

# Implementation of National Education Policy 2020 in Pharmacy Education

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## ABSTRACT

Precise and explicit education policy is requisite for a country at all education levels because education ushers to evolution of balance between economy and growth. India with the direction of current Prime Minister and a skilled team with members of diverse backgrounds have developed and planned to implement a new education policy "Indian National Education Policy (NEP-2020)". NEP-2020 is a pioneering and visionary proposal, framed with the intention to provide a standardized education to everyone with a belief of integrated and research-oriented growth. It is the first change in the education policy in 21<sup>st</sup> century. This article initially talks about the history of education policies in India, Introduction of NEP 2020, its salient features, status of pharmacy education in India and at last the inclusion of NEP 2020 in Pharmacy to achieve enormous growth and advancement.

**Keywords:** NEP 2020, Pharmacy, Education policy, Implementation.

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## INTRODUCTION

Education leads to the empowerment of humans so that they can live a meaningful life and also contribute to the development of the society and the nation.<sup>1</sup> Development leads to economic growth and prosperity. Hence devising appropriate education policies based on the needs of the hour is the most sought responsibility of the government. However, the government needs to revise such policies from time to time based on contemporary needs of the times. India is no exception to this. Hence the first education policy of India was drafted in 1968, which was a revolutionary document presented by the then think tank. The second educational policy was published in 1986, along with its amendments in 1992 as shown in Figure 1. The visionaries who drafted such policies had carved out greater ideas for imparting better education to the masses of the nation. Unfortunately, after 1992 no attempts were made to bring out reforms in the education sector. In fact, as India became a free and liberalised economy, the technology started flowing into the country.<sup>2</sup> India moved towards digitalisation post GATT era and thus need of revamping the education policy was highlighted time and again. But due to many unknown reasons, nobody thought of the education sector, until the government led by Prime Minister Narendra Modi came into power in 2014. The wave of Innovation, Skill India and

Digital India started attracting the young populace.<sup>3</sup> The country wanted more barrier free and liberalised policies of education. Hence government brought a revolutionary, first of its kind, National Education Policy (NEP) in 2020. NEP envisages basic changes in the system itself. It visualises a new curricular and pedagogical structure for education that is responsive, responsible and relevant to the needs and interests of students at different stages of their development. In this context, to develop good, well-rounded, nationalistic, and creative individuals, NEP plays an important role in defining all-in-one and all-for-one system. The provisions of NEP if executed in letters and spirit shall create vibrant, socially engaged, cooperative communities which in turn will lead to a happier, cohesive, cultured, productive, innovative, progressive and prosperous India.<sup>4</sup>

## Salient Features of National Education Policy (NEP)<sup>4</sup>

NEP proposes sweeping changes in the Indian educational system keeping all the stakeholders at centre stage as depicted in Figure 2. Some of the salient features of NEP are as follows:

1. Multidisciplinary educational approach.
2. Enhanced flexibility in selecting cross disciplinary courses: A tailor-made approach.
3. Ease in access, equity, and affordability of education.
4. Skill development and character building.
5. Creating Knowledge based society based on revamping of the educational system.
6. Design unique pattern of 5+3+3+4 leading to incremental capacity building in the children.



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7. Introduction of a four-year multidisciplinary UG Programme focused on research.
8. Research, Innovation and entrepreneurship development are identified as priority areas.
9. Thrust on experiential learning and critical thinking.

### Status of Pharmacy Education In India<sup>5-9</sup>

Prof. M. L. Schroff, the Father of Pharmacy Education in India, started formal Pharmacy education with 3 years Bachelor of Pharmacy course at Banaras Hindu University (BHU) in 1937. Until the early 1980s, there were 11 universities and 26 colleges offering pharmacy education at the bachelor's and master's levels, in addition to Two-year D. Pharm. programmes. Post-1980s, when private sector was opened up for education, institutes offering all these courses increased rampantly, to such extent that, currently, there are over approximately 4000 Pharmacy colleges in India, out of which, more than 3000 are private colleges. Additionally, 6 years Pharm. D. Program is running in approximately 286 institutes. More number of NIPERs were established when central government realised importance of pharmacy education due to rapid industrialization in the pharmaceutical sector. Majority of these institutes provide trained manpower to manufacturing, research and allied fields of pharmaceutical industries and particularly pertain to post-graduation and doctoral programmes in Pharmaceutical Sciences.

### Status of Pharma Industries In India<sup>10,11</sup>

India is a prominent provider having 20% share in generic medicines and 62% share for vaccines. India has more than 262 US-FDA compliant Pharma plants, more than 2000 WHO-GMP approved Pharma Plants, 253 European Directorate of Quality Medicines (EDQM) approved plants. India is a source of 60,000 generic brands across 60 therapeutic categories and manufactures more than 500 different APIs. India is a home to more than 3000 pharma companies with over 10,500 manufacturing facilities. However, India imports 86% of medical devices and 63% of Bulk drugs of the total pharma imports in the country which has been increasing year after another.

### Major Challenges In Pharmacy Education In India<sup>12,13</sup>

1. Indistinct and unspecialised coursework: The curriculum at the undergraduate level is not distinct and it is without specialisation. All students have to learn same subjects irrespective of his/her interest level and grasping capacities. This does not make them industry ready soon after graduation as they do not possess any specific skill set as desired by Industry.
2. Inability to attract meritorious students into the course: Despite many employment opportunities due to technological advancements, Pharmacy remains a third or fourth choice of course for the majority of students, probably due to lack of professional status for pharmacist in our society.

3. Tight boundaries and less integration with other sciences: Rigid course boundaries do not allow the course to integrate and collaborate with other fields and branches like Engineering, Medicine, Economics, law, etc.
4. Over regulations leading to restrictions in imparting Cross: Disciplinary and Inter-Disciplinary courses which demand critical thinking e.g., Intellectual Property Rights, Artificial Intelligence, Machine Learning, Data Science, etc.
5. Lack of strong, uniform Industrial support in training: Since there is no legal binding on pharmaceutical industries to train students for a specified duration, the academia and industries work in silos in majority of the cases.
6. Lack of Innovation, critical thinking, and problem: solving attitude in students due to emphasis on the examination system which emphasizes on rote learning.
7. Lack of sufficient research funding from the government and Private sector leads to the demotivation for faculties and students to undertake research that has commercial importance.
8. No professional recognition to Pharmacist In spite of the growth of pharma sector, Pharmacists have not achieved the status of Professionals just like Doctors, Architects, Engineers, etc. The main reason could be that Pharmacists could not connect themselves with community at large. So, society does not realise his/her importance. Pharmacy remains to be a course of medical shops in terms of dispensing drugs. This has side-lined concepts like preventive healthcare and community medicine. Recently PCI brought Pharmacy Practice Regulations 2015, to bridge this gap and to give much desired and deserved recognition to Pharmacists as professional. However, time will decide if this is a fruitful step toward the desired objectives.
9. Untrained teachers this is the biggest lacuna in the Pharmacy profession. There is no institute or no course designed for professionals who wish to pursue their careers in the Pharmacy academics. This leads to uneven and un-scientific teaching and solely depends upon the skills and interest level of the teachers.

### Solutions Provided in NEP to Address above Problems<sup>14</sup>

1. Research at UG level: In the present curriculum of Final year, Semester VII has practice school and Semester VIII has project work. The project work includes minor research in Formulation Development, Cosmeceuticals, Nutraceuticals, Drug Delivery System, Synthetic Process Development, Clinical Surveys, Data Analysis, etc. So, instead of separate project work in semester VIII, there can be inclusion of project work based on practice school to be initiated from Semester VII altogether. It will lead to develop research aptitude among students in final year UG. Also, the outcome would be fruitful with ample of training as students will get almost

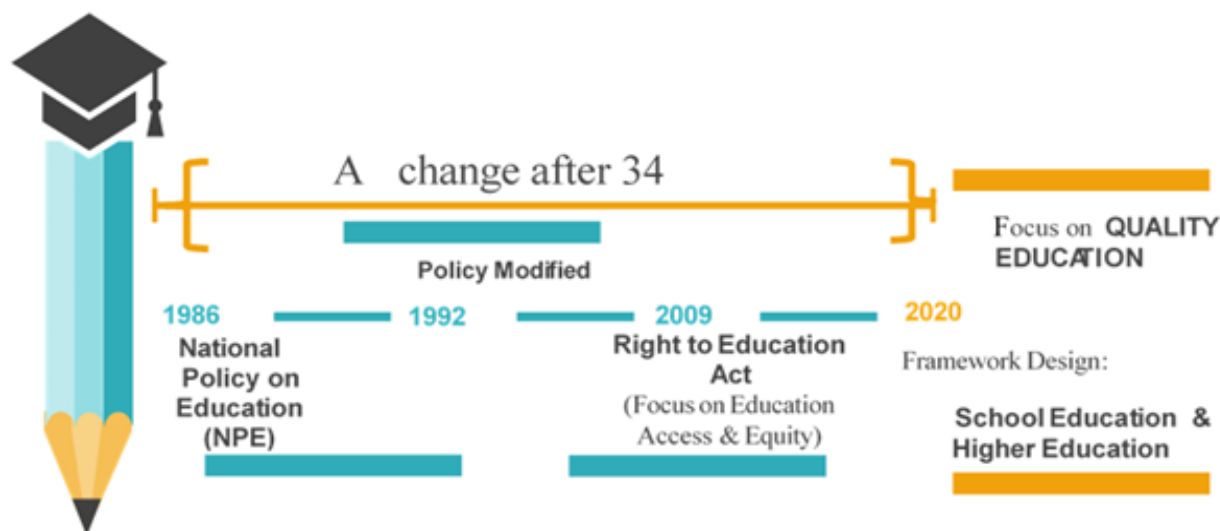


Figure 1: Development of Education Policy in India.

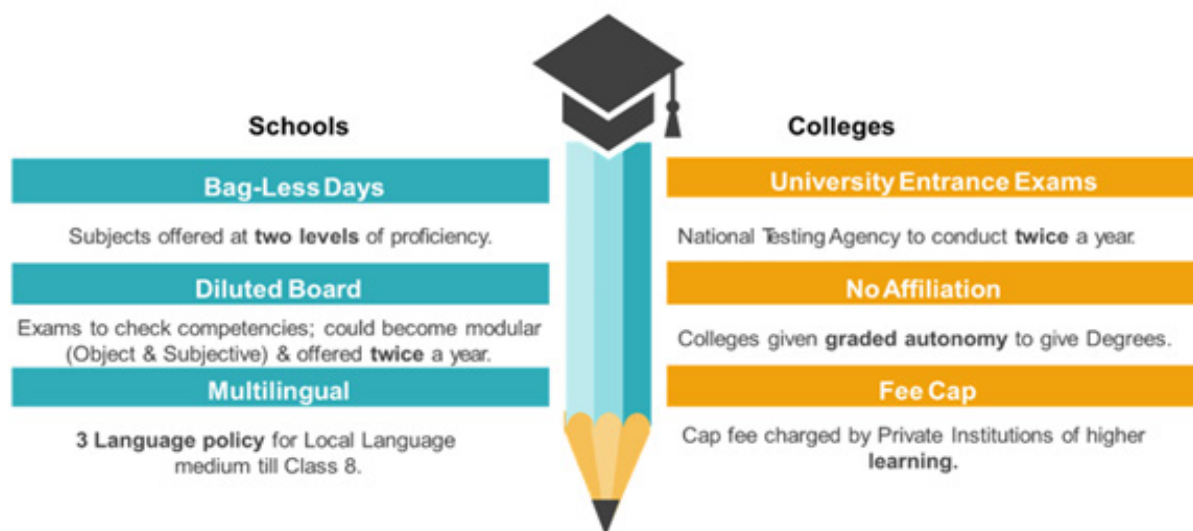


Figure 2: Key Features of NEP 2020.

10 months in hand to conduct their research. This will reflect in enrolment of students with research attitude in the course. Setting up of National Research Foundation (NRF) can help in identifying thrust areas of research and provide platform for interdisciplinary research among different institutions.

2. Multidisciplinary courses: A pharmacy student can take up following courses from other branches (flexibility) and become specialised in Profession. Pharmacy can be clubbed with various fields like engineering, physics, mathematics, commerce, etc.

- Law: Pharmaco-Legal.
- Economics-Pharmaco-Economics.
- Instrumentation engineering-Medical Devices.
- Medicine-Clinical studies, Data Management.

Table 1: Proposed Exit Options.

Year	Credit Earned	Award to Learner
1 <sup>st</sup> year	40	Certificate
2 <sup>nd</sup> year	80	Diploma in Pharmacy
3 <sup>rd</sup> year	120	Degree in Pharmacy
Final year	160	Degree in Pharmacy with Honours/Specialization

- Forensic sciences-Legal.
- Ayurveda- Integrated Health Care Education/ Herbal Drug Delivery-AYUSH Approach
- Computer engineering: AI/ML/Data Sciences/Analytics.
- Statistics-Biostatistics.
- Industrial Chemistry-Process development.

- Physics-Biophysics, Nano-Technology for drug development.
  - Management-Product Marketing.
  - Engineering-Bulk drugs industry set up.
  - Nutrition-Nutraceuticals.
  - Sports-Sports Medicines.
  - Botany-Pharmacognostic studies of plants
3. With the mandate received from UGC, Academic Bank of Credits (ABC) is a virtual/digital storehouse that contains the information of the credits earned by individual students throughout their learning journey. Academic Bank of Credit can help Pharma graduates to learn Pharmacy from different institutes of repute of their choice, thus exposing them to the newer and advanced learning environment. ABC will allow students of UG and PG courses to enter and exit the course within a stipulated period. It will give impetus to blended learning mode, allowing students to earn credits from various HEI's registered under various schemes like SWAYAM.
  4. To fulfil the objectives of National Education Policy 2020, the Government with members from UGC, AICTE, NCVET, NIOS, CBSE, NCERT, Department of School Education and Learning and Department of Higher Education, Ministry of Education, DGT, and Ministry of Skill Development jointly developed National Credit Framework (NCrF). NCrF is a panoramic credit framework circumscribing elementary School, higher, and vocational education and training, integrating credit system in academics, vocational skills and Experiential learning including relevant experience and professional levels acquired. According to the draft, 40 credits will be required for a certificate, 80 for a diploma, 120 for a degree and 160 credits will be needed for a degree with honours and research components. Similarly for postgraduate diploma, students must earn 40 credits and 80 credits for a master's Degree.
  5. A provision of compulsory opportunities of internship with local industries, and businesses under NEP shall help Pharmacy institutions to establish tie-ups with industries helping students to take benefit of experiential learning.
  6. Integrated 5 (4+1) years Bachelor / Master Programme in Pharmacy shall motivate students to take up research and innovation in emerging branches like Drug Discovery, Molecular Modelling, Drug Designing, Pharmacokinetics Studies, Phytopharmaceuticals.
  7. A separate and independent Teachers' training facility shall make teachers equipped to teach Pharmacy effectively and professionally.
  8. Emphasis on preventive healthcare and community medicine can develop Pharmacy practice as a profession.
  9. NEP recommends increased opportunities for faculties by research collaboration both for interdisciplinary and/or

multidisciplinary among Indian and foreign universities having some dedicated expenditure reserved for research.

10. A blended learning approach that combines integrated content for native language within an English curriculum. Under the Ministry of Education, Madhya Pradesh government has implemented local language books for MBBS, such similar initiatives are planned by UGC for Pharmacy as well which will integrate the pharmacy education throughout INDIA.

### Key Indicators of NEP 2020 and its Relevance in Pharmacy

1. **Multidisciplinary Approach:** In the present era, the pharmacy profession and its applicability have changed immensely. Due to the advent of computational techniques, various branches like AI, ML, and Data Science have been efficiently used in the healthcare services. Hence, a multidisciplinary approach is a need of the hour while educating the learners of the present generations. Newer courses of diverse specialities must be included in the curriculum to make it relevant.
2. **Multiple Entry and Multiple Exit:** We propose that multiple Entry and multiple Exit (ME-ME) can be applied to pharmacy courses as depicted in Table 1.<sup>15</sup>
3. **Skill Based Training:** Pharmacy being an exclusively Technology-Based Profession, diverse skills are required to become successful pharmacist. The learners inclined towards industry should be equipped with skills like machine handling, documentation, computation, knowledge of market, finances, etc. Whereas the learners inclined towards clinical/hospital side should be equipped with skills like patient counselling, communication skills, handling medical devices, etc.

### CONCLUSION

The action plan of NEP enables the sustainability of Pharmacy personnel relevant to local needs. It will give importance to students' practical knowledge and will help students to develop a research temper from a young age. Implementation of NEP will make it easier to set up new standards of Pharmacy education which will be at par with the global standards. Since NEP will make it easier for foreign colleges to set up their campuses here, many students who are unable to go abroad due to multiple reasons will be able to experience it and get global exposure. NEP lays a strong foundation for the growth of Pharmacy Institutions as the government proposes to establish multi-disciplinary institutions which will provide flexible academic curricula, allowing the study of inter-disciplinary subjects, and giving multiple exit options to the Pharma students. Thrust on Faculty Training and Development suggested by NEP will also benefit the student fraternity. Pharmacy faculties will be able to share their knowledge and educational resources with their colleagues worldwide and will be able to form alliances. Thus, recommendations made by NEP can provide a conceptual

framework for the design, implementation, and assessment of Contemporary Educational Programmes for Pharmacists throughout the Nation.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## ABBREVIATIONS

**NEP:** National Education Policy; **GATT:** General Agreement on Tariffs and Trade; **BHU:** Banaras Hindu University; **NIPER:** National Institute of Pharmaceutical Education and Research; **US-FDA:** United States Food and Drug Administration; **WHO-GMP:** World Health Organization Good Manufacturing Practice; **EDQM:** European Directorate of Quality Medicines; **API:** Active Pharmaceutical Ingredient; **UG:** Under Graduate; **NRF:** National Research Foundation; **AYUSH:** Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy; **AI:** Artificial

Intelligence; **ML:** Machine Learning; **DGT:** Directorate of General Training.

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