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RESEARCH PAPER

Role of ICTs and e-Resources in agricultural education under the new education policy 2020

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Abstract: Human resource development is a process of developing and unleashinghuman expertise. Human Resource Development (HRD) makes people more competent through acquisition of new skills, knowledge and develop favourable attitudes towards new developments. HRD can create an environment of trust and respect to perform more efficiently and prepare individuals to accept change.This is particularly important in the context of New Education Policy of Government of India, which has come 34 years after the first Education Policy was passed in 1986. The new National Education Policy (NEP) for India has been updated, revised and approved in July 2020. This is a huge milestone for India's Education system, and aspires to make India an attractive destination for higher education world-wide.Through "Access, Equity, Quality, Affordability and Accountability", the new education policy aims to transform India into a vibrant knowledge hub. Systemic and institutional improvements are emphasizedin regulation, governance and promotion of multidisciplinary academics and research in Indian higher education institutes.

Key words: Cognitive skills, Education policy, Equity

Agricultural education must evolve in tune with the globalization of education and emergence of new areas. Enhanced quality and relevance of higher agricultural education is essential to facilitate human resource development for producing self-motivated and capable professionals and entrepreneurs.With the advances in science and technology in general and agriculture and allied sectors in particular, changing economic status, life styles, food habits and demand for processed/value added foods, the academic programmes of the university need to be reoriented accordingly.The need of the higher agricultural educational system is to generate world-class manpower with available limited resources making full use of advanced technologies. Human resource development is a process of developing and unleashinghuman expertise. Human Resource Development (HRD) makes people more competent through acquisition of new skills, knowledge and develop favourable attitudes towards new developments. HRD can create an environment of trust and respect to perform more efficiently and prepare individuals to accept change.This is particularly important in the context of New Education Policy of Government of India, which has come 34 years after the first Education Policy was passed in 1986. The new National Education Policy (NEP) for India has been updated, revised and approved in July 2020. This is a huge milestone for India's Education system, and aspires to make India an attractive destination for higher education world-wide.Through "Access, Equity, Quality, Affordability and Accountability", the new education policy aims to transform India into a vibrant knowledge hub. Systemic and institutional improvements are emphasizedin regulation, governance and promotion of multidisciplinary academics and research in Indian higher education institutes.

Several challenges manifested in the domain of higher education in the country, which are listed below:

- Fragmented higher education ecosystem
- Poor learning outcomes and development of cognitive skills of students
- Rigid, inflexible separation of disciplines for eg: An arts stream student cannot study any science related subject at HE
- Lack of quality higher education in socioeconomically challenged areas
- Low teacher and institutional autonomy to innovate and excel
- Inadequate career management and progression for faculty/ institutional leaders
- Lack of research funding across disciplines
- Sub-optimal governance and leadership of HEIs
- Poor regulatory mechanism that inhibits growth of excellent and innovative HEIs
- Large number of affiliations to universities resulting in poor undergraduate performance

Besides the above challenges, there are specific challenges affecting agricultural education. Limited autonomy has led to inadequate networking with national or international centres of excellence and weak linkages with industry and the private sector.There is a disconnect between agricultural education and employment and hence there is a need to reorient academic programs with entrepreneurship-focused courses. In most of the universities, the faculty positions are vacant leading to heavy workloads, thereby adversely affecting the teaching performance. There is also insufficient infusion of frontier science areas such as nanotechnology, precision and climate-resilient agriculture, information and communication technology etc. With most of the budgetary allocation is going for salaries, very limited financial resources are available for

building e-resources and digital communication technology facilities.

The New Education Policyaims at overcoming all the above challenges

The NEP brings about a range of changes in the system of higher education aiming to improve it with the goal of "creation of greater opportunities for individual employment. Creating an Higher Education system consisting large, multidisciplinary universities and colleges, with at least one in or near every district, and more higher education institutions (HEIs) across India which offer their programmes in local/Indian languages. NEP will replace the fragmented nature of India's existing higher education system and instead bring togetherHEIs into large multidisciplinary universities, colleges, and HEI clusters/ knowledge hubs. New and existing HEIs will evolve into three distinct categories; Research Universities (RUs); Teaching Universities (TUs); and Autonomous Degree Granting Colleges (ACs). The policy states that over time, single-stream HEIs will be phased out over time.

Improved Governance of HEIs by high qualified independent boards having academic and administrative autonomy. "light but tight" regulation by a single regulator for higher education. In place of UGC, new Higher Education Commission of India(HECI) will be set up as a single overarching umbrella body for entire higher education (excluding medical and legal education). Public and private higher education institutions will be governed by the same set of norms for regulation, accreditation and academic standards.Govt will phase out the affiliation of colleges in 15 years and a stage-wise mechanism is to be established for granting graded autonomy to colleges.

A goal of the NEP is to increase the Gross Enrolment Ratio in higher education, including vocational education. Giving access to education to all learners (disadvantage/ learners with special needs) through online education, and Open Distance Learning (ODL).

Student Centric Policy

The NEP is more student centric, giving flexibility to students to pursue their passion at the same time enhancing their skills enabling them to become more employable. Undergraduate degrees will be of either a three or four-year duration, with multiple exit options within this period, with appropriate certifications for those dropping out at a certain point in the course. The NEP replaces homogenous format (arts and science) to concept of singular streams (arts/science) called Liberal Education. The notion of a physical campus or geographical location to dissolve giving flexibility to students to study either in a national or an international institution. A multidisciplinary approach to implement an "Academic Bank of Credit (ABC)", which will be able to digitally store academic credits earned from various recognized HEIs (national and international). This will allow degrees from an HEI to be awarded considering credits earned.Further, the credits earned at various levels will get credited into a digitalized Academic Bank of Credit. Students can use their earned credits to take admission in another institution to further continue their studies for the remaining year/s of their graduation courses.

There will be no rigid separations between arts and sciences, between curricular and extra-curricular activities, between vocational and academic streams. Students can select subjects of their liking across the streams. Vocational education will start in schools from the 6th grade, and will include internships.Under the NEP, undergraduate degree will be of either 3 or 4-year duration with multiple exit options within this period. College will be mandated to give certificate after completing 1 year in a discipline or field including vocational and professional areas, a diploma after 2 years of study, or a Bachelor's degree after a 3-year programme.

The NEP 2020 has aimed at almost doubling the Gross Enrolment Ratio (GER) in higher education to 50 per cent by the year 2035, as compared to the current GER of 26.3%. It also has provision for greater autonomy to the academic institutions offering quality higher education.The National Education Policy has also emphasized on setting up of a **Gender Inclusion Fund** which is aimed at creating an environment of equitable and fair quality education for girls as well as transgender students. Also, as per the NEP document, Special Education Zones will be created for disadvantaged regions and groups which will make higher education opportunities more accessible for students.

Research Focused Policy

National Research Foundation (NRF) will fund brightest, peer-reviewed research and to actively seed research in universities and colleges. The NRF will be an institution specially set up to help channel systematic investment in research and innovation for India which has been low (0.69% of GDP) in comparison to the US (2.8%), China (2.1%) Israel (4.3%) and South Korea (4.2%). The NRF will liaise between researchers and government as well as industry, so that research scholars are constantly made aware of the most urgent and current national research issues. The NRF will also ensure policymakers are constantly made aware of the latest research breakthroughs; this would allow breakthroughs to be brought into policy and/or implementation in an optimal fashion. Outstanding research and progress achieved via NRF funding/ mentoring across subjects will be recognized through prizes and special seminars recognizing the work of the researchers.

Teacher Development

A National Mission for Mentoring will be established, with a large pool of outstanding senior/retired faculty – including those with the ability to teach in Indian languages to provide mentorship to university/ college teachers. All fresh Ph.D. entrants, irrespective of discipline, will be required to take credit-based courses in teaching/education/pedagogy/writing related to their chosen PhD subject during their doctoral training period. PhD students will also have a minimum number of hours of actual teaching experience gathered through teaching assistantships and other means. Ph.D. programmes at universities around the country will be reoriented for this purpose.

Use of Communication Technology in Higher Education

National Education Policy 2020 has emphasized the use of communication technology in multiple ways to enhance the teaching-learning experience and also to make quality education accessible for masses. As per the NEP document, the use of communicationtechnology will be taken to the next level to "ensure preparedness with alternative modes of quality education whenever and wherever traditional and in-person modes of education are not possible." This step carries special significance in the backdrop of the COVID 19 pandemic, forcing the majority of institutions to switch their teaching-learning mode from in-person offline method to virtual learning in online mode.To promote 'Online Education and Digital Education', a dedicated unit will be set up to facilitate building of digital infrastructure, digital content and also to look after the e-education needs at the level of both school and higher education.Further, under the 'Open and Distance Learning' will be made more relevant with credit-based recognition of Massive Open Online Courses (MOOCs) to make these courses at par with the highest quality in-class programmes.The government will also set up an autonomous body – National Educational Technology Forum (NETF), which will work as a platform for free exchange of ideas on the use of technology to enhance learning, assessment, planning, and administration.

ICAR plans to support Agricultural Universities with the flexibility to offer different designs of Master's programmes. Provision to undergo an Internship for Development of Entrepreneurship in Agriculture (IDEA) and permitting PG students to take up to a maximum of 20% credits in a semester through online learning resources.

With the available alternative modes of quality education, ICAR proposes to complement/enrich traditional and in-person modes of education. Steps will be taken to avail the existing e-learning platforms such as SWAYAM, DIKSHA, SWAYAMPRABHA, etc and also to develop e-courses in agriculture and allied sciences. Under the Niche Area Projects,e-Courses have been developed by NAARM covering video lectures for UG students of veterinary and plant protection for UG (Agriculture) students. A diagnostic kit for detection of pesticide residues in milk has also been developed by NDRI, Karnal. ICAR website has the list of e-courses for BScAg, BVSc, BFSc, B.Tech (Dairy Technology), B.Sc. (Home Science), B.Tech (Agricultural Engineering) and B.Sc. (Horticulture). Several e-Books are also available in the ICAR website for wider use. The tools, such as, two-way video and audio interface for holding online classes are needed at all colleges.ICAR plans to support the Agricultural Universities to achieve the goal of 'internationalization at home' by maintaining global quality standards and attracting greater numbers of international students. Research/teaching collaborations and faculty/student exchanges with high-quality foreign institutions will be facilitated. ICAR Digital Resources includes National Initiative on Climate Resilient Agriculture (NICRA), Design of Micro Irrigation Systems (DOMIS), ,*edalhangyanmanch*, Knowledge Innovation Repository of Agriculture in the North East, Rohu Database, Expert System for Maize, Expert System on Wheat Crop Management, Expert System on Seed Spices, Expert System on Seed Spices, CaneInfo, Technologies & Products for Commercialization -Animal Science, Design Resources and Statistical Computing for NARS.