CAN SMART EDUCATION ADDRESS THE KNOWLEDGE GAP IN INDIA? AN OPINION[1]

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Abstract

The opinion paper explores the dimensions of smart education post the advent of National Education Policy of 2020 in India and aims to understand how the problem of knowledge gap can be addressed through the integration of digital technologies in higher education. The paper explores the different aspects of NEP 2020 and its blueprint for integration of digital technologies and to what extent they address the concerns of the knowledge gap theory in context of India.

Keywords: Smart Education, Knowledge Gap, Adaptive Learning, Digital Divide

I. Concern of Knowledge

In the 1970s, Philip J. Tichenor, George A. Donohue, and Clarice N. Olien (Donohue, Olien, and Tichenor,1970, pp. 159-17) proposed the "Knowledge Gap Theory". The theory highlighted the existence of an information gap within society that is shaped due to socio-economic factors. The fundamental aspect of the theory was that in a society the existing social systems create a hierarchy of classes on the basis of which accessibility is defined. In this process when mass media is included as a variable then the information gap increases further as those positioned higher in the overall hierarchy are able to acquire more information in comparison with the rest. As a result, the knowledge gap between these classes increases (Communication Theory, 2019). Since Media Dependence Theory has highlighted that in a society individual would gradually rely more and more on media for information, the classification of information accessibility on the basis of socio-economic hierarchy ultimately leads to a vicious gap in knowledge creation which can only be addressed through an equilibrium. Since ensuring an equilibrium from a long-term perspective can be a herculean task as the concerned variables such as money, information, class, etc. may not remain constant, the problem of the knowledge gap has to be addressed through some form of technological innovation that allows the space for inclusivity and can leap-frog the structural hurdles for the creation of a sound knowledge system.

Atkin and Jeffers (2017) regarding the knowledge gap have highlighted that the socio-economic factors have been dictating the accessibility of information through technologies

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and the inclusive accessibility to technologies has been a trickle-down process in society. In other words, there has always been a gap (or a phase of gestation) where the technology has been accessible across different classes. For instance, comparing the smartphone revolution in India post-2010s, there has been a strong hierarchy in terms of the devices owned by different users that provided different degrees of freedom for engagement with information as well as utility. This very process has reflected a divide in knowledge formation across different classes. Though the gap has reduced with time, but it has not been considerable due to the existence of a hierarchy in accessibility to technologies. The other criticism regarding the knowledge gap has been that it can never be filled as the factors involved in defining the gap can never be fixed and may change over time. Thus addressing the given set of factors in the long run to limit the knowledge gap may itself create another information gap in society because of the changing factors impacting the already existing knowledge gap. Further, the Knowledge Gap theory holds significant importance in the context of India's rapid digitization in the 21st century because digitization has expanded the options for knowledge creation among the populace. However, a fundamental drawback of this phenomenon is the potential for an unequal distribution of knowledge across socio-economic groups due to the increasing freedom of choice in accessing information. Such disparity may lead to adverse long-term societal consequences. Thus, policymakers are tasked with ensuring equitable knowledge formation among the country's demographic dividend. However, in India, existing structural inequalities and unequal access to media technologies have exacerbated the knowledge gap among different segments of the population (Sheikh, 2017). As a result, there is a dire need to explore the domains of knowledge creation and dissemination but with an unconventional and different approach that can ultimately provide inclusivity in accessibility and engagement.

II. The Indian Smart Education Approach

The Smart Education approach in India has witnessed different cycles of structural changes. Despite that, smart education has been an important step forward because more than 800,000 students have been enrolled in higher education from 2018 onwards, marking an increase in the Gross Enrollment Ratio (GER) of 27% (2020-21). However, there exists the issue of insufficiently recognized institutions that pose a challenge in absorbing the young population into higher education (Livemint, 2019). Apart from that, there is another significant problem of lack of effective industry-academia collaboration. Many courses offered by institutions have not been updated to meet evolving market demands and this has led to the curricula misalignment with industrial needs. Most of the central and state institutions are still relying heavily on grants from the University Grants Commission for sustenance. Self-funded colleges and institutions have no other option but to maintain high fee structures that restrict student admissions and compromise the long-term educational quality due to profit-driven models. Even research-based engagements are affected due to a lack of resources or funds or due to the growing rat race for showcasing advancement in pedagogy and innovation.

The advent of the National Education Policy (2020) has been a major step in enhancing the overall state of education in India. A notable aspect of the National Education Policy (NEP)

of 2020 has been its focus on promoting education through indigenous languages, employing innovative methods like gamification and apps, as well as cultural exchanges through various mediums such as films, theatre, storytelling, poetry, and music. Additionally, the NEP aims to encourage the learning of international languages like Korean, Spanish, French, and German. In the domain of higher education, NEP has identified key areas for growth, including offering interdisciplinary programs in local languages, promoting faculty and institutional autonomy, curriculum redesign, flexible exit options for students, establishing a National Research Foundation, and enhancing online and distance learning. In addition to that, NEP has strategically integrated online learning and ICT into higher education, facilitating industry-academia linkages. For instance, the Academic Bank of Credits, a provision under the NEP, digitally records students' academic credits from various institutions, allowing flexibility in course selection and credit transfer. It also promotes MOOCs and e-learning platforms like UGC-SWAYAM, where students can earn credits and enhance their digital skills. Moreover, the NEP encourages the development of digital libraries and the creation of a National Education Technology Forum to boost students' digital literacy. Also, to enhance research and innovation, the NEP has advocated for integrating ICT into academic practices, given India's comparatively low research contribution. Institutions have been encouraged to develop digital infrastructure for optimal learning models and curriculum content. Accreditation through the National Accreditation Council grants institutions the freedom to develop online programs, exemplified by initiatives like IIM-B MOOCs.

Apart from that, the NEP-2020 also emphasizes the use of digital technologies for smart education which also focuses on integrating digital learning in a personalized manner so that different students from various cultural backgrounds can be integrated into this educational and participatory digital space. Further, most online learning platforms rely on open educational resources (OERs) and utilize the Sharable Content Object Reference Model (SCORM) due to its cost-effectiveness and customizable content sharing and assessment features. However, SCORM provides a linear digital engagement experience and lacks adaptability in learning. For example, e-PG Pathshala (2015) uses SCORM exclusively for delivering learning material in text and video formats with self-assessment tasks (Hwang & Tsai, 2008).

An alternative model is the Modular Adaptive Learning System (MALS), which constructs online learning programs in a personalized and intelligent manner using algorithms. If learning objectives are not met, MALS generates new learning objects, course material, and assessments iteratively until objectives are achieved. While considered suitable for adaptive learning, MALS requires comprehensive digital infrastructure to operate effectively. The other models such as the "Wrap Around Model" and "Integrated Model" are also linear and utilize existing online materials, offering limited customization and dynamic assessment capabilities. The challenge in integrating ICT into education under the NEP (2020) lies in incorporating dynamic e-learning models that cater to users' adaptive learning experiences. Many government-run e-learning platforms, like Google Course Builder, remain linear rather

than dynamic, lacking the ability to adjust learning processes based on individual achievements and objectives (Chauhan, 2017). Additionally, copyright restrictions limit access to adaptive learning models, necessitating public-private partnerships to develop alternative e-learning models.

III. Problem Solved?

The problem remains partially addressed because of certain limitations. By comparing India's National Education Policy (NEP) - 2020 with its global counterparts reveals differing ideological approaches to the education policy. In many global contexts, education policies align with neoliberal ideologies, particularly in higher education, emphasizing competition, entrepreneurship, and neo-conservatism. For example, China's education policy operates on a 3-tier system, focusing on mobility, foreign recruitment, and internationalization. It stresses innovation-driven development over technology-driven progress, utilizing digital educational resources to enhance teaching and learning. In contrast, India emphasizes entrepreneurial skills, competitiveness, and employability, with NEP-2020 underlining the significance of local and Indian languages in higher education. Similarly, Singapore places a high value on holistic education, exposing students to best practices in higher education and conducting internal assessments of institutions to complement the Gross Enrollment Ratio (GER). India's new policy aims to restructure accreditation and ranking systems to categorize institutions offering value-added courses, both online and offline. Conversely, countries like the USA, Japan, and Canada prioritize infrastructure development, pedagogical excellence, and industry-academia collaboration despite promoting competition in education policy. They have successfully integrated ICT into higher education, fostering effective adaptive learning models based on universalism and ultra-relativism. Consequently, they have attracted considerable talent migration due to educational and professional opportunities. While India's NEP initiates internationalization efforts, its approach to ICT integration reflects a blended approach across different higher education programs, as opposed to the more advanced models seen in other global leaders.

The other principal challenge is the integration of ICT into education through the NEP (2020) where there is a need to emphasize on the incorporation of various dynamic e-learning models that cater to users' adaptive learning experiences. Most government-run e-learning platforms still rely on open-source applications like Google Course Builder, which offers a linear engagement format rather than dynamic ones. Adaptive learning entails dynamically adjusting the learning process with changes in objectives. However, current courses progress in a time-bound manner rather than responding to learners' achievements and goals (Chauhan, 2017). Additionally, course designers must manually adjust programs to meet individual learning needs, which becomes cumbersome with a large number of learners. Furthermore, assessment lacks flexibility, as many adaptive learning models are copyrighted and not readily available through open-source licenses. Hence, the policy should outline how public-private partnerships can develop alternative e-learning models. Another drawback of the policy regarding e-learning and industry-academia linkages is its failure to emphasize contemporary cloud-computing-based learning models for dynamic user engagement.

Additionally, the policy overlooks the "Sand-Castle Principle," crucial for shaping India's online learning systems around adaptive learning models. There is also concern about how to strategically invest resources in building platforms and training instructors across geographically diverse institutions in India. Moreover, the policy should highlight how adaptive learning models can enhance and update online content for future use, rather than being repetitive.

Under the NEP-2020, institutions in India with higher accreditation from NAAC have the opportunity to develop their in-house e-learning models for undergraduate and postgraduate programs. This initiative is seen as positive, as smaller institutions are collaborating with larger ones to leverage infrastructure, applications, and expertise, fostering alternative partnerships between institutions. Additionally, higher education institutions are exploring open-source applications and adapting them to offer adaptive learning experiences. While the Modular Adaptive Learning System (MALS) is considered the most desirable model in India, its costliness limits its availability across many institutions. Nevertheless, some institutions in science and management domains have partnered with private stakeholders to develop online course models, sometimes charging subscription fees for popular specializations. Collaborations for cross-platforming exist, but adaptive learning experiences are currently limited to specific attributes. NEP-2020 has also encouraged the growth of the market for alternative learning platforms by private players, offering cost-effective solutions. However, these applications, compared to global counterparts like Coursera, Skillshare, and Moodle, have restricted features due to copyright limitations, limiting their ability to provide similar experiences. Nonetheless, the market for alternative platforms is gaining attention, fostering collaboration for the development of in-house applications for online course delivery.

If there can be an integrated participatory space between the public and the private in terms of smart education and the policy in the later years provides a blueprint regarding the collaboration between different stakeholders, it will not only enhance adaptive learning models for digital education but will also help in addressing the problems of accessibility and greatly reducing the problem of knowledge gap, especially in the case of India.

IV. Conclusion

The discourse on the Knowledge Gap Theory, alongside the examination of India's Smart Education approach and the implications of the National Education Policy (NEP) of 2020, underscores the persistent challenges in addressing socio-economic disparities and ensuring equitable knowledge formation. While the NEP introduces commendable initiatives to integrate ICT into education and foster adaptive learning models, it faces hurdles in achieving dynamic engagement and overcoming copyright restrictions. Disparities in institutional recognition, industry-academia collaboration, and resource allocation further hinder progress. However, the potential for public-private partnerships and the development of alternative e-learning platforms offer avenues for improvement. For India to effectively bridge the knowledge gap and promote inclusive education, a concerted effort involving diverse

stakeholders and a strategic focus on dynamic e-learning models are imperative. Only through such collaborative measures can the nation harness the full potential of smart education to mitigate socio-economic disparities and foster a more equitable knowledge ecosystem.

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