students (Azlan et al., 2019; Marisda, 2019; Yundayani & Sri Ardiasih, 2021). The implementation of task-based e-learning has several privileges. First, task-based e-learning enables students to be involved in a real communicative condition (Azlan et al., 2019; Purdam, 2016). Students are given concrete tasks demanding the use of English in a meaningful and relevant context (Yaccob & Yunus, 2019; Yundayani & Sri Ardiasih, 2021). Second, task-based e-learning facilitates interactive and interesting technology usage in English learning. Teachers can use various applications, such as; learning video, simulation, and other multimedia activities. It improves students' motivation and involvement in the learning process. Third, task-based e-learning wides students' comprehension of the language concept including improving their communication skills.

The previous research findings reveal that e-learning can increase students' motivation, students' involvement, and English learning outcomes (Fandiino et al., 2019; Ja'ashan, 2020; Mahyoob, 2020). Other researchers also found that e-learning allows students to access learning materials, task instructions, and other flexible learning resources (Almelhi, 2021; Ernalida et al., 2021; Fandiino et al., 2019). It is also mentioned that task-based learning can increase students' activeness in learning indirectly increasing their learning interest (Marisda, 2019; Yundayani & Sri Ardiasih, 2021). However, there is no study regarding the effectiveness of task-based e-learning on students' cognitive dissonance and reading engagement in learning English at elementary schools. Task-based e-learning allows interaction and collaboration between teachers and students, as well as between fellow students. Through online discussion forums, study groups, and collaborative projects, students can share their ideas, experiences, and understanding related to English, as well as provide feedback to each other. Based on this situation, the current study is conducted to investigate the effectiveness of task-based e-learning on students' cognitive dissonance and reading engagement in learning English at elementary schools.

Research method

This type of research was a Quasi-Experimental Design using a posttest-only control group research design. A quasi-experimental design is a research design to study the effect of independent variables on dependent variables without using randomization (Agung, 2010; Widiana et al., 2023). The research setting was in Cluster IX, Banjar District, which consists of SD Negeri 1 Gobleg, SD Negeri 2 Gobleg, SD Negeri 3 Gobleg, SD Negeri 4 Gobleg, SD Negeri 5 Gobleg, SD Negeri 6 Gobleg, and SD Negeri 2 Pedawa. The population in this study was all elementary school students in Cluster IX, Banjar District, totaling 158 fourth-grade students at elementary schools. The sampling technique used in this study was a random sampling technique by drawing lots. In this case, the seven schools in Cluster IX Banjar District were drawn to determine two schools as the samples. Before conducting the lottery, an equality test was conducted using a one-way analysis of variance (One-Way ANOVA). The results of the equality test showed that F_{count} was lower than F_{table} ($F_{count} < F_{table}$), namely; $1.27 < 2.271$. It indicated that there was no significant difference which meant that the population was equal. The drawing result indicated that the fourth-fourth grade students at SD Negeri 2 Pedawa was the experimental class

with a total of 25 students and the fourth-grade students at SD Negeri 4 Gobleg was the control class with a total of 30 students. The experimental class was treated by using task-based e-learning. The method used to collect data was a questionnaire. The questionnaire method was used to collect data regarding cognitive dissonance and students' reading engagement in learning English at elementary schools. The instrument used to collect research data was a questionnaire sheet. The questionnaire sheet in which it was tested to determine its validity. The results of the instrument item validity test from 2 experts found 15 valid items. The results of the reliability test obtained a coefficient of 0.72 indicating that the reliability of the instrument was very high. The research instrument grid is presented in Table 1.

Table 1. The blueprint of research instrument

No	Variable	Dimension	Indicators
1	Cognitive Dissonance (Robert A. Baron dan Donn Byrne, 1991)	Psychological tension	• Recognizing students' anxiety levels. • Understanding students' stress levels. • Understanding students' emotional tension levels. • Understanding students' irritability levels. • Understanding students' fatigue levels. • Understanding the levels of students' decreased concentrations. • Understanding students' hopelessness levels. • Understanding students' social withdrawal levels.
		Motivation to reduce tension	• Recognizing how students control emotions • Recognizing how students show their expression or feeling. • Recognizing how students avoid a certain condition or situation. • Recognizing how students decrease their stress. • Recognizing students' self-confidence levels.
		Level of reward	• Recognizing the reward from material obtained by students. • Recognizing the emotional rewards obtained by students. • Recognizing the form of students' intrinsic rewards obtained by students. • Recognizing the psychological rewards form obtained by students. • Recognizing the health-related rewards form obtained by students.

		Forced compliance	• Recognizing the form of discrepancy between beliefs and actions obtained by students. • Recognizing the form of feelings of discomfort experienced by students. • Recognizing the protests or rejection received by students. • Recognizing the form of compliance obtained by students. • Recognizing the forms of social pressure experienced by students. • Recognizing the fear of consequences experienced by students
2	Reading engagement	Reading Frequency	• Recognizing the number of books that have been read by the students. • Recognizing the duration spent by the students in reading.
		Reading Variations	Recognizing the number of book types read by students.
		Interaction with Reading Content	Recognizing the participation in reading forum discussion.
		Reading Motivation	• Recognizing the students' reading goals. • Recognizing who is the motivation source for students to read.
		Emotional Responses to Reading	• Recognizing the level of students' satisfaction in reading books. • Recognizing the feelings experienced during or after reading a book.

The technique used to test the hypothesis was two-way ANOVA. This research investigated the influence of one independent variable, namely; task-based e-learning on two dependent variables; cognitive dissonance and reading engagement in English learning. Normality and homogeneity tests were conducted before the hypothesis testing. Normality testing used the Kolmogorov-Smirnov test at the 5% level. The test criteria were p value> 0.05, it could be concluded that the data were normally distributed. A homogeneity test was conducted by using SPPS assistance. Hypothesis testing used a two-way analysis of variance (ANOVA). Hypothesis testing was conducted using the two-way ANOVA test and further testing using the Tukey HSD test at a significance level of 5% (a=0.05) with the assistance of SPSS 26.

Results

The present study aims to examine the effectiveness of task-based e-learning on students' cognitive dissonance and reading engagement in learning English at elementary school. Learning activities are conducted in 12 meetings using task-based e-learning. Learning assisted by task-based e-learning can reduce cognitive dissonance and increase students' reading engagement in learning English at elementary school. Learning activities using task-based e-learning are presented in Figures 1 and 2 below.
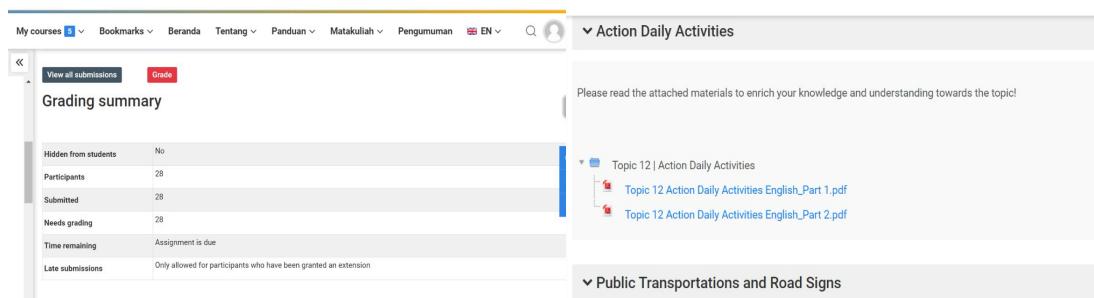
Figure 1. Homepage of task-based e-learning

Figure 2. The implementation of task-based e-learning

The result of descriptive analysis shows that there is a significant influence on the implementation of task-based e-learning on students' cognitive dissonance and reading engagement in learning English at elementary school. It shows that there is a difference in students' cognitive dissonance and reading engagement between the class that implements task-based e-learning and the class that does not implement task-based e-learning. The difference can be shown from the mean score of students' cognitive dissonance and reading engagement in which the experimental class outperforms the control class. The descriptive analysis is presented in Table 2.

Table 2. The descriptive analysis result of the implementation of task-based e-learning on cognitive dissonance and reading engagement

Dependent Variables	Independent Variables	Mean	Std. Deviation	N
Cognitive Dissonance	Task-based E-Learning	45.48	1.782	25
	Conventional	39.63	2.659	30
	Total	42.29	3.720	55
Reading Engagement	Task-based E-Learning	91.52	2.946	25
	Conventional	83.77	3.702	30
	Total	87.29	5.138	55

Before testing the hypothesis, prerequisite tests are conducted, namely the normality test and homogeneity test. The first prerequisite test is the normality test using Kolmogorov-Smirnov. The results of the analysis show that all data was distributed normally as indicated by the sig value. > 0.05, namely 0.200 > 0.05. The results of the normality test are presented in Table 3.

Table 3. The results of the nomanlity test

Dependent Variables	Independent Variables	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Cognitive Dissonance	Task-based E-Learning	0.126	25	0.200[*]	0.968	25	0.585
	Conventional	0.130	30	0.200[*]	0.954	30	0.210
Reading Engagement	Task-based E-Learning	0.125	25	0.200[*]	0.969	25	0.622
	Conventional	0.115	30	0.200[*]	0.975	30	0.686

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

The homogeneity results show that the data comes from a homogeneous data group. These results can be proven from the sig value which is more than 0.05. The results of the homogeneity test with Box's Test of Equality of Covariance Matrices obtain a sig value, namely 0.130 with an F-value of 1.883. It is concluded that the MANOVA prerequisite test has been fulfilled with normal and homogeneous distributed data so that hypothesis testing can be conducted. The results of the hypothesis test are presented in Table 4.

Table 4. Result of MANOVA prerequisite test

	Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.999	30261.573[b]	2.000	52.000	0.000	0.999
	Wilks' Lambda	0.001	30261.573[b]	2.000	52.000	0.000	0.999
	Hotelling's Trace	1163.907	30261.573[b]	2.000	52.000	0.000	0.999
	Roy's Largest Root	1163.907	30261.573[b]	2.000	52.000	0.000	0.999
Task-Based E-Learning	Pillai's Trace	0.771	87.784[b]	2.000	52.000	0.000	0.771
	Wilks' Lambda	0.229	87.784[b]	2.000	52.000	0.000	0.771
	Hotelling's Trace	3.376	87.784[b]	2.000	52.000	0.000	0.771
	Roy's Largest Root	3.376	87.784[b]	2.000	52.000	0.000	0.771

a. Design: Intercept + elearning_TBL
b. Exact statistic

Based on the findings presented in Table 4, Pillai's Trace, Wilks' Lambda Hotelling's Trace, and Roy's Largest Root show an F coefficient of 30261.573 with a Sig. value of 0.00. It means that there is a simultaneous difference between cognitive dissonance and reading engagement in learning English between students who are taught by using task-based e-learning and students who are taught by limited face-to-face learning without using task-based e-learning. The results of the Tests of Between-Subjects Effects analysis are presented in Table 5.

Table 5. The Analysis Result of the Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Task-based E-Learning	466.139[a]	1	466.139	87.855	0.000	0.624
	Conventional	819.739[b]	1	819.739	71.740	0.000	0.575

Intercept	Task-based E-Learning	98785.630	1	98785.630	18618.472	0.000	0.997
	Conventional	418982.939	1	418982.939	36667.522	0.000	0.999
Task-based E-learning	Task-based E-Learning	466.139	1	466.139	87.855	0.000	0.624
	Conventional	819.739	1	819.739	71.740	0.000	0.575
Error	Task-based E-Learning	281.207	53	5.306			
	Conventional	605.607	53	11.427			
Total	Task-based E-Learning	99116.000	55				
	Conventional	420509.000	55				
Corrected Total	Task-based E-Learning	747.345	54				
	Conventional	1425.345	54				

a. R Squared = .624 (Adjusted R Squared = .617)
b. R Squared = .575 (Adjusted R Squared = .567)

The result of the data analysis presented in Table 5, namely Tests of Between-Subjects Effects shows an F value of 87.855 with a Sig. value of 0.000 which is smaller than 0.05. The result shows that there is an influence of task-based e-learning on students' cognitive dissonance in learning English at elementary schools. In addition, the result of the Tests of Between-Subjects Effects analysis shows an F value of 71.740 with Sig. value of 0.000, which is smaller than 0.05. It shows the influence of task-based e-learning on reading engagement in learning English at elementary schools

Discussion

The results of the data analysis show that there is an influence of task-based E-learning on students' cognitive dissonance and reading engagement in learning English at elementary schools. It is caused by the following factors. Firstly, task-based E-learning can reduce the cognitive dissonance of elementary school students. The use of task-based E-learning at elementary schools has a potency to reduce students' cognitive dissonance. Cognitive dissonance occurs when there is a mismatch between a person's beliefs or understanding and the new information received (Pangesti et al., 2023; Williams et al., 2021). Cognitive dissonance can arise when students face differences between what they believe about English and new information provided by the teacher as well as new learning experiences. Task-based e-learning can reduce cognitive dissonance in several ways. The first one is that students are given concrete tasks. The material presented is not only theoretical but it is also applied in meaningful situations. It reduces the possibility of a mismatch between what they learn and the reality they experience. The second point is that e-learning provides wider access based on individual needs and interests. This helps reduce the gap between students' initial understanding and the new material they are learning. It is because they can access proper materials in line with their level of understanding, and have control over their own pace and learning style (Rahmawati et al., 2020; Sarkar & Biswas, 2021; Vonti & Rahmah, 2019). This is supported by previous research findings which state that the use of E-learning in the teaching and learning process can improve student learning outcomes (Ahmadi & Maharani, 2019; Divayana, 2017; Sarkar & Biswas, 2021; Sudirtha et al., 2022). The use of E-learning allows students to interact with learning materials interactively. It creates an interesting learning

experience and reduces the possibility of cognitive dissonance (Ahmadi & Maharani, 2019; Garad et al., 2021b).

Secondly, task-based e-learning can increase the reading engagement of elementary school students. Reading engagement refers to the level of involvement and students' interest in reading activities (Ho & Lau, 2018; Ratnasari & Adiwijaya, 2023). Task-based learning approach trains reading skills in which students are given concrete tasks. During the teaching and learning process, students are asked to read texts provided in E-learning to finish particular tasks like formulating a question or composing a summary. These assignments provide a real context for reading which can increase student engagement as they find the relevance and purpose of the reading activity. Previous studies also report that E-learning provides wider access to various interesting and varied reading sources (Adebayo & Balogun, 2019; Purnama Dewi dan Alfi Nura et al., 2021). Students can access various learning materials based on their interests and level of difficulty (Ahmadi & Maharani, 2019; Aini, Putra, et al., 2020; Divayana, 2017; Garad et al., 2021b; Sarkar & Biswas, 2021). The ability to choose interesting reading materials for themselves can increase students' motivation to engage in reading. Task-based e-learning uses interactive media and multimedia to present learning material. Students can use learning software that allows them to read stories while listening to the narration, watching videos presenting the content of the story, or interacting with images supporting the text. This approach makes the reading experience more interesting and challenging for students, thereby increasing their engagement (Moustakas & Robrade, 2022; Santos-meneses et al., 2023). Through E-learning platforms, students can collaborate with their peers in reading and analyzing texts. Online discussions and forums can be used to share insights, make predictions, and ask questions about the texts. This social interaction can increase students' motivation and involvement in reading because they feel involved in social learning.

Lastly, task-based e-learning can reduce cognitive dissonance and increase reading engagement for elementary school students. The task-based learning approach in learning English emphasizes contextual learning (Azlan et al., 2019; Marisda, 2019). By giving assignments that ask students to apply English, cognitive dissonance can be reduced. Cognitive dissonance can also be an opportunity to encourage students to think critically and reflectively about their learning process (Pangesti et al., 2023; Williams et al., 2021). By stimulating questions and discussions with comparisons between prior knowledge and new information, students can develop analytical skills that are important in understanding language more holistically (A. Al Roomy, 2022; Fernandes et al., 2024; Surdyanto & Kurniawan, 2020). Overall, understanding the cognitive dissonance of elementary school students in learning English helps create a learning environment that supports problem-solving, reflection, and a deeper understanding of the language, which are important foundations for students' ability to communicate effectively in English. Task-based e-learning allows the use of interesting and varied digital resources to increase students' engagement in reading. Through online platforms, students can access various types of interesting reading materials, such as interactive stories, news articles, or digital comics. In addition, integrated assignments with reading materials can provide relevant contexts and clear goals for students which increase their motivation to engage in reading activities (Alshenqeeti, 2018; Kassem, 2018; Kristiawan et al., 2022). It can be concluded that task-based e-learning can reduce cognitive dissonance and increase the reading engagement of elementary school students. The limitation of the study relies only on the effectiveness test of task-based e-learning on cognitive dissonance and reading engagement of elementary school students, especially in learning English for 4th Grade. This study implies that the use of task-based e-learning has the potential to increase the reading engagement of elementary school students by providing challenging assignments, access to

interesting learning materials, interactive reading experiences, and opportunities to collaborate as well as discuss with fellow students. This approach makes the reading experience more interesting and challenging for students, thereby increasing their engagement. When students experience directly the language concepts that they learn, they can align new understandings with what they previously believed.

Conclusion

The results of data analysis show the first finding, namely that there is a significant difference in cognitive dissonance between students who are taught by task-based e-learning and students without implementing Phenomenon-based Learning. Secondly, there is a significant difference in reading engagement between students who are taught by task-based e-learning and students without implementing Phenomenon-based Learning. Based on the findings, it can be concluded that task-based e-learning can reduce cognitive dissonance and increase the reading engagement of elementary school students in learning English.

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