



ISSN: 2230-9926

Available online at <http://www.journalijdr.com>

IJDR

International Journal of Development Research

Vol. 13, Issue, 04, pp. 62351-62353, April, 2023

<https://doi.org/10.37118/ijdr.26494.04.2023>



RESEARCH ARTICLE

OPEN ACCESS

EFFECTIVENESS OF DUAL SITUATED LEARNING MODEL ON ACHIEVEMENT IN CHEMISTRY AMONG SECONDARY SCHOOL STUDENTS

*Nambiar Sheeba Narayanan

M.Ed. Scholar, School of Pedagogical Sciences, Kannur University

ARTICLE INFO

Article History:

Received 27th February, 2023

Received in revised form

02nd March, 2023

Accepted 16th March, 2023

Published online 27th April, 2023

KeyWords:

Effectiveness, Dualsited learning model (DSLML), Achievement.

*Corresponding author:

Nambiar Sheeba Narayanan

ABSTRACT

One learning model that fits the conceptual change approach is the dual situated learning model, which benefits students due to its integration of three philosophical perspectives: epistemological, ontological, and motivational. This study aims to determine the impact of dual situated learning on secondary school students' performance in chemistry. A quasi-experimental approach was used, with a pretest-posttest non-equivalent group design. The study sample included 60 secondary school students from the Kannur area. In order to construct clusters for the sample for this study, the investigator used a multistage sampling technique from the population. Thus, the creation of a dual situated learning model, the creation of lesson transcripts based on the lecture cum demonstration approach, and achievement tests conducted both before and after the intervention were the tools employed for this study. Following the implementation of the dual situated learning model in the classroom, the investigator discovered that, when compared to the lecture-cum-demonstration method, the dual situated learning instructional strategy is most effective in conceptual change for challenging concepts.

Copyright©2023, Nambiar Sheeba Narayanan. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Nambiar Sheeba Narayanan. 2023. "Effectiveness of dual situated learning model on achievement in chemistry among secondary school students". International Journal of Development Research, 13, (04), 62351-62353.

INTRODUCTION

- Conceptual transformation must be established in accordance with the conceptual nature and ideological beliefs of the student.
- To challenge the students' prior knowledge and provide them with a fresh perspective,
- It is necessary to revise their prior understanding as part of the conceptual transformation process.
- During the conceptual shift process, it is important to question students' understanding of reality and concepts of knowledge (She & Liao, 2010; She, 2004a).

In this study to improve students' understanding of difficult topics, the ongoing teaching method, don't improve conceptual understanding because they weren't found to be useful in real-world settings. The investigator believed that physical science teachers should use some kind of instructional technique. It would be preferable to employ an event-based learning environment, but the investigator discovered from evaluations that event-based learning environments haven't been particularly effective in using interventions created by instructional strategies. There is a barrier in secondary school that prevents secondary education from having an impact on this situation. Therefore, the investigator created a study on effect with the following title:

“Effectiveness of Dual Situated Learning Model on Achievement in Chemistry among Secondary School Students”

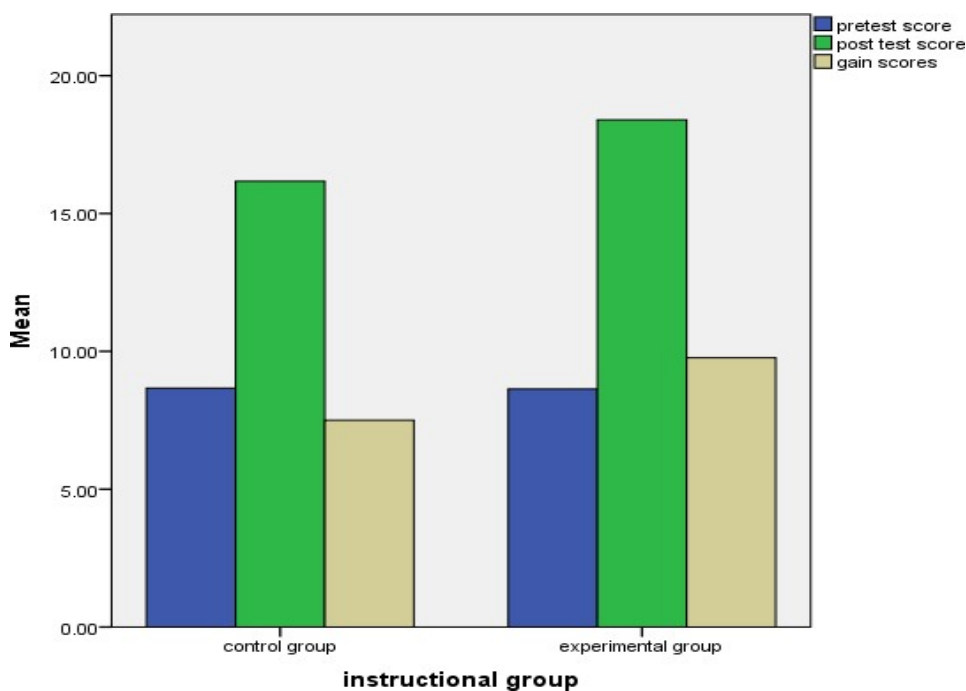
The objectives of this study were prescribed as one main objective which was to find out the effectiveness of Dual Situated Learning Model to enhance achievement in chemistry among secondary school students and a set of specific objectives ,(i) to identify the difficult topics in chemistry as prescribed by secondary school students,(ii) to design Dual Situated Learning Model, appropriate for teaching dissolution and diffusion (Identified difficult topics) in secondary school students and(iii) to find out effectiveness of the DSLM on achievement in chemistry among secondary school students. In this study investigator has framed an alternative research hypothesis that, There is a significant effect of Dual Situated Learning Model (DSLML) to enhance the achievement in chemistry among secondary school students. The purpose of this study was to determine how the dual situated learning strategy affects secondary school students' performance in chemistry in the Kannur region. A multi-stage sampling procedure was utilised to choose the sample for the experimental investigation at the Medical College Public School in Pariyaram, which was chosen at random and selected two clusters from the secondary level. Two entire classes were used as the source for the chosen sample, which was created via clustering.

Table 1. T-values of Pretest, Post test and Gain Score of Achievement Test Scored by Students

Study group	Pretest (Before intervention)			Post test (After intervention)			Gain
	N	Mean	t-value (0.05%)	Mean	Mean	SD	t-value (0.01%)
Experimental group	30	8.63	0.059 (NS)	18.40	9.77	2.40	2.87 (S)
Control group	30	8.67		16.17	7.50	3.58	

*NS: Non Significant

*S : Significant

**Figure 1. Bar diagram showing Pre Test, Post Test and Gain scores of Control and Experimental Group**

One class is chosen by lottery as the experimental group while the other class is chosen as the control group, taking into account two classes of pupils without any discrimination. Both categories are represented in the 60 samples overall. 30 samples, comprising both boys and girls, are used for each group. The development of a dual situated learning model, the creation of course transcripts based on the lecture-cum demonstration approach, and achievement tests conducted both before and after the intervention were the tools employed for this study.

The experimental process for the purpose of data collection was conducted to find out the effectiveness of DSLM on achievement in chemistry among secondary school students. The ability to identify students who were having comprehension issues was made possible by the investigator adopting the study on a sample of class VIII students. For a period of ten days, the investigator obtained approval for the study from the head of the Institution, the Principal of the school, the class teacher, and the science teacher. Thus, the Achievement Test was given without any discrimination to both the experimental and control groups' i.e. non-equivalent subgroups as a pretest. To determine the impact of the achievement exam, the investigator set up each day two classes in the forenoon session with the same themes for the control group and experimental group, with authorization from the school administration. 45 mins time were used for each group. Sixteen lessons were thus taught to each group, in total. The experimental group received education with eight lessons using situational learning events while the control group received instruction with eight lessons using the lecture cum demonstration method. Before beginning to solve the paper, the investigator provided clear instructions, such as: attempt all questions; all questions are compulsory; each question carries one mark; four

possibilities were provided; mark all that apply with a pen. In order to gauge students' degree of understanding of complex scientific concepts like dissolution and diffusion, the researcher administered a pretest. By analysing the results of the pretest, the investigator discovered that there was a lack of comprehension of the tough issues covered in the eight course transcripts for each approach. As a result, the DSLM was chosen as the instructional model for the experimental group, and the tool was accurate to a standardization technique that took into account the students' level of comprehension. The experiment group was taught using a dual situated learning paradigm using Ph-ET-Simulation videos, while the control group was taught using a standard lecture cum demonstration manner. The transcript was 45 minutes for each lesson. After the experiment, achievement tests were administered to both groups once again as follow-up assessments. To examine the score, statistics were employed. The investigator has adopted a split-half strategy after two weeks of the trial to test the tool's reliability and proceeded for data analysis from SPSS.

Results of the Investigation demonstrate the detailed findings that emerged from the study are shown below,

1. After putting this dual situated learning model into practice in the classroom, the investigator discovered that it is significantly more successful than the lecture-cum-demonstration strategy in raising secondary school students' achievement in chemistry.
2. Through mean pre-test results on accomplishment in chemistry among secondary school students, the investigator determined the necessity of conceptual modification for the topics of dissolution and diffusion.
3. After determining the need, the investigator created a dual

situated learning model for the challenging concepts of dissolution and diffusion. The model was successfully implemented on secondary school students' performance in chemistry by setting up various situational events in Ph-ET Simulation during its six stages of development.

4. By comparing the gain scores of Achievement in Chemistry between the experimental and control groups, the investigator was able to draw the conclusion that this approach is effective. The obtained t value was 2.58, which is significant at the 0.01 level of significance. This shows that the gain scores of the experimental group students and the control group students differ significantly. This shows that the Dual Situated Learning Model is superior to the lecture-cum-demonstration approach.

Recommendation

- Dual situated learning strategy based model would be good for teachers by receiving training, so that students can approach conceptual transformation.
- The curriculum should be reframed to support situated learning as part of the use of other teaching approaches. If the teachers use the dual situated learning model for teaching, it will be easier for the students to address some challenging scientific issues.
- The dual situated learning approach of instructional teaching can enable students to apply the ideas in several real-world contexts.
- The establishment of a techno-pedagogical context for teachers & pre-service and in-service programmes should be incorporated into the educational curriculum for teachers because simulation is so fascinating.
- It can allow students to concentrate on their own experiences, this model promotes students & motivating learning when they are in a reflective mode.
- It encourages higher level thinking rather than the gathering of knowledge.

REFERENCES

Amin, T., Levin, M., & Olivia, L. (2022). Theorizing Concept Learning in Physics Education Research: Progress and Prospectus <https://files.eric.ed.gov/fulltext/EJ1251663.pdf>

- Best, J.W & Kahn, J.(2006). Research in education .Prentice hall of India. Pvt: Ltd :New Delhi.
- Hwa, T., & Karpudewan, M. (2017). Green Chemistry-Based Dual-Situated Learning Model: An Approach that Reduces Students' Misconceptions on Acids and Bases. In *Overcoming Students' Misconceptions in Science: Strategies and Perspectives from Malaysia* (pp. 133–155). https://doi.org/10.1007/978-981-10-3437-4_8
- Ozkan, G., & Sezgin Selçuk, G. (2015). Effect of Technology Enhanced Conceptual Change Texts on Students' Understanding of Buoyant Force. *Universal Journal of Educational Research*, 3, 981–988. <https://doi.org/10.13189/ujer.2015.031205>
- Paneerselvem, R. (2016). *Research Methodology*, Prentice Hall of India. Private Limited .New Delhi.
- PDF] Effect of Simulation-based Inquiry with Dual-situated Learning Model on Change of Student's Conception. (n.d.). Retrieved November 21, 2022, <https://www.researchgate.net/publication/259552566>
- She, H.-C. (2003). DSLM Instructional Approach to Conceptual Change Involving Thermal Expansion. *Research in Science and Technological Education*, 21, 43–54. <https://doi.org/10.1080/02635140308345>
- She, H.-C. (2004). Facilitating Changes in Ninth Grade Students' Understanding of Dissolution and Diffusion through DSLM Instruction. *Research in Science Education*, 34, 503–525. <https://doi.org/10.1007/s11165-004-3888-1>
- She, H.-C. (2005). Enhancing Eighth Grade Students' Learning of Buoyancy: The Interaction of Teachers' Instructional Approach and Students' Learning Preference
- Srisawasdi, N., Junphon, S., & Panjaburee, P. (2013, November 18). Effect of Simulation-based Inquiry with Dual-situated Learning Model on Change of Student's Conception. *Workshop Proceedings of the 21st International Conference on Computers in Education, ICCE 2013*.
- Styles. *International Journal of Science and Mathematics Education*, 3(4), 609–624. <https://doi.org/10.1007/s10763-004-6113-9>
