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Relationship Between Science Anxiety and Study Habits of the Students of IXth Standard

Saradindu Das[1], Kalyani Mitra[2]

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Abstract

This study was conducted to examine the relationship between science anxiety and study habits of the students of IX standard. A descriptive survey research design was adopted on the basis of the nature of the study. 90 students among which 45 boys and 45 girls from four secondary schools from both rural and urban areas of Purba Bardhaman District have been selected by simple random sampling. The self-developed structured and validated Anxiety in Science Scale (ASS) and Study Habits Scale (SHS) were administered to estimate the science anxiety score and study habits score of the selected sample students. Mean, standard deviation, Pearson's Product Moment Correlation and t-test have been used for the analysis of the collected data. The results showed that there is a significant and inverse relationship between Science Anxiety and Study Habits of students of IXth standard. The result leads to infer that as the science anxiety increases, study habits of the students decrease. There is significant difference in science anxiety between boy and girl students of IXth standard. The girl students are found more anxious than the boys since the mean score of science anxiety of girl students are higher than that of the boys. There is no significant difference in science anxiety between rural and urban pupils. There is no significant gender difference in mean score of study habits. There is no significant difference in study habits between rural and urban students also. The result of the major hypothesis of the study leads to conclude that effective measures should be taken to control and minimise the science anxiety in order to enhance study habits.

Keywords: Science anxiety, study habits, students of IXth standard

1. Introduction

Anxiety as a whole is typically defined as a diffuse apprehension, something vague and broadly encompassing many feelings, while a fear is a reaction to a specific danger (Usera, 1984). Anxiety is common to every human being. There are different types of anxiety. One type is of the specific phobias. Another kind is of individual's performance regarding a specific domain of knowledge or any skill. Here, the science anxiety is one kind of performance anxiety which is expected to be common among the students of IXth standard.

Science anxiety refers to the feelings of apprehension, fear, or unease associated with learning science and can be manifested in different ways affecting individual's performance related to scientific activities. The intensity and difficulty of learning science is a significant source of anxiety among students (Mallow, 2006; Mallow and McDermott, 1988).

Habit is formed when a task or action is periodically and repeatedly performed by an individual. Initially it needs the performer's keen attention to be accomplished but gradually it become shaped as a spontaneous repeated action or better called habit. Study means application of knowledge in the process of learning. Hence, study habits may be explained as the students' planned study schedules of different subjects that are consistently and regularly practised by them. If students can develop effective study habits and discipline, they surely perform expectedly well in their academic activities (Mark and Howard, 2009).

The present study is conducted in order to delve into the nature of the relationship between science anxiety and study habits of the IXth standard students. It is also designed to figure out the difference in science anxiety and study habits with respect to gender as well as locational variation.

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1.1. Rationale

Science anxiety is a common fear of the students regarding science learning in present landscape of education. It is a pressing need to successfully resolve the unnecessary apprehension of science learning. On the other hand, study habits explore the planned study schedules of the students for preparing their lessons. there are so many researches conducted on the relationship between test anxiety and study habits, but there are a few researches conducted on the relationship between science anxiety and study habits among the students of secondary level. Hence, it would be interesting to reveal the relationship between the science anxiety and study habits of the students of XIth standard. It is expected that the present study will formulate the utilitarian guidelines and suggestions for the parents, teachers and stakeholders about how to implement anxiety management strategies and offering appropriate learning environment to the students for performing better in their academic pursuit.

2. Objectives

1. To find out the relationship between science anxiety and study habits of the students of IXth standard
2. To compare the science anxiety between boys' and girls' students of IXth standard
3. To compare the science anxiety between rural and urban students of IXth standard
4. To compare the study habits between boys' and girls' students of IXth standard
5. To compare the study habits between rural and urban students of IXth standard

3. Hypotheses

1. There is no significant relationship between science anxiety and study habits of students of IXth standard
2. There is no significant difference in science anxiety between boys' and girls' students of IXth standard
3. There is no significant difference in science anxiety between rural and urban students of IXth standard
4. There is no significant difference in study habits between boys' and girls' students of IXth standard
5. There is no significant difference in study habits between rural and urban students of IXth standard

4. Review of the Related Literature

Lawrences, A. (2014) conducted a study to examine the relationship between test anxiety and study habits of higher secondary students. the findings of the research work revealed that the levels of study habits of the students were moderate and the levels of test anxiety of the students were also moderate. The study showed that there was no significant relationship between test anxiety and study habits of higher secondary students.

Nixon III (2021) conducted a study to examine the relationship between study habits (attitude, motivation and study aids) and test anxiety of students of secondary level. The results showed a significant negative correlation between test anxiety and attitude. There was no significant correlation between test anxiety and motivation. There was no significant correlation between test anxiety and study aids.

Ammara Numan (2017) conducted a study to investigate the effect of study habits on test anxiety and academic achievement of the students of undergraduate level. The results showed that students having effective study habits experienced low level of test anxiety and perform better academically than students having ineffective study habits. The girls experienced higher level of test anxiety than the boys. There was significant positive relationship between study habits and academic achievement and test anxiety was negatively correlated with academic achievement and study habits.

5. Method

Method: Descriptive survey method was used.

Population: All the students of IXth standard studying under West Bengal Board of Secondary Education were considered as the population of the study.

Sample: 90 students were selected as the sample of the study.

Sampling Technique: simple random technique was used.

Tools: Anxiety in Science Scale (ASS) and Study Habits Scale (SHS) – two self-developed scales were used by the researcher.

Statistics: mean, standard deviation, t-test were used for the analysis of the collected data.

3. Findings

3.1. H_{01} : There is no significant relationship between science anxiety and study habits of students of IXth standard

Table 1. Relationship between Science Anxiety and Study Habits of Students of IXth Standard

	N	df	R	p-value	Significance
Science Anxiety Study Habits	90	88	-0.98	0.00	Significant at 0.01 level

Interpretation: There is a significant and negative relationship between Science Anxiety and Study Habits of students of IXth standard as the p-value of 0.00 is less than 0.01 for df 88. Hence the null hypothesis H_{01} is rejected and the alternative hypothesis H_1 is accepted. The negative correlation value (r) is -0.98 which indicates that Study Habits decreases significantly at 0.01 level when Science Anxiety increases.

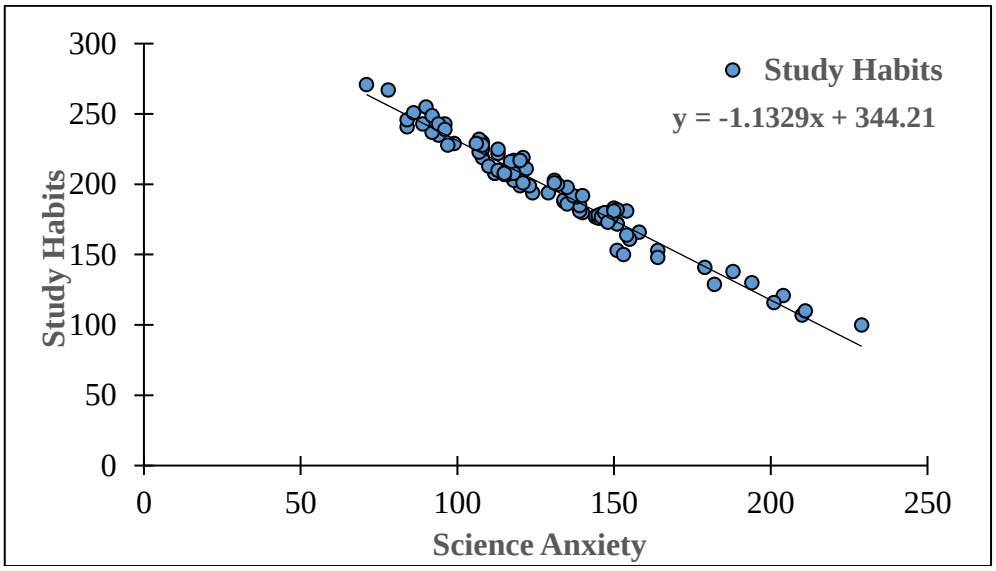

Figure 1. Graph showing Relationship between Science Anxiety and Study Habits of Students of IXth Standard

3.2. H_{02} : There is no significant difference in science anxiety between boy and girl students of IXth standard

Table 2. Difference in mean score of science anxiety between boy and girl students of IXth standard

Boy Students			Girl Students			MD	df	SE_D	t-value	Significance
n_1	Mean	SD	n_2	Mean	SD					
45	120.91	22.46	45	140.96	36.68	20.04	88	6.41	3.13*	Significant at 0.01 level

*t-criterion value at 0.01 level is 2.63 for df 88.

Interpretation : There is significant difference in science anxiety between boy and girl students of standard IX as the t-value of 3.13 is greater than the t-criterion value of 2.63 at 0.01 level for df 88. Hence, the null hypothesis H_{02} is rejected and the alternative hypothesis H_2 is accepted. The girl students are found more anxious than the boys since the mean score of girl students being 140.96 is higher than that of boy students being 120.91.

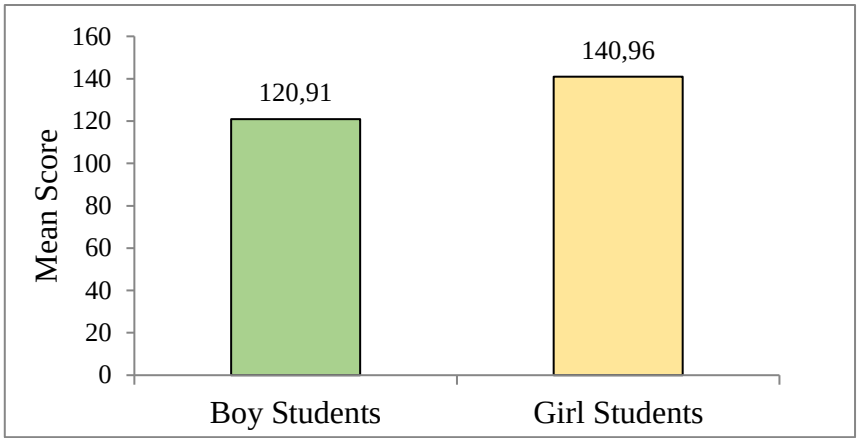

Figure 2. Mean scores of science anxiety of boy and girl students

3.3. H_{03} : There is no significant difference in science anxiety between rural and urban students of IXth standard

Table 3. Difference in mean score of science anxiety between rural and urban students of IXth standard

Rural Students			Urban Students			MD	Df	SE_D	t-value	Significance
n_1	Mean	SD	n_2	Mean	SD					
44	133.80	34.94	46	128.20	28.76	5.60	88	6.73	0.83*	Not Significant

*t-criterion value at 0.05 level is 1.99 for df 88.

Interpretation : There is no significant difference in science anxiety between rural and urban students of IXth standard as the t-value of 0.83 is less than the t-criterion value of 1.99 at 0.05 level for df 88. Hence the null hypothesis H_{03} is accepted.

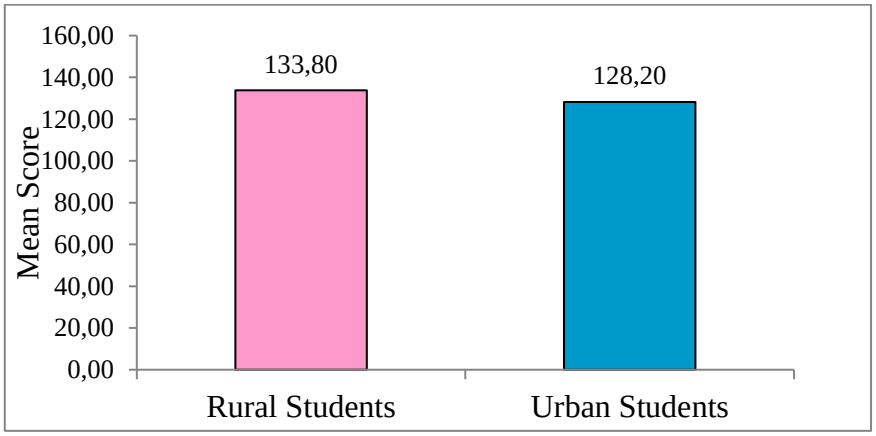

Figure 3. Mean score of science anxiety of rural and urban students of IXth standard

3.4. H_{04} : There is no significant difference in study habits between boys' and girls' students of IXth standard

Table 4. Difference in mean score of study habits between boy and girl students of IXth standard

Boy Students			Girl Students			MD	Df	SE_D	t-value	Significance
n_1	Mean	SD	n_2	Mean	SD					
45	202.82	28.30	45	188.93	42.89	13.89	88	7.66	1.81*	Not Significant

*t-criterion value at 0.05 level is 1.99 for df 88.

Interpretation : There is no significant difference in study habits between boy and girl students of standard IX as the t-value of 1.81 is less than the t-criterion value of 1.99 at 0.05 level for df 88. Hence the null hypothesis H_{04} is accepted.

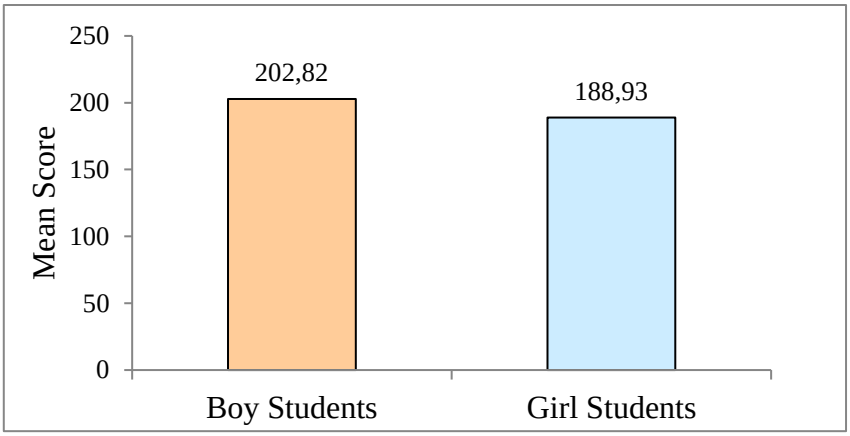

Figure 4. Mean score of study habits of boy and girl students IXth standard

3.5. H_{05} : There is no significant difference in study habits between rural and urban students of IXth standard

Table 5. Difference in mean score of study habits between rural and urban students of IXth standard

Rural Students			Urban Students			MD	Df	SE_D	t-value	Significance
n_1	Mean	SD	n_2	Mean	SD					
44	191.43	38.69	46	200.13	34.78	8.70	88	7.75	1.12*	Not Significant

*t-criterion value at 0.05 level is 1.99 for df 88.

Interpretation : There is no significant difference in study habits between rural and urban students of IXth standard as the t-value of 1.12 is less than the t-criterion value of 1.99 at 0.05 level for df 88. Hence the null hypothesis H_{05} is accepted.

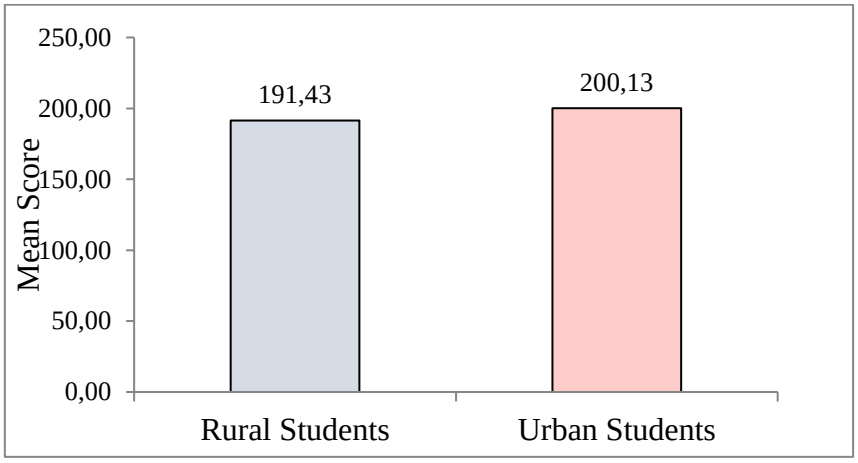

Figure 5. Mean scores of rural and urban students in Study Habits

6. Conclusion

A significant and negative relationship between science anxiety and study habits was explored through the conducted study. Hence as anxiety reduces, study habits increase. This guides parents, teachers and stakeholders to take effective measures to control the science anxiety and inspire to learn the science subjects through activity-based methods. They should provide the appropriate learning environment to the learners so that they can develop consistent and effective study habits. Reducing the levels of anxiety and offering proper learning environment the degree of study habits should be augmented exponentially. The incremental development of study habits would bring excellent academic achievement which in turn, bring success of the learners as well as the welfare of the nation.

References

Akinleke, W. O., & Adeaga,T. M. (2014). Contributions of test anxiety, study habits and locus of control to academic performance: British Journal of Psychology Research, 2(1), 14-24.

Ammara, N., & Syeda, S. H. (2017). Effect of study habits on test anxiety and academic achievement of undergraduate students: Journal of Research and Reflections in Education, 11(1), 1-14.

Ergene, T. (2011). The relationship among study habits, test anxiety, achievement motivation, academic success among Turkish high school students. Journal of Education and Science, 36(160), 320-330.

Lawrence, A. (2014). Relationship between study habits and test anxiety of higher secondary students. International Journal of Teacher Educational Research, 3(6), 1-9. www.eduresearch.in.

Naveh-Benjamin, M., Mckeachie, W. J., & Lin, Y. (1987). Two types of test anxious students: Support for an information- processing model. Journal of Educational Psychology, 79, 131-136.

Nixon III, E. C. (2021). The relationship between study habits (attitude, motivation, study aids), and test anxiety of secondary students attending private school (Doctoral dissertation, Grand Canyon University).

Numan, A., & Hassan, S. S. (2017). Effect of study habits on test anxiety and academic achievement of undergraduate students. Journal of Research and Reflections in Education, 11(1), 1-14. http://www.ue.edu.pk/jrre

Udeani, U. (2012). The relationship between study habits, test anxiety and science achievement. Journal of Education and Practice, 3(8), 151-157.

Shokrpour, N., Zareii, E., Zahedi, S., & Rafatbakhsh, M. (2011). The impact of cognitive and meta-cognitive strategies on test anxiety and students' educational performance. European Journal of Social Science, 21,177-188.

Universal Design for Learning: Facilitator to Inclusive Education for Children with Intellectual Disabilities

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Abstract

This article aims to explain the concept of Universal Design for Learning (UDL) and how it facilitates Inclusive Education for Children with Disabilities (CwDs). UDL is an approach towards achieving inclusive education by enabling the provision of flexible instructional strategies from the onset and this approach is increasingly gaining attention. UDL allows learners from diverse socio-economic, cultural, experiential background and varied abilities to get access of learning by adopting various means and methods of teaching that are in line to the principles of UDL. Universal design (UD) is commonly used in field of architecture, designing and hence its derived concept must be considered while developing physical environment of school as it also contributes in learning of children specifically for children with intellectual disabilities. Education is a fundamental Right and supporting acts like Right to Education Act, 2009 and The Rights of Persons with Disabilities Act, 2016 allows Children with Disabilities (CwDs) to get admitted in their nearby mainstream/general school and get admission in age appropriate classroom. Awareness regarding disability and its inclusion has increased the diversity in a classroom and hence general education teacher must be equipped with skills to deliver education to all and meet learning objectives with such diverse group of learners. The results have shown that UDL framework can contribute significantly in making inclusive education a success for children with disabilities. Teacher training and professional development programs need to be developed to enable teachers to learn and implement UDL in their lesson plans and execute same in classroom considering varied abilities of learners in a classroom.

Keywords: Universal design for learning, inclusive education, children with disabilities, right to education act, the rights of persons with disabilities act, disability awareness

1. Introduction

Universal Design for Learning is a concept coined by David Rose. This concept has been derived from concept of Universal Design, which follows the ideology of "One Size Fits All" and emphasize on developing architecture in such a way that all individuals with or without disability can be accommodated in same structure without requirement of any further adaptations. Universal Design talks about physical environment and its inclusive and accessible development, where Universal Design for Learning aims to incorporate students from all phases into a classroom and achieving learning objective with them. Singh (2017) explained UDL as "UDL is an instructional approach that opens opportunities for all learners by using flexible mode of instructions and digital media to help students meet their learning objectives." Kapil (2024) stated UDL as "a framework that assists educators in minimizing barriers and enhancing learning opportunities for all students". Whenever we talk about diversity of learners in a classroom, we talk about children belonging to different language, race, gender, socio-economic backgrounds, social status, residential status etc. In today's era, Children with disabilities are also becoming part of diverse culture of the classroom and have contributed in increasing the diversity range of classroom. Inclusive Education too follows the same ideology of including all groups of learners having diversity and individual differences amongst them in same classroom and gain learning within same environment. Hasan (2023) considered Inclusive Education as "a human right issue pertaining to one's right to avail quality education and ensure personal development of his potentials". Hence, it can be easily understood that there might be some or the other relation

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between Universal Design for Learning and Inclusive Education. Where, Universal Design for Learning lays responsibility on the teacher's skills to use varied modes of presentation, ensure engagement of students through variety of materials, and provide opportunities to students to showcase their actions and expressions. Inclusive Education on the other hand, is not a skill based model, rather it is a right based model and involve all stakeholders involved in the education of children. Teacher is one of those stakeholders and hence his/her skill set will ease the process of inclusion for children specially children with disabilities. Traditional classrooms and modes of teaching could not help all students having different levels of learning, understanding, explaining, retaining etc., hence an approach need to be devised that meet learning needs of disabled and non-disabled students at the same time, keeping in line the learning objectives and timeline to achieve them. Students suffering from various disabilities have difficulty in different areas of learning, so their needs should be addressed and required adaptation in learning through UDL must be planned and executed. This will not only motivate students to learn but also acts as a support for teachers, as they can plan, execute, evaluate and re-plan their teaching using UDL Principles.

In this study the researchers felt the need to understand or develop a relationship between Inclusive Education and Universal Design for Learning, so that it can be understood how UDL can help student with disabilities accommodate within classroom with non-disabled peers.

2. Method

The investigators have used analytical method of screening and identifying latest relevant studies and considered their findings to draw the conclusion of their study. Reviews taken in the study are related to the area of UDL and its framework, Inclusive Education and role of these approaches in facilitating education for children with Disabilities.

3. Studies related to Universal Design for Learning and Inclusive Education for Children with Disabilities

Kapil, Jeyaprathaban and Halder (2024), propounded that "Universal Design for learning improves accessibility of general education curriculum which further improve learning outcomes and provide growth in various important skills like reading, writing, comprehension, decision-making, social skills and life skills etc. among children with mild intellectual disability".

Frolli et.al.(2023) investigated through their research "UDL could improve academic career of children with ADHD, as it works on improving basic learning skills (reading, writing and arithmetic skills) and children with ADHD who have undergone UDL based educational intervention demonstrated more significant improvement in core learning areas".

Khurana (2022) in their research found that "Universal Design approach in education focuses on making the curriculum, instructions, materials and assessments accessible for all the learners" and they further advocates that "Physical space of a school or Universal Design like classroom, corridors, playgrounds can be transformed into learning spaces that promote subconscious learning in all learners and such transformation would ensure learners with an equitable, inclusive and accessible environment that address learners individual differences and reduce barriers to learning".

Priyadarshini (2024) in her presentation at National Conference stated that "UDL offers flexibility in the ways students access materials, get engaged with it and showcase what is known to them." She also insisted that "Developing lesson plans using this approach will not only help normal children but also supports children with learning and attention issues".

Sulaiman and Tahar (2024) have discovered through their research that "UDL helps in reducing the hardships being faced by Special Education Needs students in learning by providing a variety of strategies, approaches and methods".

Molbæk and SØrense (2023) have written that "UDL is a mean to understand and develop more accessible and inclusive practices. This framework is an educational strategy for implementing inclusive education, which can help in understanding and working with inclusion and also, developing a teaching practice which will help overcome some of the dilemmas that teacher experience daily in their classrooms."

Zhang, Carter, Greene and Bernacki (2024), stated in their research that "UDL framework has been used by instructional designers and educators to guide their design of inclusive instruction for every student in class (with or without disabilities)." They also highlighted various challenges that stymie UDL research, including the absence of explicit alignment between UDL and intervention or instructional design.

Hasan, Khan and Malik (2023), conducted a study on Universal Design for Learning and how it promotes paradigm shift in Inclusive Education and in their study researchers supported the implementation of UDL in Inclusive setting through statement "UDL has the potential to meet out the diverse learner's needs of an inclusive classroom and it may be considered as paradigm shift in inclusive education." and they also added that UDL incorporates philosophical shifting of pedagogical aspects from text to audio-visual, traditional mode to blended, One Size fit curriculum for all to need based curricula. Hence UDL addresses one's right to get access to quality education.

Pagliara, Utge, Bonavolonta and Mura (2023) in their study emphasized on "significance of providing adequate training and necessary support to the teachers to facilitate inclusive education and improve learning outcomes", as teachers generally use Information and Communication Technology in their classroom which is in line with Principle 1 of UDL guidelines which is Multiple Means of Representation.

Kovyazina and Lyudmila (2020) in their research highlighted that "problem of inclusive education relevant to quality management can be solved using principles of universal design for learning of children with special educational needs".

Chavarria, Lopez-Bastias and Diaz-Vega (2023) emphasized that "though Universal Design and strategies were designed to eliminate difficulties and increase all student's participation and achievements, they also mean to manage classrooms by focusing on the essential aspects of the teaching and learning process."

Chen, Evans and Luu (2023) in their study on Australian Secondary school teachers found that "teachers have positive attitude towards UDL, though there were still some practical concerns regarding providing instructions and hence the need of developing professional teacher training program was emphasized so that inclusive education can be promoted as UDL framework is a lens for interpreting Inclusive Education"

Wilson (2017) through their research highlighted that "classrooms are typically constructed for non-disabled, neurotypical, white, male and it neither accommodates nor reflect the wide range of learners within it. Disability Studies in Education see the environment not students with disabilities as a problem and call for UDL approach to learning and such instructional designs and materials/activities that allow diverse learners to achieve learning goals, as UDL has the potential to radically transform the meaning of inclusive education and the very concept of disability."

Dalton and Mckenzie (2020) stated that "UDL has several advantages and its introduction into policies, research and teaching practices can ease implementation of inclusive education".

Dr. J. Sujathamalini et.al. (2022) investigated that "UDL has various importance in making learning accessible as (1) UDL makes the students to be socially productive with appropriate adaptations (2) UDL help all students to become expert learners, (3) It makes inclusive education possible by allowing adaptation in general curriculum and providing necessary support to students so they improve academically and develop social skills and relationship and (4) UDL advocates for barrier free physical environment that makes learning accessible for children with disabilities."

Khushwaha (2023) emphasized through their study "need of professional development model that can effectively build teacher capacity for inclusive education and promote positive outcomes for students with diverse needs."

4. Conclusion

The reviewed literature significantly showed the potential of UDL and its principles in making learning accessible for children with and without disabilities. It has also pinned significant importance on training of professional teachers on UDL and building teachers capacity for successful inclusion of all learners in inclusive education. The studies have shown affirmative role of UDL in inclusion and its role in facilitating inclusive education for children with disabilities.

Kapil (2024) have recognized the role of UDL in benefitting all students including those with mild intellectual disabilities. Frolli (2023) advocated the benefit of UDL in learning of students with ADHD and significant improvement among learner with ADHD after UDL interventions. Priyadarshini (2024) insisted on role of teachers to develop Lesson Plans in accordance to the Principles of UDL as it will provide accessibility to students with learning and attention issues. Pagliara (2023) emphasized on training and providing necessary support to teacher to facilitate inclusive education. Sujathamalinin (2022) advocated that UDL makes inclusive education possible by allowing adaptation in general curriculum and providing necessary support to students so they improve academically and develop social skills and relationship

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References

Chavarria, R., Montesino, R., Bastias, J., and Vega, M. (2023), Universal Design for Learning and Instruction: Effective Strategies for Inclusive Higher Education, Education Sciences, 13(6), 620, DOI: 10.3390/educsci13060620.

Chen, H., Evans, D., and Luu B. (2023), Moving towards Inclusive education: Secondary school teachers attitude towards Universal Design for Learning in Australia, Australasian Journal of Special and Inclusive Education, 47(1), 1-13. DOI: 10.1017/jsi.2023.1

Dalton, E, and McKenzie, J. (2020), Universal Design for learning in inclusive education policy in South Africa, African Journal of Disability, 9(3), DOI: 10.4102/ajod.v9i0.776

Frolli, A., Cerciello, F., Esposito, C, Ricci, M.C., Laccone, R.P. and Bisogni, F. (August, 2023), Universal Design for Learning with ADHD, Children, 10(8), 1350, DOI: 10.3390/children10081350

Hasan, M., Khan, A.N., and Malik, I.S. (2023), Universal Design for Learning: A paradigm shift in Inclusive Education.

Kapil, Y., Jeyaprathban, S. and Haldar, T. (March, 2024), Effectiveness of Universal Design of Learning for students with Mild Intellectual Disabilities – A Review, International Journal of Research and Review, 11(3), 271-280.

Karisa, A. (2022), Universal Design for Learning: not another slogan on the streets of inclusive education, Disability & Society, 38(1), 1-7.

Khurana, A., (September, 2022), Converting physical spaces into learning spaces: Integrating universal design and universal design for learning, Frontiers in Education, DOI: 10.3389/feduc.2022.965818

Khushwaha, R., and Singh, C. (2023), Building teacher capacity for inclusive education: A professional development model using technology and UDL, International Journal of Religion Education and Law, 2(2), 97-104.

Kovyazina, E.S., and Lyudmila, V. (2020), Inclusive Education Quality Management Based on Conception of Universal Design for Learning, Pedagogika Voprosy teorii i praktiki, 5(4), 437-442. DOI: 10.30853/ped200104

Molbæk, M. and S∅rense, L.H. (2023), Universal Design for Learning: Accessible learning environments and School Development, Book-Building Inclusive Education in K-12 Classrooms and Higher Education, DOI: 10.4018/978-1-6684-7370-2.ch002

Pagliara, S.M., Utge, M.S., Bonavolonta, G., and Mura, A. (2023), Analyzing Italian Inclusive Education Practices in Relation to Universal Design for Learning Principles, DOI: 10.3233/SHTI230670

Priyadarshini, S. (2024), Universal Design for learning physical sciences at secondary level, National Conference at National NIEPID Secunderabad on Techno-Pedagogic Approach in Rehabilitation of Children with Special Needs

Singh S. Universal design for learning. Slideshare,Education, 2017. Retrieved on 10 April 2024 from https://www.slideshare.net/SmritiSingh37/universal-designforlearning-75754232

Sujathamalini, J, Gunasekaran, K., Vishnu, T.R., and Ravichandran, G. (2022), Universal Design for learning in inclusive Class room to ensure sustainable development goals: Inclusive and Equitable Quality class room, International Journal of Science and Healthcare Research, 7(2), DOI: https://doi.org/10.52403/ijshr.20220434

Sulaiman, L.H. and Tahar, M.M. (2024), Implementation of Universal Learning Design Principles by mainstream teacher in Inclusive Education Programs, Special Education, 2(1), e0015, DOI: 10.59055/se.v2i1.15

Wilson, J.D. (2017), Reimagining Disability and Inclusive Education through Universal Design for Learning, Disability Studies Quarterly, 37(2), DOI: 10.18061/dsq.v37i2.5417

Zhang, L., Carter Jr., R.A., Greene, J.A., and Bernacki, M.L. (2024), Unraveling Challenges with the implementation of Universal Design for Learning: A systematic literature Review, Educational Psychology Review, https://doi.org/10.1007/s10648-024-09860-7.

(1) (PDF) Universal Design for Learning (UDL): A Paradigm Shift in Inclusive Education. Available from: https://www.researchgate.net/publication/373775178_Universal_Design_for_Learning_UDL_A_Paradigm_Shift_in_Inclusive_Education [accessed Apr 10 2024].