

Multi-Disciplinary Education of Teaching and Learning in Higher Education

Mrs. Archana Sharma

Assistant Professor (Botany),
Nirmala College of Education, Ujjain, M.P., India

Abstract: *Multidisciplinary education is a unique educational approach that allows the student to learn and explore different subjects or curriculum from various disciplines. A multidisciplinary curriculum is one in which a single topic is studied from the viewpoint of more than one discipline. Multidisciplinary education is important because it helps to bring number of ideas and perspectives from different subjects, and therefore may be able to offer alternative ways of looking at issue or problems. The evolution of world is happening very fast in terms of learning and technology, A whole lot of subjects are being born out of necessity and it is only going to increase over time. Particular skill and its specialization is very necessary to survive in today's competitive environment, with the help of job, they would have a financial support and to hinder their progress in education ,where people would study different subjects allowing them to get a job easier as a result of dipping their tools into very different streams. Another important reasons why multi disciplinary education should be promoted is that there is a greater emphasis on employability there are a lot of students who graduate from college with fairly decent CGPA but do not have a particular skill to be employable by a company. Employability is directly limited to the knowledge that a student possesses about a particular subject.*

Keywords: Multidisciplinary, Learning, Education, Curriculum

I. INTRODUCTION

The word 'Multidisciplinary' consist of two words. First word is 'multi' which means many, more than one. Second word is 'disciplinary' which means 'relating to a particular field of study'. 'Multidisciplinary' refers to a combination of various disciplines as independent and separate components of learning, which allow students to work with in discipline specific parameters and attend discipline specific goals. In multidisciplinary approach, each discipline retains no integration between these disciplines is expected in a multi disciplinary approach.

Multidisciplinary approach is like a bowl of mix fruit each fruit representing a single discipline. Multidisciplinary education refers to the juxtaposition of school subjects, yet with a retainment of disciplinary identities. In multidisciplinary studies, a topic or theme is addressed through the lenses of different subjects. An example of a multidisciplinary education would be B.A. LLB. Here the student willbe learning arts as well as law which are two completely different disciplines. It is a method of curriculum integration that helps bring together the diverse perspectives of different disciplines to bring out or emphasize a subject, issue or theme. In such a curriculum multiple disciplines can be studied under the same topic. The importance of multidisciplinary education has been steadily increasing in the 21st century because of the hyper-competitive world that we live in today.

To influence goals of education to give rise to the capacity of students to think deeply, analyze information and integrate important ideas in a context with his situated in a disciplinary foundation and connected to lead experiences. Looked at more closely, we wish for students to engage in asking important, big questions; this is not so easy to do. Why? One answer might be that we teach as if knowledge is discrete and compartmentalized. It is not. In fact, the most enjoyable and reinforcing aspects of learning are seeing and experiencing the connections between different subject areas. And yet, in many colleges and universities we teach in ways that mask this reality from students. Professors teach as if in silos and engage in the magical thinking that our students will make these connections themselves. We decided to address the challenge students face trying to see how topics from different disciplines are authentically

interconnected. To do so, we stepped out of our individual disciplinary comfort zones (social science and life Science) and developed a co-taught, multidisciplinary course, organized around the question: what does it mean to be human?

1.1 Objectives

This paper is based on the following objectives. Such as

- To give a clear cut concept of the multi-disciplinary education or multi-disciplinary approach in education.
- To study the different aspects of multi-disciplinary approach in education;
- To highlight different aspects of multi-disciplinary approach in teacher education as proposes in NEP-2020.
- To find out the relevance and importance of this method in teacher education program and finally.
- To recommend the necessary suggestions in association with it.

II. METHODOLOGY

"MULTIDISCIPLINARY TEACHING AND RESEARCH":

Although our course philosophy, design, pedagogy, and implementation are generalizable and learning in this way is accessible to students of any major, we designed our integrated course with non-science majors in mind. Such students possess perspectives, interests, dispositions, and expectations that differ somewhat from most students majoring in biology, and that is what makes it so much fun and so rewarding to teach them. These differences in student populations, however, mean that non-majors biology courses can be taught differently than those intended for majors. Different does not mean "dumbing down" but rather recognizes there is a fundamental distinction between introductory courses taught for majors and those taught for non-majors. We reasoned that focusing on non-majors biology would provide us greater freedom for pedagogical creativity and innovation. To be specific, the introductory course sequence designed for biology majors is intended to be the first in a series of courses, while non-major biology courses are more discrete: there is no expectation that additional biology courses will be taken. In addition, we encouraged elementary education majors to enroll in the course given their well-documented fears of science. Our hope was that by experiencing an integrated approach to learning the students would engage more readily and with less trepidation.

Interdisciplinary Research

Based teaching is a novel way to engage students to think rather than understand existing body of knowledge (Ribéreau-Gayon and David d'Avray, 2018).

Interdisciplinary teaching and research requires a team that gathers information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines. Its purpose is to solve problems whose solutions are beyond the scope of a single discipline or area of research practice. Interdisciplinary teaching and research is more productive than multidisciplinary teaching and research as former leads to the integration and fusion of knowledge whereas the latter may not (Young, 1995). It would be interesting to look at the Indian scenario for the promotion of multidisciplinary teaching and research. Indian Council of Social Science Research (ICSSR) promotes research in social sciences under two categories of research projects. First, Major and Minor Research Projects and secondly Research Programs, formerly known as Research Projects Responsive and Research Projects Sponsored respectively. Among other objectives of research program, disciplinary research as well as collaborative, multidisciplinary research activities are noted. Indian Institute of Science promotes interdisciplinary through a specific division of interdisciplinary sciences. Specific research areas are: Bioengineering, Urban Infrastructure and Transportation, Nano-scale Materials, Nano Devices and Systems, Economics, Finance, Human Resource Management, Marketing, Optimization, Public Policy, Energy, Water, Internet of Things, Distributed Sensing, Computer Systems, Computational Science, Data Sciences and Bioinformatics. Transdisciplinary Research Cluster was established in October 2013 in Jawaharlal Nehru University to plan the University's teaching and research to fulfill the vision of university of innovation and social change and to promote interdisciplinary research in areas such as disaster research, energy, silk road and cognitive sciences, sustainability studies, history and philosophy of science, natural disasters and development, international migration and Diaspora studies, language technology, non-invasive molecular imaging,

pluralist health care: knowledge, technology, practice and policy. Jadavpur University has Interdisciplinary Studies, Law and Management and various centers of studies which offer programs of teaching and research. DST Centre for Interdisciplinary Mathematical Sciences was formed in 2007 in BHU with the active cooperation from the Departments of Mathematics, Statistics, Computer Science, and Applied Mathematics of the university. The DBT-BHU Interdisciplinary School of Life Sciences (ISLS) was established in 2009 in the Faculty of Science under an initiative of the Department of Biotechnology, Ministry of Science & Technology, Government of India. Its objective is to foster and promote interdisciplinary and interactive research among the faculty members, especially of life science departments. The ISLS is constituted of the existing Departments of Biochemistry, Botany, Molecular & Human Genetics, Zoology and School of Biotechnology. It has collaboration with the Institute of Medical Sciences, Institute of Agricultural Sciences, Institute of Environment & Sustainable Development in BHU and with the Indian Institute of Technology (BHU). Delhi university has interdisciplinary centers such as Centre for Interdisciplinary Studies of Mountain and Hill Environment, Centre for Science Education & Communication, Centre for Global Studies, Women Studies & Development Centre, Dr. B.R. Ambedkar Center for Biomedical Research, Cluster Innovation Centre. A sample of the list of interdisciplinary research and, in some cases, teaching centers present a glimpse of a movement of interdisciplinary in Indian higher education. The author has not gone into analyzing the teaching and research functions performed by the centers in interdisciplinary areas. Hence it is difficult to know the fusion of knowledge across various disciplines. However, it is important to note that universities in India are promoting teaching and research in interdisciplinary areas.

III. DISCUSSION

To know the basics of multidisciplinary approach in education, it is necessary to know other approaches in education such as interdisciplinary and trans-disciplinary. Interdisciplinary approach is the method of bringing together the knowledge of two different disciplines and implementing in to a child's learning. Here, integration of two different subjects is happened and makes a hybrid content or topic or subject in order to enrich the students learning experiences. On the other hand, trans-disciplinary curriculum is the method of removing the boundaries of different subjects and integrating them to create or construct complete and new sets of knowledge to fulfill the aspiration of the new societal phenomenon. Multidisciplinary approach in teacher education is relatively a new concept when we speak about the field of Teacher education. Here educators or trainee teachers are well matured to impart knowledge and skills with the help of this new way of teaching and learning. Trainee teachers have enough opportunity to develop this new method of teaching and they can easily impress the learners and enrich their multidimensional skills and experiences. Educator or trainee teachers will illustrate a lesson with the experiences gathered from the multiple disciplines. This method is very important and relevant for the present era of development and hence the NEP-2020 strongly recommended introducing it with our national framework. The aim of education will not only be cognitive development, but also building character and creating holistic and well round individuals with the key 21st century skills. (4.4 of NEP 2020). Recognizing the need for more holistic education, the NEP -2020 urges to render teacher education to multidisciplinary colleges and universities by 2030. All multidisciplinary higher educational institutions will provide B.Ed, M.Ed. and even Ph.D degrees by establishing dynamic and well equipped education departments. As per NEP- 2020, bachelor degree of education will include most recent and relevant teaching techniques such as pedagogy with related to basic arithmetic and mathematics, multi level teaching as well as evaluation techniques, teaching children with disabilities and special needs, uses of educational technology and learner-centered or collaborative learning.

Advantages of multidisciplinary approach in teacher education program:

- The multidisciplinary approach in education provides more holistic understanding of the world and enhances the student's personality and character building process. The rare and necessary social values and ethics will be adopted by the students through this method of teaching.
- This method emphasizes the importance of collaboration and integration of knowledge and information. It helps to create twenty-first century individual by incorporating and integrating new ideas and concepts.
- This approach is very much relevant in present day global system and enhances the scope of employability and jobs for students within the country and in abroad. This method helps student to work as managerial way and

enhances the managerial and corporative skills and techniques. They can easily synthesize different ideas and thoughts collected from different sources;

- Students learn different skills of evaluation and assessment through this approach. By studying different logical methods and approaches, students can easily choose their desired subjects. This, it enhances logical thinking and analyzing power in them.
- It motivates the students as it linked with practical knowledge, given authentic purposes of the learning. It helps students to draw conclusion from the divergent field of knowledge and subjects.

Disadvantages of multidisciplinary approach in teacher education program: -

- This approach is followed in foreign universities and academic institutions where there is abundant scope for faculty improvement and orientation. These institutions have well equipped with infrastructural facilities to adjust with the teaching-learning process.
- There is a necessity to mass aware and to grow consensus about this approach among the stakeholders of teacher education program

IV. SUGGESTIONS

It is suggested to start multidisciplinary institutions and academic institutions throughout the country as envisioned by the NEP-2020. This policy also suggested to introduce four years integrated teacher education program in multidisciplinary colleges and universities. By incorporating this program, students from divergent fields such as arts, humanities, commerce, science etc. get benefited. This will save their time and enhance the opportunity to join with teaching- learning process in a well befitted manner.

There is a necessary to popularize the ancient gurukul system in accordance with the present system of education. The gurukuls were the academic places where most of the Indian boys and girls enriched and equipped with all necessary skills and knowledge. In that system, students were acquainted divergent filled of knowledge in a given time. Hence there is a necessity to recall this ancient system of education.

As suggested by the NEP-2020, this approach is relatively modern, well equipped with latest skills and techniques and hence students joined with this method will easily coop up with the latest advancement of the global system of education and set competitive mind as a global citizen.

It is mandatory to introduce different subjects in a same platform and hence the success of this method depends upon the latest infrastructural and skilled developments and huge funding from the various levels. In absence of any one component from this arena will responsible for the loophole of the entire education system.

There is a necessity to establish more and more integrated teacher education centre throughout the country to provide multidisciplinary method of teaching at every level of education in the country. Hence it is very urgent to follow the suggestions of NEP-2020 in this regard.

A well versed and well maintained curriculum is necessary to input in teacher education program to enrich and enhance with this new and innovative method of teaching. Thus, more and more orientation and refresher courses are needed to be introduced more the exiting faculties of the teacher education institutions throughout the country.

V. CONCLUSION

To push society forward in a direction that is both inclusive and progressive, multidisciplinary education is vital. Nothing in nature and nothing about human behavior or human beings is black and white - so why should education be so? The current education system was created for training people to become factory workers so that they could work in coal mines and follow orders. The industrial revolution started at the beginning of the 20th century, and it is high time that we update ourselves not just in the case of curricula, but also in the realm of education. It is high time to let students decide what is best for them because they have all the resources that they need to figure it out on their own right at their fingertips. All we need to do is give them the space to think freely and miracles will happen for sure.

VI. RESULT

Multi disciplinary education allows our student to understand the power of new ideas. It helps them to develop pragmatic attitude towards allowing them to decide what subject they will opt for and what could be their possible benefits. They get time to make a decision by calculating the risks and advantage.

REFERENCES

- [1]. Chettiparamb, A. (2007). Interdisciplinarity: a literature review. The Interdisciplinary Teaching and Learning Group,
- [2]. Subject Centre for Languages, Linguistics and Area Studies, School of Humanities, University of Southampton, SO17 1BJ.
- [3]. Government of India. (2005). National Knowledge Commission Report to the Nation, 2006-2009, published by National Knowledge Commission, New Delhi. available on <https://web.archive.org/web/20140123091014/http://knowledgecommission.gov.in/downloads/report2009/eng/report09.pdf>
- [4]. Krishnaraj, M. (2018). The First Women's Studies Research Centre: A History of Women's Studies and Its Progenitors.
- [5]. Indian Journal of Gender Studies, 25(2), 212–233. <https://doi.org/10.1177/0971521518763472>
- [6]. Lindblom, S. & Kola, J. (2018). The importance of evidence-based development of teaching and learning at university.
- [7]. In R. van der Vaart & A. Heijnen (Ed.), Places of Engagement: Reflections on Higher Education in 2040 - A Global Approach (pp. 76-81). Amsterdam: Amsterdam University Press. <https://doi.org/10.1515/9789048543656-011>
- [8]. Ministry of Education. (2020). National Education Policy, 2020, Government of India. Ministry of Education.
- [9]. OECD (1972). Interdisciplinarity: Problems of Teaching and Research in Universities. Paris: OECD.
- [10]. Ribéreau-Gayon, A., & d'Avray, D. (2018). Interdisciplinary research-based teaching: Advocacy for a change in the higher education paradigm. In V. C. H. Tong, A. Standen, & M. Sotiriou (Eds.), Shaping Higher Education with Students: Ways to Connect Research and Teaching (pp. 139–149). UCL Press. <https://doi.org/10.2307/j.ctt21c4tcm.23>
- [11]. Squires, G. (1992). Interdisciplinarity in Higher Education in the United Kingdom. European Journal of Education, 27(3), 201–210. <https://doi.org/10.2307/1503449>
- [12]. UGC. (2019). Draft Guidelines for Development of Women Studies Centres in Indian Universities & Colleges. Available on https://www.ugc.ac.in/pdfnews/3849681_Guidelines-for-Womens-Studies-Centres-for-Universities-and-Colleges-05-03-2019.pdf
- [13]. University Grants Commission. (2009). Action Plan for Academic and Administrative Reforms, Gnanam Committee Report. New Delhi: UGC. Available on https://www.ugc.ac.in/pdfnews/9682768_Action_plan-new_01.pdf
- [14]. University Grants Commission. (2015). Guidelines on adoption of Choice Based Credit System. New Delhi: UGC. Available on [UGC_credit_Guidelines.pdf \(du.ac.in\)](https://www.ugc.ac.in/pdfnews/9682768_Action_plan-new_01.pdf)
- [15]. Yash Pal. (2009). Report of the Committee on available to advise on Renovation and Rejuvenation of Higher Education
- [16]. available on <https://www.aicte-india.org/downloads/Yashpal-committee-report.pdf> Young, D. L. (1995). Agricultural Economics and Multidisciplinary Research.
- [17]. Review of Agricultural Economics, 17(2), 119–129. <https://doi.org/10.2307/1349726>
- [18]. Dr. Sudhanshu Bhushan is Professor and Head of the Department of Higher & Professional Education in the National Institute of Educational Pl