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Systematic Literature Review: The Effect of Experiential Learning (EL) on Learning Outcomes

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Abstract: Experiential Learning (EL) is one of the 21st century learning models that provides students with more real and applicable learning experiences. Although EL has been widely used in various learning, there is still no comprehensive synthesis of how EL can be effectively implemented in various learning contexts to achieve various learning outcomes. This research aims to identify and synthesise the effectiveness of EL in improving and developing various learning outcomes. This research uses the Systematic Literature Review (SLR) method by analysing search results from the Scopus, Erics, Web of Science, and Google Scholar databases, in the last 10 years (2025-2015). Based on the search results, 16 suitable articles were obtained based on the inclusion and exclusion criteria. The results of the analysis of this article review can be drawn conclusions and findings that EL has a good impact on improving various learning outcomes, such as improving academic achievement, critical thinking skills, higher order thinking skills, collaboration, learning motivation, self-learning readiness, activeness, pedagogical skills, and problem-solving skills both at the elementary, junior high school, high school/vocational school and university levels. This research provides a comprehensive synthesis of the effectiveness of EL in improving and developing various learning outcomes.

Keywords: Experiential Learning; Learning Outcomes; Systematic Literature Review

Introduction

A broad variety of competences that are essential for success in the quickly changing educational and professional landscape of today are included in the concept of 21st century skills. Communication, critical thinking, collaboration, creativity, digital literacy, and problem-solving are some of these abilities, which are acknowledged as essential for students to succeed in a complicated society (Anagün, 2018; Diocos, 2023). In order to interpret complex information and make wise judgments in both their personal and professional life, students must possess these competencies. It is imperative that these abilities be incorporated into the curriculum since they enhance academic achievement and equip pupils to handle obstacles in the real world. Therefore, appropriate learning efforts are needed to achieve the expected results.

Teachers must take into account a number of aspects, such as student characteristics, the learning environment, and educational goals, in order to attain the best possible learning outcomes. Applying the right learning model is essential to achieve the desired learning outcomes. The appropriate selection of a learning model is fundamental in achieving educational goals. A learning model serves as a strategic framework that guides educators and students, ensuring effective and efficient achievement of learning objectives (Novitasari, Ansori, & Widagdo, 2023). Moreover, the relationship between educators' choices of learning strategies and student outcomes is crucial. Effective models not only engage students but also cater to different learning styles, significantly influencing

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academic performance. Research indicates that incorporating varied instructional methods, such as blended learning, facilitates deeper understanding by accommodating diverse learner needs and promoting cognitive engagement (Nurdiyanti, Rajab, Sudarsono, & Sirajuddin, 2019). Therefore, educators must strategically select learning models that align with their educational goals and resonate with their students' learning preferences (Arifin, Hasan, & Tuasikal, 2021). Effective learning models not only facilitate concept understanding, but also increase student engagement, motivation and critical thinking skills. The use of innovative and interactive learning models can increase student interest and motivation, and create a more dynamic and effective learning environment (Herwina, 2021; Situmorang, 2021). Therefore, choosing the right learning model is a crucial step in the educational process to achieve the desired learning outcomes. The A number of studies have demonstrated that the experiential learning approach is one that improves learning results.

David Kolb defines Experiential Learning (EL) as a holistic learning model, where a person learns, develops and grows. The use of the term Experiential Learning itself is intended to emphasise that experience plays a significant part in the learning process, and this differentiates EL from other learning models, such as cognitive learning theory or behaviourism. Students in EL undergo four systematic learning steps. The first phase that students must undergo is concrete experience, followed by the second phase, observation, the third phase, abstract conceptualisation, and the final step (fourth phase), active experimentation. The concrete experiences of students are transformed into abstract concepts in this process so that the concepts formed can be used by students to gain new experiences. Experiential learning is seen as a successful educational strategy because it has the ability to develop learners' metacognitive skills, improve skills through applying knowledge to real situations, and provide learners with the ability to learn independently (Kolb, 2014). EL is learning that can increase student engagement, critical thinking, and practical skills across a range of educational contexts. Its effectiveness is supported by many studies that show a positive impact on learning outcomes, making ELan important component in modern educational practices.

Based on this background, this research aims to provide information on how the Experiential Learning model affects various learning outcomes of students.

Method

To collect data on the impact of implementing the EL model on learning, the researchers used SLR (Systematic Literature Review) method. The SLR method is a structured and systematic approach to collecting, evaluating, and analysing literature relevant to a specific research topic. The researcher used the help of the Publish or Perish 8 application to synthesise suitable articles.

Research Stages

In this SLR study, there were three stages carried out by the researcher, namely 1) Planning, 2) Conducting, 3) Reporting (Choifah, Suyitno, & Pujiastuti, 2022).

1. *Planning*

The planning stage is the initial stage carried out by researchers, which involves selecting and determining the topic to be studied. In this case, the researchers chose to examine the effect of applying the EL model on various learning outcomes of students at various levels of education. Next, determine the article search criteria. Article search criteria are based on Scopus, ERICS, Web of Science, and Google Scholar sources from 2015 to 2025. The keyword used is 'Experiential Learning'.

2. *Conducting*

The conducting stage is the implementation stage in SLR research. At this stage, the search for articles according to the criteria and suitability with keywords began. After selecting according to the inclusion and exclusion criteria, 16 articles were selected. The inclusion criteria applied in this study are national or international articles pertaining to the impact of using experiential learning for various learning outcomes, articles come from sinta or scopus accredited journals, publications only in the last 10 years, the type of research is experimental research, qualitative, PTK, elementary, junior high school, high school/vocational school, or higher education level. While the exclusion criteria include irrelevant titles, no full text available, irrelevant abstracts, and unclear conclusions of research results. After the selection process was completed, the next step was to synthesise the data to analyse and evaluate the research results from various articles. Data synthesis in this study will be presented in a narrative manner.

3. *Reporting*

After reviewing the articles that met the inclusion and exclusion criteria, the researchers prepared a research report in the format of a reputable scientific journal article. The report structure consists of introduction, method, results and discussion and conclusion. By conducting systematic and transparent

reporying, this research can make a significant contribution to the field of education and can be accessed by the wider community.

Result and Discussion

The articles used in the literature review process in this study were 15 articles. The articles used came from international and national articles (scopus and sinta). All of these articles were reviewed by analysing the content of the article to obtain information on how the use of the EL model affects the various learning outcomes of students. The articles used in this study are only articles related to the effect of the application of EL models on learning outcomes. There are various learning outcomes obtained by applying the EL model in the research results such as increased academic achievement, critical thinking skills, higher order thinking skills, collaboration skills, motivation to learn readiness to learn independently, sensitivity, activeness, pedagogical skills, and problem-solving skills. The results of the content analysis of the article can be seen in Table 1.

Table 1. Research Results on the Effect of *Experiential Learning* Model Implementation on Various Learning Outcomes

Author (Year)	Subject/Field	Publisher	Results
(F Alkan, 2016)	College students/ chemistry	Journal of Turkish Science Education	Research conducted at universities in chemistry courses on the topic of acid-base solutions and titration shows that experiential learning in chemistry laboratories is effective in improving the academic achievement and scientific process skills of prospective teachers compared to teacher-centred (traditional) learning. Experiential Learning (EL) resulted in higher post-test scores in chemistry achievement and scientific process skills. The chemistry performance of students in the treatment group increased from an average of 3.80 to 8.65, while the control group increased from 3.60 to 6.60. The average science process skill scores of the treatment group were 25.75 and those of the control group were 15.25. This indicates that learning experiences involving direct interaction with materials and practical work can provide significant benefits in understanding and mastering chemistry concepts and scientific process skills for prospective teacher students. This study provides support for the application of EL in the context of chemistry education as an effective strategy to improve student learning outcomes.
(Su & Cheng, 2019)	junior high school students/chemistry	Sustainability	The study's findings suggest that using a virtual chemistry lab as part of an experiential learning approach improves students' academic performance and motivation to learn. According to this research, students' academic performance can eventually improve as a result of the Experiential Learning learning model's ability to boost learning motivation. In addition, the use of virtual chemistry laboratory system also improves students' academic performance. The study's conclusions imply that using virtual technology in the classroom can raise students' academic performance and motivation for learning. The results of the study indicate a positive relationship between learning motivation and academic achievement in experiential learning using a virtual chemistry laboratory. These findings provide insight into the importance of using virtual technology in improving student learning outcomes.
(Fatma Alkan, 2019)	college students/ chemistry	New Trends and Issues Proceedings on Humanities and Social Sciences (ICI)	This study was conducted on quantitative analytical chemistry learning with a sample group of prospective teacher students at a university. Experiential Learning was conducted in an analytical chemistry laboratory with the topic of titration, aiming to improve students' readiness for independent learning. There was an increase in the average Self-directed learning readiness score from 2.25 (pretest) to 8.38 (posttest). The results obtained in this study emphasise that the Experiential Learning model is effective in improving independent learning readiness and highlight the importance of practical activities in chemistry learning to connect theoretical knowledge and practical application. The integration of daily practices in chemistry instruction was highlighted as highly beneficial for students' understanding and achievement.

Author (Year)	Subject/Field	Publisher	Results
(Sumarmi et al., 2020)	senior high school students/ geography	Journal for the Education of Gifted Young Scientists	This study was conducted in senior high schools in geography lessons to improve geography scores and disaster countermeasures education abilities. The research used three treatment groups, namely Experiential Learning, Problem-Based Learning, and control. The average geography scores (posttest) were 91.6 for EL, 84.9 for PBL, and 79.2 for the control group. The average Disaster Education Ability Scores were 89.0 for the EL group, 81.6 for the PBL group, and 76.9 for the control group. Based on the results of this study, learning using EL achieved better results than the other two groups. In EL learning, students directly observed environmental conditions that could potentially cause disasters, namely coastal erosion and waste from fishermen. The students reflected on their observations to find solutions. As solutions, the students attempted to clean up the waste and plant mangrove seedlings to prevent disasters. Learning based on experience, such as observation and taking real actions in the surrounding environment, can enhance students' sensitivity and active participation in identifying issues or problems, improve their skills throughout the learning process, and conduct disaster education for the community.
(Hossain, Manzoor, & Hashmi, 2023)	Elementary students at private -sector English Medium School	Journal of Innovation and Research In Primary Education	The purpose of Experiential Learning in this study is to encourage students to become independent learners. The students, divided into eight groups, were asked to role-play before filling out a questionnaire consisting of four aspects, namely Inventiveness, Assurance, Re-Assurance, and Collaboration. After conducting correlation and regression tests, it can be concluded that there is a correlation between the four aspects of Experiential Learning and Learner Autonomy, or it can be concluded that EL has a positive impact on student independence. *Experiential Learning* fosters a safe, engaging, and flexible classroom environment through social interaction, experience sharing, and reflection. Students' perspectives undergo a transformation, shifting from relying solely on teachers in their learning to becoming more independent and responsible for their own learning. Independence in learning is a crucial aspect in preparing students to face the real world and solve their own problems.
(Susanti, Murniasari, & Oryza, 2022)	senior high scholl/biology	BIODIK: Jurnal Ilmiah Pendidikan Biologi	To address the low critical thinking skills of senior high school students in Jambi in biology, the researcher applied the EL learning model. The students were divided into two groups, namely the treatment group (EL) and the control group. The results obtained in this study were that 80% of students taught using the EL model obtained a critical thinking skill index in the 'high' category and 20% in the 'medium' category. Students in the control group had a critical thinking ability index of 30% in the 'high' category, 55% in the 'moderate' category, and 15% in the 'low' category. The average post-test score for critical thinking skills of students in the EL learning group was 85.00, which was higher than the critical thinking skills of students in the control group, which was 74.10. This study concluded that EL learning can improve students' critical thinking skills.
(Nwuba & Osuafor, 2021)	senior high school students/ biology	(SEJRSD) South Eastern Journal of Research and Sustainable Development	The findings of this study revealed that the use of Experiential Learning. This study was conducted in a senior high school biology class. The aim of this study was to observe differences in academic achievement between students in the experimental class (EL) and the control class (conventional), to observe differences in academic achievement between male and female students in EL, and to observe the interaction effect between gender and the learning model used on academic achievement in biology. This study was conducted over a period of four weeks. The findings obtained were that the average academic achievement score in biology for students in the experimental class (EL) was 65.59, while in the control class it was 42.80. The academic achievement of students taught in the EL class was 69.50 for male students and 64.10 for female students. The results

Author (Year)	Subject/Field	Publisher	Results
			of the hypothesis test showed that EL was more effective in improving students'academic achievement in biology than the conventional lecture model, with no effect of gender on students' academic achievement. Another finding from this study was that there was no interaction effect between the learning model used and gender on students'academic achievement in biology. Therefore, this study concluded that EL is a learning model that can improve students' academic achievement and is gender-friendly.
(Reshmad'sa & Vijayakumari, 2017)	college students/ pedagogical	Journal on School Educational Technology	This study was conducted to improve the pedagogical skills of pre-service teachers. The study used a 2x3 factorial design. The learning models used were the EL model and the conventional model. Teaching ability was differentiated and categorised into three types. The results of the study concluded that EL was more effective than conventional learning in improving pedagogical skills. Other findings stated that teaching ability did not have a significant effect on pedagogical skills, and the interaction between training strategies and teaching ability did not have a significant effect on the pedagogical skills of pre-service teachers.
(khoirussaadah & Hakim, 2019)	senior high school students/ chemistry	Journal of Educational Chemistry	This study was conducted to improve students' higher-order thinking skills in chemistry learning with the topic of acid-base titration. There were two sample groups in this study, where one group was the experimental class taught using the EL model and the other group was the control class given conventional learning. Based on the data, it is known that the application of EL can improve the higher-order thinking skills of students in chemistry learning (acid-base titration). Students who previously were only able to answer questions at level C4 by 25% increased to 44%, level C5 rose from 51% to 74%, and level C6 rose from 52% to 72% after using the Experiential Learning model. The average score for higher-order thinking skills in the EL class was 0.553 and 0.239 for the conventional control class. This study concludes that the EL model can be applied to enhance students' higher-order thinking skills.
(Priyandari, Astina, & Utomo, 2020)	college students/ geography	Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan	This study focuses on improving the problem-solving skills of geography students through EL. Geography learning is closely related to environmental damage, therefore students are expected to be sensitive and concerned about their environment and able to find solutions to environmental problems that occur around them. This study used an experimental class (EL) and a control class (conventional). Problem-solving skills were measured through five essay questions in accordance with the following indicators: formulating problems (river pollution), formulating hypotheses (causes of river water pollution), collecting data (measuring pH, measuring temperature, observing changes in colour, taste, and smell), drawing conclusions, and recommending solutions to problems. The questions were given before and after the learning process. The results obtained were that students taught using the EL experienced a 45.52% increase in problem-solving ability, while students taught using the conventional model experienced an increase of 31.24%. The results of this study indicate that the EL model has a significant effect on students' problem-solving ability. Through observation activities, students were able to have practical experiences in the field, which served as the foundation for their development of critical thinking abilities in order to address actual issues that arise in their environment. This is supported by the gain-score data of the experimental class that applied the EL, which was higher than the control class that applied the conventional learning model in the form of lectures.

Author (Year)	Subject/Field	Publisher	Results
(Yusof et al., 2020)	college students/ Business and Accounting	International Journal of Learning, Teaching and Educational Research	This study aims to enhance student engagement in the Business and Accounting Department in learning and improve students'cognitive scores at levels C2, C3, and C4 through the application of Experiential Learning. The study was conducted over eight weeks with four different topics. Student engagement was measured through questionnaires administered before and after learning. Students' cognitive scores were measured through test scores covering four topics. Based on the pretest and posttest scores, it can be concluded that there was an increase in student involvement in learning accounting principles. The percentage of students' cognitive scores increased at level C2 from 70 to 83, at level C3 from 35 to 60, and at level C4 from 45 to 60. These results indicate that EL can increase student involvement and cognitive scores.
(Sholihah & Mahmudi, 2015)	junior high school students/ mathematics	Jurnal Riset Pendidikan Matematika	This study aims to examine the effectiveness of the Experiential Learning on students' academic achievement in mathematics and their appreciation of mathematics in flat-sided shapes. The research sample consisted of eighth-grade students at MTs Negeri Sidoharjo. The researcher used two sample groups (treatment and control), where the experimental group was given EL learning, while the control group was given conventional learning. Mathematical academic achievement was measured using a test consisting of 16 items, while students's appreciation of mathematics was measured through a questionnaire consisting of 20 statements. Students' mathematical academic achievement was 82.81 (EL) and 74.37 (conventional). Students's appreciation of mathematics was 65.55 (EL) and 61.75 (conventional). The results of the hypothesis test indicated that EL is effective in improving academic achievement in mathematics and students' appreciation of mathematics.
(Suryantini et al., 2021)	elementary school students/ natural sciences	Jurnal Media dan Teknologi Pendidikan	The research conducted at the elementary school level in science lessons was motivated by students' difficulties in understanding abstract material and constructing their own knowledge. The researchers applied the video-assisted EL learning model in the experimental class, while the control class received conventional learning. Both classes were given pre-tests and post-tests using 32 multiple-choice questions in accordance with the science learning competencies that students were expected to achieve. The science learning competencies in the experimental class (EL) were 80.067 and 72.375 in the control class. After testing the hypothesis, it was concluded that video-assisted EL learning had a significant effect on the science knowledge competencies of primary school students.
(Haryanti, Suhartono, & Salimi, 2019)	Elementary school students/ physics	Jurnal Pijar MIPA, Tahun 2018	Experiential Learning was applied to elementary school students in science lessons on the topic of heat and its transfer to achieve a target of 85% mastery of science learning outcomes. EL learning was conducted in two cycles, each consisting of three meetings. Student learning outcomes were measured using cognitive levels C1-C4. In the first cycle, some students still had difficulty answering questions, especially at level C4. Achievement in Cycle I improved in each meeting, from 63% (meeting 1) to 81% (meeting 2) to 85% (meeting 3). In Cycle II, 100% of students achieved mastery (meeting 6). Based on these data, it can be concluded that EL can be applied to achieve mastery of science learning outcomes, particularly in the material on Heat and Its Transfer (cycle I = 76.33%; cycle II= 2.63%).
(Saputra, Qosyim, Mahdiannur, & Norsaputra, 2025)	junior high school students/ natural sciences	Thabiea : Journal of Natural Science Teaching	To improve the low science inquiry skills of students, the researcher integrated Experiential Learning with peer instruction (PI). This study involved a group of 30 junior high school students in science lessons on the topic of pressure. Students' science inquiry skills were measured using 15 questions covering five indicators of science inquiry skills. Students' responses after the learning process were measured through a questionnaire consisting of three aspects: interest and motivation, satisfaction, and scientific inquiry skills. The results

Author (Year)	Subject/Field	Publisher	Results
			obtained showed an increase in science inquiry skills from an average of 15.15 to 80.12. The aspect of science inquiry skills in the post-test that received the highest score was 'summarize' at 96. The aspect of 'problem formulation' scored 94, 'variable identification' scored 92, and 'hypothesis' scored 91. The aspect with the lowest score was 'data analysis' at 83. Based on the average scores obtained from the five aspects, it can be concluded that students' science inquiry skills after implementing EL integrated PI are classified as high. Student responses were calculated in percentages, with interest and motivation at 77%, satisfaction at 79%, and science inquiry skills at 77%. All three aspects fall into the 'good' category.
(DHARLINA, DANIL, & ALDYZA, 2025)	elementary school students/ natural sciences	Jurnal Inovasi Pendidikan Dasar	This study involved elementary school students who were given experiential learning treatment in natural science with the topic 'Artificial Ecosystems'. The EL learning on the topic of Artificial Ecosystems aims to improve the understanding and learning motivation of fifth-grade students at UPTD SD Negeri 15 Bireuen. The level of student participation reached an average of 93%, indicating that the Experiential Learning model used by the teacher was successful in attracting students' interest and motivating them to participate and improve their understanding.

The results of the literature review indicate that the implementation of Experiential Learning has a positive impact on various learning outcomes, both for elementary school students, junior high school students, senior high school students, and university students. Experiential Learning is a gender-friendly learning model that is suitable for various subjects such as natural sciences, chemistry, biology, physics, mathematics, geography, accounting, and pedagogy. The learning outcomes that can be achieved as positive impacts of EL include academic achievement, scientific process skills, critical thinking skills, problem-solving skills, science inquiry skills, higher-order thinking skills, pedagogical skills, learning independence, learning readiness, student engagement, disaster countermeasures education abilities, interest, motivation, appreciation, and satisfaction. This aligns with Susiloningsih's research findings, which state that the implementation of EL in science education can enhance students'curiosity and academic performance, increase student motivation, improve student understanding, enhance the quality of learning, and boost students' competencies while making learning enjoyable (Susiloningsih, Sumantri, & Marini, 2023). Collaboration among students during EL-based learning is one of the keys to its success. Student participation in the learning process using the EL model increases, thereby enhancing learning outcomes. The four syntaxes in EL have a positive impact on students by providing them with real-life experiences that can be directly observed, reflected upon, analysed, and processed, as well as tested further. Through EL, students can find relevance between the theories taught in class and their practical applications in the real world, thereby helping to maintain student motivation and strengthen learning outcomes. An alternate method to raise educational standards is to incorporate Experiential Learning into the curriculum.

Conclusion

The results of the analysis based on the SLR study concluded that the Experiential Learning (EL) has a positive impact on improving various learning outcomes for all levels of education. EL is a gender-friendly learning model that is 'suitable' for application in various subjects such as natural sciences, chemistry, biology, physics, mathematics, geography, accounting, and pedagogy. The *Experiential Learning* model has been widely applied in learning activities. Experiential Learning can improve academic achievement, scientific process skills, critical thinking skills, problem-solving skills, science inquiry skills, high-order thinking skills, pedagogical skills, learning independence, learning readiness, student engagement, disaster countermeasures education abilities, interest, motivation, appreciation, and satisfaction. The Experiential Learning model is highly recommended for implementation in both natural sciences and social sciences.

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Author Contributions
Dewi Syafriani was responsible for conceptualising the research idea, collecting data from various sources, analysing data, and writing the article. Retno Dwi Suyanti and Ani Sutiani were responsible for the research methods, analysing data, and providing input for article improvement.

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Conflicts of Interest

The researchers stated that there were no conflicts of interest in this study.

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