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Innovations in the English Classroom: The Students' Perceptions Toward Robot Media

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ABSTRACT

This study sought to pinpoint key requirements for incorporating technology into education. A survey of junior high schools was used in the study which took a qualitative approach. A research sample of 35 students who were chosen purposively for the study were given the questionnaire as a data gathering tool with three components; the utility/feature of usage, the interest, and the pedagogical content of the Evoce robot. The data was analyzed by using the Guttman scale has a CS of at least 0.60 and a CR of at least 0.90, it was considered to meet the unidimental and cumulative features. The findings showed the mean of CR from three indicators was 0.908, which means the result of CR was valid while the mean score was CS was 0.798, which means that the coefficients of scalability were considered good. Based on the result findings students' opinions about the usage of the Evoce robot as technology in the learning process were inversely correlated with their usage of learning media was helping them in attaining new media of teaching was the Evoce robot. It recommended that robots might give an alternative interesting media in class, especially for teaching vocabulary.

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1. Introduction

Technological advancements are always changing the educational landscape and transforming how teachers and students are taught (Kuts & Lavrentieva, 2022). The incorporation of technology inside educational environments has been demonstrated to be a potent inducer of change (Toma et al.,2023). In the twenty-first century, interactive platforms (Albashtawi & Al Bataineh, 2020; Gower, 2023), digital gadgets (Ramiah & Pitchipoo, 2020), and multimedia materials (Kakati & Barua, 2021) are commonplace in classrooms and provide new avenues for student engagement and improved learning results (Dilmurod & Elmira, 2020; Ölmez & Ulutaş, 2023).

The field of language teaching has recently seen the introduction of sophisticated educational robots (Huang & Moore, 2023). Robot media is one such invention that has surfaced as a viable tool to engage and deepen the learning process in the context of English language teaching. The use of robot media in English language instruction offers a vibrant and participatory approach to language learning and literacy enhancement like the study of grammar (Van den Berghe et al., 2019; Vogt et al., 2019). According to research conducted from the viewpoint of the learners, educational robots have been successful in assisting foreign language learners in developing their reading (Hong et al., 2016) and grammatical (Herberg et al., 2015; Kennedy et al., 2016) skills. Speaking and learning vocabulary present a mixed picture, according to Van den Berghe et al. (2019).

Moreover, the research illuminates the ways in which technological advancements might be utilized to equip learners for the language requirements where communication in English becomes progressively more essential for scholastic and professional achievements (Huang & Moore, 2022). The results provide direction for teachers, curriculum designers, and legislators in reshaping English education and incorporating cutting-edge resources like robot media to enable learners to be proficient in literacy and communication discovering the most efficient ways to use robots in language classes (Lee et al., 2022). Through an examination of instructional methodologies and their integration with RALL robots, the result has provided some clarity on this issue (Engwall & Lopes, 2022). Language classes have been stimulated to be more creative by it. Depending on the complexity of tasks and degree of flexibility in human-robot interactions, robots can play a variety of roles, including learning companions (Aidinlou et al., 2014), teaching aids (Lee & Lee, 2022), and do students' voices imitating (Nomoto et al., 2022).

The usage of robot media in English classes has been shown above, but there are a number of significant research gaps that need to be filled in. Very little research has been done on the use of robot media in English language instruction, particularly at the tenth-grade level. This is in contrast to the increasing amount of research that looks into the integration of technology in education. This work will fill a significant in the literature by offering new perspectives on the relatively uncharted area of robot media's use of language learning at this crucial developmental time.

By addressing these research gaps, the project will provide valuable insights into the perspectives and experiences of students, as well as practical implications for curriculum developers and educators. In addition, it will advance our understanding of the role of robot media in tenth-grade English education. In the future, language teaching will be guided by the findings of this research, with an emphasis on innovative and useful technology.

This study essentially creates a bridge between the fields of pedagogy and technology by providing a more profound knowledge of how students view and engage with robot media during their English language instruction. For further outcome, the present study, entitled "Innovations in the English Classroom: Tenth-Grade Students' Perceptions toward Robot Media," aims to investigate students' perceptions of this technological breakthrough, with a focus on the critical tenth-grade schooling period.

2. Literature Review

2.1 Educational Robot

There are many different definitions of what defines robots in education, depending on how the term "educational robots" is defined. In general, educational robots fall under the category of assistive robots, which are designed to support or assist users in a variety of settings, including educational institutions (Eguchi, 2012). In this sense, educational robots are employed as teaching aids to impart knowledge to students, either directly or indirectly through the manipulation and interaction with the robots (Jerčić et al, 2018). Actually, the usage of instructional robots is primarily restricted to STEM subjects (science, technology, engineering, mathematics).

According to Merdan et al (2018), using robots for technology-focused teaching approaches has significant promise. According to Van Straten et al (2020), socially assistive robots that support and help people in their learning through social interactions can be thought of as educational robots as learning collaborators. This environment stresses the development of social relationships with people based on behaviors, communication, or emotions that are similar to those of people (Gratani et al, 2022).

In order to foster soft and transversal skills like problem-solving (Gratani et al., 2022), metacognition (La Paglia et al., 2018), divergent thinking (Leroy et al., 2021), creativity (Yang et al., 2020; Badeleh, 2021), and collaboration (Gueorguiev et al., 2018), educational robots are thought to be an influential tool.

Educational robotics is purely a technical approach to education. Robotics has attracted a lot of instructors, researchers, and schools over the past ten years as a highly important instrument for learning to build a variety of skills from elementary school to high school (Kunduracioglu, 2018). The primary factor supporting the notion that educational robots can be a valuable tool in the classroom is the fact that they support students' efficient topic learning. According to Kubilinskiene et al. (2017), the educational robot offers students in a variety of subjects an effective teaching tool for math, physics, science, and other subjects.

2.2 Characteristics of Young Learners

According to Mawarti (2022) which says that early childhood is a time that really determines the basic personality of a person because child development involves many factors including physical development, behavior, thought processes, emotions, and morals and attitudes, which are influenced by family, environment and education at school. Education is an alternative to solving the problem of decreasing public character. A person's character will be firmly entrenched if started from an early age. So early childhood education is the initial foundation in forming a person's personality, and character that will influence his life into adulthood, this can be a solution to address the problem of declining moral quality in society.

The character in early childhood is an effort to foster students to develop all the potential that students have in exploring understanding, instilling attitudes and behavior into a habit so that these values are embedded in the souls of students until adulthood. This is in accordance with what was said (Ardiatyas et al., 2022) which says that early childhood character education is education that focuses on developing the potential of students as a whole so that they can become individuals who are ready to face the future and are able to survive in overcoming the times with excellent and commendable behavior.

According to Masitoh, et al.,(2014), the most striking early childhood learning characteristics compared to other levels are: (1) Children learn in four different ways: (1) by playing and singing; (2) by gaining knowledge; (3) by learning spontaneously; and (4) by learning in a way that is exciting and useful to them. While the case with Badru Zaman (2017) argued that the most prominent early childhood learning characteristics consisted of being unique, egocentric, active and energetic, having high curiosity, explorative and adventurous spirit, expressing behavior relatively spontaneously, being rich with fantasy/imagination, being easily frustrated, lacking consideration in doing something, has a limited duration to focus, is enthusiastic to learn and picks up knowledge from experience, and is becoming more interested in friends.

In early childhood, their language development is influenced by 5 factors, namely: intelligence, social status, gender, family relations, and bilingualism (Use of two languages). Language function for early childhood is to develop intellectual abilities and basic abilities of children. Following are some of the functions of language for early childhood according to the Ministry of National Education: 1) As a tool for communicating with the surroundings,2) As an instrument for fostering children's intellectual growth,3) As an instrument for fostering children's expressiveness, and4) As a means of communicating emotions and ideas to other people (Isnaningsih, 2016).

2.3 Relevant Studies

Many studies have shown that educational robots have greatly contributed to English subjects like the sociable robot speaks English Japanese students' proficiency in speaking English is improved via Robovie (Randal, 2020). According to Angeli & Valanides (2020), interacting with items like smart toys and robots helps young children acquire a range of cognitive, linguistic, and communication skills. The Nao robot is a standard humanoid used in the industry as of 2019, having been the subject of over 15 research studies. The second-place robots, like Dragonbot, have additional functional diversifications, making zoomorphic, animal-like characteristics another potential RALL endeavor (Zamfirescu et al., 2021). It is believed that these social robots are more "beneficial, reliable, enlightening, and enjoyable to communicate with," which makes the learning environment enjoyable.

A comparable study carried out in Taiwan, China, discovered through data analysis, both quantitative and qualitative, that students' motivation and learning outcomes improved noticeably when they worked with a self-developed robot (Wu et al., 2015) while Reich et al., (2020) did research It was highlighted that users' attitudes about the design elements have greater positivity and more willing to utilize it later on after integrating consumers in the formulation of design decisions for useful items, tools, systems, interfaces, or software programs. Students' favorable attitudes toward robots are a desired side effect to be attained since RALL research intends to create trustworthy robotic agents to improve students' acquisition of foreign languages and boost the quality and diversity of their class activities.

La Paglia et al., (2018) contend that robotics-based educational programs encourage the application of particular both mental and focused abilities, bolstering cognitive functions and influencing head functions. Additionally, logical thinking and creative thinking are frequently connected. Komis et al., (2017) made a distinction between Educational Robot activities centered on meticulous and formal resolution and multidisciplinary activities aimed at a creative and teamwork approach that demand cooperative problem-solving techniques (Romero et al., 2021; Kakati & Barua, 2021).

Guastella & D'Amico (2020), educational robots can considerably help to create an environment that is interesting for both students and teachers to study in and that clearly rewards interpersonal and collaborative abilities. The rapid feedback on Educational Robot work that students receive from the robot-environment interaction is one of the added benefits of these settings (Daniela et al., 2019; Gratani et al., 2021). This allows students to rework their work and reflect on what they have done.

Since those initial social robots, a lot has been accomplished. The technology that is currently accessible to researchers considerably outpaces that of the early robotics pioneers. The use of instructional robotics has increased during the past ten years (Santos et al., 2019). Commercial robots intended for education are being produced by more and more companies. The educational community has recently decided that robots in the classroom should be inclusive of all students and should work in tandem with teachers. Despite the fact that the majority of educational interventions currently do not meet these requirements, we approach this objective (Yanis et al., 2020).

RALL research on adult Chinese learners engaging with online representatives is less common than constructed robots. (Nomoto et al., 2022). This study's empirical experiment on vocabulary learning serves as its foundation. Ten students were split into two groups; one group worked with an actual robot, and the other worked with a teacher. Three different forms of interactions were carried out in each group with the presence of an instructor: translation, quiz, and chat. The group exposed to the physical agent reportedly "showed reduced levels of discouragement and increased levels of involvement" (Gratami et al., 2022). It also demonstrates several potential avenues for the RALL study, such as the viability of creating a robot that can assist with language acquisition and involving language instructors in the design phase.

3. Research Methodology

3.1 Research Design

Qualitative research design was employed in this research. Students' perspectives become the focus of the robot media in English subjects in the classroom. Cresswell and Guetterman (2019) describe that a qualitative research design explores the phenomenon from participants' perspectives, in this study was the students' perspective on using robots in the classroom. The researchers used phenomenology research design which focused on the students' perspective toward using robots in English classrooms.

3.2 Participants

35 grade ten of SMP Negeri 37 Pekanbaru to be the participants of the research. The purposive sampling technique was used in this activity because of the limited number of Evoce robot production.

3.3 Instruments and Data Analysis

Students were given a survey to determine how they felt about using the Evoce robot. There were three ways to look at the students' perceptions. The survey consisted of three components, namely utilized, students' enthusiasm, and the pedagogical content in using the Evoce robot. The first element consists of 5 items of questions to see whether the students maximally utilize/feature the Evoce robot. The second element contains 5 items of interest statement of students whether they find interest while using the Evoce robot. The third element refers to pedagogical content inside the Evoce robot to help students in acquiring English vocabulary. A scoring rubric in the form of a Guttman scale in which the respondents selected "YES" or "NO" on that scale. Each "YES" answer was given a score of 1 and the "NO" answer was given a score of 0. The respondent score came from the amount of statement that was approved, so that the greater the score, the higher the respondent's perception of behavior, conversely, the smaller the respondent score, the lower the respondent's perception of the use of Evoce Robot. In calculating the data In order to determine whether the statements may be arranged according to the tolerance level, the known Coefficients of Reproducibility (CR) and Coefficients of scalability (CS) must be determined. CR demonstrated that the extent of a student's reaction pattern can only be estimated based on their overall score (Yulianto, 2019). If a Guttman scale has a CS of at least 0.60 and a CR of at least 0.90, it was considered to meet the unidimental and cumulative features (Yulianto, 2019). These questionnaire were then tested for data adequacy with a validity test using the Guttmann scale and also a reliability test using the Kuder-Richardson 21 (KR 21) formula because the questionnaire type is dichotomous.

In the validity test using the Guttmann scale calculation, the Coefficients of Reproducibility (CR) and Coefficients of scalability (CS) were calculated. The Coefficients of Reproducibility show the degree of reliability of the measurement with the scale used which can be seen from the percentage of pure responses that can be reproduced from the scale score used to summarize it. Then the condition for accepting the Coefficients of scalability is > 0.90. The scalability coefficient is used to measure whether deviations on the reproducibility scale are still within tolerable limits. Then the condition for accepting the scalability coefficient is > 0.60.

4. Findings

The three components of the questionnaire were employed to interpret the results of the study. Finding out how the students were using the robot to its fullest extent was the goal of the first questionnaire item. Table 1 displays the students' perceptions of the first element.

Table 1. Students' Perceptions of the Utility/Feature of Using the Evoce Robot

No	Items of Questionnaire	Total YES Answer	Total NO Answer
1	The Evoce robot is easy to operate.	33 (94,3%)	2 (5,7%)
2	The Evoce Robot has visual instructions.	31 (88,6%)	4 (11,4%)
3	The Evoce robot includes voice.	35 (100%)	0 (0%)
4	The Evoce Robot has mathematical thinking.	30 (82,9%)	5 (17,1%)
5	The Evoce Robot has color detection	30 (82,9%)	5 (17,1%)
	Means	**31,8 (89,7%)**	**3.1 (10.3%)**

Table 1 shows that the result of students' perception of the utility/feature of using the Evoce robot got positive responses. The first aspect of using the Evoce robot was well-received by the majority of students, as evidenced by the average score of approximately 31.8. Because a large percentage of students (89,7%) selected "YES" for indicator 1, it was possible for them to make the most use of the Evoce robot. Students generally had a positive opinion of the first indicator, according to the analysis of their responses.

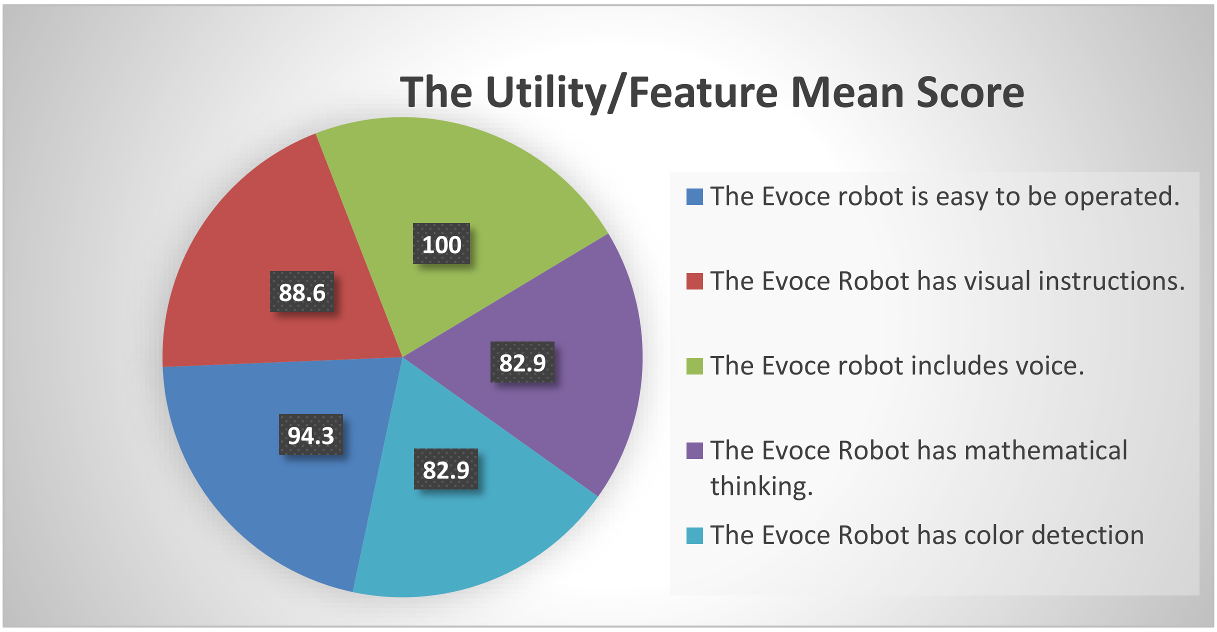

Figure 1. The chart for the utility/feature mean score

Figure 1 above illustrates the mean score of each statement in the utility/feature of the Evoce robot. The 35 students chose "YES" or 100% for the statement "the Evoce robot includes voice" which was the highest score in answering the statement of component one. The statement "the Evoce robot has mathematical thinking" has the lowest score as amount as 82%.

The findings for the second element were the lowest score among the three indicators. The average and percentage scores of the students' responses for interest are presented in Table 2 below.

Table 2. Students' Perceptions of the Interest in Using the Evoce Robot

No	Items of Questionnaire	Total YES Answer	Total NO Answer
1	I think I know how to operate the Evoce robot	31 (88,6%)	4 (11,4 %)
2	I enjoy playing with the Evoce robot	34 (97,1%)	1 (2,9%)
3	I can hear the voice from the Evoce robot because the speech is audible.	34 (87,1%)	1 (2,9%)
4	I am able to count the steps on the Evoce Robot's map.	33 (94,3%)	2 (5,7%)
5	I adore seeing the Evoce robot's color instructions.	26 (74,3%)	9 (25,7%)
	Mean	**31.6 (90.3%)**	**3.4 (9,7%)**

Table 2 demonstrates that the mean scores of the students' answers are nearly equal to 35. The second indicator was the interest of students' perception in using the Evoce robot. The mean score of component 2 as amount as 31.6 and the percentage of 90.3% shows that the students' interest in implementing the Evoce robot was positively response to the "YES" answer. It means that the students had positive motivation for the Evoce robot.

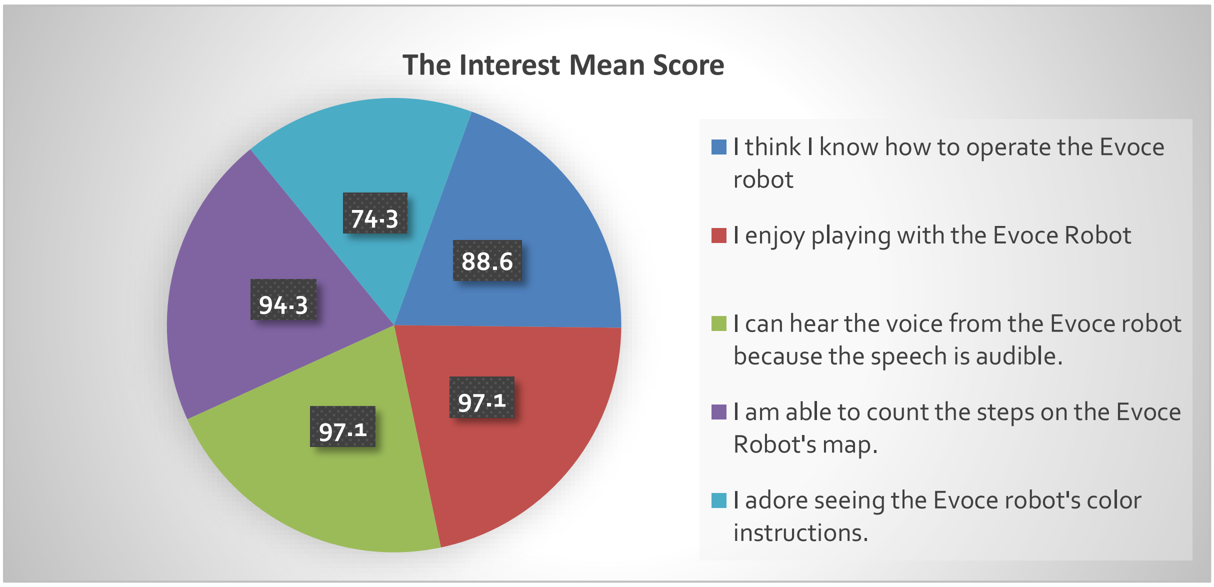

Figure 2. The chart of Interest mean score

Figure 2 above illustrates the mean score of each statement in the interest of using the Evoce robot. The result of highest score as amount as 97,1 was in two statements "I am able to count the steps on the Evoce robot's map" and "I can the voice from the Evoce robot because the speech is audible" while the lowest score in the statement of "I adore seeing the Evoce robot's color of instruction" has lowest score as amount as 73,3%.

Table 3. Students' Perceptions of the Pedagogical in Using the Evoce Robot

No	Items of Questionnaire	Total YES Answer	Total NO Answer
1	The Evoce robot is presenting vocabulary variation.	31 (88,6%)	4 (11,4 %)
2	The Evoce robot assists me in learning new vocabulary.	34 (97,1%)	1 (2,9%)
3	The Evoce robot pronounces words clearly.	35 (100%)	0 (0,0%)
4	The Evoce robot assists me in increasing my mathematical thinking.	29 (82,9%)	6 (17,1%)
5	My pronunciation gets better by using Evoce Robot.	31 (88,6%)	4 (11,4%)
	Mean	**32 (91.46)**	**3 (8,56%)**

Table 3 indicates that the student's average scores are close to 35 points. The mean average score for indicator 3 shows the highest score for others. It means that most of the students had a positive perception of the third element in pedagogical content which is vocabulary exposition inside the Evoce robot.

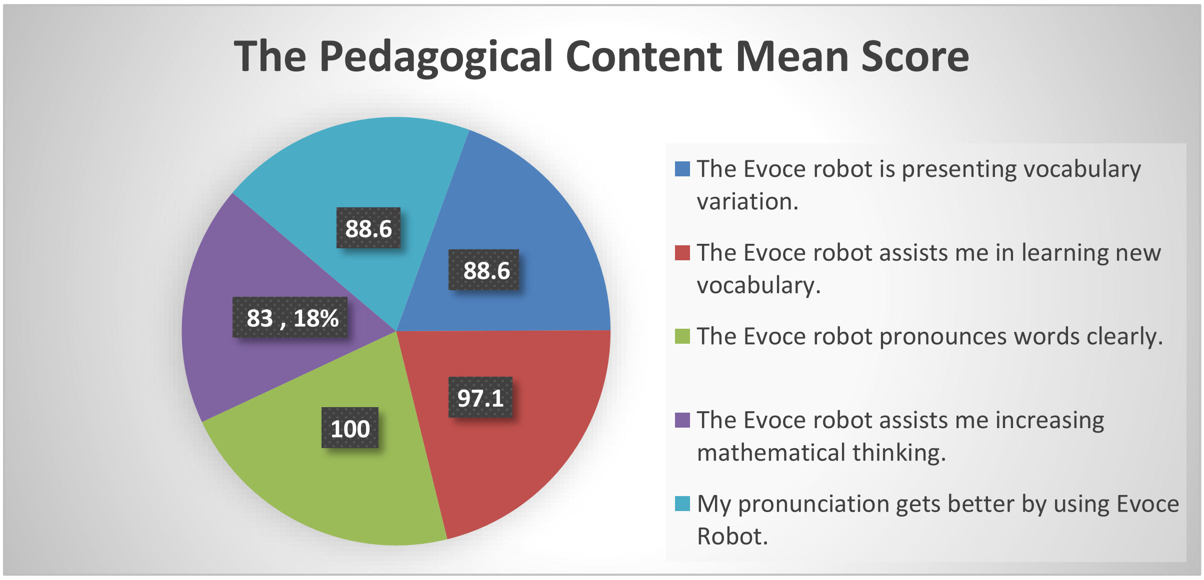

Figure 3. The chart of pedagogical content mean score

Figure 3 above illustrates the mean score of each statement in the Pedagogical content of using the Evoce robot. The result of highest score as amount as 100 was for two statements "The Evoce robot pronounces words clearly" while the lowest score in the statement "The Evoce robot assists me increasing mathematical thinking" with has lowest score as amount as 83,18%.

The result found three indicators; there was one idea that related to critical thinking or mathematical thinking for students were in lower scores. The statement from utility/feature which stated that "the Evoce robot has mathematical thinking" has the lowest mean score so did the third component pedagogical content statement "the Evoce robot assists me increasing mathematical thinking" were in the lowest score.

Based on the result findings on the three tables above shown that every component positively responded to by the students in using Evoce robot for English vocabulary learning. Each statement mostly answered "YES" with the mean score for three components was 31,8 and the average percentage as amount as 90.5%. We analyzed the result findings from three indicators that students' perception toward using the Evoce robot was positive feedback in terms of utility/feature, interest, and pedagogic content in the Evoce robot in English vocabulary learning.

After finding the calculation of each item in the survey, the next step was exposing the Coefficients of Reproducibility (CR) and Coefficients of scalability (CS) to find out the tolerance level of statements for three indicators. Table 4 below the result of each CR and CS for validity and reliability of each statement in three indicators.

Table 4. The result of Coefficients of Reproducibility (CR) and Coefficients of scalability (CS).

No	Indicators	Coefficients of Reproducibility (CR)	Validity	Coefficients of Scalability (CS)	Reliability
1	Utility/feature	0,908	Valid	0,798	Reliable
2	Interest	0,902	Valid	0,786	Reliable
3	Pedagogical	0,914	Valid	0,81	Reliable

The recapitulation results of the questionnaire in the attachment Table 1 to Table 3 as accumulated in Table 4 showed that the highest Coefficients of Reproducibility (CR) from three indicators was pedagogical content as amount as 0.914 while the lowest score was in the indicator of interest. The Coefficients of Scalability (CS) based on Table 4 above show that the pedagogical component got the highest score followed by the utility/feature component and the last was the interest component.

Table 4 for indicator utility/feature, the acceptance requirements (validity) for the Coefficients of Reproducibility (CR) was > 0.90 and the CR value = 0.908 > 0.90, so the Coefficients of Reproducibility (CR) for this questionnaire was considered good (valid). Then the acceptance requirements (reliability) for the Coefficients of scalability (CS) was > 0.60 and the CS value = 0.798 > 0.60, so the Coefficients of scalability (CS) for the questionnaire were considered good and can be used in this research where the reliability testing limit has a certain size according to Sekaran (1992), namely the reliability of less than 0.6 was not good, while 0.7 is acceptable and above 0.8 was good (Priyatno, 2010). So the reliability test for utility/feature for the Evoce robot was considered reliable and acceptable.

The second indicator was interest, the acceptance requirements (validity) for the Coefficients of Reproducibility (CR) was > 0.90 and the CR value = 0.902 > 0.90, so the Coefficients of Reproducibility (CR) for this questionnaire was considered good (valid). Then the acceptance requirements (reliability) for the Coefficients of scalability (CS) was > 0.60 and the CS value = 0.786 > 0.60, so the Coefficients of scalability (CS) for the questionnaire were considered good and can be used in this research, so the reliability test for interest for Evoce robot was considered reliable and acceptable.

The last indicator was pedagogical content, the acceptance requirements (validity) for the Coefficients of Reproducibility (CR) was > 0.90 and the CR value = 0.914 > 0.90, so the Coefficients of Reproducibility (CR) for this questionnaire was considered good (valid). Then the acceptance requirements (reliability) for the Coefficients of scalability (CS) was > 0.60 and the CS value = 0.81 > 0.60, so the Coefficients of scalability (CS) for the questionnaire were considered good and can be used in this research, so the reliability test for pedagogical content in the Evoce robot was considered reliable and acceptable.

5. Discussion

The goal of the current study was to find out how students felt about employing educational robots. named Evoce robot in English vocabulary. Using Guttman's calculation, the result of the survey shows that most students viewed the Evoce robot have contributed in learning English vocabulary. Three indicators which collected the data by surveying the students' perception of using the Evoce robot in English vocabulary. The utility/feature matter was the first component, and the result exposed that most students responded positively. The Evoce robot was ideal for instructing young children in the areas of configuring the robot's characteristic behavior, using it with other technologies, manipulating it with various technologies, and utilizing the drag-and-drop interface. The research findings above were in line with the past study research that analyzed the educational robot research conducted at the preschool level by Yang et al. (2022) and O'Brien (2020), it has also been observed that educational robots possessing specific features In light of the learning support dimension, these devices are more popular for teaching preschoolers because of their features, which include sound and visual instructions, support for various designs for robots, an interface with voice and visual instructions, and the capacity to construct a range of activities and examples (Usengül & Bahçeci, 2020; Khodabandelou & Alhoqani, 2022; Tweedale, 2022; McAllister & Glidden, 2022).

The research findings in the second component described the interest of students increased while using the Evoce robot. The Evoce robot has attracted students to play with it and the robots' program has motivated students to do more with English vocabulary, this finding is related to Chalmers et al (2022) and Pandey & Gelin (2017) found that humanoid robots used in classroom settings with the goal of improving student motivation, engagement, and students' concentration, thus, investigating the potential and constraints of utilizing social robots in education has gained interest.

The last component in the study shows that the Evoce robot contributed to pedagogical content. With the program settled inside the robot contained many vocabularies which can be heard clearly from a distance. The installment of a speaker inside the robot makes the voice produced by the speaker audible for students to hear. These instructional pedagogical matters which educational robot's propensity to emphasize motivating pupils to engage in the learning process is general knowledge (Wu et al., 2015; Reich et al., 2020; La Paglia et al., 2018; Nomoto et al., 2022).

6. Conclusion

Tenth-grade students have shown a tremendous amount of interest and involvement in robot media in the English classroom. Students' interest in English vocabulary has increased since the introduction of these robotic companions, which have brought freshness and excitement to the learning process. This study paves the way for more research on the effects of robot media over for future on English language competency, the role of educators in moderating robot-assisted learning, and possible barriers to equality and access in educational environments.

In summary, the use of robot media in English classes has shown a viable option for improving language acquisition and cultivating favourable student attitudes. The research findings highlight the potential of cutting-edge technologies to influence the future of learning and enable students to interact with the English language and literature in fresh and fascinating ways, as education continues to change in an increasingly digitalized world. The integration of technology and education is a continuous process, and the perspectives of students in the tenth grade provide insight into what could be possible in the future when it comes to forming the English classroom.

Recommendations for future researchers concentrating on the application of robotic technology in educational settings must take into account the potential relationships between these and other variables and students' academic achievement. Limitations of the study related to the shortage number of participants in the research. The study only focused on the students' perceptions which needed more elaboration for future research

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