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## Role of Five E's Instructional Model in Enhancing Students' Learning Outcomes in English Language: An Experimental Design

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### Abstract

This study aims to investigate the effectiveness of the 5E Instruction Model in enhancing language learning among students. Research objective of the study was to analyze the role of 5Es' instructional model in enhancing students' learning outcomes in English. The quantitative and experimental design was adopted. Population of study comprised of students of 9<sup>th</sup> and 10<sup>th</sup> classes with same ratio of boys and girls. A pre-test and post-test based on standardized test items of last 5 years tests were developed for data collection. These tests were validated through experts' opinion. The researcher personally visited the selected schools and administered the pre-test and post-test. Then collected data from 400 students with the same ratio of boys and girls. Findings presents significant improvements in language proficiency, indicating that the 5E model positively influences learning outcomes. This paper

discusses the findings, implications, and recommendations for educators. In the pre-test, only 20% of the 200 girls passed, with scores of A (35%), B (25%), C (15%), and D (20%). Like their male counterparts, the girls faced challenges in mastering the content. However, following the instructional changes, the post-test results revealed an 80% passing rate, with

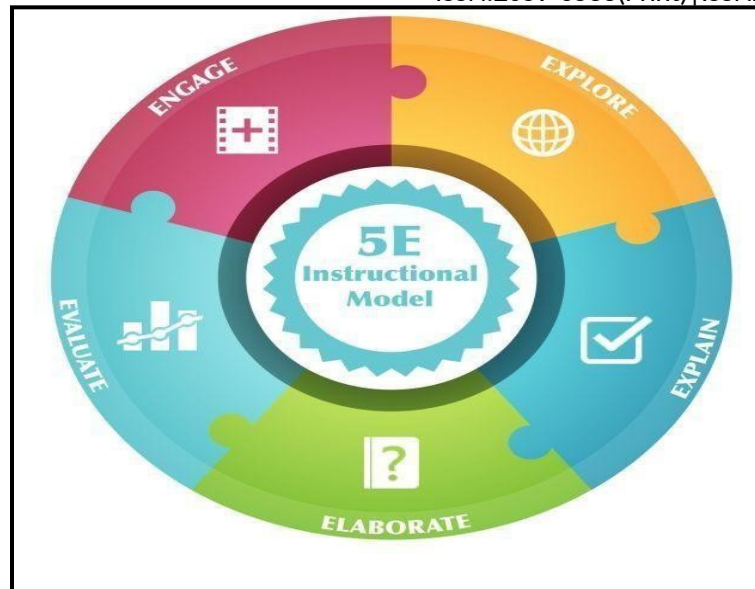
80% of the students scoring in category D. This improvement signifies that the teaching strategies were effective for girls as well, contributing to a better understanding of the material. The study concluded that this study highlighted positive impact of the 5E Instructional Model on language learning. By fostering an engaging and exploratory learning environment, educators can enhance student outcomes and promote a more effective language acquisition process.

**Key Words:** 5E's Instructional Model, English language education, pretest and posttest.

## **Introduction**

Language learning is a critical skill in today's globalized world, and educators continuously seek effective instructional strategies to enhance student engagement and comprehension. English Language Education (ELE) is the academic discipline concerned with the investigation of the what, how, why/what for and who of teaching and learning English as a second/foreign language (L2). English language plays an essential role in our lives as it helps in communication. It is the main language for studying any subject all over the world. English is important for students as it broadens their minds, develops emotional skills, improve the quality of life by providing job opportunities (Farhat, 2019; Ahmad, Iqbal & Rao, 2023). "The innovation of new technologies has influenced the educational system, and these new emerging technologies have made teaching and learning methods easy for students" (Ahmad, Iqbal & Rao, 2023). The 5E instructional approach is also emerged due to the innovation of new technologies in the modern age.

The 5E instructional model was developed by the Biological Sciences Curriculum Study (BSCS) in 1987, and Dr. Rodger Bybee is known as the creator of this model (Bybee et al., 2006; Lam, Hew & Jia, 2022; Hassan, Zafar & Ullah, 2024). The main purpose of this model is to aid the students to understand scientific concepts and structures of the lessons of the sciences (Shen & Huang, 2016; Demir & Emre, 2020). Inquiry-based learning is its main feature that encourages students to discover information themselves; while the engage, explore, explain, elaborate, and evaluate are its phases that offers a structured approach to facilitate active learning (Yiğit, 2011; Biggs, Tang & Kennedy, 2022).



Source: (<https://www.linkedin.com/pulse/future-education-implementing-5-es-model-impactful-part-kawtharani-7dvhf>).

The 5Es in instruction refers to a model of instructional approach that was planned to improve and simplify instruction through attracting learners in an arrangement of steps. The 5Es model of instruction is mainly predominant in scientific instruction but it can be adjusted in various subjects (Duran & Duran, 2004). There are five stages of the 5Es model are:

- I. **Engage:** This stage aims to pique students' interest, stimulate their curiosity, and connect their past experiences and knowledge with the new content to be learned. The teacher might pose a question, present a problem, or share an interesting fact or scenario to get students thinking and ready to explore the new concept.
- II. **Explore:** At this stage, students are given the opportunity to investigate the concept or skill being taught. Through hands-on activities, experiments, research, or discussions, they actively engage with materials, ideas, and each other to start building their understanding. The teacher facilitates this exploration, guiding students as they make observations and collect data.
- III. **Explain:** After exploring, students are encouraged to articulate what they have learned, often through discussion or presentation. The teacher provides more direct instruction at

this point, clarifying concepts, introducing specific terms or procedures, and connecting students' discoveries to the wider body of knowledge. This stage helps solidify understanding and correct misconceptions.

- IV. **Elaborate:** Students extend their understanding by applying it to new situations or by exploring related concepts. This stage encourages deeper learning and helps students make connections between the concept and real-world applications. Teachers might introduce complex problems, new projects, or extended investigations to challenge students further.
- V. **Evaluate:** Throughout the entire process, but especially at this final stage, both formative and summative assessments are used to gauge students' understanding, skills, and progress. Evaluation can be informal, such as through observation and discussions, or formal, using quizzes, tests, projects, or presentations. This stage helps teachers understand what students have learned and to plan future instruction.

## Research Objectives

- The first aim of the present research is to find the impact of the 5E's instructional model in improving student learning outcomes in English language education.
- The second aim of the present research is to find that traditional method or 5Es model of instruction which is enhancing student learning more effectively.

## Research Questions

- I. What is the impact of the 5E's instructional model in improving student learning outcomes in English language education?
- II. Which instructional approach (traditional approach or 5Es model approach) is enhancing student learning more effectively?

## Literature Review

The 5E model of instruction was advanced in year 1987 by the Biological Sciences Curriculum Study, promoting collaborative, active learning in which students work together to solve problems and investigate new concepts by asking questions, observing, analyzing, and drawing conclusions (Castrillón, 2020; Garcia et al., 2021). The 5E Model is based on the

constructivist theory to learning, which suggests that people construct knowledge and meaning from experiences. By understanding and reflecting on activities, students are able to reconcile new knowledge with previous ideas. According to subject matter expert Beverlee Jobrack, Educational movements, such as inquiry-based learning, active learning, experiential learning, discovery learning, and knowledge building, are variations of constructivism (Polanin et al., 2024). In the classroom, constructivism requires educators to build inquiry, exploration, and assessment into their instructional approach. In many ways, this means the teacher plays the role of a facilitator, guiding students as they learn new concepts (Shen & Huang, 2016; Demir & Emre, 2020)..

### **Previous Related studies**

Chengetal (2015). In the research article entitled *“5Emobileinquirylearningapproach for enhancing learning motivation and scientific inquiry ability of university students”* analyzed that that how5Emobileinquirylearning method is improving students’ knowledge and capacity of making scientific investigation. Through this experimental research the researchers tried to assess the effectiveness of this approach by using pretest and posttest approach. The population of the study was the participants of the university level students and the target population was the thirty-two students divided in two groups of eighteen and fourteen the former-group of students was taught through lecture-based instruction and usage of mobiles while the later-group of students was taught by 5E approach of learning. The experimental outcomes revealed the positive effects that 5E instruction approach. The English subject was ignored in this research in spite of this reality that English is international language. To fill this gap the main focus of my research is to enhance student learning and find the impact of the 5E instructional model improving student learning outcomes in English language education.

One more study was conducted by Alorabi and Abdullah, (2019). As in his thesis at Taif University he investigated the effect of the 5Es model on EFL female student’s motivation and achievement limited to female participants. While Naguib. (2019). In the research article entitled *“Using the 5 E's Instructional Model to Enhance English Grammar Learning of Secondary Stage Students”* investigated the effect the using of the 5E model of instruction on secondary levelstudentsregardingEnglishlanguagelearning.ThepopulationofthestudywastheEnglish

teachers and secondary classes. The target population was selected the ten teachers and the five classes to teach grammar. As a research instrument a qualitative assessment type questionnaire was used for data collection. The results of the study displayed that remarkable improvement in the grammar of the learners through the 5E model which proved that this approach is valuable for EFL and ESL classes. But this research was limited to the English language grammar which is a system of rules in English; therefore, the gap is left in this study as the English subject was ignored. Consequently, there was need to conduct research on English language. My research is an effort to fill this gap the main focus of my research is to enhance student learning and find the impact of the 5E instructional model improving student learning outcomes in English language education.

Rahmawati, Achdiani & Maharani, (2021). In the research article entitled ***“Improving students’ learning outcomes using 5e learning cycle model”*** use the 5E model in the educational setting 5E model to find out the variances in the students learning consequences. For this experimental research students were divided in two groups named experimental and control group the earlier was taught through 5E model while later was treated by using discovery learning approach. The results revealed positive results of 5Es learning model as the average score of experimental group was better than control group in the posttest results while in the pretest the scores of both groups was almost same from there it becomes clear that 5E model improved students learning effectively. But the English language education was neglected in this research in this way the present research study also an effort to fill the remaining linguistic gap which was left.

Yonan, R.F., Mahmood, L.Z., Hamid, R., (2022). In the research article entitled ***“The Effect of Using 5E Strategy on Developing University Students’ Achievement in Transformational Grammar”*** investigated the effect of 5E modal on increasing achievement in transformational grammar among university level students. For this experimental research quasi experimental design was used. The 102 participants were selected as research participants divided in two groups. The first group named as controlled group that was taught in conventional manner while the second group was trained by means of 5E method of instruction. The posttest results revealed that the group which was trained through 5E instructional method performed

betterthancontrolledgroupstudentswhichindicatedthat5Eapproachprovideoptimisticresults. But gap is left as the research was limited to grammar so the present study fills this gap.

From the above researches it become clear that in different years different scholars and researchers employed 5E instructional approach in the different spheres of learning but there is no research which is conducted to judge the impact of the 5E's instructional model improving student learning outcomes in English language education. Therefore, the present research study is conducted to fill this gap by using the following research methodology.

## Research Methodology

The present study utilizes experimental research design. The population of the study was the students of a local high school and total of 400 students were selected as research participants to contribute this study. The participants were divided into two groups named experimental and control groups. The experimental group that received instruction through the 5E model and the control group that followed traditional teaching methods. Pre-tests were conducted to assess initial language proficiency, followed by a 6-week instructional period using the respective teaching methods. Finally, post-tests were administered to measure any changes in proficiency.

## Findings

The pre-test and post-test results were analyzed using statistical methods to determine the effectiveness of the 5E Instruction Model. The following table summarizes the findings:

Gender	Test	Stat.	Options					Total	Remarks
			A	B	C	D			
Boys	Pre-test	F	38	60	60	42	200	21%Pass	
		%	19%	30%	30%	21%	100%		
	Post-test	F	10	11	9	170	200	85%Pass	
		%	5%	6%	4%	85%	100%		
Girls	Pre-test	F	70	55	35	40	200	20%Pass	
		%	35%	25%	15%	20%	100%		
	Post-test	F	20	10	10	160	200	80%Pass	



		%	10%	5%	5%	80%	100%	
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In recent educational assessments, a comparative analysis of pre-test and post-test results for boys and girls has revealed significant insights into their learning outcomes. The data from these assessments highlights the effectiveness of instructional strategies employed during the teaching process. Starting with the boys' performance, the pre-test results showed that only 21% of the 200 boys passed, with scores distributed across four categories: A (19%), B (30%), C (30%), and D (21%). This indicates a need for improvement in their understanding of the material. However, after implementing targeted teaching methods, the post-test results were strikingly different. The passing rate soared to 85%, with a remarkable 85% of students scoring in category D. This dramatic increase suggests that the instructional interventions were successful in enhancing the boys' comprehension and application of the subject matter.

Similarly, the girls' results also demonstrated notable progress. In the pre-test, only 20% of the 200 girls passed, with scores of A(35%),B(25%),C (15%),and D(20%).Like their male counterparts, the girls faced challenges in mastering the content. However, following the instructional changes, the post-test results revealed an 80% passing rate, with 80% of the students scoring in category D. This improvement signifies that the teaching strategies were effective for girls as well, contributing to a better understanding of the material.

In summary, both boys and girls exhibited substantial growth in their test scores from pre-test to post-test, reflecting the positive impact of the instructional methods used. The boys' passing rate increased from 21% to 85%, while the girls' rate rose from 20% to 80%. These results underscore the importance of adaptive teaching approaches that cater to the diverse needs of students, ultimately fostering an environment conducive to learning and academic success. The data not only showcases the effectiveness of the educational strategies but also emphasizes the potential for continued improvement in student performance through tailored instructional methods.

## Discussion of the Findings

The study concludes that the 5E Instruction Model significantly enhances language learning. The interactive nature of the model encourages students to take ownership of their learning and improves their ability to comprehend and use the language effectively. The results

indicate that the experimental group, which utilized the 5E Instruction Model, showed a significant improvement in language proficiency compared to the control group. This suggests that the model's interactive and student-centered approach fosters a deeper understanding of the language, enhancing overall learning outcomes. To some extent the results of the present research match and differ with the some previous research studies as the studies of Chenget al. (2015) analyzed that that how 5E mobile inquiry learning method is improving students' knowledge and capacity of making scientific investigation. Through this experimental research the researchers tried to assess the effectiveness of this approach by using pretest and posttest approach. One more study was conducted by Alorabi and Abdullah, (2019). As in his thesis at Taif University he investigated the effect of the 5Es model on EFL female student's motivation and achievement limited to female participants. While in (2019). Naguib investigated the effect the using of the 5E model of instruction on secondary level students regarding English language learning. Rahmawati, Achdiani & Maharani, (2021) used the 5E model in the educational setting 5E model to find out the variances in the students learning consequences. Yonan, R.F., Mahmood, L.Z., Hamid, R., (2022). investigated the effect of 5E modal on increasing achievement in transformational grammar among university level students. Tarawneh, (2024) the effectiveness of the 5E instructional model on the academic achievement of ninth grade students towards learning English reading comprehension skills. The results of these studies revealed positive effects of the 5E model of instruction in different spheres. While regarding methods, population and sample sizes of these studies differ with present research study. Moreover there is also difference in spheres and settings of these studies.

## **Conclusion**

The study highlights the positive impact of the 5E Instruction Model on language learning. The educators can enhance student outcomes and promote a more effective language acquisition process by fostering an engaging and exploratory learning environment.

## **Recommendations**

- Educators are encouraged to implement the 5E Instruction Model in language classrooms to promote active learning and engagement.
- Professional development workshops should be organized to train teachers in effectively applying this model.



## References

- Ahmad, A., Iqbal, B., & Rao, I. S. (2023). Efficacy Of Blended Learning Technique in Enhancing ESL Students' Linguistic Skills. *Global Language Review*, VIII(II), 9-21. [https://doi.org/10.31703/glr.2023\(VIII-II\).02](https://doi.org/10.31703/glr.2023(VIII-II).02)
- Alorabi, O.,&Abdullah, S.(2019). The Effectofthe 5Es Modelon EFLfemalestudent'sMotivationand achievement at Taif University. *Arab world English journal (April 2019)* Thesis ID, 231,
- Biggs, J., Tang, C., & Kennedy, G. (2022). *Teaching for quality learning at university 5e*. McGraw-hill education (UK).
- Bybee, R. W., Taylor, J. A., Gardner, A., Van Scotter, P., Powell, J. C., Westbrook, A., & Landes, N. (2006). The BSCS 5E instructional model: Origins and effectiveness. *Colorado Springs, Co: BSCS*, 5(88-98).<https://fremonths.org/ourpages/auto/2008/5/11/1210522036057>
- Castrillón Álvarez, M. (2020). The Effects of Implementing Inquiry-Based 5Es Model on grade 9 EFL Students' Interest and English Language Progress.
- Cheng, P. H., Yang, Y. T. C., Chang, S. H. G., & Kuo, F. R. R. (2015). 5E mobile inquiry learning approachforenhancinglearningmotivationandscientificinquiryabilityofuniversity students. *IEEE Transactions on Education*, 59(2), 147-153. <https://ieeexplore.ieee.org/abstract/document/7258408>
- Demir, Y., &Emre, İ. (2020). The effectof learning activities based on 5e learning modelon 4thgradescience teaching. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 16(3), 573-586. <https://doi.org/10.17860/mersinefd.750957>
- Duran, L. B., & Duran, E. (2004). The 5E instructional model: A learning cycle approach for inquiry-based science teaching. *Science Education Review*, 3(2), 49-58. <https://files.eric.ed.gov/fulltext/EJ1058007.pdf>
- Farhat, P. A. (2019). The Effect of Computer Assisted Language Learning (CALL) on English Language Learners' Pronunciation in Secondary School in Pakistan. [https://etd.uum.edu.my/8134/1/s95301\\_01.pdf](https://etd.uum.edu.my/8134/1/s95301_01.pdf)
- García Grau, F., Valls, C., Piqué, N., & Ruiz-Martín, H. (2021). The long-term effects of introducing the 5E model of instruction on students' conceptual learning. *International Journal of Science Education*, 43(9), 1441-1458. <https://doi.org/10.1080/09500693.2021.1918354>
- Hassan, S., Zafar, J. M., & Ullah, N. (2024). Effect of Using Problem Solving Technique of 5Es Instructional Model on Student' Learning at Secondary Level: An Analysis. *Pakistan Journal of Humanities and Social Sciences*, 12(2), 2279-2289. <https://doi.org/10.52131/pjhss2024.v12i2.2409>
- Hassan, S., Saleem, Z., & Saleem, R. (2024). Efficacy of Medium of Instruction in Educational Setting at Elementary Level. *Remittances Review*, 9(4), 1823-1835. <https://doi.org/10.33282/rr.vx9i2.101>
- Lam, Y. W., Hew, K. F., & Jia, C. (2022). Toward a flipped 5E model for teaching problem-solution writing in ESL courses: A two-year longitudinal experiment.
- Naguib, S. M. N. (2019). Using the 5E's Instructional Model to Enhance English Grammar Learning of Students. *Stage Secondary* مجلة در اساتيف المناهج وطرق التدريس 244(115-152.244 10.21608/mjat.2019.102110
- Polanin, J. R., Austin, M., Taylor, J. A., Steingut, R. R., Rodgers, M. A., & Williams, R. (2024). Effects of the 5E Instructional Model: A Systematic Review and Meta-Analysis. *AERA Open*, 10, 23328584241269866.
- Rahmawati, F., Achdiani, Y., & Maharani, S. (2021). Improving students' learning outcomes using 5e learning cycle model. *ASEAN Journal of Science and Engineering Education*, 1(2), 97-100. <https://ejournal.upi.edu/index.php/AJSEE/article/view/33389>
- Shen, H., & Huang, F. (2016). The Impact on Teaching through 5E Model: Perspectives of Prospective Teachers in Teaching Science in Secondary Schools in Gampaha District, Sri Lanka.

- Tarawneh, M. (2024). The Effectiveness of the 5E Instructional Model on the Academic Achievement of 9th Grade Students Towards Learning English Reading Comprehension Skills. *Dirasat: Human and Social Sciences*, 51(1), 305-313. <https://doi.org/10.35516/hum.v51i1.1129>
- Yiğit, C. (2011). The effect of the 5E model in writing on achievement and motivation. *Yayımlanmamış Yüksek Lisans Tezi, Trakya Üniversitesi: Edirne*. <https://core.ac.uk/download/pdf/50609912.pdf>
- Yonan, R.F., Mahmood, L.Z., Hamid, R., (2022). The Effect Of Using 5E Strategy On Developing University Students' Achievement In Transformational Grammar. *Journal of Language and Linguistic Studies*, 18(4), 1390-1399; 2022.