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Biology

IMPLEMENTATION OF DIFFERENTIATED LEARNING STRATEGY IN TEACHING BIOLOGY FOR SEVENTH CLASS STUDENTS OF CBSE CURRICULUM

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ABSTRACT *When whole-group instruction is the focus of the learning programme, many students fail to learn. This is especially true when educating students about biology. The proposed intervention approach includes many tried-and-true methods for improving students' learning capabilities. The study concentrated on differentiated learning strategies such as creating learning stations, using task cards, interviewing students, targeting different senses within lessons, sharing your own strengths and weaknesses, using the think-pair-share strategy, making time for journaling, grouping students with similar learning styles, questioning, and knowing your purpose. Students learned to maintain a strict learning regimen, respect classroom norms, work in groups, and solve issues on their own after using the aforementioned tools. This research looked at the benefits of differentiated teaching with forty CBSE 7th grade students. The study's major findings suggested that diversifying learning methodologies and employing small group instruction aided and increased students' learning competency in biology. Almost all of the students increased their readiness level using the differentiated instructions. This is evident that the learners' readiness level scores obtained through one sample t-test. The students' confidence in studying biology rose as a result of the positive adjustment in their learning pattern.*

KEYWORDS : Conventional instruction, instructional effectiveness, multiple Intelligence, curriculum, biology, differentiated teaching strategies, learning styles, Science

INTRODUCTION

Teachers frequently lack the classroom management skills required to efficiently supervise a large class of students with varied academic ability, as well as the biology teaching experience. For children to learn biology effectively, a teacher needs have knowledge in four different areas, according to Echevarria, Frey, and Fisher: access, climate, expectations, and language teaching. The circumstances that exist in classrooms are referred to as the "climate" here. It is stated that good instructors use a range of techniques to foster a favourable learning environment in their classrooms. Additionally, extensive study has demonstrated that a teacher's expectations have a direct impact on the performance of the students. Thus, before beginning a class, it is crucial to explain to the students what the precise learning objectives are. The students would have a framework about the learning process. Learners might easily become sidetracked when being presented a lesson without this structure (Echevarria et al., 2015).

Every student in the class has a unique learning profile, interests, skill set, and emotional maturity level. As a result, each student in the classroom exhibits varying degrees of preparation for particular disciplines (Tomlinson, 2017). Attending to the variety in classrooms with the supplied expansive curriculum and the marks-oriented educational systems is one of the key issues that our instructors in India confront. With a teacher student ratio of 1:32, it becomes challenging for the instructor to maintain the school grades while also attending to every learner in the classroom (Statista, Journal of Education and Science, 2017). The curriculum, on the other hand, is frequently uninteresting and not difficult enough for advanced learners in the classroom, which prevents them from developing their potential cognitive talents. The student in an Indian classroom is sometimes treated as a simple spectator, which encourages rote learning rather than developing conceptual mastery in the numerous disciplines that are taught in schools (Tomlinson, 2017).

The Right to Education Act of 2009 and the Education for All movement helped popularize the relatively new idea of inclusive education in India. India created the groundwork for inclusive education with its "zero rejection policy." Inclusion and equity are highlighted as the policy's guiding principles in the most current National Educational Policy (NEP) 2020. According to NEP 2020, inclusive education refers to a system of education in which pupils with and without disabilities study together, with teaching and learning suited to each pupil's individual learning requirements (National Education Policy, 2020).

Every learner understands the topics given in class at different levels depending on their preparation and interest, which is one of the typical qualities in an Indian classroom (Tomlinson, 2018). As a result, it becomes challenging for teachers to satisfy curricular deadlines and guarantee that every student in the class has grasped the ideas. One-size-fits-all fashion does not apply to education, and just as everyone has a choice in clothes, one-instruction does not fulfil the demands of all of the varied pupils in a classroom (Tomlinson, 2018).

The NEP 2020 emphasizes that teachers' responsibilities in the educational system would be to support learning and encourage active participation from pupils. Our regular teachers need to receive training in a variety of ways in order to make this a reality. The material delivery model used in India's teacher training programmes restricts the ability of normal teachers to use cutting-edge methods in the classroom. Indian pupils are accustomed to rote learning techniques and do not engage in active learning.

The use of differentiated instruction in schools is one strategy that may be utilized to make inclusion a reality. Differentiation, in Carol Ann Tomlinson's definition, is the process of modifying instructions to suit specific requirements. The degree of diversification in either the content, method, product, or the learning environment determines the effectiveness of the teacher's instruction (Tomlinson, 2018). Based on the learner's readiness, interests, or learning profile, the instructor can differentiate six classroom components.

- Student Interest – understanding the student's motivation in studying and figuring out their personal condition.
- Assessment – preliminary assessment of the students' preparedness level.
- Lesson Planning – planning the study materials according to the students' reading/interest abilities.
- Content – what the learner must learn and how they will access the learning objectives.
- Process – the exercises the learner completes to master the material.
- Product – a summary of the student's comprehension of the subject matter and degree of proficiency.

In the USA, differentiated education has a long history that extends back to the 1600s (Subban, 2006; Tomlinson, 1999). It was noted that variations amongst pupils manifested on more grounds than anticipated when given the freedom to work at their own speed without the fear of failing. The Individuals with Disabilities Education Act (IDEA) Act, which was passed by Congress in 1975, added criteria for schools to follow when creating individual education plans (IEPs) for children with special needs. These aided educators in creating differentiated education for kids who require extra care. Following implementation, it was discovered that differentiated instruction simply does not satisfy the requirements of both high achievers and

children with impairments in the classroom. The one-size-fits-all method does not work in general classrooms, and individualized teaching is essential to meet the requirements of all students in the classroom, according to later experts like Susan Demisky Allan, Carol Ann Tomlinson, and Gersten.

In comparison to studies conducted in secondary education and primarily in primary education, there have been fewer studies looking into the implementation of differentiated instruction in higher education (Dosch & Zidon, 2014; Tulbure, 2011). This suggests that while many primary teachers use differentiated instruction, less is used in secondary education, and even fewer are used in higher education. The large number of student divisions, the few contact hours, as well as the time needed to plan various methods of evaluating them, which is time-consuming and difficult for teachers who, in addition to teaching, are responsible for research tasks, are the reasons for the limited implementation of this particular teaching approach in higher education (Ernst & Ernst, 2005). These few studies, which looked at the role differentiated instruction plays in higher education, found that students who received differentiated instruction performed significantly better academically than those who received regular instruction (Graham, 2009). However, further research is required to determine how this teaching strategy affects kids' academic progress.
Create learning stations, use task cards, interview students, target different senses within lessons, share your own strengths and weakness, use the think- pair share strategy, make time for journaling, group students with similar learning styles, questioning, and know your purpose are the differentiated learning strategies used in this study. This study will demonstrate how the tests given to students increased their learning levels and inspired them to do better.

Statement Of The Problem

Unfortunately, it seems that in many instances, the obstacle to responsive classrooms is not simply a dearth of teacher confidence or training. It is also a sign of indifference or disinterest on the part of teachers to adapt their methods of instruction to meet the demands of pupils who have atypical learning requirements. Teachers need to know if differentiation can affect student learning, thus this study is crucial. The implementation of differentiation can be costly and time-consuming for teachers. Teachers may consider changing this method if it turns out to be detrimental to academic performance rather than directly correlated with student achievement. Teachers should participate in professional development to ensure the tactics are used in the classroom if the usage of differentiated teaching is positively associated to improved student achievement.

Operation Definition

Students Interest

Based on their interest in the subject, talents, and teacher, learners' profiles are affected by another crucial component. However, teachers must remember that a student's involvement in class is determined by his or her level of interest.

Assessment

The teaching strategy known as assessment for learning generates feedback that is utilized to enhance both student performance and instructional strategies.

Lesson Planning

A lesson plan is the teacher's blueprint for what the class will cover and how it will be done efficiently. A lesson plan, which is by no means thorough, gives a basic overview of the teaching goals, learning objectives, and methods for achieving them. A successful class is one in which both the instructor and the students gain knowledge from one another rather than one in which everything goes according to plan.

Content

Here, when we talk about content, we mean both what the learner needs to learn and how they will acquire the material. Based on Bloom's taxonomy, a teacher may distinguish between lower-order and higher-order thinking skills in the topic. Lower order cognitive abilities like remembering and understanding can be presented to students who are unfamiliar with the subject matter. Through the use of graphic organizers, word boards, and jigsaw grouping, the subject may be broken up for the class. Additionally, material can be given to the class in chunks using a variety of techniques. As a result, the student has a comprehensive knowledge of the curriculum's structure and may pick the subject matter according to their preferences.

Process

Every kid in the class has a unique learning style, thus we must first consider this while considering how to differentiate the process. Here, the instructor must involve the class in a way that helps the pupils understand and retain the material. In the classroom, some children excel while working in pairs, small groups, or individually, while others might need the teacher's assistance. Here, the teacher encourages students to choose their preferred learning methods and supports them in doing so. Some popular ways of differentiation include giving visual learners textbooks, giving auditory learners audiobooks, and putting kinesthetic learners in small groups so that each person may develop in their zone of proximal development. If a student needs more time to complete an assignment, the teacher can give them that time.

Product

In differentiated education, the final product is what the student produces to show that they have mastered the material. Tests, projects, reports, and other kinds of assignments can be used to demonstrate this. Based on the student's preferred method of learning, the instructor might provide the student a choice here on how to demonstrate knowledge. The instructor must provide kids options so they may express themselves more effectively. An assessment's primary goal is to determine whether or not students have understood the material, and the best method to achieve this is by giving students options and allowing them to communicate how they will try their hardest.

The current educational system forces students to use rote learning techniques in order for them to memorize the chapters and prepare for the tests. This widely utilized method involves teachers instructing students through whole-group instruction with an emphasis on rote memory. Numerous studies have shown that the archaic technique of rote memorization is insufficient for many courses and may not always be beneficial (Fata-Hartley, 2011). Rote memorizing does not truly teach children anything. Instead, students must actively engage in the learning process in order for learning to truly take place.

Objectives Of The Study

Specifically this study aimed to 1) identify the learning styles of the students in the differentiated group; 2) assess the impact of differentiated learning strategies in Biology of 7thclass students of CBSE grade; 3) know if there is a significant difference between post and pretest achievement scores of the differentiated and traditional groups; 4) evaluate if there is a better understanding amongst the teachers about the differentiated instructions 5) analyze if there is a significant influence amongst the teachers in implementing the differentiated instructions.

METHOD

Research Design

A mixed-methods design was used in this investigation which includes survey method for the assessment of teacher competency and differential learning strategies were used for the assessment of learner's readiness level. The design incorporated a qualitative and a quantitative approach, presuming that one might benefit from both technique's advantages and avoid its disadvantages (Lund, 2012). Particularly, the study's data gathering and analysis phases used an explanatory sequential mixed techniques design (Creswell, 2013).

Participants

The study was conducted at Vels Vidyashram School Senior Secondary School, Pallavaram Dargah Road, Chennai. A random sampling technique employed and the researcher selected 40 students as study participants to assess the learners' preparedness level in order to assure objective study results. This was decided based on the CS survey. 50 biology teachers were recruited in the study to examine teacher competency using a random selection technique. Based on the CPS questionnaire given to teachers, 100 teachers from primary, 100 from middle, and 100 from high school were chosen for this study. It was discovered that 50% of primary school instructors indicated a higher degree of student readiness and had an interest in learning various tactics to be applied at the primary level. In contrast, middle school responders weren't prepared due to a lack of time or other personal concerns.

Instruments and Procedure

Santangelo & Tomlinson's instruments, which were created and thoroughly tested, served as the basis for the questionnaire employed in this study (2012). With an assessment of the literature, the

researchers concluded that it was extremely dependable and reflects Tomlinson's DI model (Santangelo & Tomlinson, 2012). Instead of altering the instrument's original contents, an adoption process contextualized some demographic data. The questionnaire was divided into two parts. A question using a five-point Likert scale was included in the first section of the questionnaire to assess instructors' mastery of differentiated instruction. While the implementation of differentiated instruction was covered in the second section, instructors' concerns and opinions were gauged by a five-point Likert scale question in that area. A total of 50 teacher educators were given printed copies, and the date was gathered.

Besides, to measure the learner's readiness, the following differentiated learning strategies were used- Create learning stations, use task cards, interview students, target different senses within lessons, share your own strengths and weakness, use the think- pair share strategy, make time for journaling, group students with similar learning styles, questioning, and know your purpose are the differentiated learning strategies. These differentiated learning strategies helps to assess the students' readiness levels.

Data Analysis

The researchers imputed data into the SPSS software version 20. One sample t-test were used to analyze the learners' readiness level and teacher competency.

RESULTS AND DISCUSSION

Learners' Readiness Level

H1: There is a significant impact of differentiated instructional strategies on the summative assessment amongst the 7th class students of CBSE grade

Table 1. One-Sample t-Test for summative assessment of control and experimental groups

Groups	Mean	Standard Deviation	t value	Level of Significance
Control Group: Summative Assessment- Circulatory	14.93	2.454	38.473	.000
Experimental Group: Summative Assessment- Circulatory	20.75	2.06	63.706	.000
Control Group: Summative Assessment- Respiratory	16.15	2.315	44.112	.000
Experimental Group: Summative Assessment- Respiratory	19.88	1.856	67.719	.000

One-Sample t-test results for summative assessment of circulatory and respiratory system on the control and experimental groups are shown in the table above. The findings suggest that both the control and experimental groups' summative assessment scores had two-tailed p-values of 0.000, or less than 0.05. The findings thus imply that learner readiness for summative assessment of circulatory and respiratory system has a strong favorable influence among the 7th class students in the CBSE grade. The results also suggest that, when comparing the experimental group to the control group, the experimental group's t-value was higher (summative assessment: circulatory- t-value of 63.706 with p-value = 0.000; summative assessment: respiratory- t-value of 67.719 with p-value = 0.000), indicating that the experimental group had the better and improved learning ability, thereby rejecting the null hypothesis. As a result, the experimental group's data demonstrated that, when compared to the control group, the 7th class students in the CBSE grade benefited significantly from differentiated instructional strategies.

H2: There is a significant impact of differentiated instructional strategies on the formative assessment amongst the 7th class students of CBSE grade

Table 2. One-Sample t-Test for formative assessment of control and experimental groups

Groups	Mean	Standard Deviation	t value	Level of Significance
Control Group: Formative Assessment- Circulatory	3.98	0.947	26.547	.000
Experimental Group: Formative Assessment- Circulatory	7.25	0.670	68.451	.000
Control Group: Formative assessment- Respiration	4.98	0.768	40.995	.000
Experimental Group: Formative assessment- Respiration	7.03	0.800	55.521	.000

One-Sample t-test results for formative assessment of circulatory and respiratory system on the control and experimental groups are shown in the table above. The findings suggest that both the control and experimental groups' formative assessment scores had two-tailed p-values of 0.000, or less than 0.05. The findings thus imply that learner readiness for formative assessment of circulatory and respiratory system has a strong favorable influence among the 7th class students in the CBSE grade. The results also suggest that, when comparing the experimental group to the control group, the experimental group's t-value was higher (formative assessment: circulatory- t-value of 68.451 with p-value = 0.000; formative assessment: respiratory- t-value of 55.521 with p-value = 0.000), indicating that the experimental group had the better and improved learning ability, thereby rejecting the null hypothesis. As a result, the experimental group's data demonstrated that, when compared to the control group, the 7th class students in the CBSE grade benefited significantly from differentiated instructional strategies.

Teacher Competency

H3: There is a significant impact of differentiated instructions on the student interest amongst the 7th class students of CBSE grade

Table 3. One-Sample t-Test for differentiated instructions on the student interest

Groups	Mean	Standard Deviation	t value	Level of Significance
Understanding of Differentiated Instructions				
I know individual student interest and can relate it to instruction.	4.28	0.730	41.483	.000
I know individual student culture and expectations and can relate to instruction.	3.82	1.119	24.134	.000
I know individual student life situations and how it may impact their learning.	3.88	0.773	35.492	.000
I am aware of student's learning disabilities and handicaps and how to address them in lessons so as not to impair their learning.	3.76	1.001	26.555	.000
Implementation of Differentiated Instruction				
I know individual student interest and can relate it to instruction.	1.98	0.937	14.949	.000
I know individual student culture and expectations and can relate to instruction.	2.40	1.010	16.800	.000
I know individual student life situations and how it may impact their learning.	2.68	1.186	15.983	.000
I am aware of student's learning disabilities and handicaps and how to address them in lessons so as not to impair their learning.	2.72	1.179	16.317	.000

One-Sample t-test results for differentiated instructions on the student interest with respect to teacher competency are shown in the table above. The findings suggest that both the understanding and implementation of differentiated instruction showed two-tailed p-values of 0.000. The findings thus imply that differentiated instructions on the student interest has a strong favorable influence towards teacher competency. The results thus suggest that, both the understanding and implementation of differentiated instruction had the better and

improved results, thereby rejecting the null hypothesis. As a result, the data of the differentiated instructions on the student interest demonstrated that, teachers recognized the differentiated instruction approach as essential to use in a diverse classroom.

H4: There is a significant impact of differentiated instructions on the student assessment amongst the 7th class students of CBSE grade

Table 4. One-Sample t-Test for differentiated instructions on the student assessment

Groups	Mean	Standard Deviation	t value	Level of Significance
Understanding of Differentiated Instructions				
I pre-assess students before instructing.	3.44	0.993	24.495	.000
I pre-assess readiness to adjust the lesson.	3.72	1.126	23.370	.000
I assess during the unit to gauge understanding.	3.96	1.087	25.755	.000
I assess at the end of the lesson to determine knowledge acquisition.	4.56	0.577	55.871	.000
I determine student's learning styles.	4.68	0.844	39.223	.000
Implementation of Differentiated Instruction				
I pre-assess students before instructing.	2.98	1.220	17.266	.000
I pre-assess readiness to adjust the lesson.	2.88	1.206	16.885	.000
I assess during the unit to gauge understanding.	2.82	1.240	16.077	.000
I assess at the end of the lesson to determine knowledge acquisition.	2.16	0.955	15.988	.000
I determine student's learning styles.	3.68	1.058	24.588	.000

One-Sample t-test results for differentiated instructions on the student assessment with respect to teacher competency are shown in the table above. The findings suggest that both the understanding and implementation of differentiated instruction showed two-tailed p-values of 0.000. The findings thus imply that differentiated instructions on the student assessment has a strong favorable influence towards teacher competency. The results thus suggest that, both the understanding and implementation of differentiated instruction had the better and improved results, thereby rejecting the null hypothesis. As a result, the data of the differentiated instructions on the student assessment demonstrated that, teachers recognized the differentiated instruction approach as essential to use in a diverse classroom.

H5: There is a significant impact of differentiated instructions on the lesson planning amongst the 7th class students of CBSE grade

Table 5. One-Sample t-Test for differentiated instructions on the lesson planning

Groups	Mean	Standard Deviation	t value	Level of Significance
Understanding of Differentiated Instructions				
I teach up by assuring each student works towards their highest potential.	4.64	0.563	58.298	.000
Materials are varied to adjust to students' reading/interest abilities	3.14	1.195	18.574	.000
Learners play a role in designing /selecting learning activities.	3.98	1.116	25.227	.000
I adjust for diverse learner needs with scaffolding, tiering instruction &provide Student choice in learning activities.	4.38	0.530	58.403	.000
I provide tasks that require students to apply and extend understanding.	3.98	0.820	34.304	.000
Implementation of Differentiated Instruction				
I teach up by assuring each student works towards their highest potential.	3.96	0.880	31.831	.000
Materials are varied to adjust to students' reading/interest abilities	3.90	0.974	28.309	.000
Learners play a role in designing /selecting learning activities.	3.92	0.752	36.880	.000
I adjust for diverse learner needs with scaffolding, tiering instruction &provide Student choice in learning activities.	4.10	0.707	41.000	.000
I provide tasks that require students to apply and extend understanding.	3.60	1.107	23.004	.000

One-Sample t-test results for differentiated instructions on the lesson planning with respect to teacher competency are shown in the table above. The findings suggest that both the understanding and implementation of differentiated instruction showed two-tailed p-values of 0.000. The findings thus imply that differentiated instructions on the lesson planning has a strong favorable influence towards teacher competency. The results thus suggest that, both the understanding and implementation of differentiated instruction had the better and improved results, thereby rejecting the null hypothesis. As a result, the data of the differentiated instructions on the lesson planning demonstrated that, teachers recognized the differentiated instruction approach as essential to use in a diverse classroom.

H6: There is a significant impact of differentiated instructions on the usage of content amongst the 7th class students of CBSE grade

Table 6. One-Sample t-Test for differentiated instructions on the usage of content

Groups	Mean	Standard Deviation	t value	Level of Significance
Understanding of Differentiated Instructions				
The curriculum is based on major concepts and generalizations	4.46	0.706	44.673	.000
I clearly articulate what I want students to know, understand and be able to do.	3.34	1.394	16.942	.000
I use variety of materials other than the standard text.	4.04	0.925	30.885	.000
I provide a variety of support strategies (organizers, study guides, study buddies).	3.48	1.074	22.920	.000
Implementation of Differentiated Instruction				
The curriculum is based on major concepts and generalizations	4.26	0.723	41.658	.000
I clearly articulate what I want students to know, understand and be able to do.	3.78	1.112	24.039	.000
I use variety of materials other than the standard text.	3.92	0.724	38.289	.000
I provide a variety of support strategies (organizers, study guides, study buddies).	3.78	0.954	28.022	.000

One-Sample t-test results for differentiated instructions on the usage of content with respect to teacher competency are shown in the table above. The findings suggest that both the understanding and implementation of differentiated instruction showed two-tailed p-values of 0.000. The findings thus imply that differentiated instructions on the usage of content has a strong favorable influence towards teacher competency. The results thus suggest that, both the understanding and implementation of differentiated instruction had the better and improved results, thereby rejecting the null hypothesis. As a result, the data of the differentiated instructions on the usage of content demonstrated that, teachers recognised the differentiated instruction approach as essential to use in a diverse classroom.

H7: There is a significant impact of differentiated instructions on the process of learning activities amongst the 7th class students of CBSE grade

Table 7. One-Sample t-Test for differentiated instructions on the process of learning activities

Groups	Mean	Standard Deviation	t value	Level of Significance
Understanding of Differentiated Instructions				
The pace of instruction varies based on individual learner needs.	4.14	0.783	37.401	.000
I use learner preference groups and/or learning preference centers	4.16	0.889	33.091	.000
I group students for learning activities based on readiness, interests, and/or learning preferences.	4.10	0.886	32.707	.000
The classroom environment is structured to support a variety of activities including Group and/or individual work.	3.88	0.872	31.454	.000
Implementation of Differentiated Instruction				
The pace of instruction varies based on individual learner needs.	3.46	0.973	25.137	.000
I use learner preference groups and/or learning preference centers	3.74	1.121	23.583	.000
I group students for learning activities based on readiness, interests, and/or learning preferences.	3.98	1.078	26.098	.000
The classroom environment is structured to support a variety of activities including Group and/or individual work.	4.58	0.575	56.358	.000

One-Sample t-test results for differentiated instructions on the process of learning activities with respect to teacher competency are shown in the table above. The findings suggest that both the understanding and implementation of differentiated instruction showed two-tailed p-values of 0.000. The findings thus imply that differentiated instructions on the process of learning activities has a strong favorable influence towards teacher competency. The results thus suggest that, both the understanding and implementation of differentiated instruction had the better and improved results, thereby rejecting the null hypothesis. As a result, the data of the differentiated instructions on the process of learning activities demonstrated that, teachers recognized the differentiated instruction approach as essential to use in a diverse classroom.

H8: There is a significant impact of differentiated instructions on the usage of products amongst the 7th class students of CBSE grade

Table 8. One-Sample t-Test for differentiated instructions on the usage of products

Groups	Mean	Standard Deviation	t value	Level of Significance
Understanding of Differentiated Instructions				
I provide multiple modes of expression in the final product.	3.46	0.952	25.696	.000
I provide students with the choice to work alone, in pairs or small group.	2.38	0.855	19.694	.000
The product connects with student interest.	2.08	0.986	14.910	.000
I provide variety of assessment tasks.	2.08	1.027	14.321	.000
Implementation of Differentiated Instruction				
I provide multiple modes of expression in the final product.	4.76	0.657	51.268	.000
I provide students with the choice to work alone, in pairs or small group.	4.66	0.557	59.124	.000
The product connects with student interest.	3.16	1.184	18.868	.000
I provide variety of assessment tasks.	4.00	1.030	27.456	.000

One-Sample t-test results for differentiated instructions on the usage of products with respect to teacher competency are shown in the table above. The findings suggest that both the understanding and implementation of differentiated instruction showed two-tailed p-values of 0.000. The findings thus imply that differentiated instructions on the usage of products has a strong favorable influence towards teacher competency. The results thus suggest that, both the understanding and implementation of differentiated instruction had the better and improved results, thereby rejecting the null hypothesis. As a result, the data of the differentiated instructions on the usage of products demonstrated that, teachers recognized the differentiated instruction approach as essential to use in a diverse classroom.

According to the overall outcome of the study, differentiated instructions showed a considerable positive influence on the learners' readiness. The findings thus consequently showed that both the understanding and implementation of differentiated teaching led to better and improved results. The results of the differentiated instruction data on the progression of learning activities showed that teachers understood the value of using differential learning strategies in a classroom with a diverse student body.

CONCLUSION

Differentiated instruction is one method for fostering an inclusive learning environment. With an emphasis on the calibre of instruction and learning, the instructor uses this technique to adapt the curriculum to the demands of the class. Additionally, engaging the class and instructing the pupils up to their zone of proximal development might be beneficial for general education teachers. We must realize that learner-centered educational theories like Thorndike's Law of Readiness, Gardener's Multiple Intelligence Theory and Variable Learning Style, and Vygotsky's Zone of Proximal Development served as the foundation for the notion of individualized instruction. In order to enhance student learning in the biology topic and engage a variety of learners in the classroom, this study explores varied instructions and differentiated learning methodologies. This will make it easier for us to understand why varied instruction is so important in classroom instruction and why it is one of the best ways to support inclusive education. Even though Indian schools are becoming more diverse, little extensive research has been done in this area. As a result, this study was an attempt to fill a knowledge gap on the method for putting into practise a number of strategies that involve teaching the same curriculum to students using different instructions, or the teacher may differentiate the student interest, assessment, lesson planning, content, process, and product of the curriculum based on the learner's readiness, level of difficulty, environment, and learning patterns. The researcher is of the opinion that the field of education will benefit from further research into differentiation and how to meet the needs of students from various backgrounds.

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