

EFFECT OF TEACHER TRAINING IN DIFFERENTIATED INSTRUCTION ON THE KNOWLEDGE OF TEACHERS IN INCLUSIVE CLASSROOMS

* Ms. Nishat Imam & ** Dr. Judy Grace Andrews

* Research Scholar, Gandhi Shikshan Bhavan's Smt. Surajba College of Education, I/C Principal, SOPAN's Suvidya College of Special Education, University of Mumbai

** Research Guide, GSB Research cell, Principal, Royal College of Education & Research for Women, University of Mumbai

Abstract:

Differentiated instruction (DI) is an instructional approach that aims to address the diverse learning needs of students in inclusive classrooms. It is based on the premise that students learn in different ways and at varying paces, necessitating adaptations in teaching methods. Competency of teachers is of paramount importance in responding to the learner needs in an inclusive classroom. The role of the teacher becomes crucial in implementing DI effectively. This research paper explores the effect of teacher training on the teachers' knowledge in primary-level inclusive classrooms.

Keywords: *Differentiated Instruction, Teacher Training, Teacher Knowledge, Inclusive Education, Inclusion*

Copyright © 2024 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial Use Provided the Original Author and Source Are Credited.

Introduction:

Inclusive education has become a key focus area globally, and it emphasizes the integration of students with varying abilities into mainstream classrooms. Differentiated instruction (DI) has emerged as an essential strategy to ensure that all students, regardless of their abilities, are provided with learning experiences suited to their needs. In primary education, DI has the potential to address the learning disparities that often arise in inclusive classrooms.

The role of teachers in facilitating DI cannot be overstated. A teacher's knowledge of the subject, their pedagogical understanding of DI, their attitude towards inclusivity, and their skills in implementing DI strategies are all critical to the success of this approach. This paper aims to analyse the effect of teacher training in building the competencies of the teachers in primary inclusive classrooms.

Theoretical Framework:

The theoretical framework for this research is based on several established theories and models of differentiated instruction and inclusive education. Carol Ann Tomlinson's model of differentiated instruction serves as the foundation, outlining the need for adapting content, process, products, and learning environments based on student readiness, interests, and learning profiles. Additionally, Vygotsky's theory of social constructivism, which emphasizes the importance of scaffolding and guided learning in the Zone of Proximal Development (ZPD), provides a psychological basis for understanding how differentiated strategies can be applied to influence the learning outcomes in the classrooms.

In the context of inclusive education, the Salamanca Statement (1994) underpins the global shift towards inclusive practices, which emphasizes the role of teachers in creating accessible learning experiences for students of diverse abilities. This framework aligns with the philosophy of DI, which advocates for instructional modifications to cater to the heterogeneous needs of students.

Literature Review:

a. Teacher Knowledge and Differentiated Instruction:

Research indicates that a teacher's depth of knowledge in both subject content and instructional strategies is a critical determinant of the success of DI in inclusive classrooms. According to Tomlinson (2001), DI requires teachers to modify their teaching methods based on students' learning readiness, which necessitates a solid understanding of multiple instructional strategies.

Studies by Jones (2018) suggest that teachers with a robust grasp of differentiated pedagogies are more likely to engage students effectively, especially in subjects like mathematics, which often present a wide range of learning abilities. Teachers who understand how to scaffold learning, break down complex mathematical concepts, and provide tailored instruction tend to have students who perform better and exhibit greater engagement.

b. Teacher Attitudes Towards Inclusive Education:

The attitude of teachers toward inclusivity plays a significant role in the success of DI in inclusive classrooms. Teachers who view inclusive education as beneficial are more likely to embrace DI strategies and apply them effectively. Research by Florian and Black-Hawkins (2011) emphasizes that teachers who adopt a positive outlook toward inclusive practices are more proactive in identifying and addressing the individual needs of their students.

In mathematics classrooms, where some students may struggle with abstract concepts, teachers with inclusive attitudes are more inclined to provide additional support and differentiation. A positive teacher attitude toward inclusivity fosters an environment where all students feel valued and capable of achieving success, irrespective of their abilities.

c. Teacher Skills in Implementing Differentiated Instruction:

While knowledge and attitude are crucial, the practical application of DI strategies in classrooms requires specific teaching skills. These include the ability to assess student readiness accurately, design flexible lesson plans, and implement various instructional techniques that cater to diverse learning styles. Skills in formative assessment, for example, allow teachers to gauge the ongoing learning progress of their students and adjust their instruction accordingly.

According to Santangelo and Tomlinson (2012), skilled teachers in DI are adept at using tiered assignments, flexible grouping, and ongoing assessments to meet the needs of all learners in their classrooms. In mathematics, where student learning can vary widely, these skills are particularly important for ensuring that students who struggle with foundational concepts are not left behind, while advanced learners are continuously challenged.

Research question:

Will there be a difference in the knowledge of the teachers before & after the training in differentiated instruction?

Research objective:

1. To examine the knowledge of teachers in the use of differentiated instruction in the classrooms before & after the training in differentiated instruction.

Hypothesis:

Null hypothesis for this study is as follows:

1. **H₀**: There will be no significant difference in the mean scores of the teachers on the knowledge in differentiated instruction (KIDI) before the training and after the training in the experimental group
2. **H₀**: There will be no significant difference in the mean scores of the teachers on the knowledge in differentiated instruction (KIDI) before the training and after the training in the control group.

Methodology:

Research Design: This is an experimental research pre-test post- test control group design.

Data Collection:

Tools: A tool based on knowledge prepared by the researcher is used to gather data. **Variables:** Independent variable is the differentiated instruction training & Dependent variable is knowledge of teachers.

Sample: It comprised of primary school teachers in English medium SSC board schools.

Sample selection is done using multistage sampling. The schools for research is selected using random sampling technique based on criteria like geographical location, school board and medium of instruction. And cluster sampling is used to select teachers from those schools. Thus all the teachers in a particular school are included in either experimental or control groups. Assignment to experimental and control is done using random selection technique.

Data Analysis:

The data is analyzed using inferential statistical measures for paired sample t-test for experimental group and independent sample t-test for control group.

Results and Discussion: The results are tabulated below along with the research findings following it.

1. **H₀**: There will be no significant difference in the mean scores of the teachers on the knowledge in differentiated instruction (KIDI) before the training and after the training in the experimental group

Table 1: Comparison of mean scores of the teachers on KIDI in the Pre experimental group and post-experimental group

Experimental	N	Mean		SD	df	t-value	Level of significance
Pre	43	6.93		2.16	42	16.79*	0.05
Post	43	14.52		2.25	42		

*Significant t critical value = 1.988

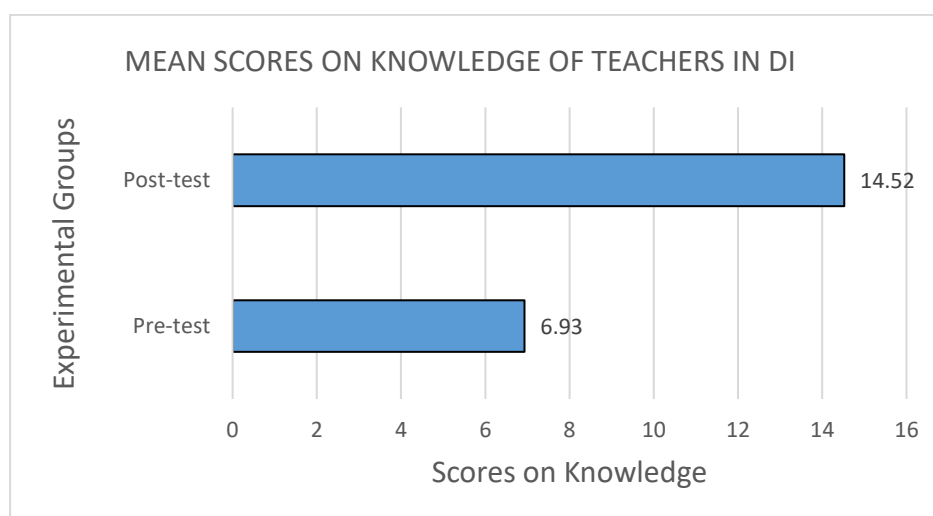
In Table 1 the mean scores of the teachers on KIDI are 6.93 on the pre-test and 14.52 on the post-test in the experimental group respectively.

The calculated t-value is 16.79 which is more than the tabulated t-value at 0.05 level of significance. Thus it can be inferred that there is a significant difference in the pretest and posttest of the experimental group on KIDI. Therefore, the null hypothesis is rejected. The alternative hypothesis is suggested below;

Ha: “There will be a significant difference in the mean scores of the teachers on the knowledge in differentiated instruction (KIDI) before the training and after the training in the experimental group”.

Findings: The difference in the mean scores is statistically significant. Thus it can be concluded that the training in DI is effective. There is a significant difference in the knowledge of teachers before training and after training.

Figure 1: Mean scores on pre-test and post-test scores of the experimental group on ‘Knowledge’ of teachers in DI



2. **H0:** There will be no significant difference in the mean scores of the teachers on the knowledge in differentiated instruction (KIDI) before the training and after the training in the control group.

Table 2: Comparison of mean scores of the teachers on the Knowledge of teachers in differentiated instruction (KIDI) in the pre-control group and post-control group

Control	N	Mean	SD	df	t-value	Level of significance
Pre	43	7.1	2.26	42	0.298	NS*
Post	43	6.98	2.23	42		

*Not Significant *t critical value=1.988 at 0.05

In Table 2, the mean scores of teachers on KIDI are 7.1 on the pre-test and 6.98 on the post-test in the control group respectively.

The calculated t-value is 0.296 which is less than the tabulated t-value at a 0.05 level of significance, therefore we fail to reject the null hypothesis. The hypothesis that there will be no significant difference in the mean scores of the teachers on KIDI in the control group is retained.

Findings:

It can be concluded that there is no statistically significant difference in the knowledge of teachers in the control group. There is no change observed since there was no training in differentiated instruction given to the teachers in the control group.

Conclusion and Implications:

The findings suggest that teachers benefitted greatly with the training in differentiated instruction. Therefore, training programs will enhance the capacity of teachers and ensure appropriate support in the inclusive classrooms. This study also revealed that teachers had poor knowledge in differentiated instruction. Therefore, such trainings are much needed in inclusive classrooms.

Teachers who possess a deep understanding of DI principles, coupled with a positive attitude toward inclusivity and the necessary skills to apply these principles, are more likely to foster an engaging and effective learning environment for all students. However, the study also points to the need for enhanced teacher training and professional development in DI, particularly in rural and under-resourced areas.

Policymakers and educational institutions must prioritize teacher education programs that focus on DI strategies, particularly for mathematics instruction in inclusive classrooms. Providing teachers with ongoing support, access to resources, and opportunities for collaborative learning will be key to ensuring that differentiated instruction becomes a standard practice in Indian primary schools.

References:

- Florian, L., & Black-Hawkins, K. (2011). *Exploring Inclusive Pedagogy*. *Cambridge Journal of Education*, 41(4), 437-450.
- Jones, J. (2018). *The Role of Teacher Knowledge in Differentiated Instruction: A Study in Mathematics Classrooms*. *International Journal of Education and Development*, 36(2), 152-165.
- Santangelo, T., & Tomlinson, C. A. (2012). *Teacher's Guide to Differentiation in Practice*. *Educational Leadership*, 69(5), 12-17.
- Sarva Shiksha Abhiyan (2011) MHRD Govt. of India <https://www.educationforallindia.com/SSAI.htm>
- Tomlinson, C. A. (2014) in *Differentiated Classroom: Responding to the Needs of All Learners*, 2nd Edition Retrieved on - May 30, 2019. From <http://www.ascd.org/publications/books/108029/chapters/What-Is-a-Differentiated-Classroom%C2%A2.aspx>
- Tuli, U. & Malhotra, S. (Nov. 2018) in 'The Pioneer' retrieved on May 28, 2019 From- <https://www.dailypioneer.com/2018/columnists/inclusive-education-for-whole-of-india.html>
- The Persons with Disabilities Act, (2016) Govt. of - India <http://www.disabilityaffairs.gov.in/upload/uploadfiles/files/RPWD%20ACT%202016.pdf>

The Right to education Act (2009) Dept. of School Education and Literacy Ministry of Human Resource Development. Govt. of India <http://education.nic.in/elementary/elementary.asp>

Tomlinson, C. A. (2001). [How to Differentiate Instruction in Mixed-Ability Classrooms \(2nd ed.\)](#). ASCD.

Tomlinson, C. A. (2014). [The Differentiated Classroom: Responding to the Needs of All Learners \(2nd ed.\)](#). ASCD.

Cite This Article:

Ms. Imam N. & Dr. Judy G.A. (2024). [Effect of Teacher Training in Differentiated Instruction on the Knowledge of Teachers in Inclusive Classrooms](#). In Educreator Research Journal: Vol. XI (Issue V), pp. 1–6. DOI: <https://doi.org/10.5281/zenodo.14054391>