

Infrastructural Challenges in Higher Education towards Inclusive Growth of Human Resources

Ravi Kumar

Head, Postgraduate Department of Commerce,
N. V. Degree College, Gulbarga-585103

ABSTRACT: The paper studies the *infrastructural challenges in higher education* that has formulated as a hindrance towards the growth of young Human Resource (HR) and meets the requirement of employment. The study starts with an overview of the higher education in India, growth and progress, and identifies five important infrastructural challenges viz.: a) Teachers/Faculties; b) Teachers' teaching aids; c) Learning materials and teaching methods; d) Building and accessories; and e) Infrastructure surrounding educational institutes. Methodologically, the paper is descriptive in nature as it tries to narrate the facts rather than provide statistical evidence based on observation and/or field investigation. The aforementioned bottlenecks discussed in the study are not confined to rural areas alone, but are universal as could be witnessed in majority of the colleges and universities in the semi-urban, urban settings as also in the metro cities, to a significant extent. It was identified that all the five factors have a massive negative impact on the growth and development of the youth with regard to internalising knowledge in terms of *mentalising* the learning and creating avenues for either wage- or self-employability and has to be address seriously with remedies to stop further obliteration which is the very purpose of this paper.

Key Words: Higher Education, Human Resource, Inclusive Growth, Infrastructure, Teachers, and ICT

INTRODUCTION:

Growth is a live sign of existence while inclusive growth is the sign of a welfare state. Synchronisation of human resources and employment could be sighted wherein young human resources are given a chance to explore and experiment with the talent they possess. Higher education is the platform through which the youth are given a chance, path, direction to understand their talents, potentials and supplemented by all those infrastructure and intellectual backup, which would help them to grow and become employable. Globally, the Ministry of Human Resource Development is putting up all their efforts to get maximum employment to graduates and postgraduates of the state, but it still remains a challenge. Among the various challenges facing them are: deficit of opportunity for higher education, deficit in learning (enrolment numbers) in higher education, cost, regulations governing higher education, workforce development, competency-based education, accreditation, assessment, to name some.

Manufacturing and services sectors in India estimate the demand for employment to be at 191 million in manufacturing to the present demand of 99 million and an increase of 53 million service employment demand to the present 116 million, added with youth at a median age of 32 years as advantage of demographic dividend compared to any other advanced nations making India one of the fastest growing economies (FICCI, 2013). With high demand on one hand for service and industry, and lack of appropriate supply due to challenges of higher education, the study attempts to bridge this gap.

HIGHER EDUCATION IN INDIA – AN OVERVIEW:

Aryan-Vedic Age:

The ancient education system which was evolved in India was known as the *Vedic system of education* as it was based on the *Vedas*. This Vedic education system had unique characteristics which were peculiar for an ancient education system and was not found in any other civilisation of the world. Vedic education included: proper pronunciation and intonation of the Vedas, the rules of sacrifice, grammar and derivation, composition, versification and meter, understanding of secrets of nature, reasoning including logic, the sciences, and the skills necessary for a profession/occupation apart from advanced surgery, herbal medicines knowledge existed.

Varnāshramas:

Varnāshrama dharma is the *Vedic* system of the social divisions and stages of life and one is encouraged to strive for a balance and harmony of all the four goals. The ideal *varna-ashrama dharma* system of life is divided into four social groups (varnas) according to one's natural talents and propensities. The intelligentsia (brahmana), the administrators (kshatriya), the entrepreneurs (vaishya), and the proletariat (sudhra). The ideal lifespan of the individual is divided into four stages: student (brahmacharya), householder (grihasta), retiree (vanaprastha), and the renunciate (sannyasi).

The Brahmins are expected to pass through all four stages. Kshatriyas pass through the first three, Vaishyas have the first two, and the

Sudras have only one stage – that of marriage. During the stage of studentship one learns the principles of *dharma* – spiritual wisdom, religious duties as well as secular knowledge. During the stage of the householder this sacred and secular knowledge is put into practice. One then indulges in sensual pleasures and of retirement, a process of preparing for eventual renunciation is begun and one gradually abandons one’s profession and sense-enjoyment, and concentrates on dharma with a view to achieving liberation (moksha) and when one finally renounces (sannyasa) then one’s complete focus is on obtaining moksha to the exclusion of all else.

Macaulay’s Reforms:

Thomas Babington Macaulay played a major role in introducing English and western concepts to education in India. He supported the use of English as the medium of instruction in all schools, and the training of English-speaking Indians as teachers. In his view, Macaulay divided the world into civilised nations and barbarism, with Britain representing the high point of civilisation. In his *Minute on Indian Education* he stated that *Sanskrit* and *Arabic* would help them in showing the direction towards usage of money for development, but cannot help in earning money on itself as English language was the source of jobs and earning for livelihood. So, it could be observed that English language and western methods of teaching took over the ancient *Sanskrit* and *Arabic* methods leading to a modern era in higher education in India.

Present Scenario:

The Indian higher education system has emerged as one of the largest in the world, with 14.6 million students enrolled in more than 31,000 institutions. The number of institutions has grown

at a CAGR of 11% while student enrolment has grown at a CAGR of 6% and the Gross Enrolment Ratio (GER) currently stands at about 13.8% compared to 60% in the US and Canada, and 21% (average) in the BRICS countries.

Of the 1.21 billion population in India, around 234 million fall in the age group of 15-24 years, which is expected to increase by 13% over 2005-2020 as compared to the world average of 4%. Hence, India is an attractive market for the higher education sector. India’s education and training sector is estimated to be about US\$ 40 bn market, with a potential 16% five-year CAGR. The market size for higher education is projected to treble in next 10 years to \$115 bn.

As per an estimate in FICCI-Ernst & Young Report 2010, the higher education spend is going to increase to INR 1,55,015 crores and requires an investment of INR 3,60,640 crores (\$ 76 bn) by 2020 to create the additional capacity. The amount accounts for around 1.9 % of the current GDP based on Purchasing Power Parity.

Growth and Progress in Higher Education:

Undoubtedly, the provision of education could have done better, particularly to the scheduled castes (SC), scheduled tribes (ST), minority groups, the disabled, and the girls. There has been a considerable variation in the progress made in education across the Indian states ‘with some states lagging behind while others surging ahead’ (Clarke and Jha, 2006). Since Independence, higher education has grown steadily over the years whose growth is evident in the form of institutional growth as well as enrolment growth. Table-1 showcases the data relating to the growth of institutions and their intake capacity.

Table-1: Institutions of Higher Education and their Intake Capacity (1950-51 to 2010-11)

Capacity Indicators	1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11
No. of University-Level Institutions	28	45	93	123	137	366	611
No. of Colleges	578	1,819	3,223	4,738	7,345	11,146	31,324
No. of Teachers (in '000)	24	62	190	244	272	395	588
No. of Students Enrolment (in mn)	0.1	1.7	2.5	2.7	4.9	8.3	13.6

[Source: UGC Report 2010]

From the data it may be observed that the number of universities-level institutions in India have increased from a mere 28 in 1950-51 to 611 in 2010-11 marking a 20 times growth. The trend continued with the number of colleges as well with over 50 times hike in their numbers. Similarly, teachers’ numbers have also surpassed over 25 times. Interestingly, the students’ enrolment has outgrown the growth rates of all the variable put together i.e., 136 times.

EXISTING INFRASTRUCTURE AS A CHALLENGE TO EFFECTIVE HIGHER EDUCATION:

Infrastructure generally refers to any physical asset or organizational structure that is capable enough to provide those benefits and facilities which are necessary for meeting the basic needs of the society or for promoting the quality of life of the people. Infrastructure is an engine of

growth and provides a basic framework for economic and social progress in a country like India. Physical infrastructure strengthens the economy, boosts investment, attracts prospective entrepreneurs, and helps alleviate poverty by reducing unemployment incidences through numerous positive forward-backward linkage effects of primary, secondary, and tertiary sectors of the economy. Infrastructure plays an important role in providing intellect and producing employable human resource. The current study identifies five broad infrastructure verticals – which have now turned into challenges – in transforming higher education system in India: a) Teachers/faculties; b) Teachers’ teaching aids; c) Learning materials and teaching methods; d) Buildings and accessories; and e) Infrastructure surround education institute.

I. TEACHERS/FACULTIES:

A highly qualified, experienced, and competent teacher could probably be an effective educator with fewer resources than a poorly educated, inexperienced, and an untrained teacher with abundant resources. To be effective, the teachers must be competent and knowledgeable about the subjects that they teach, but they must also have a passion (*love for learning and learning to love*) to be able to pass on the skills and knowledge to their students. In countless assessments of education systems in developed and developing countries conclusive evidence has been established that shows the critical role of the teacher in ensuring positive learning outcomes for students (DFID, 2001). Thus, teachers’ role in modelling positive learning is undeniable.

Administrative works are no longer administerable, but have become challenges to the faculties in the private sector demanding them to take up those tasks compulsorily as part of their job thereby, leaving less and less time for research and/or in-depth study of the subject enabling them to do justice to the students. In this day and age, there is a new trend plaguing the knowledge economy i.e., more and more youngsters picking up teaching career often as a source of income rather than a passion, that too till the time they get a career of their choice, in the meanwhile making the classroom environment miserable.

In line with the preceding aspect of the part-time faculties’ taking up teaching as a source of income, pastime, standby job and worst of all many teachers hop on and off to many colleges/universities with no or less proficiency in subject matter and teach in terms of syllabus, not in terms of knowledge and intellect. In addition, their teaching is inversely proportional to the remuneration they get from the management, rather than in terms of infusing employability skills in the student fraternity.

Another alarming challenge is teacher:student ratio. In almost all the private and government colleges and universities it is pretty low and has been observed 1:100 ratio in graduate colleges and 1:60 in postgraduate levels. The ratio makes the teachers difficult to handle the activities of the class and pave personal attention to address the queries of the students. Sometimes, when one takes a look into strength of classroom to faculties, it could still be managed and the students made to understand the subject, making it more interesting and application-oriented, if the faculties have a good industrial exposure and experience which they could share with students making them understand the changes in the subjects’ application and dimensions where they have to cope up to meet the expectation of the employment, which is a big challenge faced by the present higher education system. Not only the industrial exposure, but changing subjects at semesters make the faculties to workup more numbers of subjects leaving them “jack of all trades, master of none” which is once again a challenge which has been observed in the current higher education system wherein faculties cannot teach the subject correctly nor are the students able to understand them.

All this has resulted in research – which is the true spirit of teaching – being narrowed down to few issues of common topical interest with repeated usage in different geographical setups, instead of exploring new factors, dimensions, and critical evaluation which could really contribute to the existing mass of knowledge by either *inductive* or *deductive* reasoning and thereby brightening bring up the subject with a new outlook to the students.

II. TEACHERS’ TEACHING AIDS:

The analysis of various policy documents clearly indicate that achieving equality through education has been consistently and unequivocally voiced over the years. However, the challenge of translating this vision of equality into a curriculum framework has remained unanswered. The basic problem that emerges has been conceptualising flexibility or diversity which is closely linked to the system’s inherent limitation and inability to define the role of the ‘curriculum’ and its transaction. In relation to this are the associated problems in defining ‘syllabus,’ ‘standards,’ and going beyond the ‘core’ curriculum. This reluctance of the system to allow for true plurality and flexibility in the curriculum, as well as the restricted meaning of the term curriculum itself is most clearly evident in the report ‘Learning without Burden’ (GOI 1993).

The Secondary Education Commission (1952) pointed out that the then curriculum was ‘narrow, bookish and theoretical’ with an overloaded syllabus and unsuitable textbooks. It has suggested that the curriculum should not be divided into a number of watertight subjects, but

that all subjects should be interrelated and should include relevant and significant content so that it could touch the lives of students.

In the light of the above facts it has been found that curriculum, syllabus, standards which had to be the base of teaching-learning process is facing serious problems of relating with industrial relevance. Outdated syllabi, vast treatment of the topic almost impossible to cover the syllabus in a stipulated timeframe, more of a transformation of information for the purpose of examination rather than real-time application of the subjects which strengthens the students in this challenging work environment and getting suitable employment. More number of subjects with horizontal specialization rather than vertical depth in a particular area of knowledge followed by semester system of education are making the students learn more number of subjects, but have mastery over none.

Semester system of education is more suitable for creamy layer of students as they have that competency to understand and workup on the subject, but in reality the majority of higher education students come from rural and semi-urban areas who cannot afford for understand large number of subjects within a limited time in a semester which render the subjects more towards examination than to intellectual osmosis. Surprisingly, some of the specialization subjects introduced are not in the sequence basic to complex, but are in the reverse order, wherein the teachers and students both face the problem of teaching and understanding the subject and its relevance. In extremity, some of the subjects introduced are no way relevant to the course making the subjects as formality completion. If a serious thought is not given by the educators and universities, teachers teaching aids – which have become a challenge to inclusive growth of human resource, will worsen.

Table-2: Distribution of Teaching Aids with Respect to the Educational Process

Teaching-Oriented Aids	Universal Aids	Learning-Oriented Aids
General office package, training and exercise software, interactive whiteboards, digital resources	Data collection tools, multimedia development tools, equipment and practical supplies	Mobile devices, communication tools, games, simulation/modelling software, learning management systems
Open Content, Electronic books	Learning analytics, Augmented reality, Gesture-based computing	Game-based learning, mobile device and apps, tablet computing, personal learning environment, augment reality, natural user interface
Mobile classroom	School equipment	Personal tablet computers

[Source: Based On: Vaino Brazdeikis and Mantas Masaitis (2012)]

III. LEARNING MATERIAL AND TEACHING METHODS:

Apart from teacher qualification and institution facilities, another important determinant of educational quality is the teaching and learning materials. It is essential that quality materials be made available to the teachers and students in adequate quantum and quality to support the teaching and learning processes. But as an integral part of learning infrastructure, it has been observed that the quantum of learning material ratio to the students is proportionately very less in the colleges and universities, more so in the rural areas. Huge amount of funds are released by the state and central government for library books and accessories, but it practice very less books are seen in rakes of the libraries in government colleges and on contrary private institutions take it as a cost factor and do not invest much on it, creating a infrastructural challenge in higher education.

A new trends has been started i.e., publishing semester books which has also a major share in destructing the learning methods to a very great extent, wherein the students depend on those books which are exactly designed keeping the university syllabus and examination in mind depriving the students from learning in depth, from

different dimensions, and understand and regenerate the knowledge in application.

Open Educational Resources (OER) which can be used as a source of knowledge enhancement is absent creating a hollow in access to learning materials in the higher education in rural and semi-urban India. OER are teaching, learning and research materials in any medium that reside in the public domain and have been released under an open license that permits access, use, repurposing, reuse and redistribution by others with no or limited restrictions (Atkins, Brown & Hammond, 2007). The use of open technical standards improves access and reuse potential. OER can include full courses/programmes, course materials, modules, student guides, teaching notes, textbooks, research articles, videos, assessment tools and instruments, interactive materials such as simulations and role plays, databases, software, apps (including mobile apps), and any other educationally useful materials.

It is not only the learning material, but the teaching methods also matter when ti comes to the growth of students and here also it was observed that still a traditional face-to-face learning is being carried out instead of blended learning and self-paced learning. Much of the efforts are put towards syllabus completion rather than to knowledge and

application base development, lack of mix was seen in open learning and expert orientation through live, online, and lab interaction, which dulls a learning environment, saps enthusiasm and		interest in the students which, in turn, turns as a challenge in the higher education Figure-1 shows methods to be used to bring back the students to classroom and make them learn.
Informational Methods		
Imparting Narrative (plot, descriptive, explanatory); Lecture (scholastic, academic); Demonstration		Reproduction Retelling (written, oral); Repetitory conversation (recreation, summarizing); Writing assignments (examination, impression, and other)
Operational Methods		
Practice Training (based on example, instruction or task); Contextual practice (commenting, explaining); Creative practice; Reading, writing methods	Practical Assignments Instruction; Technical work; Production assignment	Lab Work Demonstration of experiments; Illustrator laboratory work
Creative Methods		
Heuristic Heuristic conversation; Logical demonstration; Search; Technical construction	Problem-Based Problem-based lecture; Problem-based case study discussion; Problem solving; Technical modeling; Creative writing	Research Observation; Experiment; Processing the research findings

[Source: Based on Jovaisa and Vaitkevicius, (1989)]

Figure-1: Classification of Teaching Methods

IV. BUILDINGS AND ACCESSORIES:

It is said an excellent teacher can teach students anywhere: under a tree, veranda, in a classroom, but it does not hold good any more as it is observed that distractions in the classroom is less compared to any other place for learning necessitating spacious and properly ventilated classrooms, comfortable furniture, virtual ICT classrooms, a good canteen to have hygienic food, playground for sports, auditorium for cultural and management events, separate girls room and washroom, cubicles for the staff et al., could make the system of teaching and learning more meaningful, but in contradiction to the above, it has been observed compact classrooms and small rented building wherein a good number of courses are run. Common staff room, traditional apparatus of teaching, no playground and sports club, and most important for a higher education is research lab which is the mission why most colleges/universities in India are created.

V. INFRASTRUCTURE SURROUNDING EDUCATIONAL INSTITUTES:

Infrastructure surrounding educational institute is to be perceived in a broader sense i.e. from students' house to that of the institutions. Infrastructure gives an edge and would serve better in contributing towards the growth of higher education at a very high rate, but facts are that, in this digital age of Information and Communication Technology many semi-urban and rural areas are deprived of strong internet connectivity (interestingly, *broadband is a basic human right*,

according to UN), ICT interaction, and information collection and transformation which are the core aspects of learning today. Assuming that ICT could be developed in these areas, but the power problem continues to haunt indefinitely. Many areas faced a power shutdown for long hours creating a problem towards effect learning and teaching process in house and classrooms. Many students do not turn out to the colleges not because of lack of interest in higher studies, but for non-availability of income in house which forces them to go for work and earn on one hand and labour problem on the other hand in labour-intensive jobs in which these students have to join the fields make them miss the classes. Girls face a problem of collection of drinking water in the house where they are responsible for collecting water from a long distance and other household chores leaving less scope to go to college. Proper and right transportation is another issue which needs to be addressed to connect the colleges/universities, hospitals to recover from health hazards faced by the students in the rural and semi-urban areas creating a challenge to growth of higher education, in turn, the human resource development.

CONCLUSION:

The infrastructural challenges in the higher education are inevitable and unavoidable. A majority of the institutions and universities face severe infrastructural problems. Hence, the government and the management of the educational institutions must take several initiatives in motivating the teachers and students to cope up

with the existing challenges of infrastructure and look out ways to improve the system, as otherwise this would ultimately affect the productivity of the human resource and growth of the economy. Since the demographic dividends are in our favour and

world is looking ahead towards us, strategies towards managing these infrastructural challenges would produce positive results toward inclusive growth in the long-run.

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