

Experiential Learning: It's Effect on Achievement of Students with Visual Disabilities

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Abstract

The purpose of the present study was to find out the effect of experiential learning on academic achievement of students with visual impairment. The study was conducted on 64 students those were studying in elementary school. In the study, academic success of the students was measured with their last qualifying examination result. The major findings of the study revealed that there is a significant difference between the experimental group and control group students after intervention programme on science achievement. Recommendations were suggested on the basis of obtained findings.

Keywords: Experiential learning, achievement, visual disabilities

Introduction:

Engagement of students in learning activities promotes new understanding to the concept, Parua and Behera, (2019). The teacher has a significant role to engage students in learning activities by occupying the role of facilitator and motivator and provide guidance service to the learner by engaging in some experiential activities. Student's engagement in learning activities helps is accessing knowledge and practicing particular skills of live (Parua, 2020). The technique in which students are encouraged to be trained, the idea of thought material by experiment and creating the goal of the construction of knowledge and skill from direct experiences are termed experiential learning.

One of the effective approaches of teaching learning activities is the experiential learning. It highly impacts on students meta-cognitive skills and enhance the skills through the implementation of the knowledge of real situations (Kolb & Kolb, 2006). It requires proper planning in learning activities for better comprehensive conceptual formation of students. Students prefer every time learning should be fun and useful (Hein & Budny, 2000). So it can be concluded that that learning from experience is more durable, real and useful for life. So the present study tried to find the impact of experiential learning on the achievement of students.

Research effort in this area

Ravula (2013) found that organized classroom activities reflect the teaching in a student-centered environment. Joshi (2015) found that the Experiential Learning was found interesting, relevant, and effective to students for their achievement. Shivani.(2018) found that teaching science through experiential learning programmes resulted in positive and statistically significant changes in science achievement. The quality of science education developed with the help of experiential learning.

A study by Thote & Gowri (2020) revealed that students' handmade models is effective and efficient in enhancing the achievement level and conceptual understanding of Chemistry. Further it has a positive impact on the attainment of specific learning out comes and low score learners are much more beneficial than the average learner and high score learners. So, it is concluded that experiential learning activities not only enhance the interest in the subject but enhance the student's academic performance (Thote & Gowri 2021). Perrin (2014) stated that experiential learning programs helped college students to engage and empower learning experiences. Further, the experiential learning had positive effect on students' Mathematical Creativity (Chesimet et al 2016). Kang& Martin(2018) Experiential learning, coupled with reflection, was a powerful tool for changing teachers' beliefs and practices. This course expanded pre-service teachers' opportunities to positively engage with SEN students in a supported learning environment so that teachers' awareness and positive attitudes towards SEN students increased and also provided scope to teachers for better interaction with students. Our teachers had begun to expand their view beyond the classroom and were beginning to consider challenges for disabled people in Korean society and the world. Su and Cheng (2019) found that experiential learning significantly affects learning motivation and academic achievement. Moreover, a virtual lab promotes students' motivation regarding chemistry. Albattat et al. (2020) conducted a study on the topic "The Effectiveness of Hospitality Experiential Learning from Academic and Industry Perspectives" with an objective review of experiential learning in hospitality education through its implementation and explores lecturer and industry perceptions with regards to the effectiveness of the adopted experiential learning methods. And found that experiential learning should be increased in the hospitality and tourism management course to produce comprehensive graduates with the knowledge, skills and most notably experience that the industry considering in employing fresh graduates. Nwuba & Osuafor (2021) conducted a study on the topic "Effect of experiential learning approach on secondary school student's academic achievement in biology in Awka education zone" to investigate the effect of Experiential Learning Approach (ELA) on secondary school student's academic achievement in biology in Awka Education Zone. The sample size of fifty-three (15 males and 38 females) senior secondary second year (SS2) students was selected from a population of Four thousand, seven hundred and fifty-five (4755) students from Awka Education Zone by using a multi-stage sampling procedure and found that an Experiential learning approach is a gender-friendly approach that enhances students' academic achievement.

Method

Design of the study

This research was conducted with 64 visually impaired students studying in special schools of Odisha. A 32 number of students were formed the experimental group and 32 formed the control group. The main purpose of the present study was to check the effect of experiential learning programmes on the science subject for the students of class IX. The present study was carried out in two important phases.

- Phase: 1 Adapt and modify according to the use of students with Visual disabilities on the Science Achievement test.
- Phase:2Equivalenceofthegroups
- Phase:3 Development and effectiveness of experiential learning programme.

Tools used

For the present study, to find out the achievement of both the group's students at the end of all the units, the investigator constructed and standardized an achievement test on science. To find out the achievement of both the groups, i.e., the Experimental group and control group in the particular units of science textbook of Odisha State Board school text-book syllabus, 2021-2022, the investigator constructed and standardizes an achievement test to keep the mind the seven chapters Science a test is objective in nature.

Analysis and interpretation

Table-1 Significance of Difference between the mean scores of academic Achievements of experimental and control group in science during pre-testing phase

Variable	Phase	Group	N	Mean	SD	't'ratio
Academic Achievement in Science	Pre-testing	Experimental Group	32	15.7	3.03	0.143
		Control Group	32	14.5	2.87	
*Non-Significant at 0.5 level of significance						

It is revealed from the Table-1 indicate that the experimental group obtained 14.7 and 3.03 as mean and standard deviation values respectively whereas these figures for the control group were 14.5 and 2.87. The mean score of students in the experimental group was slightly better than students in the control group. The obtained 't' value of both groups was found to be 0.143, which is not significant at the 0.5 level of significance. It means the students of both groups are statistically equal concerning their academic achievement in science before the experimental intervention. The graphical description of the mean scores of two groups on the science achievement test during the pre-testing stage is given in figure-1

Figure-1 Comparative bar graph showing mean academic science achievement score of pre-test of Experimental and Control group students

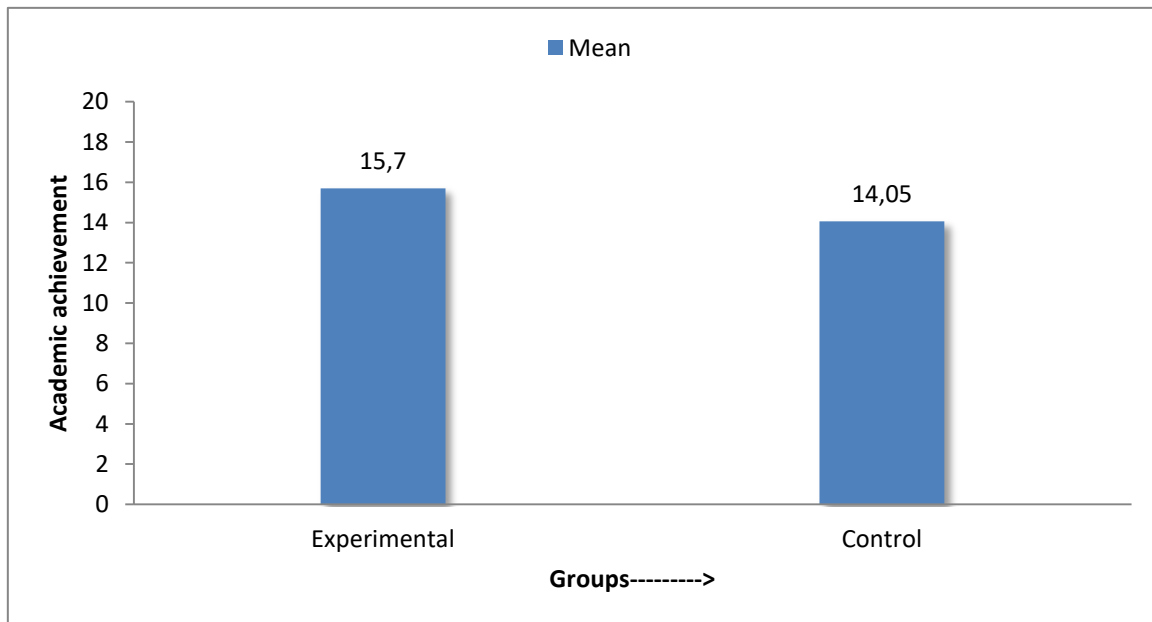


Figure-1: Mean scores of the experimental and control groups on the science achievement test during the pre-testing phase

The pre-testing phase revealed that the two groups were equal in the academic achievement parameters. It justified

the basic statement and recruitment of “randomized groups, pre-test-post-test design”. Further, it confirmed the authenticity of matching and random distribution of subjects in to two groups.

Hence, based on the above results, hypothesis H1 states, “There is no noteworthy variance in the Experimental and Control groups’ academic achievement before treatment” is accepted at a 0.05 significant level. Therefore, it is acceptable and verified that experimental and control group students are not significantly different from each other in terms of science academic achievement before treatment

Comparison of Science Academy achievement post-testing mean scores in the experimental and control groups after the experiment

After implementing the experiment, the student’s performance in science academic achievement tests in both groups was tested and evaluated. Thereafter, post-testing means scores of academic achievements of two groups in science achievement were tested for the significance of difference. The mean and standard deviation for post-testing scores of students in both groups were computed. The ‘t’ value was also calculated, and details are presented in table 4.2.

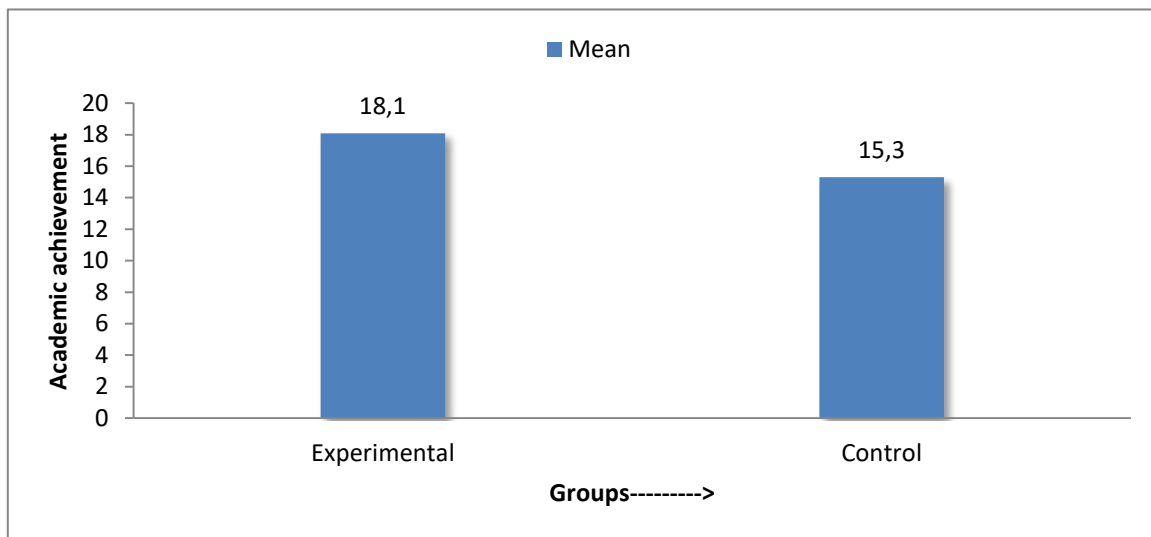
Table 4.2 Significance of difference between the mean scores of the experimental and control groups in academic achievement in science during the post-testing phase

Variable	Phase	Group	N	Mean	SD	‘t’ratio
Academic Achievement in Science	Post-testing	Experimental Group	32	18.1	2.38	2.22
		Control Group	32	15.3	2.93	
*Significant at .05 level of significance						

Table 2 revealed that the mean and standard deviation of academic achievement in science post-testing phase scores in the experimental and control group comes out to be 18.1 and 15.3 with SDs 2.38 and 2.93 respectively. The mean score of science achievement post-testing phase showed higher scores for experimental group students than for the control group. As far as the ‘t’ value of both groups was concerned, it was found significant at 0.05 and the calculated value of ‘t’ was 2.22. It illustrates that the mean scores of both groups are significantly different in the post-testing phase of the science achievement test. The post-testing scores of both groups were compared with the in pretesting score and experiential model learning showed better academic performance than conventional one.

The graphical representation of the summary showing means scores of pre-testing and post-testing phase scores of academic achievements in the control and experimental group is in figure 2.

Figure-2 Comparative bar graph showing mean academic science achievement score of pre-test of Experimental and Control group students



It is observed from figure 4.2 that there is an improvement in academic performance in both groups in post-testing scores than in pre-testing scores. The figure further explored that the improvement is visible in the academic performance of the experimental group as compared to the control group.

Hence, based on the above results, hypothesis H2 which states, “There is no noteworthy variance in the experimental and control groups' academic achievement after treatment.” is rejected at a 0.05 significant level. Therefore, it is acceptable and verified that experimental and control group students are significantly different from each other in terms of science academic achievement after treatment.

Discussion and Conclusion

The findings revealed that teaching science through an experiential learning programme resulted in a positive and statistically significant change in science achievement. The results have clearly stated that through experiential learning, the quality of science education can be improved. It was found that various experiential learning methods helped students with visual impairment (VI) in attaining better scores on science academic achievement tests than the conventional method. The result is in congruence with the results of various studies showing that experiential learning activities help in improving the students with visual impairment (VI) academic achievements. In this present study, we also concluded that if the study time duration is increased then we must get a better result.

The current results are supported by previous studies conducted by various researchers. Camp (1990) remarked that students' participation in out-of-class activities and field experiences like indoor and outdoor laboratory experiences are effective in enhancing abilities and achievement in academics. Similar results were shown by other researchers. Cheriyan (2010), Kaur(2012) and Josphe (2015) found that learning mathematics is effective through the experiential learning method. Their findings also disclosed that web-based instructions and inquiry-based science instructions have a more positive effect on enriching the academic achievement level of students in science than the conventional method. The various activities associated with experiential learning help get better scores in science. Alkan (2016) and Adak (2017) observed with an experiential learning programme and constructive model of learning, students got a good ranking in chemistry and collectively in a science subject. There view of previous studies on experiential learning showed that an intervention programme of experiential learning is extremely important if academic achievement need to been enhanced through a multisensory approach. The observation of Dhanapal and Lim (2013), leal-Rodriguez & albort - Morant (2018) established that indoor and outdoor activities help in achieving academic excellence among students, and strongly recommend that activity-based performance is capable of developing a link between students' participation in experience-based learning and

its impact on their academic achievement.

The achievement level of students in science taught through “Kolb’s experiential learning model” is more significant than the conventional model. The objective-wise (knowledge, understanding, application and skill) achievement in science taught through Kolb’s experiential learning model is significant in comparison to conventional teaching. Hence, Kolb’s experiential learning model was found to be better than the traditional method of teaching about total achievement and objective-wise achievement. The utilization of best possible resources can be used to make the teaching-learning process more interesting, helping students to make content more attractive and attaining the various domains of educational objectives i.e., Knowledge, understanding, application and skill domain.

The results are in congruence with outcomes of earlier research, that experiential learning programme has helped the students for attaining better scores in Science, Mathematics, and other areas of subject than the conventional method. The inquiry-based activity, project activity, constructive approach, web-based media approach, effective teaching aids and indoor and outdoor activities etc. are highly motivating as they create a suitable environment and increase interest among learners. The students are thus able to understand and have longer retention and resulting in better performance.

References

1. Alkan, Fatma. (2016). Experiential Learning: Its Effect on Achievement and Scientific Process Skills. *Journal of Turkish Science Education*. 13. 15-26.
2. Alkan, F. (2016). Experiential learning: Its effects on achievement and scientific process skills. *Journal of Turkish Science Education*, 13(2), 15-26.
3. Chen, Yu-Fen & Liu, Chen-Chung & Yu, Ming-Hung & Chang, Sung-Bin & Lu, Yun-Chen & Chan, Tak-Wai. (2005). Elementary science classroom learning with wireless response devices implementing active and experiential learning. 96-103.
4. Creswell, John W. *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (Boston: Pearson Education, Inc., 2012) p.295.
5. Camp, W. (1990). Participation in student activities and achievement: a covariance structural analysis. *The Journal of Educational Research*, 83(5), 272-278. Retrieved from www.jstor.org.
6. Dhanapal, S., & Lim, C. C. Y. (2013). A comparative study of the impacts and students' perceptions of indoor and outdoor learning in the science classroom. *Asia Pacific Forum on Science Learning and Teaching*, 14(2), 1-23.
7. Joseph, C.O. (2015). Teaching aids a special pedagogy tool of brain development in school children, interest and academic achievement to enhance future technology. *Journal of Education and Practice*, 6(29), 92-101.
8. Kang, Da & Martin, Sonya. (2018). Improving learning opportunities for special education needs (SEN) students by engaging pre-service science teachers in an informal experiential learning course. *Asia Pacific Journal of Education*. 1-29.10.
9. Kaur, M. (2012). Effect of web based instruction on achievement in biology in relation to learning style and intelligence. (Unpublished Ph D thesis). Panjab University Chandigarh.
10. Prashant Thote, and Gowri. S. (2021). Evidence Based Learning: A Study of Impact on Experiential Learning Activities on Attainment of Specific Learning Outcomes. *International Journal of Research: Granthaalayah*, 9(2), 22-31.
11. Perrin, Jeffrey. (2014). Features of Engaging and Empowering Experiential Learning Programs for College Students. *Journal of University Teaching and Learning Practice*. 11. 4-16. 10.53761/1.11.2.2.
12. Su, Chung-Ho & Cheng, Ting-Wen. (2019). A Sustainability Innovation Experiential Learning Model for Virtual Reality Chemistry Laboratory: An Empirical Study with PLS-SEM and IPMA. *Sustainability*. 11.
13. Thote, P., & Kumar Sen, R. (2019). Experiential Learning: Inclusive Art Education for Joyful Learning. *International Journal of Research- Granthaalayah*, 7(11), 111–115.