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Research Article

Role Of Multidisciplinary Approach In Enchanting The Learning Outcome Among Secondary Level Students

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ABSTRACT

To improve the academic performance of secondary school pupils, there has been a recent rise in the understanding of the transformative potential of a strategy that incorporates several disciplines. By merging knowledge and methods from a wide variety of areas, this approach provides a more thorough and interconnected understanding of complex concepts. The emphasis of this study is on the outcomes of learning that occurs in secondary school students when they are exposed to a method that draws from several disciplines. There were eighty students included in this study's sample. In addition to collecting and analyzing data on academic accomplishment, we also obtained and analysis demographic data. For the purpose of testing hypotheses, doing descriptive statistics, and conducting demographic analysis, the study makes use of t-tests.

Keywords: - Student, Secondary Level, Teacher, Approach, Education.

I.INTRODUCTION

Recently, there has been a lot of acclaim and attention in the current educational scene about the significance of a multidisciplinary approach in enhancing the learning outcomes of secondary school pupils. The purpose of this educational paradigm is to create a more thorough and linked knowledge of complex concepts. To do this, it bridges traditional subject boundaries by combining material and methods from a variety of areas. In light of the fact that the challenges that students face are becoming more complex, it is of the utmost importance to acquire a teaching approach that accurately represents the complexity of the real world. Through exposure to a wide range of subject areas, students are able to improve their skills for critical thinking, problem-solving, and creative thinking. Through exposure to a wide range of academic subjects, students are able to acquire abilities in information synthesis, ideation, and application across a number of circumstances. As a result, they are better prepared to deal with the issues that are more prevalent in today's workplaces and higher education institutions. A multidisciplinary approach is most visible at the secondary level, when children are going through a crucial stage of personal and cognitive growth. This is the time when the benefits of such an approach are most obvious. As a result of this method's focus on active learning and collaboration, students are able to dive more deeply into the subjects that they are studying. Incorporating disciplines such as physics, geography, economics, and ethics into a project on climate change, for instance, would help students to examine the issue from a variety of perspectives and arrive at a more nuanced understanding of it. Not only can these sorts of projects make learning more fascinating, but they also demonstrate how diverse areas of study are dependant on one another and how crucial it is to think across disciplines.

Additionally, the development of abilities that are essential for success in today's globalized world is well-aligned with the multidisciplinary approach. These talents are essential for success in the 21st century. When it comes to developing skills such as critical thinking, communication, collaboration, and computer literacy, having a curriculum that encourages exploration and new ideas is the optimal way to go about it. By reducing boundaries that exist across traditional fields of study, students are inspired to think in a more creative and adaptable manner. These are skills that are invaluable in a world that is always evolving. Students improve their social and emotional abilities by working together on projects that span many disciplines, by resolving disagreements in a constructive manner, and by developing a greater ability to comprehend and appreciate the perspectives of others. The efficacy of a strategy that draws from several disciplines is strongly dependent on the instructors who are engaged. In order to establish interdisciplinary courses and projects, it is necessary for educators to set aside their specialized subject areas and collaborate with their colleagues who come from

different sectors. For educators to gain the knowledge and self-assurance necessary to effectively apply this plan, it is of the highest significance that they get constant guidance and the opportunity to participate in professional development. In addition, educational institutions should create an atmosphere that fosters collaboration and creativity by providing the necessary resources and facilities to make it easier for students to study across academic boundaries. Technology is not something that should be ignored in order to make a multidisciplinary approach more easier to implement. With the help of digital tools and services, students are able to interact with industry professionals and classmates from all over the globe, and they also have access to a wide range of information. Technology has the potential to give venues for the production and sharing of transdisciplinary projects, which would further enrich the educational experience offered by the technology. Through the use of virtual labs, simulations, and interactive media, there are new methods that may be utilized to examine challenging subjects and provide a tangible shape to theoretical concepts.

Numerous studies have shown that a multidisciplinary approach is much more effective in improving learning outcomes. Researchers have shown that children who participate in interdisciplinary learning are more likely to be engaged, motivated, and successful academically than kids who do not. They are better able to retain information in their memories and use that information in practical situations. Through the consideration of individual variations in learning styles and requirements, this approach has the potential to make education more accessible and equitable, which, in turn, may contribute to the reduction of the achievement gap. On the other hand, there are challenges that must be conquered in order to achieve a multidisciplinary approach. This necessitates a mental adjustment on the part of both the pupils and the instructors, in addition to the implementation of new strategies for the creation and assessment of the curriculum. There is a possibility that the usual assessment techniques are unable to adequately manage the breadth and depth of information that may be acquired in an interdisciplinary environment. As a consequence of the interdependence of knowledge and abilities, it is necessary to use assessment strategies that are both more extensive and formative. It is necessary to take a revolutionary and significant multidisciplinary strategy in order to improve the learning results for students who are enrolled in secondary school. Through the promotion of a more holistic and integrated perspective on information, this approach assists students in becoming prepared for the complexities of the modern world and provides them with the skills they need to be successful in learning throughout their whole lives. In light of the fact that the educational environment is always shifting, the incorporation of a multidisciplinary approach has the ability to improve learning for each and every student by making it more engaging, relevant, and effective.

II. REVIEW OF LITERATURE

Brandshaug, Sigrid. (2024). Previous research on liminality as a theoretical framework for entrepreneurial education that places an emphasis on transformational learning is expanded upon in this study. Scholars believe that education in entrepreneurship should offer students with opportunity to reflect on and develop their own strengths and limitations, as well as help them acquire an entrepreneurial attitude that will allow them to cope with the ongoing upheaval that is occurring in society. The purpose of this narrative-based study is to provide a response to the question, "How do the students cope with and learn from being in the liminal space 'in between' student and entrepreneur?" More specifically, this research investigates the liminal processes that students go through when participating in a venture-creation program. The results indicate that students' peers play a significant role in the transformational processes that they go through by providing constructive criticism and promoting reflection. Additionally, students develop a variety of techniques to deal with liminality themselves. This study contributes to the current body of literature on transformational learning and the process by which individuals become entrepreneurs by diving into the "black box" of student learning processes in the context of entrepreneurship education. Furthermore, this study contributes to the current body of literature by putting up a technique for the development of liminality competence via the process of entrepreneurial learning.

Kamala, Dr. (2023). It was difficult to miss the headline that followed the unveiling of the National Education Policy 2020: by the year 2030, each and every district will have no less than one enormous college that focuses on multidisciplinary studies. The momentous changes that are about to take place in India's academic system are summed up in the title. It is a significant step forward that will have far-reaching repercussions for the improvement of students since the research places a focus on learning that is relevant to several disciplines. A multidisciplinary education system that may assist students in thriving and shaping India's future has been laid out by the Indian government, which has done a fantastic job of establishing the framework for their establishment. Students are provided with the ability to study not just the hard sciences and humanities, but also the soft sciences, the arts, and sports, which provides them with a far wider range of possibilities than they had before to choose from. An atmosphere that allows for unique course combinations, state-of-the-art curricula, customized attention, and various entry and exit points during the undergraduate experience gives students the permission to follow their passions and improve their talents. This environment also provides students with the flexibility to explore their interests. Developing an interest in learning, an aptitude for critical thinking, the ability to reflect on one's own actions, leadership and collaboration skills, professionalism, a strong sense of commitment, and an acute awareness of one's social and cultural context are

some of the additional benefits that can be gained from using this method. By incorporating a wide range of viewpoints into the field of humanities, students would be able to acquire agency, which would result in an increase in the capacity of human resources. As a result, this would pave the way for the more rapid achievement of social, economic, and environmental sustainability.

Mishra, Pratima. (2024). Within the context of the ever-evolving field of modern education, the need of a multidisciplinary approach to the education of teachers cannot be overstated. Future educators are more equipped to adapt and innovate when they possess a diverse skill set. This is because a multidisciplinary approach that acknowledges the interconnectedness of knowledge has the potential to support the development of such a skill set. In order to provide teachers with the skills necessary to fulfill the complicated needs of a wide range of students, teacher education programs should include concepts from a wide variety of fields in order to give a holistic perspective on educational instructional strategies.The inclusion of interdisciplinary components in the curriculum for teacher training encourages collaborative teaching approaches by drawing attention to the significance of educators working together across academic boundaries. This approach not only helps students become better at finding solutions to problems, but it also encourages creative teaching approaches that include getting students involved in real-world projects that span many disciplines. Teacher candidates who are exposed to multidisciplinary perspectives are better equipped to develop inclusive learning environments that stress cultural competence and global awareness. This is to ensure that these environments are able to meet the needs of all students.Furthermore, the goals of education in the twenty-first century, which put an emphasis on critical thinking, collaboration, and adaptability, are coherent with the strategies that are used in the multidisciplinary approach. It is the responsibility of teacher preparation programs to guarantee that future educators possess the skills required to adapt to the ever-changing nature of today's classrooms. These programs concentrate on the aforementioned topics. The ultimate objective of introducing a multidisciplinary approach into the process of teacher education is to generate educators who are innovative, diversified, and capable of inspiring and instructing the children of today and tomorrow.

Thana, Paskha. (2022). Over the course of the last century, there has been a rapid acceleration in the development of science, technology, and information. A whole new set of talents that are referred to as "21st-century skills" has emerged as a reaction to the ever-increasing complexity of the difficulties that people face in their lives. It is not sufficient to depend on just one of the disciplines in isolation in order to find solutions to issues that arise in life; rather, it is important to draw from a broad variety of disciplines. In light of these conditions, education plays a significant role in the production of a new generation that is equipped with the skills essential to compete on a global scale in the 21st century. The objective of providing students with a complete knowledge and the development of talents that are relevant to the 21st century is to assist them in achieving success in the complicated world that we live in today. One strategy to accomplish this objective is to adopt a multidisciplinary approach that incorporates interdisciplinary learning. The objective of this literature review is to provide an explanation of how courses that draw from a range of subjects might potentially assist students in acquiring the skills that they will need in the contemporary world.

III. RESEARCH METHODOLOGY

Sample

One hundred and eighty secondary school students from a variety of schools were selected to participate in the study's sample. One set of students was taught using more traditional methods, while the other group was taught using a more multidisciplinary approach. Both groups were given various sorts of education on their respective subjects.

Data Collection

For the purpose of gathering information, demographic surveys and student data were used. When evaluating academic achievement, the results of standardized tests were used.

Population of the study

Students receiving their secondary education from a variety of institutions who are adopting an interdisciplinary approach

IV.DATA ANALYSIS AND INTERPRETATION

Table 1: Gender of the respondents

Gender	Frequency	Percentage
Male	40	50%
Female	40	50%
Total	80	100

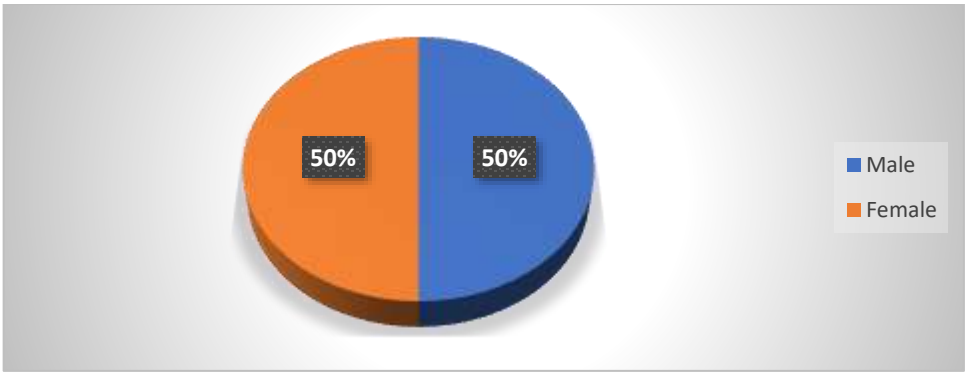

Figure 1: Gender of the respondents

The gender distribution of a certain sample is shown in Table 1, which provides an overview of the data. When it comes to the gender column of the straightforward table, there are just two possibilities available: male and female.

This means that each category has a percentage as well as a frequency connected with it. The frequency indicates the number of individuals who belong to each gender category, while the percentage indicates the proportion of the total sample that each gender accounts for.

It has been determined by statistical analysis that males constitute fifty percent of the total population, with forty men constituting the sample. According to the same pattern, forty women make up half of the sample. This indicates that the sample population is composed of an equal number of males and females, with both sexes being represented in proportions that are equal to one another.

In the sample, there are half as many males as there are women, as can be seen in the table; this indicates that the gender distribution across the sample is balanced. Any further analysis or conclusions that are drawn from this data set will be based on a set of findings that are equally represented from both sexes. This equality implies that the sample is gender-neutral, thus its results will be based on this equality.

Table 2: Age of the respondents

Age Group	Frequency	Percentage
12-13	20	25%
14-15	40	50%
16-17	20	25%
Total	80	100

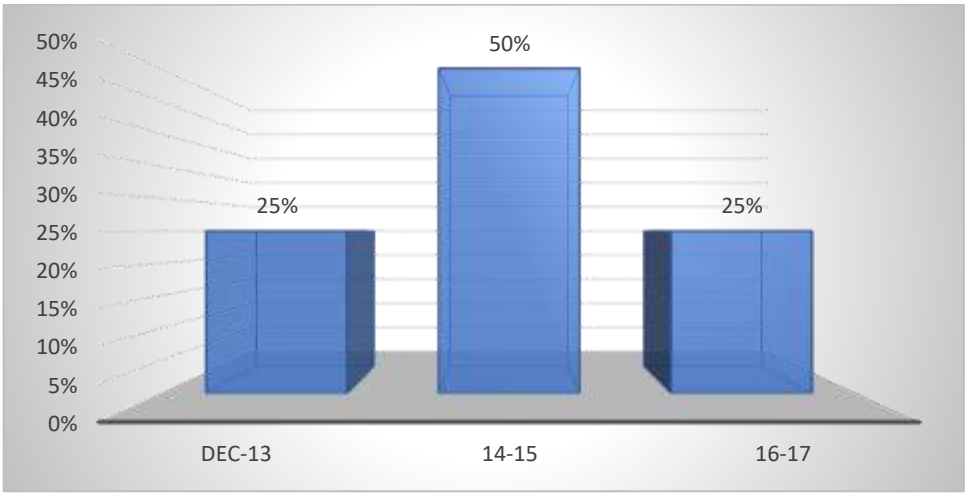

Figure 2: Age of the respondents

A thorough summary of the age distribution in a given sample is provided in Table 2, which can be found here. When it comes to the age ranges, there are three distinct categories: 12–13, 14–15, and 16–17 years old. Each age group is assigned a frequency as well as a percentage; these values indicate the number of individuals who belong to that category as well as the proportion of the total sample that they represent.

Twenty participants, which is over a quarter of the whole sample, are classified as belonging to the age category of 12–13 years old, as shown in the table. This indicates that twenty-five percent of the whole sample is comprised of individuals who are less than 25 years old.

This demographic had the most representation, with forty individuals, or fifty percent of the total sample, falling between the age range of fourteen to fifteen years old respectively. It can be deduced from this that the

bulk of the sample is comprised of individuals who are in the middle age bracket, with around fifty percent of the individuals falling into this group.
Twenty persons, or twenty-five percent of the total, are less than seventeen years old. In this age group, the percentage of persons who are the oldest is 25%, which is equivalent to the proportion of people who are between the ages of 12 and 13.
As can be seen in the table, the age distribution of the sample is somewhat varied, with almost half of the individuals falling between the age range of 14 to 15 years old. The remaining twenty-five percent of the sample is split evenly between two age groups: those who are between the ages of twelve and thirteen and those who are between sixteen and seventeen years old. According to this distribution, there is a significant concentration of individuals in the middle age range. This is despite the fact that there is equal representation in the younger and older age groups.

Table 3: Socioeconomic Status of the respondents

SES Level	Frequency	Percentage
Low	20	25%
Middle	40	50%
High	20	25%
Total	80	100

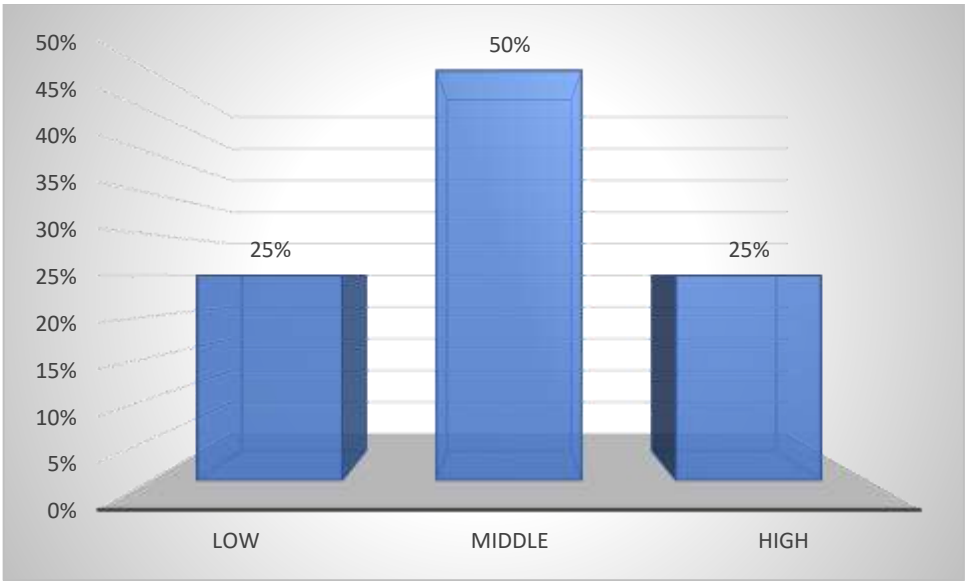

Figure 3: Socioeconomic Status of the respondents

The breakdown of the sample's socioeconomic status is shown in table 3, which can be seen here. According to the socioeconomic status (SES) classification system, there are three distinct levels: low, medium, and high. Each socioeconomic status (SES) level is represented by a frequency, which is the number of individuals who fall into that SES level, and a percentage, which is the proportion of the total sample that each group constitutes. Twenty individuals, which is equivalent to twenty-five percent of the entire population, are classified as belonging to the "Low socioeconomic status" category. Therefore, twenty-five percent of the individuals who comprised the sample came from backgrounds that are considered to be of a lower social class.
Forty individuals, or fifty percent of the whole sample, are classified as belonging to the middle-income bracket, which is the socioeconomic group with the highest number of individuals. The sample is comprised of fifty percent of the medium socioeconomic group, making it the largest group in terms of both percentage and frequency compared to other groups.
One quarter of the entire population, or twenty individuals, are classified as belonging to the upper socioeconomic class. Following the same pattern as the proportion of persons who belong to the Low SES category, this suggests that twenty-five percent of the population comes from a socioeconomic background that is more privileged.
The table demonstrates that the socioeconomic circumstances of the sample are more varied than one may expect. While the Low and High SES categories each make up 25% of the sample, the Middle SES group accounts for 50% of the total. The Middle SES group is by far the largest of the three. Despite the fact that there is a fair representation of people from lower and higher socioeconomic origins, there is a significant concentration of people who belong to the medium socioeconomic category.

Table 4. A multidisciplinary approach's mean and standard deviation are shown below

Variable	Mean	Standard Deviation (SD)
Pre-intervention Scores	68.5	8.2
Post-intervention Scores	75.4	7.9

Table 4 contains statistical information on the comparison of the sample's scores before and after the intervention. Additionally, the mean and the standard deviation (SD) are two key metrics that may be found for each and every variable that is included in the table.

A mean score of 68.5 was obtained for the scores that were obtained prior to the intervention. Prior to the implementation of any intervention, the mean represents the average score that the people in the sample had obtained. The overall average demonstrates how well the sample was doing prior to the intervention when it is considered as a whole.

When the intervention was first implemented, the scores had a standard deviation of 8.2. Dispersion from the mean may be analyzed using the standard deviation, which is one method of doing so. The scores are dispersed throughout a very wide range (standard deviation = 8.2), which indicates that there seems to be a significant degree of diversity in the performance of the people prior to the intervention.

Following completion of the intervention, the participants received a score of 75.4 on average. Due to the fact that the mean after the intervention is higher than the mean before the intervention, it can be deduced that the participants' scores increased after the intervention, which may indicate that the intervention was successful in improving their performance.

The scores that were obtained following the intervention had a standard deviation of 7.9 for the data. After the intervention, the range of scores around the mean was seen to be considerably narrower, as shown by a standard deviation that was somewhat smaller in comparison to the scores that were obtained before to the intervention. The findings indicate that after the intervention, the scores were considerably more consistent across the board for all of the participants.

After the intervention, the average score increased from 68.5 to 75.4, as shown by the data in the table. Additionally, the standard deviations of 8.2 and 7.9, respectively, demonstrated that the scores were slightly less variable than before. Taking this into consideration, it seems that the intervention did more than simply improve overall performance; it also reduced the disparity between the individual judgments of the participants.

V.CONCLUSION

The ability of pupils to think critically, creatively, and adaptably is improved by the use of a multidisciplinary approach to secondary education. This strategy brings together specialists from a wide range of fields. Through the elimination of traditional subject boundaries and the provision of an integrated learning perspective, it equips students with the skills necessary to face the challenges that they will face in further education and in the modern workforce. It is imperative that educators collaborate in order to devise innovative lesson plans that include technology in order to make the educational experience more interesting for pupils. In most cases, the benefits, which may include improved student participation and success, are greater than the challenges that are associated with the shift. Adopting this strategy is very necessary if one want to provide a learning environment that is not only stimulating and fruitful but also helps students develop the skills necessary to become citizens in a globalized society.

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