



RESEARCH PAPER

**Examine the Level of Awareness about differentiated Instructions
among Special Education Teachers**

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ABSTRACT

This study aims to investigate the awareness and understanding of special education teachers regarding differentiated instruction (DI) to accommodate diverse learners. The research explores the awareness levels based on gender and qualifications. Utilizing the Differentiated Instruction Scale (DIS), the study surveyed 201 special education teachers in Punjab through online means. Descriptive and inferential statistics were employed for analysis. Results indicate a balanced distribution of gender and a majority holding master's degrees. The approach is grounded in a Vygotsky (1962) socio-cultural theory of learning emphasizes on learners specific context that is triggered through social interaction. The study identified no significant gender-based differences in awareness, and qualification-based distinctions were negligible. The teachers demonstrated varying levels of proficiency in DI strategies, with high awareness in providing additional support and planning alternative tasks. However, moderate awareness was observed in areas like using student data for decision-making and adapting evaluation methods. The findings suggest that while special education teachers possess substantial awareness of DI, further training may enhance their ability to address diverse student needs effectively.

KEYWORDS Awareness Level, Differentiated Instruction, Special Education Teachers

Introduction

The idea of differentiation is founded on an understanding that it is acceptable to acknowledge the individual differences among students in their environments, learning styles, and areas of interest (McLeskey et al., 2014). As a result, differentiated instruction is seen as a flexible and systematic technique to modify the teaching-learning process in accordance with the needs of the child's learning in order to maximize potential and ensure success (Tomlinson, 2014).

Differentiated instruction is not a new concept; in fact, many academics think that it is essential to the learning process (Gregory, 2003). By proactively creating learning experiences in response to the requirements of varied learners, teachers may maximize the potential of every learner through diversified teaching (Santangelo & Tomlinson, 2012). As evidenced by worldwide experiences, teacher educators play a crucial role in helping to comprehend and enhance the educational systems of their respective nations (Sultana et al., 2009). The issue of adapting instruction to learners, however, grows more challenging as class heterogeneity rises (Smets & Struyven, 2018); and teachers in some nations are utilizing a "one-size-fits-all" strategy when instructing in a variety of settings (Santangelo & Tomlinson, 2012). To address the unique needs of students in the

classroom, some teacher educators contend that differentiating teaching is too challenging to implement and should no longer be recommended (Delisle, 2015).

We were intrigued to investigate this subject because of experiences of this nature, various perspectives on the nature of difference, and a dearth of studies in the Pakistani setting. Sadly, some teacher educators instruct students without having a solid foundation in differentiating instruction. Many teacher educators are aware of their preferred learning styles, but they may not always take into account how their pupils learn or whether the way they teach is based on facilitating learning. In addition, our own experiences and professional beliefs inspired us to investigate the viewpoints and degree of knowledge of teacher educators on differentiating instruction in the setting of Pakistani teacher education institutions.

Literature Review

The term "differentiation" is linked to a variety of classroom components, including education. Instruction, according to Biggs and development (1999) was described as "a construction site on which students build on what they already know" (Moon, 2016). Teachers should monitor the extent of new learning and offer assistance as required. Since providing each student with the optimal learning opportunity is the main objective of differentiation, Tomlinson and Moon (2013) stated that "instruction is at the core of differentiation." Levy and Ideas (2008) said that teachers can approach kids where they are academically and then help them progress from there by using differentiated teaching as one of their methods or tactics. (Levy & Ideas, 2008) further emphasized that differentiated education should attempt to provide for students' readiness, interests, and learning profiles "flexibility in content, process, and product" (p. 162). As a result, teachers have a variety of choices to make, such as what to teach, how to teach it, and how to evaluate what is learned (Campbell, 2009). According to Corley (2005), "the cornerstone of differentiation is active planning" (p13). An appropriate assessment can be useful in obtaining important and sufficient data that assist teachers decide on the best subject to teach and to guide the teaching process.

Elements of Differentiated Instruction

Content is a part of instruction that can be differentiated to match the present levels of all pupils. According to Tomlinson and Moon (2013), content refers to the knowledge and skills that students need access to. Teachers must follow the course materials in a standardized method, which makes it more challenging to meet the needs of each student. To accommodate the various demands of their students, teachers may, however, change the level of complexity (Hall et al., 2003). In addition to changing the content, teachers must have the power to take passages from the book out of the syllabus if the students find them difficult to comprehend. However, as all students must pass the same exams or adhere to the same standards, teachers must take care that this elimination does not prevent students from completing the course's objectives (Levy & Ideas, 2008). On the other hand, some pupils might learn quickly and do the tasks before time runs out. To free up time to work with the other kids, teachers can give these students extra materials.

The way that teachers teach and students learn a subject is reflected in the teaching and learning process. It entails putting multiple strategies into action in order to convey and apply the supplied content. Delisle (2015) noted that as every kid learns differently, teachers cannot use a single strategy to educate them all. To accommodate the wide range of readiness, interests, and learning profiles in their classrooms, teachers

should always modify the learning activities offered to pupils. To distribute various planned activities suitable for the distinct groups, teachers can use flexible grouping based on previously established criteria (Corley, 2005). According to Hall et al. (2003), grouping needs to be a dynamic process that adapts to the projects, material, and continuing evaluations. Such flexible grouping will promote variety in the classroom and foster positive relationships between kids. Additionally, teachers may be able to modify the material and procedure based on the results by using formative assessment or continuing evaluation to monitor students' development.

The third element of instruction that can be easily differentiated to show off students' successes and potential is product. According to pre-assessments, formative assessments, and summative assessments, it shows the knowledge and abilities that students have acquired (Hall et al., 2003). The outcomes of pre-assessments enhance the process of differentiating instruction and help teachers choose between flexible grouping, revision time, and other differentiated instruction components. The outcomes of the pre-assessment let teachers decide on the right degree of difficulty to maintain learning. Teachers can use the data and comments from formative evaluations to develop future lessons that students can use to accelerate their learning (Dodge, 2014). Summative evaluations demonstrate whether or not students understood what was taught or met the course learning objectives. Summative evaluations can take many different forms, from traditional exams to projects or presentations, and they might range from student to student (Tomlinson & Moon, 2013). According to Tomlinson (2014), grouping or rubric-level differentiation of products is a possibility. A quality output, according to (Tomlinson & Allan, 2000), enables students to consider what they have learned and to engage in "critical and creative thinking" (p. 5)

Theoretical Framework

The socio-cultural theory of Vygotsky, whose central premise is the social, interactive relationship between teacher and student, is reflected in the working concept of differentiated teaching. According to law and morality, teachers must be the professionals who guide children toward their complete development (Lawrence-Brown, 2004; Tomlinson, 2004). According to (Lawrence-Brown, 2004; Tomlinson, 2004), learners who are prompted by their teachers strive to be autonomous and self-sufficient and take on an increasing amount of responsibility for their life and their education. It is obvious that the relationship between a student and a teacher is reciprocal, and that both parties share responsibility for the student's development (Tomlinson, 2004) To handle learner variance, differentiated instruction is a useful strategy (Tomlinson & Allan, 2000; Tomlinson, 2003; Tomlinson, 2001). There is now a significant amount of theory being advanced, however there is a clear void in the literature discussing the application and efficacy of differential instruction

Differentiated instruction in Pakistan

Every child in the nation is being educated separately through conventional schools, special schools, and informal literacy programs. More than 22 million children in the nation are not in school despite these several streams of effort (UNICEF, 2021). In Pakistan, few research have examined how differentiated instruction is understood and used in classrooms over the past ten years (Roberts-Lieb, 2020).The general education teachers have a favorable attitude and possess the abilities to put differentiated instruction techniques into effect. The majority of them, however, is unaware of this phrase and has not received any pre-service or in-service training on it (Adams, 2020; De Neve et al., 2015).Another study reveals that Prospective teachers from both general

education and special education programs have similar knowledge and understanding of differentiated instruction, contrary to the assumption that general education teachers may have lesser information about it (Manzoor et al., 2022).

Material and Methods

This descriptive study examined the special education instructors' degree of knowledge on differentiated instruction. The Differentiated Instruction Scale (DIS), created by (Roy et al., 2015), was utilized for this. The DIS scale was created to investigate teachers' awareness and opinion on differentiated instruction and its application in the classroom. Demographics are covered in part 1 and the scale, which has a total of 12 components, is covered in part 2. Cronbach's alpha, a measure of scale dependability, came out to be .939, which is better than 0.70 and is regarded as good (Ebersole et al., 2020)). The study's sample population included special education teachers. These special education instructors are belonging to Punjab. In Google survey form, the Differentiated Instruction Scale was created. A survey was carried out online due to a shortage of time, and the sample was chosen in a practical way. Data were gathered utilizing a Google form and several online resources, including Facebook, Whatsapp, and email.

Methods and Procedure

This descriptive study's main goal was to determine how much special education teachers understood about differentiated instruction. The differentiated instructions scale (DIS), created by Roy et al. (2015), and were utilized for this purpose. It consists of two parts; the first part deals with demographics, and the second part of the scale comprises a total of 12 elements. Cronbach's alpha, which was used to gauge the scale's reliability, came out to be .939 when special education teachers looked at the study's sample. These educators specialize in special education and are from Punjab. The Google survey format was used to develop the differentiated instruction scale. Due to time constraints, the survey was performed online; Data were gathered utilizing a Google form and other web resources i.e., Email, Facebook and What Sapp.

Results and Discussion

Data analysis was done by statistical package of Social Sciences version 21.

Table 1
Frequency distribution of gender of Teachers

Gender	f	%
Male	65	32.3
Female	136	67.7
Total	201	100.0

Demographics in table 1 show that there were a total of 201 respondents (special education teachers) in this study, among which 67.75% were female and 32.3% were male. The distribution of gender seems appropriate as number of female teacher is high in special education as compare to male.

Table 2
Frequency distribution of qualification of teachers

Qualification	f	%
PhD	42	21.3
Masters	159	78.7
Total	201	100.0

Table 2 shows that out of 201 teacher, 159(78.7%) were master's degree holder and 42(21.3%) were Phd Scholar degree holder.

Table 3
Frequency distribution of teachers dealing with disabilities

teachers dealing with disabilities	F	%
Autistic children	7	3.5
Hearing Impaired children	74	36.8
intellectual developmental disable children	43	21.4
Physically handicapped children	31	15.4
slow learner	24	11.9
Visual Impaired children	22	10.9
Total	201	100.0

The table also indicate that 74 (36.6%) were hearing impaired teachers, 42 (21.3%) were IDD teachers, 31(15.3) were PD teachers, 24 (11.9%) were Slow learner teachers, 22 (10.9%) were VIC teachers and 7 (3.5%) were ASD teachers respond the questionnaire.

Table 4
Mean difference of teachers on basis of qualification

	PhD		Masters	
	male	Female	Male	female
Average	4.12	3.92	3.88	4.03

Based on PhD level average the awareness about differentiated instructions among male (4.12) is greater than female (3.92). However based on the qualification (master) the female are comparatively have more awareness about differentiated instructions (4.03) as compare to male (3.88)

Independent Sample t Test

Table 5
Comparing the level of awareness about DI among special education teacher on the base of gender

Sr.	Test Variables	Respondent	N	Mean	t	Sig
1	Awareness	Female	136	4.00	-1.13	0.25
2		Male	65	3.90		

An independent sample t test was used to compare the level of awareness about DI among special education teacher on the basis of gender. Result in table 3 indicate that there were no significant differences (SD) .75.p.78 in scores of special education male teachers (3.9,SD.75)and special education female teachers (M 4.0,SD.73) the magnitude of the difference means (means difference .1, 95%) was very small.

Table 6
Comparing the level of awareness about differentiated instruction base on qualification.

Sr	Test Variables	Respondent	N	Mean	t	Sig
1	Awareness	M.A	159	3.97	0.42	0.54
2		Ph.D.	42	3.98		

Independent sample t test was used to compare the level of awareness of special education teacher about differentiated instruction on the basis on qualification. The result in table 4 indicates that there was no significant difference PhD (3.98) and M.A

(3.97) on the basis of qualification. T.42 sig.54 the magnitude of the difference in the means was very small.

Table 7
Awareness levels in Differentiated Instruction Strategies among Special Education Teachers: A Descriptive Analysis

Statements	Min	Max	Mean	SD
Modify goals and expectations for students with difficulties	1.0	5.0	3.90	.97
By Adapt the lesson plan form at e.g. present information	1.0	5.0	3.89	.92
Adjust the amount of work required in accordance with student	1.0	5.0	4.03	1.03
Provide weaker students with additional aids or tools	1.0	5.0	4.11	1.04
Evaluate the effectiveness of teaching adjustments(e.g. monitor subsequent achievement and progress	1.0	5.0	3.92	.92
Use students data to make decisions about teaching adjustment	1.0	5.0	3.98	.88
Analyze data about students' academic progress	1.0	5.0	4.00	.88
Use alternative materials to match students' abilities (e.g. books below and beyond grade level)	1.0	5.0	4.05	.95
Plan different assignments to match students' abilities	1.0	5.0	4.04	.98
Adapt evaluations to match students' abilities (e.g. adjust grading)	1.0	5.0	3.94	1.00
Assess low achievers rate of improvement frequently	1.0	5.0	3.88	.90
Vary the complexity of assignments to match students ability	1.0	5.0	3.97	.94

The table above presents the level of awareness of special education teachers regarding Differentiated Instruction (DI) strategies and their utilization in the classroom. The mean scores and standard deviations indicate the extent to which teachers are knowledgeable and implement these strategies. The statistical analysis reveals that teachers have a high level of awareness in certain strategies. For example, the mean score of 4.11 with a standard deviation of 1.04 indicates that teachers are highly proficient in providing additional aid to weak students. Similarly, teachers demonstrate a strong understanding of using alternate materials (mean score of 4.05, standard deviation of 0.95) and planning alternate tasks (mean score of 4.04, standard deviation of 0.98) to accommodate students' capabilities. Furthermore, teachers exhibit a notable level of awareness in adjusting the quantity of work according to students' abilities (mean score of 4.03, standard deviation of 1.03) and analyzing data to monitor students' performance (mean score of 4.00, standard deviation of 0.88). However, teachers display a moderate level of awareness in several strategies. For instance, using student data for instructional decision-making (mean score of 3.98, standard deviation of 0.88), altering the difficulty level of assignments (mean score of 3.97, standard deviation of 0.94), and adapting modes of evaluation (mean score of 3.94, standard deviation of 1.00) are areas where teachers demonstrate a moderate understanding. Additionally, evaluating the usefulness of teaching adjustments (mean score of 3.92, standard deviation of 0.92), modifying aims and expectations for struggling students (mean score of 3.90, standard deviation of 0.97), adapting lesson plan formats (mean score of 3.89, standard deviation of 0.92), and utilizing formative assessment to improve the performance of low achievers (mean score of 3.88, standard deviation of 0.90) are strategies where teachers exhibit moderate awareness. Overall, the findings highlight the varying levels of awareness among special education teachers regarding DI strategies, with some areas showing high proficiency while others demonstrate a moderate understanding.

Conclusion

The findings of this study lead to the conclusion that most special education teachers are knowledgeable about differentiated instruction. According to a prior study, general education teachers are less knowledgeable about differentiated instruction than special education teachers' are. This study further supports the notion that special education teachers have knowledge about DI (Hallahan et al., 2020).

Another finding from this study revealed that male and female special education teachers have a same level of knowledge about differentiated instructions, and no gender discrimination was discovered in studies that were similar to this one (Avramidis et al., 2000)

When the population serving in the special education sector is analyzed, it is discovered that more females than males are employed in this profession as teachers (Rousso, 2015). However this study discovered that there is no gender-based difference in opinion.

There is no discernible difference in the level of knowledge of differentiated instruction among special education teachers, according to statistics based on qualification, which is another conclusion drawn from the data.

It was determined that special education teachers understand how to provide educational assistance utilizing alternative materials and planning, adjust the amount of work and monitor students based on their abilities.

To meet the varied needs of students, they must receive additional training in adaptation and assessment process.

Recommendations

- Implement targeted professional development programs for special education teachers to enhance their understanding and implementation of differentiated instruction.
- Conduct regular training workshops that provide continuous support and updates on differentiated instruction techniques.
- Integrate technology-based tools and resources into training programs to engage special education teachers and enhance their awareness of differentiated instruction
- Ensure that differentiated instruction concepts are included in special education teacher certification programs.
- Implement regular assessments and feedback mechanisms to evaluate the effectiveness of differentiated instruction strategies.
- Encourage special education teachers to engage in research projects and innovative initiatives related to differentiated instruction.

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