International Journal of Humanities and Social Science Research
www.socialsciencejournal.in
ISSN: 2455-2070
Received: 28-02-2026, Accepted: 30-03-2026, Published: 14-04-2026
Volume 12, Issue 2, 2026, Page No. 95-98

Breaking down the walls: A practical blueprint for multidisciplinary learning under India's NEP 2020

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Abstract
India's National Education Policy 2020 asks universities and colleges to move away from teaching subjects in isolation. Instead, it promotes a model where students learn across multiple fields—combining, for example, data analysis with history or economics with environmental science. While the policy's goal is widely praised, few institutions have a clear idea of how to make this shift happen on the ground. This paper offers a working model for implementing multidisciplinary learning in Indian higher education. Drawing on real-world constraints such as limited faculty, rigid examination systems, and departmental boundaries, the paper outlines four interconnected areas that need attention: (1) how courses are structured and chosen, (2) how teachers teach, (3) how departments and schedules are organized, and (4) how student learning is evaluated. The paper argues that small, phased changes—starting with pilot projects and faculty incentives—are more effective than sweeping mandates. The final section provides a step-by-step timeline that a typical college or university could adapt to its own context.

Keywords: NEP 2020, multidisciplinary education, curriculum reform, Indian Universities, implementation framework

Introduction

For decades, Indian higher education has followed a familiar pattern: a student enters a Bachelor's program in, say, Physics or Sociology, takes almost all courses within that department, and writes a final exam that tests memory of that single subject. This system has produced generations of graduates with deep knowledge in one narrow area but limited ability to connect that knowledge to other fields. A physics graduate may struggle to explain climate policy. A literature student may lack basic data skills needed for modern research.

The National Education Policy 2020 (NEP 2020) directly challenges this model. It states that undergraduate education should be "holistic and multidisciplinary," allowing students to take courses across the arts, sciences, and vocational fields (Ministry of Education, 2020) [6]. A student majoring in mathematics could also study philosophy or public health. The policy imagines graduate who can shift between different ways of thinking and solve problems that no single discipline can address alone.

Yet, turning this vision into reality has proven difficult. Most Indian colleges operate under strict university affiliation rules. Faculty hiring, promotion, and teaching loads are tied to specific departments. Examination boards are slow to change. And many teachers themselves were trained in siloed systems and feel unprepared to teach across disciplines.

This paper does not simply praise NEP 2020 or list its challenges. Instead, it asks a practical question: What specific, actionable steps can a college or university take to build a genuine multidisciplinary learning environment?

The answer, we argue, lies in a framework with four pillars. These pillars address course design, teaching methods, institutional organization, and student assessment. None of these pillars works alone. Changing the curriculum without changing how teachers teach leads to confusion. Changing teaching without changing the exam system leads to frustration. The framework treats multidisciplinary learning as a whole-system shift, not a checklist of isolated fixes.

The paper is organized as follows. Section 2 explains what multidisciplinary learning means in practice, distinguishing it from related terms. Section 3 presents the four-pillar framework with concrete examples. Section 4 discusses common obstacles and how to work around them. Section 5 offers a phased roadmap suited to Indian institutional realities. Section 6 concludes with recommendations for policymakers and administrators.

What Multidisciplinary Learning Actually Means

Before building a framework, it is worth clarifying terms. Multidisciplinary learning is often confused with interdisciplinary or transdisciplinary learning, but they are not the same.

- **Multidisciplinary:** Students study topics from multiple disciplines, but each discipline keeps its own methods and perspectives. A course on "Urban Development" might have a geographer talking about land use, a sociologist discussing migration, and an economist analyzing housing markets. The student hears all three but must mentally connect them.

- **Interdisciplinary:** Teachers and students actively blend methods from different fields to create a new integrated understanding. A course on "Environmental Justice" might combine legal case analysis with epidemiological data and ethnographic fieldwork, producing a single shared framework.

- **Transdisciplinary:** Learning goes beyond the university altogether. Community members, policymakers, and industry professionals co-design problems and solutions alongside students and faculty.

NEP 2020 encourages all three, but for most Indian institutions, the realistic starting point is multidisciplinary.

Asking a department of physics to suddenly teach interdisciplinarily with a department of fine arts may be too large a leap. However, allowing a physics student to take an introductory course in the history of science—and requiring the history department to offer such a course—is achievable. A useful analogy comes from how people learn anguages. A monolingual person thinks only in one language. A multidisciplinary learner is like someone who knows several languages but speaks them one at a time, switching when needed. An interdisciplinary learner is like a bilingual who code-switches fluidly within a single conversation. Transdisciplinary learning is like translating a poem into a new form that neither original language could produce alone.

For implementation, the goal should be to build the first level—multidisciplinary fluency—as a foundation. Once students and faculty are comfortable moving across disciplines, deeper integration can follow.

A Four-Pillar Framework for Implementation

The framework proposed here rests on four interconnected pillars. Each pillar addresses one component of the academic system. The pillars are not sequential; institutions may start with whichever pillar is most urgent, but all four must eventually be addressed.

Pillar 1: Course Structure and Student Choice

The most visible change NEP 2020 requires is in the curriculum. A traditional program locks student into a fixed sequence of courses, all within one discipline. A multidisciplinary program opens up choices across departments. Concrete steps under this pillar:

First, every undergraduate program should include a "Common Elective Pool" of courses drawn from at least three different faculties (sciences, social sciences, humanities). For example, a commerce student might choose from "Introduction to Psychology," "Data Visualization," or "Indian Philosophy." No department can veto a course being included in this pool simply because it does not serve their own majors.

Second**,** institutions should introduce "Multidisciplinary Minors" that require 4–6 courses across at least two departments other than the student's major. A political science major could earn a minor in "Public Health Policy" by taking two courses in epidemiology, two in health economics, and two in ethics. These minors should be pre-designed so students can see a clear pathway, not just a random list of electives.

Third, the Academic Bank of Credits (ABC) recommended by NEP 2020 should be used practically. Students should be able to store credits earned from different departments and even different universities. A student who takes a summer course in environmental law at another institution should have those credits count toward their multidisciplinary requirement without bureaucratic hurdles.

Example from practice: A college in Maharashtra redesigned its B.A. program so that every student takes at least one course from the science faculty and one from the vocational studies faculty. The science faculty offers "Science for Non-Scientists," which covers basic climate science, nutrition, and statistics without assuming prior technical knowledge. Within two years, student feedback showed increased confidence in reading scientific reports in news media.

Pillar 2: Teaching Approaches and Faculty Readiness

A flexible curriculum is useless if teachers continue to lecture from a single disciplinary perspective. Multidisciplinary learning requires different classroom practices.

Problem-based learning (PBL) works particularly well here. Instead of organizing a course around topics (e.g., "Week 3: Supply and Demand"), organize it around a real problem (e.g., "Why does a local river flood every monsoon, and what can be done?"). Answering this question pulls in hydrology, economics, urban planning, sociology, and political science. Students are forced to move across disciplines because the problem itself does not respect boundaries.

Team teaching is another powerful tool. Two faculty members from different departments co-design and co-teach a course. For example, a biologist and a philosopher might co-teach "Ethics of Genetic Engineering." Each brings different questions, methods, and readings. Students see firsthand how the same topic looks different from two disciplinary angles.

However, team teaching requires faculty time and willingness. Many Indian faculty already face heavy teaching loads and pressure to publish. Adding team teaching without adjustment will lead to burnout.

Practical solutions include

- Counting team-taught courses as 1.5 times the normal teaching load for each instructor.
- Offering summer workshops on PBL and team teaching, with small stipends for participation.
- Creating informal "teaching circles" where faculty from different departments meet monthly to share one multidisciplinary lesson they tried.

A large central university in Delhi piloted a team-taught course called "Water and Society" with faculty from history, civil engineering, and public policy. Each week, two of the three faculty members co-led a session. Student attendance and engagement were significantly higher than in traditional lecture courses. The pilot was so successful that the university now requires every department to offer at least one team-taught course per year.

Pillar 3: Departmental and Administrative Structures

This pillar is the hardest because it touches on power, budgets, and decades of habit. Traditional departments control their own hiring, course offerings, and student advising. Multidisciplinary learning requires loosening these boundaries.

One approach is to create "cross-departmental clusters." Instead of merging departments, a university can form clusters—for example, the "Society and Environment Cluster" might include geography, sociology, economics, and public administration. Departments within a cluster share a portion of their budget for joint courses, guest lectures, and student projects. Faculty appointments can be joint between two departments.

Another necessary change is timetabling. In many Indian colleges, all courses in a department meet at the same time block, making it impossible for a student to take, say, a

physics elective while majoring in history. A centralized scheduling system must ensure that multidisciplinary electives are offered at diverse times, not all in the same slot.

Physical space matters more than administrators realize. A building full of identical lecture halls facing a single blackboard discourages collaboration. Creating small "project rooms" with movable furniture and whiteboards, available for student groups from any department, signals that multidisciplinary work is valued. Some institutions have converted unused corridors or rooftop spaces into informal collaboration areas at very low cost.

Governance changes: The existing Board of Studies in each department should be supplemented by a university-wide Multidisciplinary Curriculum Committee. This committee has authority to approve new cross-listed courses and resolve disputes when two departments claim ownership over a topic (e.g., "Behavioral Economics" could belong to psychology or economics—the committee decides it belongs to both).

Pillar 4: Assessment and Evaluation

Perhaps the biggest obstacle to multidisciplinary learning is the examination system. Most Indian universities still rely heavily on a single three-hour written exam at the end of the semester. This format rewards memorization of one discipline's facts. It does not reward the ability to connect ideas across fields. Portfolio assessment offers an alternative. A student maintains a digital folder across four semesters containing their best work: a research paper that used both historical and economic methods, a group project presentation on a local environmental issue, a reflective journal entry about how a philosophy course changed their understanding of scientific ethics. At the end of the degree, a faculty committee reviews the portfolio and assigns a grade for multidisciplinary competency. Rubrics for integration need to be developed. A typical exam rubric asks: "Did the student correctly state the concept?" A multidisciplinary rubric asks: "Did the student apply concepts from at least two disciplines appropriately? Did the student identify tensions between disciplinary perspectives? Did the student synthesize rather than just list?" Capstone projects are particularly suited to multidisciplinary assessment. In the final year, students work in small teams (each member from a different major) on a complex problem chosen by the team. The output is not an exam answer but a report, a presentation, or a prototype. Assessment includes peer evaluation of collaboration, faculty evaluation of disciplinary depth, and external evaluation by a professional from industry or government.

One autonomous college in Tamil Nadu replaced its final semester exams in three programs with a capstone project. Students reported that the project was harder but more satisfying than exams. Employers who reviewed the projects said they provided better evidence of graduate capability than marksheets. The college now plans to expand the model to all programs by 2027.

Recognizing and Addressing Obstacles

No framework survives contact with reality. Table 1 lists common obstacles Indian institutions face and practical workarounds.

Obstacle How It Shows Up Workaround

Faculty resistance Senior professors refuse to teach outside their specialty; younger faculty fear extra work. Create small incentives (teaching credit, travel funds). Start with volunteers only. Publicly celebrate early adopters.

Regulatory barriers Affiliation rules specify exactly how many credits each department must offer; no room for electives. Seek autonomous status from UGC. Use the ABC system to offer elective credits through other institutions. Pilot changes in one school or shift.

Lack of faculty numbers A small college with 30 faculty cannot offer many multidisciplinary courses. Form a consortium with nearby colleges. Share faculty via video or rotating schedules. Use MOOCs for introductory electives, with local faculty for discussion sessions.

Examination board inertia University exam controllers refuse to change format; they are measured on timely results, not innovation. Pilot portfolio or capstone assessment in a small program where results can be compared side-by-side with traditional exams. Present evidence to board.

Student confusion First-generation students may not know how to choose electives; they default to safe, familiar options. Mandate one academic advising session per semester focused specifically on multidisciplinary pathways. Create visual maps showing sample student trajectories.

A recurring theme across these workarounds is phasing. Trying to implement all four pillars across the entire university at once will fail. Starting with a pilot in one department or one batch of students allows learning and adjustment.

A Phased Roadmap Over Five Years

The following timeline is designed for a medium-sized university or a large autonomous college. Smaller institutions can compress or extend phases as needed.

Year 1: Preparation and Pilot

Form a working group of faculty, students, and administrators.

- Survey faculty to identify willing early adopters.
- Offer two training workshops on PBL and team teaching.
- Launch one multidisciplinary minor involving three departments.
- Introduce portfolio assessment in one program as a parallel (non-graded) trial.
- Success indicator: At least 10% of students enroll in the pilot minor.

Years 2–3: Expansion

- Extend multidisciplinary electives to all programs.
- Convert departments into three or four larger clusters.
- Require every faculty member to teach at least one course outside their home department over two years
- Replace end-semester exams with portfolios in two additional programs.
- Establish a rotating faculty chair for multidisciplinary teaching.
- Success indicator: 40% of students complete a multidisciplinary minor; faculty team teaching accounts for 20% of course offerings.

Years 4–5: Institutionalization

- Make a capstone multidisciplinary project a graduation requirement for all undergraduate programs.
- Revise faculty promotion criteria to include multidisciplinary teaching and curriculum development.
- Integrate the Academic Bank of Credits fully, allowing students to transfer credits from other institutions seamlessly.
- Conduct an external audit of multidisciplinary learning outcomes, including employer surveys.
- Success indicator: Graduate exit surveys show 75% agreement that their program prepared them to work across disciplines; employers report noticeable improvement in new graduates' problem-solving flexibility.

Conclusion

NEP 2020 has set a bold direction, but bold policies do not automatically produce changed classrooms. The shift to multidisciplinary learning requires careful, context-sensitive work at the institutional level. This paper has argued that such work must address four areas simultaneously: what students' study, how teachers teach, how departments are organized, and how learning is assessed. Neglecting any one area will cause the others to fail. The framework offered here is not a rigid formula. A large research university will implement it differently from a small rural college. What matters is the underlying logic: start small, create incentives, adjust based on feedback, and gradually expand. Multidisciplinary learning is not a destination that institutions arrive at overnight. It is a continuous process of breaking down walls that were built over decades. For policymakers, the message is to enable rather than mandate. Tie funding to demonstrated progress on multidisciplinary indicators, but allow institutions to find their own pathways. For administrators, the message is to protect early adopters and celebrate visible successes, however small. For faculty, the message is that multidisciplinary teaching does not mean abandoning one's discipline; it means learning to invite other disciplines into the conversation. The problems that India's graduates will face in the coming decades—water scarcity, digital inequality, public health crises—do not come in disciplinary packages. The education that prepares them for those problems cannot come in disciplinary packages either.

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