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BOOK REVIEW

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Liberal Education: A 21st Century Imperative#

K. Kasturirangan*
Viraj Kumar**

At the outset, let me greet the entire community of National Institute of Educational Planning and Administration (NIEPA) on the august occasion of its Foundation Day. I would like to express my grateful thanks to Prof N V Varghese, Vice Chancellor, NIEPA and Prof K Ramachandran, eminent educationist, NIEPA, for this honour done to me, in inviting me to deliver the 15th Foundation Day lecture of NIEPA.

Nearly six decades into its existence, NIEPA has undergone several phases of transformation with its origins as a UNESCO regional centre facilitating the training of educational planners and administrators in the Asian region. Recognising its effectiveness as a centre for creating human resource for educational planning and administration for India and for the Asian region, NIEPA further evolved itself towards becoming what is now a full-fledged University. It is one of the few institutions in the region that impart study programmes at the doctoral level, organise capacity development programmes for educational planners, and also extend policy support for decision making in the area of education. Quality and excellence are the hallmarks of this institution in delivering its unique objectives.

It is my pleasure to recall that one of the earliest meetings of the Committee for National Education Policy 2020 was organised by NIEPA, when the Committee Members got a comprehensive picture of India's educational system and status, encompassing different facets of education through interaction with many of the distinguished educationists of NIEPA; some of the best that this country has. Subsequently, the NEP Committee often consulted members of NIEPA's academic community on specific issues on one side and co-opting Prof Ramachandran as one of the key members of the team charged with drafting India's new education policy, NEP 2020. I won't be exaggerating if I point out that Prof Ramachandran, with his vast knowledge and deep erudition of the different aspects of education, also served as a walking encyclopaedia on the subject of education. Therefore, on this special occasion of Foundation Day, I would like to pay my warm tributes to the dynamic Vice Chancellor, Prof Varghese, and all his colleagues for their crucial role in formulating the NEP 2020.

Edited Version of the NIEPA Fifteenth Foundation Day Lecture delivered online on 11 August 2021.

* Raman Research Institute, C. V. Raman Avenue, Sadashivanagar, Bengaluru - 560 080
Email: krangank@gmail.com

** NIAS and DSU, Bengaluru, and a former member of the Technical Secretariat to NEP 2020 Committee.

I am also happy to note that more recently, the University has prepared implementation strategies for NEP 2020 which, I am sure, will have a remarkable impact on the way we translate this policy into ground level actions.

The goal of this talk is to examine the concept of *liberal education*, also designated as "holistic and multidisciplinary education" in NEP 2020. Liberal education represents a substantial shift in the paradigm of our present higher education system, particularly at the undergraduate level. We will argue why such a paradigm shift is an imperative for India in this century. The Committee's mandate was to develop an education policy that would be relevant for at least 20 years. In any forward-looking endeavour, it is often helpful to first examine our past and reflect on how we have reached our present position. We will therefore begin by tracing the broad evolutionary contours of the idea of liberal education, particularly in India.

The key characteristic of liberal education – one that has remained unchanged throughout its evolution – is a recognition of the holistic and fundamentally interconnected nature of all human knowledge and enquiry. While commenting on the unity of religions, arts, and sciences, Albert Einstein evoked the metaphor of "branches of the same tree." This metaphor suggests a unified "trunk," but it also evokes a mental picture where the branches of knowledge split off and grow further apart from each other. The concept of "liberal arts" explicitly rejects such a notion and embraces the unity of these "branches."

In India, education at Takshashila and Nalanda possessed this liberal characteristic, but the idea is likely to predate these great monastic universities. Banabhatta's *Kadambari*, contemporaneous with the early phase of Nalanda some 1400 years ago, describes a truly educated person as one who had mastered several *kalas* or arts, which included music, dance, painting, sculpture, languages, and literature, in addition to subjects such as engineering and mathematics, as well as vocational subjects such as carpentry. The precise *kalas* have clearly evolved and expanded over time, and individuals at the forefront of this expansion were adept at crossing what we would today regard as disciplinary boundaries. Aryabhata I, for instance, discovered truths in mathematics and in astronomy, and was part of a scholarly lineage that established a strong tradition of systematised but objective knowledge of the world that we call science.

Thus so far, a truly broad-based, liberal education has been accessible primarily to elite members of society. Such a system provides youngsters with an opportunity to savour the breadth of human knowledge, to explore their own interests, and to delve deeply into far-reaching questions that all humans are endlessly fascinated by, such as: "What is life?", or "What is the nature of the Universe?" Such questions were largely the purview of religious thought. It is therefore unsurprising that many of the educational systems that seriously grappled with such questions originated as monasteries, as we have already noted was the case with Nalanda and Takshashila.

For the vast majority of people, however, education has had an overtly utilitarian nature and has been limited to specific silos. Historically, such an education has commonly taken the form of apprenticeship to acquire a fairly narrow skill-set. Such a system of education is scalable, and throughout history, it has produced "job-ready graduates" for the jobs of the day. Some of these graduates no doubt became highly skilled craftsmen who advanced not only their art, but also the technology associated with their art.

Metallurgy provides an excellent example. Starting from the first documented use of iron in India (about 1300 BCE), technological advances led to remarkable achievements such as the rust-less iron pillar in Delhi's Qutab Minar complex (which dates to the early fifth century

CE), and the pioneering development of wootz steel in Tamil Nadu, which represented a significant advance in the art and technology of sword-making. Even until the second half of the 18th century, certain products of Indian technology were superior to their European counterparts. A famous example is military rockets, deployed effectively by Tipu Sultan against the British forces.

The late Prof Roddam Narasimha has noted that by this stage in India, knowledge of science and knowledge of technology often resided in two different communities, with weak interactions between them. This is evidenced by the scarcity of scientific literature in metallurgy and several other domains where Indian technology was outstanding. Narasimha observes that although the Indian rockets were very well-made, "they were not standardised, being rather the creation of artisans who had a long tradition of working with well-understood materials and techniques." Thus, despite continuous improvements in technology, "rocket manufacture never went beyond being a craft" within a siloed community, and there was no opportunity for someone from the scientific community to "analyse rocket performance using mathematics that had been so imaginatively developed in the country for astronomical applications."

In Europe, a similar scientific tradition of systematised and objective knowledge had been established, with a pronounced emphasis on predicting natural phenomena in terms of the fewest possible principles or hypotheses. In this approach, scholars deliberately focussed their systematic study on narrow, seemingly mundane questions such as "How does water flow in a tube", or "Why does an apple fall to earth?" In the words of the physicist Victor Weisskopf, this approach led to "the great miracle" because it yielded surprisingly powerful yet fundamental insights into the basic structure of nature. There was absolutely no reason to expect that the answers to limited questions would generalise so dramatically – that the study of falling apples would lead to a theory of celestial mechanics and an understanding of the gravitational law, or that the theory that explains the Brownian motion of dust particles suspended in a liquid would also explain the motion of stars in the Pleiades cluster over 400 light years away.

The non-holistic, reductionist approach that lay at the heart of this brand of science was leading to a seemingly holistic understanding of the world around us, albeit within a framework of emerging disciplines. Each discipline established its own way of making sense of the world and discovering further truths. In Europe, where there were comparatively fewer barriers between the scientific and technological communities, these insights were applied to rapidly advance technologies – often initially for military purposes. Thus, a book published by a newspaper correspondent embedded with the British troops in South India triggered a vigorous research and development programme that culminated in Congreve's more advanced, mass-produced rockets.

Similar advances across the technological spectrum completely reshaped human society and ushered in the Industrial Age. In its wake, and right through most of the previous century, there has been a strong demand for education leading to "depth" in a specific discipline, and most institutions have heeded to this demand. The few institutions that offer a liberal approach, favouring "breadth" across a range of disciplines, have tended to be expensive institutions that remain inaccessible to most members of society.

To their immense credit, several prominent educationists in India and elsewhere recognised not only the inherent inequity of such trends, but also the perils of such an approach to the broader pursuit of knowledge. Two prominent examples of efforts to swim

against these prevailing currents are the establishing of units for Humanities and Social Science at IITs from their very foundations, and the Kothari Commission Report. The latter, written in 1968, presciently states that "some study of science should become a part of all courses in the humanities and social sciences at the university stage, even as the teaching of science can be enriched by the inclusion of some elements of the humanities and social sciences."

Thus, it is clear from this glance backwards in time that support for the idea of liberal education in India has waxed and waned. While drafting the NEP 2020, the Committee had to reflect carefully on the importance of this idea going forward. There are three main reasons why the Committee firmly endorsed the need for liberal education in 21st century India.

First, as was stated in the draft of the policy, the purpose and importance of a liberal arts education, especially today, is to "enable students to explore the numerous remarkable intertwined relationships that exist among the sciences and the humanities, mathematics and art, medicine and physics, etc. – and more generally, to explore the surprising unity of all fields of human endeavour." A broad-based exposure to multiple disciplinary ways of thinking is a joy in and of itself for any learner, particularly for youngsters, perhaps because it is strongly associated with holistic mental development. A liberal arts education enables the learner to truly develop both sides of their brain – the creative/artistic side and the analytic side. No education system should deprive young learners of this joy or this opportunity to develop holistically.

Apart from being a joy, it is increasingly clear that the 21st century will demand greater flexibility in ways of thinking, and this can only come through greater exposure to diverse ways of thinking. Steve Jobs famously remarked that the Macintosh would never have happened without the calligraphy class he took in college. Obviously, Jobs was not referring to the specifics of that one calligraphy class, but to how it sensitised him more broadly to aesthetics, and still more broadly to the power of multiple perspectives. The second reason is superbly articulated in Yash Pal's *Report of "The Committee to Advise on Renovation and Rejuvenation of Higher Education"* (2009):

> We have overlooked that new knowledge and new insights have often originated at the boundaries of disciplines….. Most instrumentalities of our education harm the potential of [the] human mind for creating and constructing new knowledge..... [O]ne could almost say that most serious problems of the world today arise from the fact that we are dominated by striations of expertise with deep chasms in between.

One could argue that these "chasms" are sometimes bridgeable. Indeed, the hallmark of any successful multidisciplinary effort is a framework in which experts can largely work within their well-defined silos, while facilitating engagement with experts from other disciplines at specific points in the overall process. This is manageable as long as all disciplines agree on a common structure imposed by the problem and, perhaps, certain constraints on the solution. This agreed-upon structure is sometimes called an interface. In software development, for example, the team may spend considerable time jointly designing the interface (more precisely, an Application Programming Interface or API). Once the interface has been properly designed, the team can split up and work within their silos – the interface is explicitly meant to minimise (and ideally eliminate) the need for members to communicate further across disciplines.

At ISRO, for example, we follow such a multidisciplinary model while coordinating our overall efforts across multiple work centres. Each work centre has a mandate to develop exclusive technologies and processes, bringing the related outcomes together, leading to an integrated product like a rocket or satellite. A more dramatic testament to the power of a well-structured multidisciplinary effort is the speed with which effective COVID-19 vaccines have been developed, outstripping the timelines predicted by the WHO.

However, such an approach does not work for all problems. Indeed, Prof Yash Pal's words of wisdom are alerting us to the fact that disciplinary and even multidisciplinary approaches alone cannot satisfy our thirst for knowledge in the 21st century. This is because increasingly we are grappling with problems that are too broad or complex to be adequately tackled within a single discipline, or problems that cannot be "broken up" and handed to experts from several disciplines. In such cases, there is no clean separation of concerns via interfaces, and team members must communicate regularly across disciplines as they work jointly from their disciplinary perspectives. This is often called an interdisciplinary approach. As just one example among many, consider the interdisciplinary programme in Educational Technology at IIT Bombay. In contrast to a multidisciplinary approach, the team of masters and PhD students and their faculty must integrate educational concepts, theories, and methods with a range of technologies to develop technology-enhanced learning environments, to solve complex problems related to improving pedagogy for technology enhanced learning, and to leverage technology to facilitate discipline-based education research.

There are still other types of problems where even an interdisciplinary approach is insufficient. Instead, the team must adopt a transdisciplinary approach that not only integrates several discipline-specific approaches, but also extends these approaches to generate fundamentally new conceptual frameworks, hypotheses, theories, models, and methodological applications that transcend their disciplinary origins. Such an approach is particularly relevant when problems span across arts and humanities on the one hand and science and technology on the other. This approach is increasingly necessary in cutting-edge research, and it can lead to the emergence of new sub-disciplines (or even whole new disciplines).

As an example, consider landscape archaeology. Whereas traditional archaeology focuses on studying small-scale remnants of the past, ranging from fragments of pottery to individual structures or at most a cluster of structures, landscape archaeology expands the realm of study to include surrounding landscapes. These landscapes can hold hitherto undiscovered clues to the past that are detectable using remote-sensing technologies. Transdisciplinary research in this context has led to the development of new techniques to analyse remote sensing data after integrating it with other historical data drawn from old maps using GIS technologies. Interestingly, this transdisciplinary approach has led to new insights into the history of one of the iconic transdisciplinary institutions of the past, namely Nalanda. By measuring the precise orientation of the sacred structures using satellite imagery, researchers have discovered that structures that were built later are tilted further away from the east-west line than earlier structures. To explain this, the researchers weave together insights from history and astronomy. In doing so, they have arrived at a surprising technique to date these structures. This, in turn, has advanced our knowledge because these sacred structures are difficult to date using traditional techniques.

Prof Yash Pal is obviously not suggesting that the goal of school and undergraduate education is to train young minds to solve problems that challenge professionals.

Instead, we recognise that there are key elements of the process that professionals follow which young students can (and must) be exposed to. It is challenging to achieve this without blurring rigid "subject boundaries." Perhaps such a view is surprising or even nonsensical to many of us with a strong discipline-specific education, but it is endorsed by erudite academicians in India and all over the world. To quote one such academic, Saikat Majumdar, who is a Professor at Ashoka University and formerly taught at Stanford:

> There is really no such thing as a Liberal Arts subject. Any subject can be taught as one, as long as it is not being used as professional training for a particular kind of career. So, Economics is a Liberal Art while Accountancy is not; Biology is a Liberal Art while Medicine is not; English is a Liberal Art while Journalism is not. A Liberal Arts education, however, is a very distinctive thing: it is an engagement with one (or more) of these fundamental disciplines in combination with a broad exposure to multiple disciplinary ways of thinking. If single-subject based education produces the I-shaped student, a Liberal Arts education produces the T-shaped student. The 'I' stands for depth in one subject, while the 'T' combines depth with range.

Employers are generally far more interested in T-shaped rather than I-shaped graduates. They are fully aware that well-rounded individuals with a holistic education are better prepared to tackle complex problems while also understanding the needs, desires, and motivations of co-workers, clients, and the wider society. A liberal education seeks precisely these outcomes – strong written and oral communication skills, teamwork skills, ethical decision making, critical thinking, and the ability to apply knowledge in real world settings.

The Committee's third reason takes into account the potential for significant and rapid transformations to the world of work, and consequent shocks to the wider social fabric, caused by advances in disruptive technologies. Today, we can easily identify specific forms of livelihood that are threatened by the AI revolution. What is quite remarkable is that such a threat was recognised more than five decades ago by Dr Vikram Sarabhai in his 1968 Convocation Address at IIT Madras:

> In nature, left to itself, control is maintained through an ecological balance. Order is not imposed from above, but arises through the interaction of each unit with its environment in a dynamic equilibrium. On the other hand, inherent in a programme of accelerated development, there is a suppression of some of the natural constraints which prevent divergence. And as the rate of innovation, of discovery and of everything else in the world gets faster and faster, so does the obsolescence of people and things become ever more acute..... The qualitative change which has occurred in the last decade with the development of atomic energy, with the exploration and use of space, with the advent of electronics and computer sciences, is a manifestation of the divergent human function which has suddenly overtaken the world. What we have witnessed so far, dramatic as it is, is probably pedestrian compared to what we can expect in the future.

The Committee therefore had to seriously address the following question: How is our education system going to prevent the "obsolescence of people"? Failing to do so could, in the deliberately thought-and-action provoking words of the historian Yuval Noah Harari, lead to the rise of a "useless class." This is a sobering thought, bearing in mind that our present education system fails to universally provide even foundational literacy and numeracy. Even when it does provide these necessary foundations, it does not prepare graduates for

an uncertain world buffeted by pandemics, climate change, and AI. Knowing that every graduate entering the job market today will look forward not only to several jobs, but also several careers during their working life, the need for a wider T-shaped range of skills is evident. A liberal education has the potential to provide graduates with a combination of transferable and uniquely human skills, to help them adapt and continuously learn to work in this challenging environment.

Having discussed the question of "Why liberal education?", let us change our focus to the more pressing question: "How can we implement liberal education at scale in India?" Designing liberal education programmes is obviously not a simple matter of offering a set of unrelated courses, or even courses where some lectures examine a central theme from the perspective of one discipline and other lectures examine the same theme from the perspectives of other disciplines. Bearing in mind the history discussed earlier, we have several excellent previously-tried approaches to liberal education that we can examine and learn from. Before discussing these, let us first articulate some key discipline-agnostic elements that seem absolutely necessary.

The first key element is fostering the ability to communicate clearly. Graduates are increasingly tasked with solving broad, complex problems in teams, where each member brings certain expertise to the table. Each of these members must be able to communicate effectively not only with experts within their own discipline (using a rich and shared discipline-specific vocabulary), but with others on the team who do not possess this vocabulary. Language fluency is obviously an important sub-element, but so too are critical and analytic reasoning, partly because these skills can help individuals rapidly expand an initially narrow shared vocabulary and thereby communicate more effectively. Effective communication between humans goes well beyond vocabulary, of course. It includes an understanding of diverse cultures, perceptiveness, and sensitivity to different perspectives. Thus, these are also key elements. Naturally, cooperation and collaboration are also key elements for effective teamwork.

Let us now discuss two approaches that lie on the pathway towards liberal education and have an established pedigree in India: the practice of *integrated education* in the IITs, and the principles of management education as practiced in the IIMs. It is worth pointing out that both these types of institutions enjoy far greater resources and regulatory advantages than the vast majority of our higher education institutions. Several measures suggested in the NEP 2020 seek to level the playing field in the latter category. The lack of resources will always be a challenge, and it will be necessary to find creative ways to maximize the resources that can be brought to bear to implement the approaches that we will discuss next.

In *Breaking the Silo: Integrated Science Education in India*, Anup Dhar, Tejaswini Niranjana and K Sridhar propose two models to ensure the necessary degree of integration for going beyond multidisciplinarity: the "soft integration model" and the "strong integration model." We will expand on the core ideas of these two models. The "soft integration model" is an evolution of the traditional disciplinary-based structure that most institutions follow today, where students typically "major" in one discipline but are free to choose additional courses in other disciplines (possibly leading to a "minor"). The crucial difference is that a certain proportion of the curriculum – at the course-level or at the programme-level – must be reserved for "dialogue" between multiple disciplines and their respective methodologies. In the spirit of a true dialogue, the purpose must not be to overtly challenge multiple viewpoints and choose a "correct" one, but to help students recognise the promise and the value in

considering more than one viewpoint. These dialogues must include experts from each represented domain, and they can take several familiar forms – classroom discussions, seminars, workshops, etc – but these cannot be isolated events. While this model is "pedagogy heavy," it can be complemented with interdisciplinary projects of similar complexity to traditional projects at the undergraduate level.

In contrast, the "strong integration model" is a substantial departure from the traditional disciplinary-based programme structure. Instead, programmes are defined by critical but sufficiently broad problem areas such as clean energy, or adult literacy, or heritage preservation. The fidelity is to the problem, not to one or a handful of disciplines. Indeed, relevant elements from any discipline that can help to understand and address the problem are fair game for inclusion in such programmes. Thus, a clean energy programme will probably include core courses in physics, renewable energy technologies, energy economics, as well as a host of electives that could be attuned to specific research and consultancy projects that the institution has strength in. Throughout, the search is for a solution, or a "better" solution according to a relevant metric, recognising that breakthroughs will often be interdisciplinary or transdisciplinary in nature. In contrast to the "pedagogy heavy" soft integration model, the strong integration model will tend to be more "research/consultancy heavy."

Let us now explore the second approach to liberal education, as practiced by the IIMs and other top management institutions. In many respects, a liberal approach is almost forced in this context. Business problems tend to be highly complex, where the boundaries between causes and effects are blurred, there are multiple positive and negative feedback loops, and it is generally very difficult to separate out the essential elements of "the problem" from the noise in the system. Solutions to such problems are rarely optimal in a quantifiable sense, and they must combine *explicit knowledge* of the basic disciplines with *tacit knowledge* that comes from practice. Specific pedagogical approaches, particularly the case method, have been developed and refined to facilitate learning. In the case method, students must learn to draw inferences from common patterns that they observe from a cross section of real-life illustrations of best practices. Of course, these "pattern recognition" or "synthesis" skills must be coupled with the harder more quantitative understanding of the core disciplines of management such as statistics, finance, and economics, as well as domain-specific knowledge. In fact, a key trend confronting MBA programmes today is the demand for graduates who are ready to work from day one in domain specific jobs.

The policy rejects a "one size fits all" approach by recognising the importance of institutional autonomy. It does not even compel institutions to immediately develop and implement a liberal arts model. Indeed, it is clear that among the vast majority of institutions that are presently operating within a discipline-specific framework, a substantial number lack the resources to develop a suitable liberal education model *de novo*. It therefore falls to institutions like NIEPA to put together baseline models that could be feasible for such institutions to implement, and then refine over time as per their specific institutional development plans. In the absence of suitable reference models, some institutions may pay mere lip-service to the idea of liberal education, or may develop flawed implementations based on a misunderstanding of the principles we have tried to articulate here. By making this presentation to NIEPA, we hope to exhort this august institution to develop a range of baseline models for liberal education, keeping in mind the broad spectrum of higher education institutions.

Such baseline models must include an aspect that NEP 2020 does not explicitly detail, but one that is extremely important: the need to train faculty for liberal education. An immediate challenge is the shortage of master faculty with sufficient expertise to adequately train other faculty. A greater concern is a substantial shift that is necessary in the present academic culture where interactions between faculty, between students and faculty, and between students is generally poor. It is immediately clear that both the "soft" and "strong" integration models discussed earlier are unworkable in such an environment. We must recognise that changing this culture is likely to require conscious and sustained effort, because it has deep historical roots. In fact, some scholars have argued that the etymology of the Sanskrit term उपनिषद्, which is उप- (near to) + नि (down) + सद् (to sit), reflects a prevailing atmosphere where the transmission of knowledge was restricted to only those in physical proximity, but otherwise shrouded in secrecy. Such an atmosphere is explicitly encouraged in रसरत्नसमुच्चय, a compilation from the 13th, 14th or 16th century which states that "This chemical knowledge is powerful when secret, impotent when public; so, guard it with determination, as you would the privacy of your mother."

NIEPA will play a critical role in ensuring that the key recommendations of this policy are successfully implemented. We are confident that these recommendations enjoy broad and enthusiastic support. We derive this confidence not only from the extensive consultations that our Committee engaged in while formulating the policy, but from the substantial feedback we received for the draft policy. In addition to many endorsements, this feedback included some criticisms. But it was heartening to see that almost all the criticism was constructive and detailed in nature. It indicated that the authors were reacting to the actual policy statements, and not just to newspaper headlines or trending tweets. An immense behind-the-scenes effort was then undertaken to incorporate this feedback into the final policy, which Dr Ramachandran was an integral part of.

In conclusion, liberal education is a key pillar of the NEP 2020. When implemented in the spirit we have articulated here, it can unlock all capacities of a human being – intellectual, aesthetic, social, physical, emotional and moral – in an integrated manner. It is individuals with these characteristics who will one day proudly call themselves Indians. And that, we are certain, will be the bedrock for a better India and a better world.

Reference

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Heterogeneity in the Higher Education System in India: Implications for Equitable Access to Quality Higher Education

Furqan Qamar*
Reem Qamar#

Abstract

Higher education in India is delivered through a wide variety of higher educational institutions. Such heterogeneity, hardly found anywhere else in the world, makes India a near-unique case. Depending on the choice of parameters, and the permutation and combinations in which they are used, the heterogeneity can range from simple to extremely complex. This paper slices higher educational institutions by using just three parameters, viz. the sector (central and state), the type (based on the structure and formation) and the category (based on ownership, governance, management, and funding). Each set of higher educational institutions differs significantly from others in terms of their number, enrolment, programmes of studies, fee structures, facilities, governance, funding, and selectivity in admission. Ubiquitously, such variations have major implications for the access, equity and quality of higher education and their graduates. Many a research and writings have highlighted some of these issues, but empirical evidence for the same is few and far between. This paper seeks to present some tentative empirical evidence on these counts on the basis of the relevant data that could be available from the official sources, the veracity of which has generally been accepted, though some may have challenged them on the ground of definition or methodology.

* Centre for Management Studies (CMS), Jamia Millia Islamia (JMI), Jamia Nagar, New Delhi - 110025, Email: qamar.pc@gmail.com

Ashoka University, Rajiv Gandhi Education City, Sonepat, Haryana -131029, Email: qamar.reem@gmail.com

Introduction

Higher education in India has many distinguishing features. With 1,043 university level institutions, 42,343 Colleges and 11,780 stand-alone higher educational institutions (GOI, 2020a), India is home to the single largest system of higher education found anywhere in the world. With 38.5 million students enrolled in these institutions, it is, most conservatively speaking, the second largest system of higher education.[1] At the same time, it is characterised by a very large number of minuscule to small-sized higher educational institutions. In relative terms, however, the Gross Enrolment Ratio (GER) at 27 is way behind the global average and in comparison, to many a developing country. To improve the situation, the National Education Policy 2020 (NEP 2020) has set the target of doubling the higher education enrolment to achieve a GER of 50 per cent by 2035(GOI, 2020b). Disquietingly, such a large system of higher education has no institutions reckoned amongst the top 100 in any of world university rankings. Lately, however, a few higher educational institutions (HEIs) have not only started appearing in the top 1000 list but have also started rising the ladder. A couple of them have already entered the top 200 list. The National Institutional Ranking Framework (NIRF) annually declares the lists of top 100 institutions across seven types[2] of HEIs. But that too reveals that our best come nowhere close to the best or even average of the world. Further, the difference between the best and the rest within the country is huge (Qamar, 2018a).

Most distinctively, higher education in India has extreme heterogeneity. No country in the world has as many varieties of HEIs as India does. Based on location, HEIs are categorised as *metropolitan*, *urban, rural, remote, and tribal*, whereas, based on gender, they are classified as *'for men only'*, '*for women only'* and *'coeducational.'*[3] The most unique and hierarchical are the categorisation into 'university level institutions (ULIs)', 'colleges of higher education (CHEs)' and 'stand-alone higher educational institutions (SAHEIs). ULIs include 'central universities (CUs)', institutions of national importance (INIs), institutions under state legislatures (ISLs), public funded state universities (PFSUs), self-financed private universities (SFPUs) and deemed universities (DUs). CHEs are further grouped into

1 Quite a good number of higher educational institutions, particularly universities, allow certain categories of people across wide-ranging disciplines, particularly the non-lab-based programmes, to appear as private candidates. Such candidates prepare themselves through self-study or some other modes of learning, and take the university examination alongside the regular students. These students do not get counted in the enrolment and hardly appear in any official statistics. The authors, based on the back of envelope calculations, estimate their number at around a fifth of total enrolment in higher education. Should we include them in the count of enrolment, India's shall be the single largest system of higher education in this regard as well.

2 These include (a) Overall, encompassing all kinds of higher educational institutions; (b) Universities, inclusive of their variants; (c) Engineering and technological institutions; (d) Management education institutions; (e) Medical and healthcare higher educational institutions; (f) Higher educational institutions imparting law and legal education; and (g) Colleges. Probably, from 2021 onward it, might also include another category aimed at identifying and ranking the research-focussed universities.

3 Increasingly, the 'men only' higher educational institutions are getting transformed into coeducational institutions. However, the 'women only' colleges and universities continue to exist in significant numbers.

general, professional, technical, medical, etc. General higher education colleges could further be grouped by disciplines they focus on, like Arts, Commerce, Science, and Arts-Science-Commerce colleges. SAHEIs, again, are further fragmented into polytechnics, management institutes, nursing, teacher education etc. Depending on the number of disciplines, HEIs could be mono- or multi-disciplinary, whereas, based on of the type of disciplines, they are categorised as general, professional, technical, medical, pharmaceutical, agricultural, horticultural, veterinary, fisheries, architecture, design, law, and innumerable others. Under each of the above types, they could be undergraduate (UG), postgraduate (PG), and UG cum PG level institutions (Varghese et al, 2019a). In terms of their mandate and jurisdiction, ULIs could be 'unitary' (which have a single campus), 'residential' (where most students stay on campus), 'federative' (where a limited number of colleges could be associated with or constituent to the university), 'affiliating' (which have powers to affiliate colleges within their specified jurisdiction but have no teaching within their campus, 'teaching' (universities with teaching departments on their campus but do not affiliate colleges), and 'teaching-cum-affiliating' (universities that have power to affiliate colleges within their jurisdiction but also have teaching departments within their campus).

Besides being accredited or unaccredited, they could fall into many grades, as the National Assessment and Accreditation Council (NAAC) does not follow a binary system of accreditation, as most countries do. Depending on ownership, governance, management, and funding, HEIs are categorised into government, government-aided and the self-financed unaided private, though some club government aided and self-financed unaided as 'private' (Agarwal, 2007; GOI, 2018) while others treat government aided as a 'government' institution because they are substantially funded by governments and are subject to the same rules and regulations of governance as are applicable to the government (Altbach, 1999; Kapur & Mehta, 2004). The above are just a few examples of the heterogeneity in the higher education system in the country. The system is so diverse and overlapping that it defies any attempt to develop a comprehensive taxonomy of the higher educational institutions in the country. The layers within the layers applied in various permutations and combinations make heterogeneity all the more complex (Kapur & Mehta, 2017).

Conceptual Framework

Heterogeneity in the higher education system has many connotations, though most research studies use the term to essentially mean many kinds of diversities in the higher education population — students as well as the faculty members. A few have also included the variety in the higher education system, rankings, and performance as well, though such studies are not very many. Massification of higher education has led to students from a wide ranging socially, economically, and academically diverse background entering the higher education system. Interpreting this as heterogeneity, a study undertaken in the Russian context, sought to examine the effects of such diversities on the selectivity and quality of HEIs (Aleskerov et al, 2014). Assessing the performance of universities in the European context, Bruni et al (2020), however, described heterogeneity in terms of "multi-level and multi-dimensional" systems of higher education including the typography of the teaching and research universities and concluded that large differences in the higher education system across different countries pose major challenges in measuring their performance. Interestingly, the study reported that universities specialising "either in teaching or in

research" had higher efficiency than those which sought to balance the two objectives together (Bruni et al, 2020).

A few researchers while studying the efficiency and performance of universities across different countries in Europe, have used the term heterogeneity to mean the differences in the selectivity of higher educational institutions (Murdoch, 2002). Yet others have used the term to mean the variations in the presence of international students and faculty, intellectual capital, curricula and pedagogy used by the higher educational institutions (Bygrave, Asik-Dizdar, & Saini, 2014). Heterogeneity in the higher education system has been also used to mean variations in terms of their organisational structure, size, ownership, and governance. Lepori (2019), for example builds the idea of heterogeneity on 'organisational typologies' to examine implications of different types of universities on their performance. Daraio et al ((2018) too prefer to take heterogeneity in the higher education system in a multi-dimensional way. Categorising universities by their 'geographical settings' applicable 'regulatory frameworks' have also been used to define heterogeneity in the higher education system and institutions by Berbegal-Mirabent *et al* (2019) and Afgasisti and Johnes (2013).

Clearly, these types, sub-types, categories and subcategories of HEIs differ significantly, in terms of their approach, orientation, curricula, pedagogy, funding, regulation, size, equity, inclusivity, quality, etc. Considering that the higher education sector in the country is expected to achieve three major objectives of expansion, equity, and excellence,[4] it appears critical to understand how different kinds, types and categories of institutions contribute to and impact these broad objectives. Each of the different types are markedly different from one another in terms of their size, programme offerings, admission and examination processes, competitiveness and selectivity, cost and fees chargeable from students; extent of public funding, kinds of resource mobilisation, adequacy and quality of physical facilities and infrastructure, adequacy, qualifications and procedure for the selection, training and development, retention and promotion of teachers and other human resources (Basu, 2016).

Obviously, they are bound to have consequences and implications for access, equity, and quality of higher education. By way of clarification, this paper treats the government aided institutions as government or public, because they receive public funds and mostly follow governmental rules and regulations. It may also be clarified that this paper deals with only those institutions which fall under the purview of the Ministry of Education, thus leaving out those that are in the domain of other ministries. The present paper examines the implications of such heterogeneity on the access, equity, and quality of higher education in India.

In the interest of manageability, the present paper seeks to analyse only three kinds of heterogeneity; thus it focusses on: (1) *Sector* which includes the (a) Central and the (b) State Sector; (2) *Type* of Higher Educational Institutions comprising the (a) INIs, (b) ISLs, (c) CUs, (d) COUs, (e) SUs, (f) SOUs, (g) DUs, (h) CHEs and (i) SAHEIs; and (3) *Category* consisting of (a) Government; (b) Government-Aided and (iii) Self-Financed Private. Growth and expansion in the above types of higher educational institutions and enrolment therein

[4] Some of the policy documents also suggested that in addition to these, the 'relevance,' 'value-based education' and 'extension' be made equally important focusses. Lately, 'employability' is being emphasised as an imminent objective of higher education. The present authors assume that these are only subsets of quality and have, therefore, they have kept the focus on the triple objectives of Expansion, Equity and Excellence in higher education.

during the period 2011-12 to 2019-20 are presented in Appendices A and B. The paper, thus, covers all 9 types of higher educational institutions and the enrolments therein, across three kinds of diversities based on the parameter of ownership, governance, management, and funding.

Implications for Access

Access by the Sector: Discourses on higher education are often centred around the central sector higher educational institutions, even though they account for only 0.57 per cent of the total higher educational institutions and 8.22 per cent of the total enrolment in higher education. The state sector higher educational institutions, thus, play a dominant role in providing higher education in terms of numbers (99.43 per cent) as well as enrolment (91.78 per cent). Clearly, the central sector HEIs are generally larger in size than the state sector HEIs, which on an average are smaller in size, though that could primarily be due to an overwhelming dominance of CHEs and SAHEIs (see Table 1).

TABLE 1

Number and Enrolment in the Central and State Sector HEI in 2019-20

Sector of HEIs	*No. Of HEIs*	*Enrolment (Rounded off to Thousand)*	*Share in Number*	*Share in Enrolment*
Central	315	3071	0.57%	8.22%
State	54851	34282	99.43%	91.78%
Total	55166	37353	100.00%	100.00%

Source: Compiled and Computed by the author from data as reported in GOI (2020), All India Survey of Higher Education (AISHE)-2019-20, Ministry of Human Resource Development, New Delhi

Access by Type: As of 2019-20, India had as many as 55,166 HEIs, comprising 1043 ULIs or 1.89 per cent of the total HEIs in the country. Higher education system is, thus, dominated by CHEs and SAHEIs. which respectively account for 76.76 and 21.35 per cent of the HEIs. As regards enrolment, ULIs account for 21.79 per cent as against the CHEs and SAHEIs which respectively account for 72.69 and 5.52 per cent of the total enrolment in higher education. Noticeably and as expected, ULIs may be fewer in numbers but are larger in size. Further, within ULIs, the SUs represent 68.46 per cent of all ULIs, accounting for 47.39 per cent of the total enrolment in ULI, thus playing a significant role in providing access to higher education. They are followed by INIs with 12.94 per cent of ULIs and account for merely 3.6 per cent of the total enrolment in ULIs. In comparison, DUs represent 11.98 per cent of ULIs and 10.87 per cent of enrolment in ULIs (Table 2).

TABLE 2

Number and Enrolment in Different Types of HEI in 2019-20

Type of HEIs	*Number of HEIs*	*Enrolment (Rounded off to Thousand)*	*Share in Total Number of HEIs*	*Share in Total Enrolment in HEI*	*Share in total number of ULI*	*Share in Enrolment in ULI*
Institutions of National Importance	135	293	0.24%	0.78%	12.94%	3.60%
Institutions under State Legislature	5	6	0.01%	0.02%	0.48%	0.07%
Central Universities	48	720	0.09%	1.93%	4.60%	8.84%
Central Open Universities	1	1,167	0.00%	3.12%	0.10%	14.33%
Deemed Universities	125	885	0.23%	2.37%	11.98%	10.87%
State Universities	714	3,858	1.29%	10.33%	68.46%	47.39%
State Open Universities	15	1,212	0.03%	3.24%	1.44%	14.89%
University Level Institutions	**1,043**	**8,141**	**1.89%**	**21.79%**	**100.00%**	**100.00%**
Colleges	42,343	27,153	76.76%	72.69%		
Stand Alone Higher Educational Institutions	11,780	2,063	21.35%	5.52%		
All Higher Educational Institutions	55,166	37,357	100.00%	100.00%		

Source: Compiled and Computed by the author from data as reported in GOI (2020), All India Survey of Higher Education (AISHE)-2019-20 Ministry of Human Resource Development, New Delhi

Access by the Category: Taken as a whole, 20.8 per cent of the total higher educational institutions are owned, established, maintained and funded by the government and they account for 41.88 per cent of the total enrolment in higher education. Government-aided institutions account for 11.27 per cent of the total number and 16.23 per cent of the enrolment in higher education. In sharp contrast, the self-financed private higher educational institutions, with a 59.64 per cent share, constitute the bulk of the higher educational institutions. But they account for just as much share in enrolment (41.89 per cent) as the government higher educational institutions (Table 3).

TABLE 3

Number and Enrolment in Different Categories of HEI in 2019-20

Category of HEIs	*Number of HEIs*	*Enrolment in HEIs (Rounded off to Thousand)*	*Share in Number*	*Share in Enrolment*
Government	11,475	15,642	20.80%	41.88%
Government Aided	6,219	6,062	11.27%	16.23%
Self-Financed Private	32,903	15,649	59.64%	41.89%
Not Available	4,568		8.28%	0.00%
Total	55,165	37,353	100%	100%

Source: Compiled and Computed by the author from data as reported in GOI (2020), All India Survey of Higher Education (AISHE)-2019-20, Ministry of Human Resource Development, New Delhi

Further cross tabulation shows that most central sector HEIs are government, with the only exceptions the self-financed DUs and a few of the IIITs that are established in the Public Private Partnership (PPP) mode and are generally run on self-financed basis. As regards SUs and SOUs, close to 46 and 6 per cent of them fall under the self-financed private types. Taken as a whole, 59.9 per cent of ULIs are government and another 1.0 per cent are government aided. A glance at the table further reveals that over 61 per cent of ULIs are either government or government aided. In sharp contrast, as many as 61.5 and 66.20 per cent of CHEs and SAHEIs are run in the self-financed private mode. Within ULIs, the share of the central sector institutions works out to be 38.25 per cent, with INIs, CUs, COUs and DUs accounting for 3.66, 8.98, 14.57 and 11.04 per cent respectively. As against this, the state sector institutions have a share of 61.5 per cent with ISLs, SUs, SOUs respectively enrolling 0.08, 46.60 and 15.07 per cent students. Similarly, the government and the government aided universities accounted for 75 and 0.7 per cent of the total enrolment in higher education, whereas the self-financed private institutions accounted for merely 24.3 per cent. The situation, however, is just reverse in case of colleges as the government and government-aided colleges and SAHEIs accounted for only 33.7 and 23.8 per cent of the enrolments in CHE. In sharp contrast, the self-financed private DUs accounted for as much as 89.2 per cent of the enrolment in DUs.

The central sector institutions account for 29.72 per cent share, with INIs (12.94 per cent), CUs (4.6 per cent), COUs (0.1 per cent), and DUs (12.08 per cent), as compared to the SUs and the SOUs with 68.34 and 1.44 percent. Amongst the DUs, an overwhelming majority are self-financed private (63 per cent) whereas only 28.6 and 7.9 per cent of them are government and government aided. In contrast, the state sector institutions are in all three categories with only about 39.1 per cent of them being in the self-financed private mode. Clearly, an overwhelming proportion of enrolment in ULIs is in the government and government aided institutions. In case of the CHEs and SAHEI which respectively cater to 72.91 and 5.56 per cent of the total enrolment in higher education, the situation is just

opposite, as 44.9 and 67.1 per cent of their enrolment are in the self-financed private sector. Although this appears paradoxical, it is not difficult to explain. The reason lies in the fact that students seek to get quality higher education at affordable cost, which they find in the government and the government-aided universities. This is further reinforced by high to very high seat-to-application ratio in these institutions in general, professional, and technical programmes. In contrast, most self-financed private universities find it difficult to fill up their sanctioned intake. Since the government and government aided universities are limited in number as well as in their intake capacity, they are unable to accommodate all the aspirants. Hence the rest of the students seek admission in the self-financed private institutions so long as they can afford their charges and fees. The situation is, however, changing rapidly over the past decade.

Professional vs General Higher Education: It is often stated that the self-financed private unaided higher educational institutions prefer to offer mostly professional programmes because they are high in demand and have greater career prospects. This intuitively argued position when tested empirically was found to be true beyond doubt. The relevant 2019-20 data indicate that self-financed private HEIs enrol respectively 47.07 and 58.37 per cent students at the UG and PG levels in professional programmes. In contrast, the government HEIs enrolled no more than 8.22 and 18.79 per cent of their students in the professional programmes at the UG and PG levels. This, coupled with the fact that the number of students pursuing academic programmes are nearly 2.5 times the professional programme, indicates that the government and government aided HEIs have not been diversifying their programme portfolios. This could probably be due to the lack of adequate funding but also because of the want of initiatives (Table 4).

TABLE 4

Enrolment in Academic and Professional Higher Education across Different Types of HEIs 2019-20 (Figures in Millions)

Enrolment in	*Undergraduate*			*Postgraduate*			*UG and PG Total*		
	Govt.	*Govt. Aided*	*Unaided*	*Govt.*	*Govt. Aided*	*Unaided*	*Govt.*	*Govt. Aided*	*Unaided*
Academic (General) Higher Education	10.540	4.650	6.450	1.940	0.477	0.547	12.480	5.127	6.997
Professional Higher Education	0.944	0.583	5.730	0.449	0.068	0.767	1.393	0.651	6.497
Total Higher Education	11.484	5.233	12.180	2.389	0.545	1.314	13.873	5.778	13.494
Professionals as a Percentage of Total Enrolment (%)	8.22%	11.14%	47.04%	18.79%	12.43%	58.37%	10.04%	11.26%	48.15%

Source: Compiled and Computed by the author from data as reported in GOI (2020), All India Survey of Higher Education (AISHE)-2019-20, Ministry of Human Resource Development, New Delhi

Implications for Equity

Expansion in higher educational capacities and opportunities are important to accommodate all those who aspire to receive higher education, but no less important is creating conducive conditions to all segments of the society, irrespective of their means and social status, to get fair, and equitable access to higher education of their choice. Rapid rise in the number of HEIs, the equity and inclusion remain a major concern. Research studies indicate that 'the varying rate of progression has led to widening of regional and socio-economic inequalities. Besides, high quality elite institutions and programmes too affect equitable access by all segments of the society (Varghese *et al*, 2019b). Increasing private participation has further aggravated the concerns about the equitable access to quality higher education (Thorat & Khan, 2018). With this in view, the following paragraphs dwell on the prevailing status of all the different kinds HEIs in terms of providing equitable access to women, various social groups, particularly the deprived and the marginalised sections of the society.

Participation of Women: In aggregate terms, women account for 49 per cent of the total enrolment in higher educational, thereby taking the gender parity index to 0.96. Expectedly, it may soon reach the ideal number. Yet, there are evidence that women are not equally represented across all levels and disciplines of higher education. For example, they are significantly lower than the national average in engineering and technology. Further, their representation varies across different types of HEIs; they are least represented in INIs (24.91 per cent), government DUs (33.19 per cent), self-financed private universities (34.64 per cent) and in SAHEIs (34.79 per cent). In contrast, ISLs, SOUs, and government aided DUs and CHEs have a better track record in this regard. Undoubtedly, participation of women in higher education has steadily progressed but their representation across different sectors, types and categories of institutions differs drastically. ISLs and SUs are the only government universities that have over 50 per cent representation of women, though the SOUs perform comparatively poorly with only 38.4 per cent women on their roll. The most perturbing thing is that INIs have exceptionally low (24 per cent) representation of women in their enrolment (Table 5).

TABLE 5

Participation of Women in Higher Education in 2019-20

	Sector		*Type*									*Category*		
	C	*S*	*INI*	*ISL*	*CU*	*COU*	*DU*	*SU*	*SOU*	*Coll*	*SAI*	*G*	*GA*	*P*
Women in Total Enrolment (%)	44.23	45.79	24.91	66.66	48.19	44.73	41.71	42.36	49.22	51.6	34.79	43.87	50.93	44.92
Gender Parity Index	0.79	0.84	0.33	2.00	0.93	0.81	0.72	0.73	0.97	1.07	0.53	0.78	1.04	0.82

Source: Compiled and Computed by the author from data as reported in GOI (2020), All India Survey of Higher Education (AISHE)-2019-20, Ministry of Human Resource Development, New Delhi

Social Group Representation: Except for colleges where Scheduled Caste (SC) enrolment is 15.19 per cent, no other HEI has as yet met the mandatory reservation requirements of 15 per cent. In aggregate, however, SCs constitute 14.70 per cent of total higher education enrolment. Their representation is exceptionally low in the self-financed private DUs (5.62 per cent), self-financed PUs (7.55 per cent), and ISLs (8.62 per cent). Most surprisingly, their representation in the government DUs is as low as 9.26 per cent.

No different is the situation of the Scheduled Tribes (STs) who, in aggregate, account for only 5.6 per cent of the total higher education enrolment as compared to the mandatory reservation of 7.5 per cent.

Other Backward Classes (OBCs) constitute close to 37 per cent of the total enrolment in higher education, though in many types of HEIs like colleges they are no more than 3.75 per cent, presumably because most colleges operate in the self-financed private mode.

Persons with disabilities (PWDs) are supposed to be a minimum of 2 per cent of the total enrolment in higher education. However, barring the INIs where they constitute 2.53 per cent, in the rest of HEIs their representation ranges between 0.09 per cent in the self-financed DUs and 0.50 per cent in CUs. In terms of the national average, their representation is as low as 0.25 per cent (Table 6).

TABLE 6

Participation of Persons Belonging to Various Social Groups in Higher Education in 2019-20

Share in Enrolment (%)	*Sector*		*Type*									*Category*		
	C	*S*	*INI*	*ISL*	*CU*	*COU*	*DU*	*SU*	*SOU*	*CHE*	*SAI*	*G*	*GA*	*P*
Scheduled Castes	10.35	8.08	12.04	8.62	13.73	12.29	8.61	9.95	6.23	15.19	NA	11.54	10.95	4.39
Scheduled Tribes	4.38	9.47	5.53	2.60	4.50	7.15	3.63	4.17	14.76	5.91	NA	5.32	2.34	9.64
Other Backward Classes	23.99	23.23	24.06	21.25	17.91	18.72	28.68	28.27	18.20	3.75	NA	25.00	33.56	17.44
Persons with Disability	0.61	0.20	2.53	0.32	0.50	0.00	0.30	0.19	0.22	0.20	NA	0.64	0.33	0.08
Muslim Minorities	4.53	2.63	1.92	2.20	8.41	0.00	6.39	4.77	0.50	6.01	NA	2.85	14.59	2.57
Other Minorities	2.03	0.30	0.63	0.12	1.91	0.00	3.85	0.47	0.13	2.42	NA	1.01	4.88	1.15

Source: Compiled and Computed by the author from data as reported in GOI (2020), All India Survey of Higher Education (AISHE)-2019-20, Ministry of Human Resource Development, New Delhi

Muslim minorities are about 5.5 per cent of the total enrolment in higher education, with most HEIs reporting a significantly lesser number than the national average. The only exceptions are the government aided DUs and CUs which report respectively 14.59 and 8.41 per cent Muslims on their rolls. The reason for the higher rate of representation lies in the fact that a few government aided DUs like Jamia Hamdard and some central universities like the Aligarh Muslim University and Jamia Millia Islamia, being minority institutions, have relatively higher proportion of Muslims on their roll. Further, Maulana Azad National Urdu University, by its nature of providing higher education through Urdu medium, attracts a larger number of Muslim students. Should we count these institutions out, the national average of Muslims would become much lower than the present 5.5 per cent. As regards other minorities, they constitute 2.30 per cent of the total enrolment in higher education with DUs, government, government aided and self-financed private, respectively account for 3.64, 4.88 and 3.01 per cent (Table 6).

Equity indicators, thus, highlight that government and government aided HEIs do significantly better on all equity indicators. Government aided HEIs, in fact, are doing even better as far as gender parity is concerned. Similarly, the government HEIs account for almost twice as much SC enrolment as compared to the self-financed private HEIs. So is the case with the enrolment of STs. As regards participation of Muslim and other minorities is concerned, government aided HEIs perform better than the government and the self-financed private HEIs. The data further reveal that, as against the national average of 49 per cent, the women enrolment in the government HEIs was only 43.87 per cent, probably due to significantly lower representation of women in INIs. However, a further cross tabulation by the type and category of ULIs reveals that the government aided ULIs fare far better with 50.93 per cent women than the government (43.87 per cent) and the self-financed private HEIs (44.92 per cent). Sadly, equivalent data are unavailable for CHEs and SAHEIs. As regards SCs, the government and the government aided HEIs do much better than the self-financed private HEIs. A cross tabulation by the type and category of HEIs further confirms the trend. However, the data discern a somewhat opposite trend in the case of the STs, who are represented in a much larger proportion in the self-financed private HEIs (9.64 per cent) than the government (5.33 per cent) and government aided (2.34 per cent) HEIs (Table 5). The cross tabulation by the type and category of higher educational institutions further reinforces the trend.

The OBCs too are better represented in the government aided (33.56 per cent) and government (25 per cent) than the self-financed private (17.44 per cent) HEIs, presumable because the OBC reservation in admission does not apply to them. Alternatively, such HEIs might not be receiving enough applications from the OBC candidates, as they find it easier to get into the government and government aided institutions. Further cross tabulation by the type and category of the HEIs reinforces the trend. PWD students are, however, better represented in the government (0.64 per cent) than in government aided (0.33 per cent) and self-financed private (0.20 per cent) HEIs. Cross tabulation further substantiates the point. Muslim minorities far better represented in the government-aided (14.59 per cent) than the government (2.85 per cent) and the self-financed private (2.57 per cent) HEIs. Cross tabulation of data further confirms the trend, though this could not be done for ULIs as enrolment breakup for colleges, which account for three fourth of the total enrolment in higher education, was unavailable. The case with other minorities too was quite similar (Table 5).

Implications for Quality

Quality of the HEI can be measured in many ways. For the present paper, we have used the rank position and score in the National Institutional Ranking Framework (NIRF) and in the Academic Ranking of the World Universities (ARWU), the QS World University Rankings and THE ranking of the world universities. The NIRF was launched in 2016. Since then, it has undergone at least two rounds of changes in the parameters and methodology. Some may, therefore, challenge its ranking, which gets credence because the national and global ranking results are not necessarily in sync with one another. So much so, that universities with no mention in NIRF might appear ranked in global rankings. With this in view, an attempt has been made to examine the category and type wise ranking of the Indian higher educational institutions that find place in the global ranking. Even though there are more than two dozen global rankings, three of them are most used as benchmark. These include the Academic Ranking of the World Universities (ARWU), popularly known as Shanghai Ranking (ARWU, 2021), the QS Ranking of the World Universities (QS, 2022), and the Times Higher Education (THE) Ranking of the World Universities (THE, 2021).

Sector-wise Performance: A quick glance on the data indicates that the top 100 NIRF HEIs comprise 69 central sector HEIs, as compared to 31 belonging to the state sector. Further, they not only dominate in number but are also ranked higher than the state sector HEIs. For example, all the top 10 institutions belonged to the central sector. Even among those that were ranked between 11 to 20, 21 to 30 and 31 to 40, the central sector higher educational institutions dominated the scene with 70, 80 and 90 percent of the institutions (Table 7).

TABLE 7

Ranking Status of TOP 100 HEIs by Decile in NIRF 2021

Sector of HEI	*No. of NIRF to 100 NIRF HEIs by Deciles*									
	D1	*D2*	*D3*	*D4*	*D5*	*D6*	*D7*	*D8*	*D9*	*D10*
Central	10	7	8	9	6	6	6	8	4	5
State	0	3	2	1	4	4	4	2	7	4
Share of Central	100%	70%	80%	90%	60%	60%	60%	80%	40%	50%
D1 = Decile 1 (Top 10) and D10 = Decile 10 (Bottom 10)										

Source: Culled out from GOI (2021), National Institutional Ranking Framework (NIRF) 2021, Ranking under Overall Category

Type-wise Performance: Going by the type of HEIs, it is observed that INIs dominate with 32 of them being reckoned amongst the top 100 NIRF. They are followed by SUs (30), DUs (26), CUs (10) and colleges (2). However, the data further indicate that INIs, CUs and DU were ranked much higher than the other types of HEIs. Since different types of HEIs are not equal in number, it was felt necessary to see as to what per cent of each types got ranked and higher in NIRF 100. The analysis reveals that while 23.7 per cent of INIs were ranked

amongst the NIRF top 100, followed by 20.83 per cent of CUs and 20.63 per cent of DUs (Table 8).

TABLE 8

Ranking Status of Higher Educational Institutions by Their Type in NIRF 2021

Type of HEIs	*Number of Top 100 NIRF HEIs by Decile*										*Total HEIs*	*All*	*Percent of Total*
	D1	*D2*	*D3*	*D4*	*D5*	*D6*	*D7*	*D8*	*D9*	*D10*			
Institutions of National Importance	7	1	5	5	3	4		3	2	2	135	32	23.70%
Institutions Under State Legislature											5	0	0.00%
Central Universities	2	4						1	2	1	48	10	20.83%
Central Open University											1	0	0.00%
State Universities		3	2	2	4	4	4	2	5	4	713	30	4.21%
State Open Universities											15	0	0.00%
Deemed Universities	1	2	3	3	3	2	6	4		2	126	26	20.63%
Colleges									2		42,343	2	0.00%
Stand Alone HEIs											11,780	0	0.00%
Total	10	10	10	10	10	10	10	10	11	9	55,166	100	0.18%
D1 = Decile 1 (Top 10) and D10 = Decile 10 (Bottom 10)													

Source: Culled out from GOI (2021), National Institutional Ranking Framework (NIRF) 2021, Ranking under Overall Category

Category-wise Performance: Category-wise break up of top 100 NIRF institutions shows that the government HEIs clearly lead the pack, with 70 of them appearing amongst the top 100 NIRF ranked institutions. In sharp contrast, the self-financed private (26) and the government-aided (…) come distant next. Even in percentage terms, 0.61 per cent of the government HEIs were found ranked amongst the top 100 NIRF institutions, whereas only 0.08 per cent of the self-financed private and 0.06 per cent of the government aided could make to the list. Further, it may be noted that the government HEIs not only performed better in terms of numbers, they also did far better in terms of their rank position (Table 9).

TABLE 9

Ranking Status of Higher Educational Institutions by Their Type in NIRF 2021

Category of HEIs	*Number of Top 100 NIRF HEIs by Decile*										*Total HEIs*	*All*	*Percent of Total*
	D1	*D2*	*D3*	*D4*	*D5*	*D6*	*D7*	*D8*	*D9*	*D10*			
Government	10	8	8	7	6	8	4	5	7	7	11,475	70	0.61%
Government Aided				1			3				6,220	4	0.06%
Self-financed Private		2	2	2	4	2	3	5	4	2	32,903	26	0.08%
Unavailable											4,568	0	0.00%
Total	10	10	10	10	10	10	10	10	11	9	55166	100	0.18%

D1 = Decile 1 (Top 10) and D10 = Decile 10 (Bottom 10)

Source: Culled out from GOI (2021), National Institutional Ranking Framework (NIRF) 2021, Ranking under Overall Category

Performance in the World Rankings: The data reveal that as many as 14 higher educational institutions from India appear amongst the Top 1000 list of ARWU. Of these, the best institution from India, the Indian Institute of Science (IISc), a government DU, is ranked amongst 401-500 category. The next best ranked institutions appear to be a state university. Except for these two, it is the INIs that dominate the scene both in terms of numbers as well as in their rank position followed by the CUs. Interestingly, none of the self-financed private universities appear in the ARWU list, though a few private DUs appear in 801-900 rank position (Table 10). In the QS ranking of the world universities, as many as 35 HEIs from India appear in the Top 1000 list. Within these institutions, the INIs appear prominently with 10 of them appearing in the list. They are followed by the SUs (8), CUs (7) and DUs (7) (Table 11). THE world university ranking includes as many as 63 HEIs from India in its top 1000 list, which is dominated by SUs in terms of number (23), though all of them are ranked in the lowly 601 to 1000 categories. The list includes 14 INIs of which, 1 each are ranked amongst the 301-400 and 401-500 category (Table 12).

TABLE 10

Number of Indian Higher Educational Institutions Ranked in ARWU 2021

	INI	*CU*	*SU*	*PU*	*GDU*	*GADU*	*PDU*	*GC*	*GAC*	*PC*	*Total*
Top 100											0
101 – 200											0
201 – 300											0
301 – 400											0
401-500					1						1
501 -600											0
601-700			1								1
701-800	3	3									6
801-900	1						1				2
901-1000	2	1	1								4
>1001											0
Total	6	4	2	0	1	0	1	0	0	0	14

Source: Shanghai Ranking (2021) retrieved from https://www.shanghairanking.com/rankings/arwu/2021

TABLE 11

Number of Indian Higher Educational Institutions Ranked in QS World Ranking 2022

	INI	*CU*	*SU*	*PU*	*GDU*	*GADU*	*PDU*	*GC*	*GAC*	*PC*	*Total*
Top 100											0
101 - 200	2				1						3
201 - 300	3										3
301 - 400	2										2
401-500											0
501 -600	1	2	1								4
601-700			2								2
701-800	1	2					1				4
801-1000		1	2				1				4
>1001	1	2	3	1	1		5				13
Total	10	7	8	1	2	0	7	0	0	0	35

Source: QS World Ranking of Universities (2022), retrieved from https://www.topuniversities.com/university-rankings/world-university-rankings/2022

TABLE 12

Number of Indian Higher Educational Institutions Ranked in THE World Ranking 2021

	INI	*CU*	*SU*	*PU*	*GDU*	*GADU*	*PDU*	*GC*	*GAC*	*PC*	*Total*
Top 100											0
101 – 200											0
201 – 300											0
301 – 400	1				1						2
401-500	1										1
501 -600											0
601-800	5	4	5		1		1				16
801-1000	5	1	6		1		1				14
>1001	2	3	12	1	1		10		1		30
Total Institutions	14	8	23	1	4	0	12	0	1	0	63

Source: THE World University Ranking (2021), retrieved from https://www.timeshighereducation.com/world-university-rankings/2021/world-ranking #!/page/0/length/25/sortby/rank/sortorder/asc/cols/stats

What Determines the Rankings of Higher Educational Institutions: The evidence in this regard is only indicative and by and large remains inconclusive. It only indicates a few probable pointers. It has been argued by many that a critical mass of the faculty, the student teacher ratio and the per student spending by the institutions put them in better position to get ranked higher, nationally as well as internationally (Salmi, 2009; Altbach & Salmi, 2011; Altbach *et al*, 2018; Qamar, 2021a). Tested on these parameters, the data do indicate that the faculty size in a critical mass does play an important role in improving the ranking. However, the coefficient of correlation between them was found to be weak and statistically insignificant (Table 13). So has been the case with the student teacher ratio, i.e., number of students per teacher (Table 14) as well as the per student expenditure (Table 15). Even after the outliers are removed from the calculation, the relationship looked better but remain low and statistically insignificant.

TABLE 13

Number of Teachers per Institution (PIT) and Top 100 HEIs in NIRF 2021

Parameters	*Sector*		*Type*					*Category*		
	C	*S*	*INI*	*CU*	*DU*	*SU*	*CHE*	*G*	*GA*	*P*
PIT Maximum	3,350	3,129	809	1,676	3,350	2,129	596	1,674	1,074	3,350
PIT Minimum	113	135	113	291	168	135	253	113	267	243
PIT Average	672	630	336	748	1065	638	425	453	619	1220
Number of HEIs in Top 100	69	31	32	10	26	30	2	70	4	26

Source: Computed from data collated from GOI (2021), National Institutional Ranking Framework (NIRF) 2021, Ranking under Overall Category

TABLE 14

Student Teacher Ratio (STR) and Top 100 HEIs in NIRF 2021

Parameters	*Sector*		*Type*					*Category*		
	C	*S*	*INI*	*CU*	*DU*	*SU*	*CHE*	*G*	*GA*	*P*
STR (Maximum)	24	29	20	24	19	29	18	29	19	19
STR (Minimum)	3	6	10	12	3	6	15	6	3	7
STR (Average)	14	15	14	17	13	15	16	15	12	13
Number in Top 100	69	31	32	10	26	30	2	70	4	26

Source: Computed from data collated from GOI (2021), National Institutional Ranking Framework (NIRF) 2021, Ranking under Overall Category

TABLE 15

Per Students Total Expenditure (PSTE) and Top 100 HEIs in NIRF 2021

Parameters	Sector		Type					Category		
	C	S	INI	CU	DU	SU	CHE	G	GA	P
PSTE (Maximum)	27.23	29.64	27.23	7.96	21.37	29.64	2.49	29.64	21.37	8.74
PSTE (Minimum)	0.99	0.77	2.49	2.37	0.99	0.77	1.50	0.91	1.57	0.77
PSTE (Average)	5.90	5.09	6.83	4.86	5.30	5.21	1.99	6.17	7.72	3.92
Number in Top 100	69	31	32	10	26	30	2	70	4	26

Source: Computed from data collated from GOI (2021), National Institutional Ranking Framework (NIRF) 2021, Ranking under Overall Category

Conclusion

It is also abundantly clear that the central sector HEIs, though relatively of higher quality, play a limited role in access to higher education because of limited numbers and intake capacity. Within the central sector institutions, it is the INIs and CUs that play a little more significant role in enhancing the access. In totality, however, the SUs and their colleges emerge as dominant players in providing higher education to the masses. Within the state sector, it is the CHEs that which overshadow all other kinds of HEIs, as far as the enrolment in higher education is concerned, though very few of them have the reputation of being high quality. NEP 2020, seeks to abolish the affiliation system by declaring such colleges that are able to upscale themselves into multidisciplinary HEIs as autonomous higher educational institutions with power to award degrees (GOI, 2020b). How many of them would be able to meet the prescribed criteria is the moot question? Going by the type of HEIs, ULIs play a minuscule role in providing access to higher education, as colleges take care of the bulk of the burden in this regard.

It is obvious from the above discussion the government and government aided HEIs are fewer in numbers but larger in size. Yet, the self-financed private HEIs have been rapidly growing in number and though smaller in size, they cater to a good number of students because of their sheer number. It also appears that the government and government aided HEI have not been able to respond to the changing needs of the economy and industry and continue with mostly general higher education, in sharp contrast to the self-financed private HEIs which largely focus on professional and technical higher education. Further, the quality HEIs in the government and government-aided being highly selective have been adversely impinging on equitable access. Interestingly, the private HEIs have been growing in number and enrolment but so far, they have not been able to make any remarkable progress as far as the national and world ranking of HEIs are concerned. In fact, it is the government HEIs

which still rule the roost in this regard. NEP 2020, however, seeks to promotes private higher education as no education policy did before.

Further, while the data on higher education in India do not present any conclusive evidence that a critical mass of faculty, lower student teacher ratio and magnitude of funding determine the ability of the higher educational institutions to enhance capacity expansion, tackle discrimination and promote quality. But this could be due to such extreme heterogeneity in the higher educational institutions and lack of a systematic data spread over a fairly long period of time. Out best bet, then, is the global experiences which suggest that the fund, faculty, and freedom are the three essential conditions to make the higher education system egalitarian as well as of excellent quality.

Expansion, Equity and Excellence have been given equal importance in the higher education development strategies in the country right from the time of Independence. These three, in fact, are like the triple helix defining the higher education in a welfare state. Compromising one at the cost of another will not work to the best advantage to a country of the size and diversity like ours. It has also been established that mere expansion of the higher education capacity would fail to bear fruit unless it is supported by proactive policies of equity and inclusiveness. Equity in education shall, therefore, must be a major concern Critically, it is also recognised that but for quality and relevance, the higher education shall serve no national purpose. In conclusion, it may be stated that these issues may have to be addressed at the systemic level, which under the present system of hierarchical heterogeneity has been seriously compromised.

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Abbreviations Used in the Paper

C = Central Sector; CHE = Colleges of Higher Education; COU = Central Open Universities; CU = Central Universities; DU = Deemed University; G = Government; GA = Government Aided; GADU = Government Aided Deemed Universities; GAC = Government Aided Colleges; GC = Government Colleges; GDU = Government Deemed Universities; INI = Institutions of National Importance; ISL = Institutions under State Legislature; P = Private – Self-Financed; PC = Private Colleges; PDU = Private Deemed Universities; S = State Sector; SAI = Stand Alone Institutions; SOU = State Open University

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Vocational Education at Senior Secondary Level in Government Schools of Delhi: A Stakeholders' Perspective

Riddhi Jain*

Abstract

Vocationalisation of education involves the study of technologies and related sciences and the acquisitions of practical skills, aptitudes, understandings and knowledge related to occupations in the various sectors of economic and social life in addition to the general education. It is a means of preparing for an occupational field and an aspect of continuing education. Given the vast potential of untapped human skills in India, all it needs is a framework of comprehensive policies for vocational education; more concerted efforts are required towards improving its adoption and making the stakeholders aware of its benefits. The current research aimed to study the vocational education programme in schools in terms of the perceptions of industry partners and students. The study has highlighted significant components of partnership amongst the schools and industry partners in imparting vocational education in schools. Further, various challenges and suggestions were reported by the selected stakeholders on the vocational education programme in schools. The challenges that have been brought forth by the study can be worked upon to improve the vocational education programme at the school level and make the school-industry partnership more efficient.

* National Institute of Educational Planning and Administration (NIEPA), New Delhi -110016,
Email: riddhi.jain92@gmail.com

Introduction

Vocationalisation of education is the education involving the study of technologies and related sciences and the acquisitions of practical skills, aptitudes, understandings and knowledge related to occupations in the various sectors of economic and social life in addition to the general education. It is a means of preparing for an occupational field and an aspect of continuing education (UNESCO, nd). The concept of vocational education reveals various interpretations, meanings and purposes of vocational education. The aim of vocational education is to supplement general education so that total education is imparted to the individual which has both cultural and utility values for progressing in his chosen field of activity. Vocational education is the education or training of workers and its origin can be traced to the early apprenticeship training practices (Rao, 1999). A historical review of education in India reveals that vocational education has been the subject of deliberations and debate for more than a century.

The vocational education can be traced back to the Vedic period where Brahmins and Kshatriyas used to receive education in gurukuls for the occupation of priests, warriors, etc. Vocational training in terms of preparation for jobs such as agriculture, trade and other occupations such as carpenter, iron smith etc. was imparted by father to son and not through formal education. Even in the Buddhist period, monks were supposed to know sewing, spinning, knitting etc, and they were also acquainted with the science of house building. They were given education in other vocation and crafts which could help them earn their livelihood (Gupta, 2014). The Wood's Despatch (1854) highlighted the importance of some form of vocational education as it stated that the institution in secondary schools should be 'practically useful to the people of India in their different spheres of life". The Hartog Committee on Vocational Education (1929) recommended that there should be a diversion of more boys to industries and commercial careers at the end of the middle stages, and for it the provision should be made by alternative courses in that stage. Then came the Sapru Committee (1934) whose main aim was to find out the solution of the unemployment problem so it recommended that school education should be of 11 years and vocational education should be commenced after 11 years of education (Aggarwal, 1993).

In Independent India, first came the Radhakrishnan commission (1948) which emphasised the need for the vocational education to meet the needs of the young men and women. Kothari Commission (1964-66) recommended vocationalisation of education. It mentioned that it can bring education into closer relationship with productivity and also stated that work experience should be introduced as an integral part of all education-general or vocational (Aggarwal, 1993). Vocationalisation of Higher secondary education and the +2 Committee (Adiseshlah Report) (1978), observed that the vocationalised spectrum of the higher secondary schools is learning of a skill or a range of skills through study or technologies, related sciences, and farm or other practical work (Aggarwal, 1993).

The National Curriculum Framework (2005) draws attention to work as one of the curricular areas. It visualises the establishment of separate Vocational Education and Training (VET) centres and institutions from the level of village clusters/blocks to sub-divisional/ district towns and metropolitan areas as it considered the institutionalisation of work centred education as integral part of school curriculum from pre-primary to plus two stage and underlined that VET should provide a 'preferred and dignified' choice rather than a terminal or a 'last resort' option (Verma, nd).

Moving ahead with journey of vocational education in India came the formation of National Skill Development Corporation (NSDC). It is a not-for-profit public limited company incorporated on July 31, 2008, and was set up by Ministry of Finance on the Public Private Partnership (PPP) model. The aim of NSDC is to promote skill development by catalysing creation of large, quality and for-profit vocational institutions and it also provides funding to build scalable and profitable vocational training initiatives (National Skill Development Corporation [NSDC], 2017).

Then came the policies of Ministry of Skill Development and Entrepreneurship. The policy on skill development (2009) envisions the establishment of a National Skill Development Initiative with the mission of empowering all individuals through improved skills, knowledge, nationally and internationally recognised qualifications to gain access to decent employment and ensure India's competitiveness in the global market (Ministry of Skill Development & Entrepreneurship, 2009). The National Skills Qualification Framework (NSQF) (2013) organises qualifications according to a series of levels of knowledge, skills and aptitude. The Vocationalisation of School Education has been aligned with the National Skill Qualification Framework (NSQF).

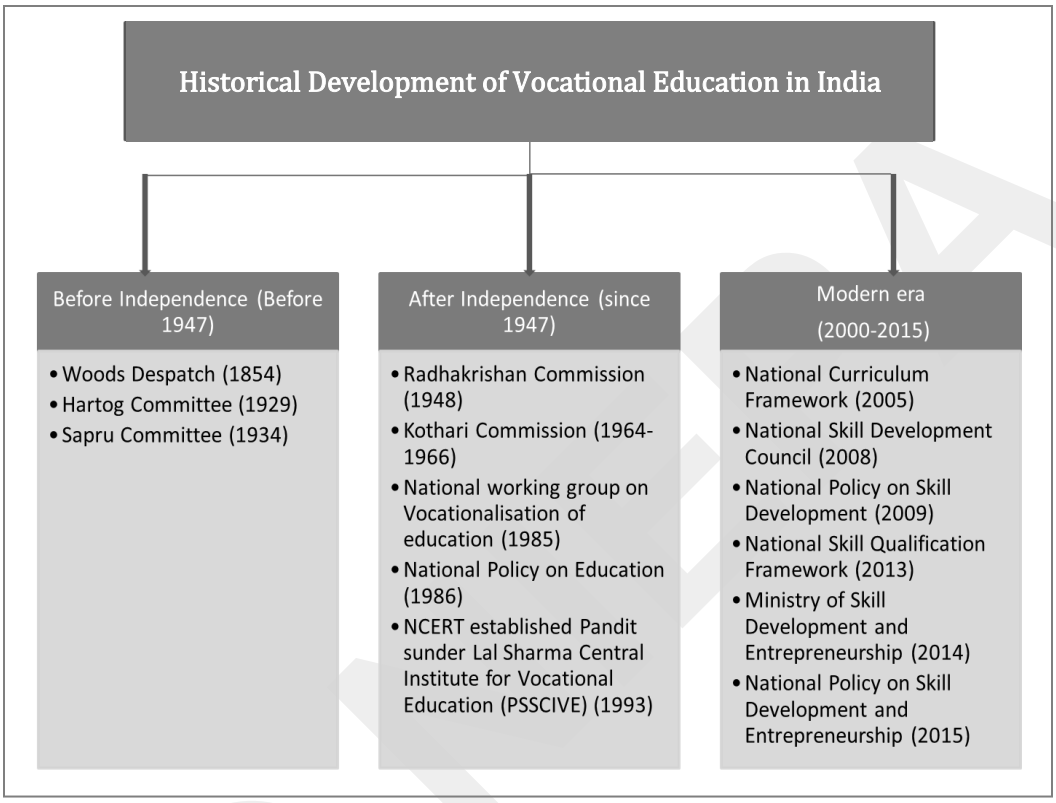
In 2014, Ministry of Skill Development and Entrepreneurship (MSDE) was set up and it was responsible for co-ordination of all skill development efforts across the country, building the vocational and technical framework, skill up-gradation, building of new skills (Ministry of Skill Development & Entrepreneurship, nd). The National Policy on Skill Development and Entrepreneurship which came in 2015 with the objective to meet the challenges of skilling at scale with speed and standard (quality). It aimed to provide an umbrella framework to all skilling activities being carried out within the country, to align them to common standards and link the skilling with demand centres (Ministry of Skill Development & Entrepreneurship, 2015). The historical development of vocational education in India is summarised in Figure 1.

When millions of people are unable to find work to earn the minimum required income, the problem of unemployment creates the tendency of exclusiveness and alienation among them. Non-utilisation of educated manpower necessitates vocational education to overcome the hurdles. Training in a specialised vocation or occupation is required so as to prepare the students for a specified job or vocation. Thus, vocational education at higher secondary level is an important step towards enhancing the employability of students joining the world of work (Prasanthakumar, 2002).

Vocational education or Vocational Education and Training (VET), also called Career and Technical Education (CTE), prepares learners for jobs that are based on manual or practical activities, traditionally non-academic and totally related to a specific trade, occupation or vocation. It is sometimes referred to as technical education, as the learner directly develops expertise in a particular group of techniques or technology (All India Council for Vocational Education [AICTE], 2017).

FIGURE 1

Historical Development of Vocational Education in India



The focus of the society has tremendously changed from fulfilling the fundamental needs of the overall development to becoming empowered in the current economic conditions by promoting the skill-based teaching and learning systems instead of approaching the textbook education methods (Singh & Mahore, 2018).

In the human capital framework, general education is said to create 'general human capital' and vocational and technical education 'specific human capital' (Becker, 1964, as cited in Tilak, 2003). Vocational education at higher secondary stage is different from the conventional education, in which literacy and work were kept apart from each other. The vocational education is not entirely an innovation, but only marks a departure from the traditional system of education. Vocational education at higher secondary stage is intended to play a dual role in education. On the one hand it has to prepare the students for identified occupations or jobs by providing knowledge of technologies and sciences and learning of practical skills related to the vocations in various industrial and economic sectors, while, on the other hand, it has to provide opportunities for higher education (Venkatasubramanian, 1982).

Vocational, or skills-based, education is becoming more important today because now many employers expect new employees to have all the practical skills to start work. It is also important for those who have to support their families immediately after senior secondary education (Kaushik, 2014).

The vocational education is the education that is focussed upon expanding employment size and bringing about improvements in the quality of employment. In technical and vocational education and training programmes, the individuals are imparted training so they are able to acquire employment opportunities to sustain their living conditions in an effective manner. Therefore, technical and vocational education and training programmes are regarded as significant and beneficial to the individuals.

The creation of a skilled labour force has been a challenge in many countries. There is a growing demand for a skilled labour force which has remained unfulfilled. To meet the requirement for a skilled labour force, more emphasis has been given to the VET programmes (Agarwal, 2013). According to research done by OECD, the most successful transition pathways are the ones that allow both a high level of general education and an occupational qualification (Barnett & Ryan, 2005).

The Indian government has set a target to skill 500 million people by 2022. A different estimate suggests that a number of 291 million skilled workers are needed by 2022 if India wants to become a globally leading manufacturing economy (Mehrotra *et al*, 2014). Drastic restructuring of Indian VET has been suggested as one of the key routes to overcome the persisting skills gaps and pursue inclusive growth in the midst of demographic and structural economic transformation. The NEP 2020 requires all educational institutions to integrate vocational education into their offerings for the explosive growth in the country (UNESCO, 2019).

According to Ochwata & Simatwa (2016), students enrolled in large numbers in the technical and vocational subjects perceived the job prospect as a significant enrolment factor. The study implied that the employment may not be the best measure to conclude the level of students at secondary school level. The majority views the subject as good but due to curriculum burden they can leave them for now but pursue them after school. The study also emphasised that guidance and counselling in public secondary schools should be strengthened so that students can access information on the importance of importance of technical and vocational subjects after school. Vocational centres attached to secondary schools should be established to facilitate the professional orientation of students and to contribute to the transition from school to work. This would boost enrolment in these subjects since the students would be aware of opportunities existing for various technical and vocational subjects. The vocational centres established should provide vocational guidance to students' information on various employment requirements in relation to technical and vocational subjects. This should be in view of both formal and non-formal employment opportunities.

Another study titled "Internship in Vocational Education and Training: Stakeholders' Perceptions of Its Organisation," conducted by Akomaning, Voogt & Pieters (2011), found that the relationship between teachers and industry was weak leading to ineffective implementation, which culminates in a myriad of challenges faced by interns. With collaboration not formalised between them, it is likely that both the polytechnics and industry did not understand their distinctive roles when it came to student internship. It was also seen that the students faced social, economic and technical challenges and lack of

professional commitment during internship. Thus, the study recommended enhanced institutional collaboration between polytechnics and industry to foster student internship. Further, it was suggested that a policy directive specifying the functions of each stakeholder could guarantee an authentic learning environment for interns' training.

Study entitled "Secondary School Students' Perceptions of, and the Factors Influencing Their Decision-Making in Relation to, VET in School," conducted by Dalley-Trim, Alloway & Walker (2008), provided insights about the students' reasons for choosing vocational education and training. The students stated that the subjects were good and enjoyable. Also, it provided a valuable qualification and a "head start" in terms of post-school pursuits and it provided them with a relief from the more taxing demands of academic subjects. Further, the study also discussed the perceptions of students for not joining Vocational education and training. The key issue was the status of vocational education as it was marked as a domain of non-academic student. The students spoke of VET subjects as a "waste of time" and perceived it as a subject which will not lead them nowhere. The recommendations were that students need to be better informed in relation to VET pathways and also there is a need to re-think the ways in which VET curricula is designed and delivered. It also recommended an overhaul of the marketing strategies of vocational education.

According to a study done by the Institute of Applied Manpower Research, Planning Commission, New Delhi (2010), India has one of the lowest proportions of trained youth in the world. The quantitative dimension of India's skill development challenge is that 80 per cent of new entrants to the workforce have no opportunity for skill training. The paper focusses on four theme areas of skill development in India, i.e., Vocational Education, Vocational Training in the Unorganised Sector, Vocational Training in the Organised Sector, and Financing of Vocational Training. It mentioned that there are 9,583 schools offering 150 vocational courses broadly of two-year duration, but it suffers from a number of constraints and structural deficiencies; for example, a mere 8 per cent of all senior secondary schools in India impart VE, only 3 per cent of the students are under the ambit of VE against the target of 25 per cent of all Grade 11-12 students, and there is absence of linkage with changing market needs. Regarding the qualitative aspects, it mentioned poor infrastructure, absence of qualified staff and obsolescence. There is low esteem for VE as low priority is given to it. Also, there is lack of vertical mobility. There is absence of private sector in strengthening VE areas of primary, secondary, and tertiary sectors of the economy. In addition, the National Institute of Open Schooling (NIOS) also imparts VE in 80 courses. Total enrolment in VE courses of all these schools is roughly 6,00,000.

At the senior secondary level in government schools of Delhi, vocational education has been offered as a subject to provide the students with job-related skills. It was seen that the subject was compulsory in a few schools in Class XII, while in some schools, it was an additional voluntary subject. Students were oriented towards the different trades of vocational education in Class IX. Government, being the main regulatory body, is promoting vocational education in the country in a sustainable manner. However, more concerted efforts are required towards improving its adoption and making the stakeholders aware of its benefits. Thus, the study attempts to assess the school industry partnership in imparting vocational education in schools, from the perspective of different stakeholders. This paper includes industry partners and students as stakeholders.

Methodology

The study was carried out in Delhi which is the largest metropolis in terms of area in India. It has a number of government schools attended by students of various backgrounds from all over the country. The schools for the study were taken from the five zones of Delhi, namely, north, east, south, west and central. A list of government schools in Delhi was procured and a total of five schools were selected from the list on the basis of willingness to take part in the study. For the study, stakeholders selected were industry partners and students. Industry partners who were collaborating with the schools for the vocational education programme were selected. It was crucial to understand the perspective of industry partners as they were the potential employers of the students. Students pursuing vocational education in schools were selected because they were the beneficiaries of the whole programme of vocational education. Their perspectives on various aspects such as their expectations from the course, aspirations were studied for the understanding of how they perceive vocational education program. Two industry partners were taken per school, making it a total of ten industry partner. Five students were taken from each school making it a total of twenty-five students. The method of sampling that was used is convenience sampling. The tools that were used for the study were questionnaire and interview schedule. The interview schedule was prepared for the industry partners who were collaborating with the schools. Firstly, background information was gathered from them like their designation and experience. Questions were focused on the perceptions about the vocational education programme at the school level in terms of the curriculum, on the job training, the challenges they faced while conducting the training and suggestions to overcome those challenges. The questionnaire designed for the students consisted of questions on the background information of the students. Further, it had questions on reasons for choosing for vocational subject and their goals after completing the program. Their opinions were also taken on challenges faced by them with respect to vocational education programme and suggestions to overcome those challenges. They were asked about their satisfaction level with the course. During the initial stages of data collection, several visits were made to the Delhi Government's schools to understand the structure of programmes for vocational education and to interact with students. Meetings were fixed with industry partners over e-mail or through telephone. Sometimes the industry partners were not available, so telephonic interviews were conducted with them. The data collected were analysed both quantitatively and qualitatively, keeping in mind the objectives of the study. The method of content analysis was used to analyse the qualitative data. The data were coded into content categories. Subsequently, frequencies were calculated and tables were made. Conclusions were drawn in connection with various objectives of the study.

Results and Findings

The research focussed on a study of the vocational education programme in Delhi Government schools in terms of the perceptions of the students studying vocational education and the industry partners partnering with the school in imparting vocational education at school. Various insights from industry partners on the curriculum, on the job trainings (OJTs), their challenges and suggestions for the same were taken. Also, students'

opinions on choosing vocational education, their aspirations after studying vocational education, the challenges faced by them, the suggestions made by them were studied.

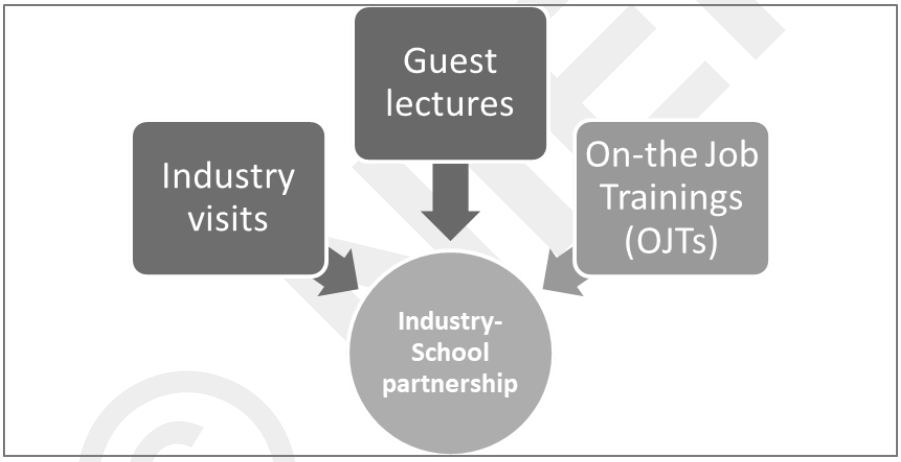
School Industry Partnership in Imparting Vocational Education in School

School Industry Partnership

The study revealed that the industry partners collaborated with schools primarily for three activities namely industry visits, guest lectures and on-the-job trainings (OJTs) of the students (Figure 2). However, it is to be emphasised that not all the industries were involved in all the three activities with the schools. Some industries were organising guest lectures, some were providing OJTs and some others were organising visits to their industries. Only a few of the industries were involved in all the three activities with the schools.

FIGURE 2

Industry and School Partnership



It was further observed that three industrial visits were to be done in one academic year. These visits were done to enable students to know about the management structure, hierarchy of employees, working conditions, etc, of the industry which they visited. For instance, students from retail visited sales department of the industry to know how the sales department of that industry works, what are the different jobs roles in that industry, etc. Most of the schools visited the same industry where the students had done their OJTs.

Further, for hands-on practical exposure, OJTs were organised for students in the form of internships. Industry partners reported that vocational trainers along with vocational coordinators contacted them for the same. All the students studying vocational subject had to undergo on-the-job training compulsorily. The duration for OJTs was 80 hours. The various organisations where the students went for OJT were Sojourn Vacation, Post Office, Inmount Technologies Pvt. Ltd., Rapiron Industries Pvt. Ltd., Shivaji College, Big Bazaar, Musafir Go India, Upasana Travels etc. OJTs aligned the students with industry. Certificates

were also given to the students after the completion of the OJTs by the respective organisations.

Two guest lectures were to be arranged by the vocational trainers every month, sometimes with the help of the vocational coordinators. However, it was not happening in all the schools. Some schools could, however, arrange only one guest lecture in a month. It was reported that the guest lecturers shared their life experiences, their journeys, job experiences, growth trajectory, working pattern in companies, etc. Also, a lot of times, they were given a particular topic from the syllabus to deliver a lecture on. The people for the lectures were mostly called form the industry where the students had done their OJTs.

It was considered important to understand the linkages between the schools and industry as they were the potential employers for the students of vocational education programme. The findings are in line with a number of studies. As per research, titled "Skill development in India: Need, Challenges and Ways Forward" by Saini (2015), the instructional material or syllabus must be prepared jointly by the industry and the educational planners. It should be regularly updated and must include more of practical learning than theoretical. So that students should imbibe the necessary job skills as demanded by the industrial sectors. The study named "Vocational Education at Higher Secondary Stage of Education in Mizoram: Status, Problems and Prospects," conducted by Lalhriatpuii (2018), also mentioned that one of the major problems of students relating to on-the-job training was that the training centre was too far from school for many students.

Skills Preferred by the Industry for Employing Vocational Education Pass-outs

When asked about the skills preferred while hiring vocational education pass-outs, industry partners gave varied responses specific to their trades. For instance, one of the industry partners from IT sector reported that they looked for proficiency in HTML, CSS and Java Script along with basic softwares like MS Office. Another industry partner from the same sector opined that they looked at two sets of skills in the students, namely, online skills which dealt with website development, and offline skills in terms of communication skills, writing skills, one to one presentations, etc.

Another industry partner from the travel and tourism sector said that they looked at good communication skills in the students. They should be presentable, polite and must have good command over language. Students should be serious and hard working towards their job. Also, a general awareness about travel destinations and basic geography was an added advantage. Retail sector majorly focussed on interaction with customers and managing them, communication skills and willingness to learn. Thus, the required skills varied as per the trade. Table 1 summarises the required skills based on the specific trade. It was found that the common skills required in all the trades were communication skills and proficiency in using computers and this has further implications.

TABLE 1

Skills Preferred by Industry for Employing Vocational Education Pass-outs

Sector	*Preferred Skills*
Information Technology (IT)	• Proficiency in HTML, CSS and Java Script along with basic softwares like MS Office • Online skills which dealt with website development • Offline skills in terms of communication skills, writing skills, one to one presentations etc.
Travel & Tourism	• Good communication skills • Students should be presentable, polite and must have good command over language • Students should be serious and hard working towards their job • General awareness about travel destinations and basic geography
Retail	• Interaction with customers and managing them • Managing the store • Good communication skills • Openness to learning
Financial Markets and Management	• Knowledge about financial softwares • Basic computer proficiency

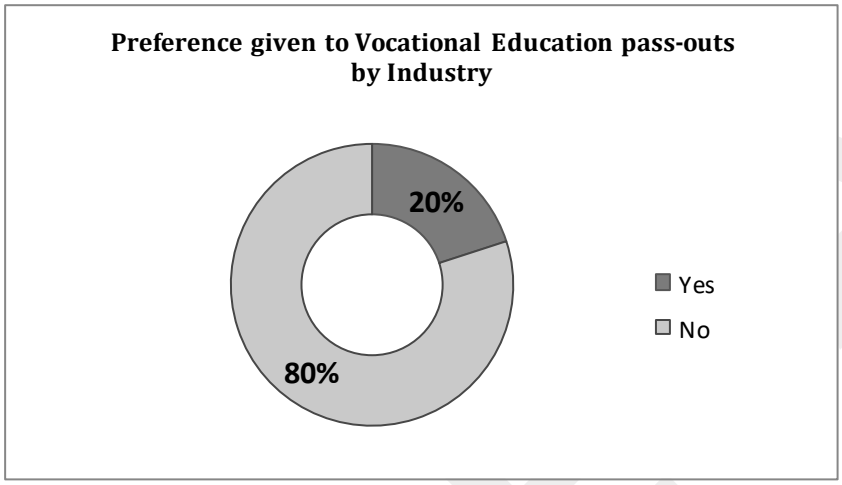
Preference given to Vocational Education Pass-outs by Industry

Another major problem faced by the Indian system of vocational education is that the students who graduate from vocational institutes are not acknowledged by the labour market. There is a mismatch of skill among the youth. Industry partners were asked if they gave preference to students with vocational education background. As many as 80 per cent of the industry partners reported that they would not prefer school pass outs with vocational background (Figure 3). The reasons cited were varied. First of all, they felt that school pass outs were not ready for jobs and required further training and improvement. Also, they reported that students had limited practical knowledge of the work and the work environment. Further, some of the industry partners said that school pass outs did not meet the age criterion for getting the job.

Only 20 per cent of the industry partners said that they would prefer school pass-outs with vocational education background, provided they were willing to learn. However, all the industry partners felt that after OJTs, communication skills, interest level and confidence level of students had increased.

FIGURE 3

Preference Given to Vocational Education Pass-outs by Industry



Challenges and Suggestions Reported by Industry Partners with Respect to on-the-job Trainings (OJTs)

When asked about challenges faced by the industry partners with respect to OJTs, a number of responses were received. One of the key challenges was that the officials involved with OJTs had to leave their regular office work which was a little difficult to manage and added to their workload. Further, some industry partners reported that a few of the students who came for OJTs were not serious towards their work.

Further, since teaching was also happening as part of the process of OJTs, the instructor had to go a little slower, keeping in mind the understanding and grasping level of all the students. However, since the time period was limited, it became a challenge to explain things in such a short span of time. Grover, Singh & Chaudhary (2015), in their study on vocational education in higher secondary schools, also highlighted that there was lack of library, textbooks, practical equipment, and teachers for vocational education programme in schools.

Table 2 below presents the suggestions given by industry partners to make the vocational education programme better and contemporary.

TABLE 2

Suggestions Given by Industry Partners for Improvement of Vocational Education Programme

Area of Suggestions	*Suggestions*
Infrastructure	• More computer systems should be installed in schools to give individual practical exposure to each student • Laptops should be provided to students by government so that they are able to practice even beyond the schools' hours
Curriculum	• Teachers and industry should work together to frame the curriculum of OJT • The framed curriculum should be followed up with the students for any suggestions • Training should be in line with the theoretical component being taught in schools
OJTs	• OJTs should be for longer time duration for effective learning • OJTs should be conducted at frequent intervals to being a continuity in the learning process of students

Another study by Falke (2012, as cited in Raman and Gupta, 2015) said that there should be better participation from the private sector in the current vocational education framework. It was seen that the vocational training institutes did not have strong linkages with the employers and thus, the training was done on the outdated perceptions. It was suggested that the trainings should rather be developed in conjunction with the industry, having local context and relevance. According to Grover, Singh & Chaudhary (2015), the principals also felt the need for better school-industry linkages. According to another study titled "A Study of Significance of Vocationalisation of Education and Skill Development in India with Special Reference to the State of Maharashtra" by Majumdar (2012), there is lack of industry participation in the field of vocational education — something which has been brought forth by the present study as well. Important recommendations made by the researcher are that there should be a unified system of vocational education, training and skill development offering standardised courses/programmes at all levels for the benefit of students, industry and community as a whole. It recommended increased industry and community participation and engagement in all aspects of the VET system and especially with VTPs and the vocational universities. In his study, Verma (2017) also mentioned inadequacy of industy's participation as one of the issues and challenges of vocational education in India.

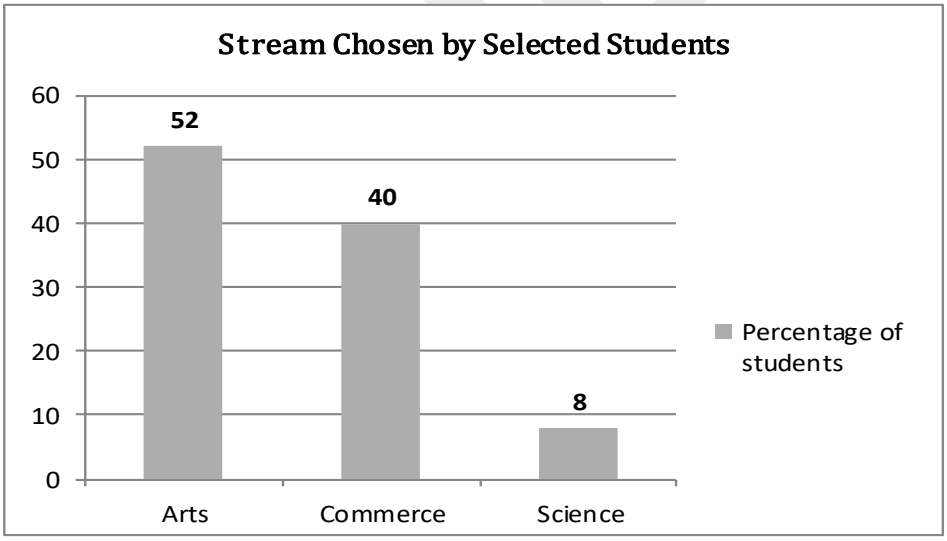
Perceptions of Students Studying Vocational Education at Senior Secondary Level with Respect to Vocational Education Programmes at School Level

Stream Chosen by Selected Vocational Education Students

It was observed that most of the vocational education students selected for the study, i.e., 52 per cent, had opted for arts as their stream of study, followed by 40 per cent who had chosen commerce, while 8 per cent had opted for science (Figure 3). It was seen that limited science students were into vocational education as science was considered to be the mainstream subject and students who secured good marks opted for this stream. On the other hand, vocational education was considered to be for those students who were not good in studies. This is also supported by Kumar (2009, as cited in Raman and Gupta, 2015), who mentioned that the proportion of students enrolled in vocational courses has remained extremely small in most states, except Kerala and Maharashtra. The reason for this was that vocational courses are considered suitable only for those students who do not perform well in the academic courses.

FIGURE 4

Stream Chosen by Selected Vocational Education Students



Annual Family Income of the Selected Vocational Education Students

Table 3 shows that 78 per cent of the students who opted for vocational education had an annual family income of less than Rs. 2 lakh while only 28 per cent of the selected students reported having an annual family income of more than Rs. 2 lakh. Thus, the main objective of students going in for vocational education may be to get some job right after school so that they could contribute to their family income.

TABLE 3

Annual Family Income of Selected Students

Income (Rs)	*Total (N=25)*	
	N	*%*
Less than 1 lakh	8	32
1,00,000	4	16
1,20000	4	16
2,00,000	2	8
More than 2,00,000	7	28
Total	25	100

Reasons for Choosing Vocational Education by Students

The data revealed that most of the students (56 per cent) opined that vocational education offered employment opportunities and this was their reason for selecting the same (Table 4). Since vocational education programme included professional trades, it opened doors for students to get employment after completion of the course. Students felt that vocational education equipped them for employment and it helped them enter the job market in a prepared manner.

Some of the students (24 per cent) reported taking vocational education out of interest. It was reported that trades like IT and travel tourism were fascinating for them as they got an exposure to computers as well. Only 20 per cent of the students said that it was offered as a compulsory paper in their school and thus, they had no option but to take it. None of the students reported taking vocational education under teachers' or parental pressure.

TABLE 4

Reasons for Choosing Vocational Education by Selected Vocational Education Students

Reasons for Choosing Vocational Education	*Total (N=25)*	
	N	*%*
To get employment opportunities after completing the course	14	56
Interest in the subject	6	24
Compulsory subject	5	20
Total	25	100

Students' Aspirations after Studying Vocational Education as a Subject

It was found that 48 per cent of the students wanted to study after the completion of their school along with some part time job. On the other hand, 20 per cent of the students wanted to go in for higher education in other subjects than vocational education (Table 5). Sixteen per cent wanted to either take up a job or go in for higher studies in vocational education after completion of the course. Grover, Singh & Chaudhary (2015), in their study on vocational education in higher secondary schools, also reinforced the need to strengthen vocational education in the Bhopal region. Most of the ex-students have opted for higher education and the reasons for that were either they wanted to or because they did not get a chance to be a part of the corporate sector. Also, it was seen that students have yet not been attracted towards vocational courses.

TABLE 5

Students' Aspirations after Studying Vocational Education as a Subject

Students' Aspirations after Studying Vocational Education as a Subject	*Total (N=25)*	
	N	*%*
Take up a job	4	16
Self-employment	0	0
Higher studies in vocational education	4	16
Higher education in other subjects than vocational education	5	20
Studies with part time job	12	48
Total	25	100

Regular Conduct of Theory and Practical Classes

All the students informed that the practical and theory classes were being held regularly. They stated that the practical sessions were interactive as they were made to do role plays, presentations, case studies, etc. Also, it was reported that the students were given hands on training which enhanced their practical skills.

Details about on-the-job Training (OJT)

All the students selected for the study stated that they were given OJT. It was reported by the students that OJT was helpful to them in increasing their practical knowledge and made them aware of how the industry works. OJT also made the students them familiar with the working conditions of the work place and other things associated with it like dealing with customers, workplace etiquettes, desk job, etc. Overall, OJT helped in boosting their confidence level and their communication skills (Table 6).

TABLE 6

Duration of on-the-Job Training (OJT)

Duration of OJT	*Total (N=25)*	
	N	*%*
5-10 days	12	48
10-15 days	8	32
15-20 days	5	20
Total	25	100

Students were placed with different organisations for OJT. These organisations ranged from educational institutions, travel agencies, marketing firms, IT companies, post offices, to banks. The nature of work included handling queries at the counter, making travel packages, creating websites, web-commerce, booking ticket and handling the customers. However, some of the students mentioned that they were not given any hands-on training but were just given a brief about the various softwares being used by the organisations.

Challenges and Suggestions Reported by Students with Respect to Vocational Education Programme

When asked about the challenges faced the students were facing while studying the vocational education courses, a number of barriers were reported in terms of *language* (80 per cent), *infrastructural deficiencies* (60 per cent), *non-availability of books* (80 per cent) and *limited practical exposure* (60 per cent). In regard to the language barriers, students reported that the material was available only in English which was difficult for most of them to understand as most of students who came from Hindi medium background were not able to cope up with the subjects being taught in English. Right now, vocational education was only being offered in English medium. A study titled "Vocationalisation of Education" by Gupta (2014) also supports this point. It mentioned that the textbooks were not available except for a few courses and they were available in English medium only. So, students had to depend on the notes dictated by the teachers. Therefore, perforce, students were using either the handwritten notes given by teachers or photocopied material. Further, in regard to the infrastructural barriers, the softwares were not updated and there was erratic supply of internet. Also, the students felt that practical exposure in terms of industry visits, OJTs, etc, was limited and this hindered their process of learning (Figure 5). Grover, Singh & Chaudhary (2015) have also suggested better school-industry linkages.

FIGURE 5

Challenges Reported by Students with Respect to Vocational Education Programme

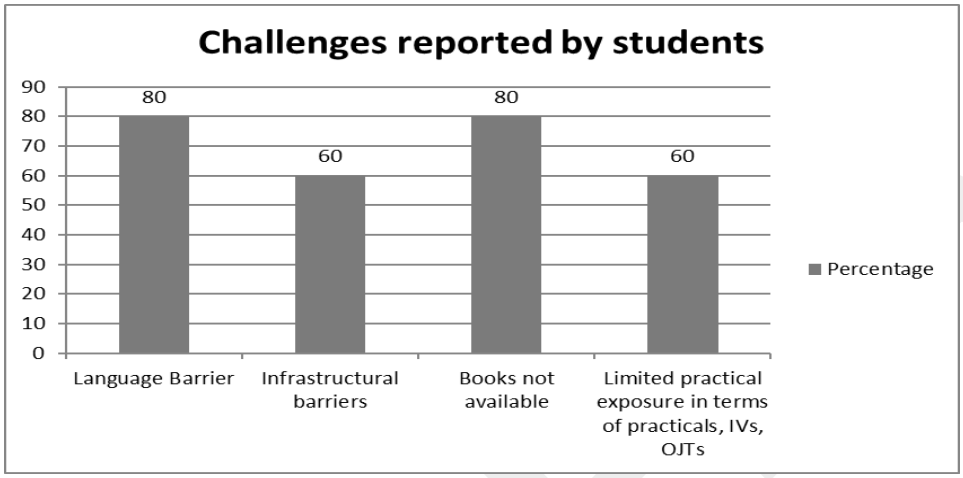


Figure 6 highlights the suggestions given by the students with respect to vocational education programme. A majority of the students (80 per cent) suggested that vocational education should be offered in Hindi and books should be timely supplied to them. Further, 76 per cent of the students suggested that there should be continuous supply of internet and more number of computers should be there to accommodate all the students. About 20 per cent of the students suggested that the practical sessions need to be emphasised more than the theoretical component to give them hands on training.

FIGURE 6

Suggestions Given by Students with Respect to Vocational Education Programme

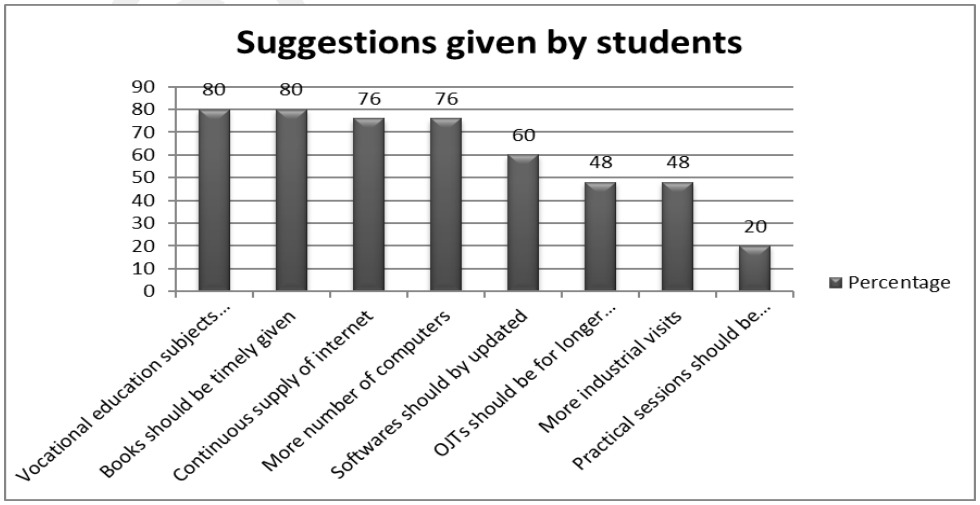


Table 7 summarises the challenges and suggestions given by the students with respect to the vocational education programme.

TABLE 7

Challenges Reported and Suggestions Made by Students with Respect to Vocational Education Programme

Challenges Faced by Students	*Suggestions Given by Students to Overcome the Challenges*
Language barriers	• Students suggested having vocational education subjects in Hindi as well • Study material should be provided in Hindi also
Infrastructural barriers	• Continuous working of internet should be provided for practical classes • There should be more number of computers to accommodate all the students at the same time • Softwares should by updated from time to time • Books should be timely given to the students
Limited practical exposure	• OJTs should be for longer durations • More industrial visits should be conducted • Practical sessions should be emphasised more than theoretical components

Satisfaction Level of Students with Respect to Vocational Education Programme

It was observed that all the students selected for the study were found to be either satisfied or highly satisfied with the course (Table 8). According to most of them, the course was easy to understand. It also inculcated professional skills in them which made them ready for the job market.

TABLE 8

Satisfaction Level of Students with Respect to Vocational Education Programme

Satisfaction Level of Students with Respect to Vocational Education Programme	*Total (N=25)*	
	N	*%*
Highly dissatisfied	0	0
Dissatisfied	0	0
Neutral	0	0
Satisfied	15	60
Highly satisfied	10	40
Total	25	100

The present study has thus highlighted the policies for vocational education in India over the years. The structure of vocational education programme in India was also studied as a part of the study. It was found that the management structure for vocational education programme for senior secondary schools of Delhi is divided under four parts or components, namely, delivery of curriculum, payment of remuneration to VCs and VTs, project management and skill certification. Further, the study has highlighted the challenges faced by selected stakeholders in terms of language, infrastructure and remuneration. It has also brought out suggestions for better implementation and uptake of the vocational education programme.

Conclusion

The study showed that there was a partnership amongst the schools and industry partners for the guest lectures, on-the-job trainings and industrial visits. As far as hiring is concerned, industry partners looked for varied skills in students. But one of the important findings showed that industry partners did not prefer vocational education pass-outs because they felt that these students were not ready for jobs and required further training and improvement. Also, they reported that students had limited practical knowledge of the work. When asked about challenges faced by the industry partners with respect to OJTs, a number of responses were received. One of the key challenges was that the officials involved with OJTs had to leave their regular office work, which was a little difficult to manage and added to their workload. Further, some industry partners reported that a few of the students who came for OJTs were not serious towards their work. Their suggestions were also recorded. Some of the suggestions were that more computer systems should be installed in schools to give individual practical exposure to each student and laptops should be given to them. They also mentioned that training should be in line with the theoretical component being taught in schools. The findings showed that the students that opted for vocational education are mostly from the arts stream. Students opined that their main reason for choosing vocational education was to get employment opportunities after completing the studies. They also faced many challenges while studying vocational at school like unavailability of books, barrier of language. They made suggestions regarding how to overcome these challenges.

The study revealed that school industry partnership is involved mainly in three activities, namely, industry visits, guest lectures and on-the-job trainings of the students. However, it is to be emphasised that not all the industries were involved in all the three activities with the schools. Some industries were giving guest lectures, some were providing OJTs and some others were organising visits to their industries. Only a few of the industries were involved in all the three activities with the schools.

The perceptions of the selected stakeholders were studied. Various challenges and suggestions were made by the selected stakeholders on the vocational education programme in schools. According to almost all the industry partners, skills like communication skill and ICT skills are the key skills that every vocational pass-outs should possess for employment and preference would be given to those pass-outs who have acquired practical knowledge and skills of the work and work environment. They faced various challenges with the OJTs, as officials involved with OJTs had to leave their regular office work, which was a little difficult to manage and added to their workload. They suggested that more computer

systems should be installed in schools to give individual practical exposure to each student and laptops should be provided to students by government so that they are able to practice even beyond the schools' hours. Teachers and industry should work together to frame the curriculum of OJT. The framed curriculum should be followed up with the students for any suggestions.

The challenges that were faced by the students were language barriers, infrastructural barriers, books being not available and limited practical exposure. As for the suggestions that were made, a majority of the students suggested that vocational education should be offered in Hindi and books should be given to them in time. Further, they suggested that there should be continuous supply of internet and more numbers of computers should be there to accommodate all the students. Also, practical sessions need to be emphasised more than the theoretical component to give them hands on training.

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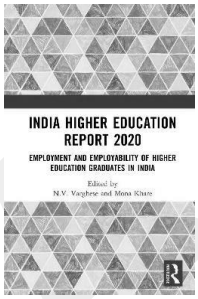

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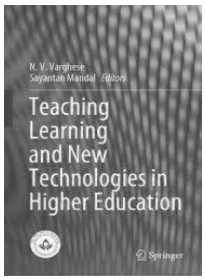

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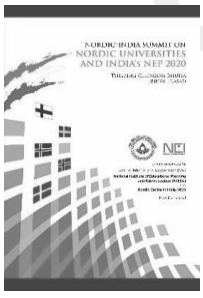

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The Learning Organisation: A Review of Studies on Educational Institutions

Shazneen Gandevia*

Abstract

Educational institutions are structurally complex organisations where people gain access to knowledge and information. They regularly undergo enormous changes in its functioning due to economic, social, cultural, political, or environmental reasons. A Learning Organisation (LO) is one that continually transforms itself in response to the change that has already occurred or has been anticipated in the environment. Early references to the term 'Learning Organisation' were made by Garrat in 1987. This article is a meta-analysis of studies on educational institutions that have used the concept of the learning organisation to evolve in the face of internal and external changes. It identifies themes that reflect key theoretical relationships, attributes and practical application of the learning organisation concept in educational institutions. Educational institutions can become learning organisations in view of the current turbulent times, and to combat the forces of change. For the purpose, the practised behaviours include systems thinking, managing change and having a strong leadership.

* N/3, Konark Pooram (Phase II), Kondhwa (Khurd), Pune – 411048, Email: shazneen86@gmail.com

Introduction

Learning is the continuous intake of knowledge, ideas, actions, habits, behaviours, and ways of doing things that are a part of our day-to-day life. Learning is something all living beings on this planet go through: firstly, as a survival instinct and, secondly, as a way to deal with the different aspects of living. Since learning is so fundamental to life, it has been studied over time among human beings in order to understand their pattern while they engage in learning behaviour. The focus of the twenty-first century in the area of learning has been on how organisations practise learning, how employees follow certain behaviours of learning and how they form and use these strategies to survive in this competitive world. LO is the concept that is developed and explored to further investigate this very idea (Park, 2006).

Since its inception, the concept of LO has been applied in various sectors like technology, service, manufacturing, etc, in order to enhance the learning behaviours of the organisation and to stay competitive in the market. The research community has also studied its applications, effects, and importance in most of these sectors. Today, being an LO is one of the prominent ways to organisational success (Hamid *et al*, 2014; Wilhelm, 2017). An organisation can adapt itself in the wake of change only if it is cognisant of its environment and has imbibed learning in its daily life and organisational culture. LO is where the individual, the team, and the organisation as a whole are engaged in reviving their knowledge and do not get stagnant with innovation. Only if this property is present in the organisation, it can achieve a competitive presence in the market (Ghaffari *et al*, 2011).

Rapid changes like governmental and local policy changes; institutions' management decisions; changing needs of parents, teachers, and students; changes in society and its environment; competition among educational institutions --- all these affect educational institutions, just like they affect any other organisation. These changes in the internal and external environment of the educational institutions are getting reflected in areas like changes in curriculum and increase in the teaching content, changes reflecting in the vocational path like skills building is receiving more importance today, changes in technology which is driving education and tools used for supporting learning.

Studies done on higher educational institutions in the world point out that during the pandemic their emergency preparedness plans were fundamental to manage online teaching. Studies also highlight the importance of continuous professional development of faculty in educational institutions, needs of adult learners to be involved with meaningful learning activities and building communities of practice (Engin & Atkinson, 2015). In another research, 150 respondents were surveyed from 65 universities located in 29 countries. Where results, explained a lack of preparedness towards emergencies in managing teaching during pandemic which should be fixed by bringing in new learning methods and teaching technology (Izumi *et al*, 2020).

When Peter Senge (1990) propounded his theory of LO, he purported that an individual, and the organisation as a whole, should be motivated to learn and grow and adapt to the changes in the environment, in order to remain ahead of the competition and to continuously excel.

When Peter Senge put forth his theory on LO and its five disciplines, it was focussed mainly on how the concept can be used in corporate settings. But its application is not restricted to industries only. He has applied the concept to schools too. In his book *Schools*

That Learn, he proposed the idea of educational institutions being effective LOs (Senge, 2012). In an article by Karen Watkins (2005) in *Advances in Developing Human Resources*, she proposed the idea of how higher educational institutions are supposed to be LOs, yet due to some hindrances they face difficulties in being one. She also proposed that the seven dimensions of an LO (leadership, strategy, participative policy-making, continuous learning, dialogue and inquiry, team learning, empowerment, and facilitating processes and structures) can be used for higher educational institutions. (Watkins, 2005; Marsick *et al*, 2000).

The present objective meta-analysis based on literature review considers Peter Senge's five disciplines, along with other contributors to the LO theory, role of leadership, and the gaps in study of LO in educational institutions. The next section presents the questions explored through the study, defines the key terms and presents the methodology with tabular representation of the shortlisted articles for the study, along with an analysis and discussion with the major themes discovered like change management, systems thinking approach, and leadership in LO. The later part of the study consists of our conclusion, the observed drawbacks of the research and some suggestions for a way forward, followed by references.

The section that follows describes the Peter Senge's model of LO in some detail.

An Overview of Peter Senge's Theory of Learning Organisation

Peter Senge, according to the 1999 issue of the *Journal of Business Strategy*, has been called the "Strategist of the Century." He propounded his model of LO in 1990 (Smith, 2001). According to him, an LO is where new and expansive patterns of thinking are nurtured, and where individuals learn to expand their capabilities. In his pioneering book *The Fifth Discipline*, he explains that the only source of competitive advantage an organisation has is the ability to learn faster than its competitors. He elaborately explains the five disciplines of LO, namely, Personal Mastery, Mental Models, Shared Vision, Team Learning and the overarching discipline Systems Thinking, which links all others. In fact, the first four disciplines lead to the development of the fifth (systems thinking) which enables us to see the world more systemically and not through a linear lens (Senge, 1990). The section that follows describes the five disciplines.

The Five Disciplines detailed by Peter Senge are as below:

Personal Mastery

Personal Mastery is personal growth and learning. If an organisation encourages and supports personal mastery, then it will be able to unleash the potential of untapped resources (Senge, 1990). An organisation is made up of individuals and the first discipline focusses on how individuals learn. Senge considers personal mastery as intrinsic motivation, a pushing force for an individual to be committed to achieving self-growth and to persist in improving oneself at daily activities. Its practitioners are aware of their purpose and integrate into their daily life the learning activities which fulfil their ultimate purpose. (Senge, 1990).

Mental Models

Mental Models explain that every individual must be flexible in his thinking and be open to new ideas, while focussing on the solutions instead of the problem. This involves having a mental shift towards a problem-solving approach and understanding how one's actions can have an impact on creating something different. Mental models can range simple day-to-day assumptions to complex opinions about situations and how they are tackled. It can be argued that mental models are also influenced by the individual upbringing and culture (Senge, 1990; Al-Shehri, 2018).

Shared Vision

Shared Vision directs employees' energy towards a common goal (Senge, 1990). It is our sense of purpose (Ghaffari et al, 2011) or a shared picture of the future (Al-Shehri, 2018) or a common identity (Senge, 1990) of the organisation and enhances trust by strengthening the relationship with the organisation. In an LO, the employees' vision is synchronous with the organisational vision. For a shared vision, a climate needs to be created where employees have their own vision and it is parallel to that of the institution (Senge, 1990).

Team Learning

Team Learning has been explained as the skills of the group that are beyond individual skills. It can help to deal with complex problems and the role of team diversity can be a contributing factor for multiple perspectives on problem-solving. It is about learning how to learn together (Senge, 1990). An essential element here is 'dialogue' between the members of the team with the ability to suspend their assumptions and enter into a conversation for the greater tasks of problem solving, decision making and, as emphasised by Senge, developing a sense of colleagueship (Al-Shehri, 2018).

Systems Thinking

Senge is known for his thoughts and ideas on Systems Thinking, which is also known as the fifth discipline and is the cornerstone of his theory. It connects the other disciplines by fitting their practice into the larger picture of the system, that is, the organisation as a whole. When the four disciplines are practised, they contribute to the fifth discipline. When we have an understanding of the patterns and not just individual events, this helps us to have systemic thinking (Senge, 1990).

Some of the researchers, other that Senge, who contributed to the field of LO, have been referred to in the coming paragraphs.

Other Contributions to Learning Organisation

Several other researchers have contributed to the understanding of an LO. Some of them are as below.

Argyris and Schon (1978) put forth concepts like Single Loop Learning (SLL) and Double Loop Learning (DLL). It is SLL is when the error is detected by the system and corrective

action is taken whereas it is DLL is when the error is corrected but not just superficially. The policies and process changes are a part of the correction process of permanently trying to eliminate the error. Argyris proposes the increasing use of DLL (Smith, 2001).

While Argyris (1978) talks of learning that happens within the organisation, Pedler (in Pedler et al, 1989) throws light on the changes external to the organisation that lead to change and affect the learning behaviours. Pedler (1989) gave the term 'learning company.' It is an organisation that helps the learning of all its members and persistently transforms itself. This definition has two significant factors: individual learning; and organisational learning (Ghaffari et al, 2011). The changes in the world economy due to the industrial era, the way markets operate, the demands of changing workplaces are the reasons cited by Pedler for conceptualising the Learning Company (Pedler *et al,* 1989). Both Argyris (1978) and Pedler (1989) give an idea of the learning behaviours which would transform an organisation and make it an LO.

If Argyris stressed on learning internally and taking corrective actions, David Garvin (1993), a professor at Harvard, defined LO as an organisation that has accumulated adequate competence to generate, acquire and transfer knowledge and also to change its behaviour while adapting to new knowledge and understanding (Skuncikiene & Balvociute, 2009). This explains that Garvin spoke about the absorption and use of knowledge and also generating new knowledge when required (Garvin, 1993).

Watkins (2005) and Marsick et al (2000) elaborated on the difference between formal and informal learning. They also elaborated on the individual, team and organisational learning in the context of the environment (Ghaffari *et al,* 2011). Their take on LO is similar to Pedler who takes the external environmental change into consideration. The LO concept, according to Watkins and Marsick, involves continuous learning at a systems level, knowledge generation and sharing, systemic thinking capacity, greater participation and accountability by a larger percentage of employees and developing a culture and creating a structure for rapid communication and learning to take place (Marsick *et al,* 2000).

Roper and Jethro (2002) state that the concept of an LO is closely associated with the work of Peter Senge. They point out that an LO is pragmatic, normative and inspirational. By pragmatic, they meant that an organisation needs to be attuned to the environment and not be isolated from it. It is normative as it follows certain norms and values such as encouraging dialogue, engaging in self-learning, creative thinking, and teamwork. The LO is considered inspirational when it continuously strives to put in place processes which will enable it to keep ahead of the competition, enable it to respond to environmental changes, and encourage individual employees to improve their learning practices (Roper & Jethro, 2002).

The section that follows describes the critical role that leadership plays in an LO.

Role of Leadership in a Learning Organisation

While researching the transformation of a knowledge-based organisation into an LO, the transformational role a leader plays is also highlighted. In addition, it is mentioned that leadership support is a foundation for an LO. The leader, according to Senge, must be able to create, capture, transfer, and mobilise knowledge to be used for innovation in the organisation (Soliman, 2011).

A quantitative research study done in a school in Greece, with a sample of 227 people, also showed that leadership plays a significant role in the functioning of an LO. A supportive leadership is positively associated with organisational learning and a transformational leadership is positively correlated with the organisation to become an LO (Karanikola *et al,* 2019).

Rijal studied Indian and Nepalese organisations in the telecommunication sector, which offers evidence that transformational leaders have a positive impact on the improvement of an LO and a generative culture (Rijal, 2009).

The next section deals with the gaps observed in the area of LO in education institutions; it also highlights the need for this study.

Identifying Gaps in the Study of Learning Organisation in Educational Institutions

Several studies examined how the concept of LO manifests in education systems. To understand this, studies have also delved into how change is executed in schools, how reform strategies are developed and how the professional development of teachers is planned. However, more research is necessary to empirically confirm the practice of LO fundamentals in educational institutions (Park, 2008).

Research suggestions also point to the need for use of longitudinal study design to understand this concept in depth (Habtoor et al, 2019)

A qualitative study done by using Watkins and Marsick's dimensions of the LO Questionnaire in a higher education institution in Egypt suggested that future research would benefit from carrying out studies in a larger number of institutions using diverse research methodologies (Sayed & Edgar, 2019).

Studies in educational institutions at Jordan and Indonesia suggests desirability of qualitative studies (Wulandari & Sunaryo, 2019; Khasawneh, 2011).

The above studies indicate the dearth of qualitative studies on the theme of LO in the educational sector. This meta-analysis attempts to put together all possible qualitative researches by considering diverse institutions such as schools, universities, and libraries. It also attempts to analysis the fundamentals of LO as they apply to educational institutions that have been studied so far.

This study seeks to explore questions related to the following.

1 What are the factors motivating educational institutions to become an LO?
2 What are the behaviours that employees and organisations exhibit in educational institutions where the five disciplines as discussed in Senge's theory are practised?

The following section defines the key terms used in the meta-analysis.

Key Terms Defined

Learning Organisation: This refers to the organisations wherein people continually expand their capacity to create the result which they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole, together (Smith 2001).

Educational Institutions: Educational institutions are defined as entities that provide instructional services to individuals or education-related services to individuals and other educational institutions (OECD, 2003).

The following paragraphs elaborate the method and approach used by the author to conduct the study.

Methodology

The author selected the database and publishers which the author had access to as a research scholar of her institution. Online journal database 'Web of Science', and publishers like 'Sage Journals Online', 'Taylor and Francis', and 'Emerald Management Xtra' were explored for keywords on the topic. As the research topic required a search on how LO concept is introduced and implemented in educational institutions, the search keywords included words like 'Senge', 'Learning Organisation', 'Five Disciplines' and 'Education'. The search included combination keywords like 'Learning Organisation and Education', 'Five Disciplines and Education', 'Senge and Education'.

The search was restricted to full access articles of the last decade, which is the year 2011 to 2020. The search was conducted in April 2020; hence articles up to April 2020 have been included. The search considered only journal articles which are qualitative in nature. The initial search was conducted in all fields, that is the title, document, keyword, and abstract. The database for Taylor and Francis threw up articles that did not have full access along with those which did. Whereas, Emerald Management Xtra generated only full access articles. Upon going through the search results, full access articles, those pertaining to educational institutions were shortlisted. Purely quantitative studies and conceptual papers were omitted. Further refinement was done after reading the full articles.

The initial search using combination keywords in Web of Science generated 12 articles, 3 were shortlisted after reading the titles and the abstracts, and another 2 were used in the final study. Sage Journal Online generated 349 articles using combination keyword searcch, out of which 3 were shortlisted after reading the titles and abstracts and 2 were used in the final study. The database Taylor and Francis generated 2114 articles using the combination keyword search, 19 were shortlisted by the author after reading the title and abstract and 9 were used for the final study. Lastly, the database Emerald Management Xtra had generated 4184 articles in the combination keyword search and 16 were shortlisted after reading the title and abstract, out of them 3 were used in the final study.

Thus, 16 articles out of all the sourced ones were pertained to educational sector and found appropriate for the final meta-analysis.

It is pertinent to note that the nature of articles finalized for the meta-analysis is diverse in terms of the geographical location, the year of study, and the type of educational institution studied (school, library, university). The similarity in the articles is in terms of their qualitative researches by using case study method, interviews, and focus group discussions for data collection, while a few have a longitudinal design. The diverse nature of articles collected gives the author a rich variety of perspectives from across geographies on the topic of learning the organisation's applications to the educational sector. Also, the different types of educational institutions are deliberately included in the research as they provide evidence of how the fundamentals of LO can be applied across educational institutions.

This meta-analysis was conducted to highlight the central findings in literature about the application of LOs in the education sector around the world. It focusses on the reason for the initiation of the change in the institutions under study and the application of the LO model as a method to carry out the change process. A content analysis was done to label the themes suitable for the study; in addition, patterns of the frequency of reoccurring themes in the studies were recorded, analysed, and reported in the findings. The author read a few studies and created the initial themes, and the same themes were identified in further studies. Additions and modifications in light of new findings were included as the analysis progressed. The author used Atlasti for the coding of categories and synthesising the final, selected research articles.

The author searched for articles using keywords and found most articles using Peter Senge's model of LO. This is supported by literature as it explains that it is the most popularly used model. It is recognised that other scholars did introduce this concept before Peter Senge. However, it was popularised by his book *The Fifth Discipline* and the numerous workshops, publications, and the like, which followed to raise awareness of this concept. Many organisations learned about this concept and adopted the model of Senge. In the research on various literature available on LO, the review done by author Thomas Garavan suggested that Senge (1990) adopts a broad approach and includes all the other perspectives; it is a composite theory (Garavan, 1997). Thimmel (2017), in his thesis, mentioned Senge as the most influential theorist on LO. This framework of Senge, on the LO, is one of the most comprehensible and accepted in the research community. As mentioned by the author, in the thesis, "According to Wilkinson (2013: 7), Senge was cited 17,124 times up until 2012. The 300,000 copies of his book sold by 2000 (10 years after the first publication) indicate that researchers are not the only ones who are interested in this framework." In the same argument, the author mentions that Jackson (2000) analysed that Senge's concept became so popular due to his visionary writing, whereas Wilkinson (2013) mentioned that the book *The Fifth Discipline* has an application-oriented focus (Thimmel, 2017). It is also one of the most popularly used LO model. These discussions lead us to understand the comprehensive nature of the theory proposed by Senge.

Table 1 below provides the details of the 16 articles which have been used for the meta-analysis in this article.

TABLE 1

Description of Articles with Titles, Sources, Years, Authors, Location and Methodology Used

SN	*Title of Article*	*Source*	*Year*	*Authors*	*Location*	*Type of Methodology Used*
1	Leading entrepreneurial e-learning development in legal education A longitudinal case study of "universities as learning organisations"	The Learning Organisation	2017	Chris Trevitt, Aliya Steed, Lynn Du Moulin and Tony Foley	Australia	Longitudinal Case Study
2	Softening the hierarchy: the role of student agency in building learning Organisations	Journal of Professional Capital and Community	2018	Stephanie Hill	England	Case Study
3	Universities: can they be considered as learning organisations? A preliminary micro-level perspective	The Learning Organisation	2012	Ozlem Bak	UK	Case Study
4	Becoming an educational leader – exploring leadership in medical education	International Journal of Leadership in Education	2017	Klara Bolander Laksov & Tanja Tomson	Sweden	Narratives
5	City Libraries Townsville as a learning organisation within a local government framework	The Australian Library Journal	2014	Judith Jensen	Australia	Case Study
6	Developing assessment policy and evaluating practice: a case study of the introduction of a new marking Scheme	Perspectives: Policy and Practice in Higher Education	2017	Fiona J. L. Handley & Ann Read	England	Case Study

7	Exploring organisational learning in universities' responses to a quality assurance reform: experiences from Ontario, Canada	Quality in Higher Education	2018	Qin Liu & Li Liu	Canada	Case Study
8	Exploring systems thinking in school principals' decision making	International Journal of Leadership in Education	2019	Haim Shakeda and Chen Schechter	Israel	Interviews and Focus Groups
9	Learning-oriented quality assurance in higher education institutions	Quality in Higher Education	2018	Burcu Tezcan-Unal a, Kalman Winston b and Anne Qualterc	United Arab Emirates	Case Study - documentary analysis, survey and interview
10	Seeding a learning organisation	The Australian Library Journal	2014	Anja Tait & Kerry Blinco	Australia	Workshop discussion
11	Singapore schools and professional learning communities: teacher professional development and school leadership in an Asian hierarchical System	Educational Review	2012	Salleh Hairon & Clive Dimmock	Singapore	Case - documentary Analysis
12	The relevance of 'personal mastery' to leadership: the case of school principals in Singapore	School Leadership and Management	2011	Kala S. Retna	Singapore	In-depth Interviews
13	Schools as Professional Learning communities: what can schools do to Support Professional development of their teachers?	Professional Development in Education	2019	Wilfried Admiraal, Wouter Schenke, Loes De Jong, Yolande Emmelot & Henk Sligte	Netherlands Ireland	Project documents, Interviews with school Principals and project leaders, Group Interviews with teachers and focus groups with Project Leaders

14	The Degree to Which Students and Teachers Are Involved in Second-Level School Processes and Participation in Decision Making: An Irish Case Study	Irish Educational Studies	2016	Dr Kathy Harrison, Dr Alison Taysum, Professor Gerry McNamara and Professor Joe O'Hara		Interview
15	Beijing Academy: Innovation, Design, and Learning	ECNU Review of Education	2018	Richard F. Elmore	China	Case - Observation, Focus group
16	Pedagogy Rules: Open Mindset in Adopting Fit-for Purpose Educational Tools in Teaching Dispersed Medical Students	Journal of Medical Education and Curricular Development	2015	Moira A.L. Maley, Helen M. Wright, Sarah J. Moore and Kirsten A. Auret	Australia	Longitudinal case Study - Observations done

Next we propose to highlight the analysis and discussion which the present study involved.

Analysis and Discussion

In this article the author has attempted to discover the motives behind educational institutions which are adopting the fundamentals of the LO, as well as the behaviours that employees and organisation demonstrate when they practise the five disciplines.

The research articles which were shortlisted for the final study were coded using Atlasti and the codes were grouped into categories. The groups were arranged to form a network which when arranged like a conceptual map, led to the emergence of three broad themes. The categories and codes are stated in the table below along with their operational definitions. The three themes show the three behaviours that an LO would show, such as Change Management – being responsive to internal and external changes; Systems thinking approach – taking into consideration the entire gamut of the organisation and its environment while changing (where the change involves every stakeholder); Leadership in LO – leaders who are the initiators and carriers of change while being the inspiration for others in the organisation.

Table 2 below outlines the major themes, sub-themes, and definitions of the theme.

TABLE 2

Major Themes, Sub-Themes and Definitions of Themes

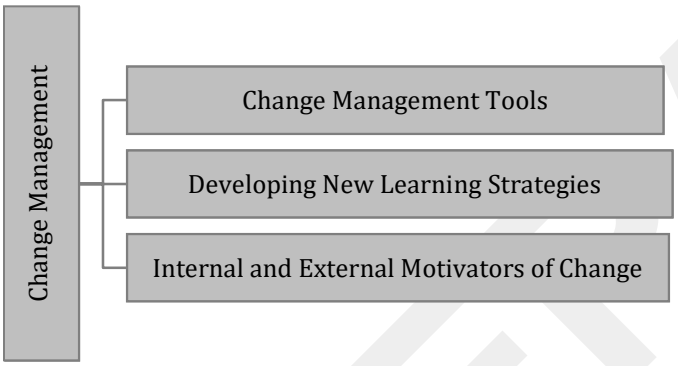
Major Themes	*Sub-Themes/Codes*	*Defining the Theme*
Change Management	Learning Strategy, Change of learning strategy, Change Tool, Need for change/Need for something new, Hinderances to becoming a Learning Organisation, Rigid Mental Models	Change management is a systematic approach to dealing with the transition or transformation of an organisation's goals, processes or technologies. The purpose of change management is to implement strategies for effecting change, controlling change and helping people to adapt to change. Such strategies include having a structured procedure for requesting a change, as well as mechanisms for responding to requests and following them up (Rouse, 2019).
Systems Thinking Approach	Becoming an LO, Systems Thinking, Experiential Learning, Ideas for Innovation, Mental Models Revisited, Reflective Analysis, Personal Mastery, Team Learning, Engaging in Dialogue, Internal Networks, Practicing Shared Vision, Shared Vision, Shared Ownership	Systems thinking is a conceptual framework, a body of knowledge and tools that have been developed over the past fifty years, to make the full patterns clearer, and to help us see how to change them effectively (Senge, 1990).
Leadership in LO	Leadership for innovation, Leaders as role models	A LO requires a leader who can help cope with the changes in the environment as well as motivate the followers to work in collaboration towards the achievement of collective as well as individual goals (Rijal, 2009)

The first theme, which is on 'change management', is explored in the coming section.

Change Management

FIGURE 1

Theme 1: Change Management Explored 3 Factors, that is, Change Management Tools, Developing New Learning Strategies and Internal and External Motivators of Change.



The first major theme which the author has identified is change management. Figure 1 shows how Theme 1 (Change Management) has been explored on the basis of three factors, that is, Change Management Tools, Developing New Learning Strategies, and Internal and External Motivators of Change.

The studies referred in this article talk about developing new learning strategies and change tools, and about moving towards an LO. The findings in the studies have shown both internal motivators and external motivators of change. The internal motivators are a need to diversify and have more learning programme, ongoing merger with another institution, the need to innovate the assessment process at the university, expansion in terms of a new campus, an addition of students and faculty, changes in leadership, need to improve the teaching quality and learner outcomes. While the external motivators are: change in quality assurance framework, initiation of new models of curriculum, change in government policies, changing nature of the complexity of the organisations. (Trevitt, 2017; Jensen, 2014; Handley & Read, 2017; Liu & Liu, 2018; Tezcan-Unal, Winston, & Qualterc, 2018; Tait & Blinco, 2014); Hairon & Dimmock, 2012; Admiraal *et al*, 2019; Harrison *et al*, 2016; Elmore, 2018).

In response to the need for change in these educational institutions, learning strategies were developed and implemented. These learning strategies include use of technology to reach out to students, the need to move from classroom to online learning, developing virtual training and learning environments, having programmes which can operate independently and can be prototyped rapidly, identification of new markets and clients, forming student learning communities, forming assessment working group to work on assessment change, encouraging distributed leadership, having a bottom-up approach in the organisation and developing an LO (Trevitt, 2017; Hill, 2019;Laksov & Tomson, 2017; Handley & Read, 2017; Liu & Liu, 2018; Admiraal *et al*, 2019). After formulating strategies, these institutions also developed change management tools like developing new learning programmes, being innovative in their approach, using parallel governing structures for

quality management, and the like (Laksov & Tomson, 2017; Handley & Read, 2017; Jensen, 2014; Liu & Liu, 2018; Tait Blinco, 2014; Trevitt, 2017).

While several motivators for change were mentioned, the hindrances to change were also pointed out. For example, in an article on schools in Singapore, it was the workload of teachers, the ambiguity of the processes of Professional Learning Communities (PLC) and their efficacy, and hierarchical system at workplaces that were pointed out as hindrances towards the implementation of PLC (Hairon & Dimmock, 2012).

In another study, it was stated that the rigid mental models of the programme head, committee members, and administrators as a hindrance to the implementation of the new Quality Assurance Framework at universities. They perceived the framework as adding little value as compared to the investment of effort to implement it (Liu & Liu, 2018). This shows that their mental models were rigid and not ready to accept the change. Reconciling existing mental models of management and staff are a part of the process for building an LO.

Both the above studies point out to the rigid mindset or fixed mental models which hinder change behaviours and inhibit the making of LO in turn.

A cumulative analysis of these studies suggests that educational institutions exist in a dynamic world due to which constant changes occur in the internal and external environment, in turn requiring these institutions to be in the race and be competitive by initiating various change activities.

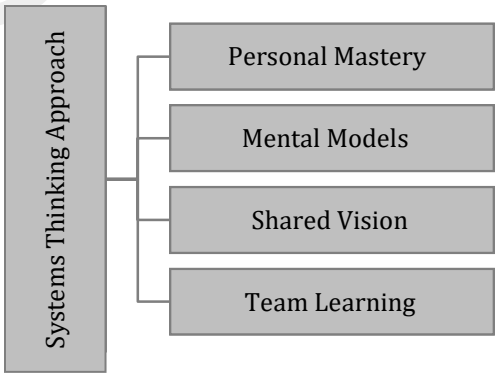
In summary, the author recognises that educational institutions included in this article had possibly realised the need for change due to various internal and external factors. These educational institutions, had to some extent, developed various tools, techniques and learning strategies in response to the need for change; and in spite of hindrances like rigid mental models, focus on organisations' hierarchy, and workload of teachers, these institutions were moving towards change and to display the characteristics of becoming LOs.

The second theme, which is on 'Systems Thinking approach,' is explained in the coming paragraphs.

Systems Thinking Approach

FIGURE 2

Theme 2: Systems Thinking Approach Explored 4 Interrelated Factors like Personal Mastery, Mental Models, Shared Vision, and Team Learning.



The author identified the Systems Thinking Approach as the second theme of the meta-analysis. Figure 2 depicts the interrelationships of the systems thinking theme with the factors which are explored further like personal mastery, mental models, shared vision and team learning. These findings from the studies attempt to explain how educational institutions are establishing practices to develop habits and behaviours of an LO (Tezcan-Unal *et al*, 2018).

One study on Dutch schools explains that it is a part of the national programme of the government to develop into an LO to improve the quality of teacher and teaching methods, to strengthen their culture of professional learning (Admiraal *et al*, 2019). This is an external motivation and force for the Dutch schools to become LOs, vis-à-vis another study in Beijing showed that the school is attempting to become an LO since it focusses on the development of new collective understandings of the culture, structure, and processes that promote higher levels of collective learning at the organisational level (Elmore, 2018). This is an internal motivation and attempt of the school towards building a learning culture.

Out of the shortlisted studies, ten studies have mentioned Systems Thinking as being used directly or indirectly in the educational institutions that were studied. Studies mention Systems Thinking approach as focussing on the whole system (all the elements which are directly and indirectly influencing the educational institution) and just not the parts of the system. Studies stress the importance of leaders to be system thinkers especially for decision making; where they are presented with various choices. All major decisions of the stakeholders are products of systems thinking to integrate organisational, situational, and individual factors (Hill, 2019; Bak, 2012; Laksov & Tomson 2017; Jensen, 2014; Liu & Liu, 2018; Shakeda & Schechter 2019; Hairon & Dimmock, 2012; Retna, 2011; Maley *et al*, 2015). The study on the school in Beijing, mentions that the culture of the nation also impacts the education system. This may indicate the interaction between culture and education: how one affects the other as they both are a part of the larger system (Elmore, 2018). Although being an LO was the school's decision, the support of the government at large is a common factor seen in the Beijing and Dutch schools. This supports the concept of systems thinking, as the nation, its culture and the governmental bodies can be considered a part of the larger system, affecting the school and its working.

Studies have also made implicit and explicit mentions of the 4 disciplines which fall under the umbrella of Systems Thinking: Personal Mastery, Mental Models, Shared Vision, and Team Learning.

Firstly, the interrelationship between 'Personal Mastery' and 'Systems Thinking' will be explored in the coming section.

The Interrelationship between the First Discipline (Personal Mastery) and Systems Thinking

Altogether twelve studies (Hill, 2019; Bak, 2012; Laksov & Tomson, 2017; Jensen, 2014; Liu & Liu, 2018; Shakeda & Schechter, 2019; Hairon & Dimmock, 2012; Retna, 2011; Admiraal *et al*, 2019; Harrison *et al*, 2016; Elmore, 2018; Maley *et al*, 2015) mentioned personal mastery as a vital behaviour of people in the LO in the education institutions studied.

Two studies, one in a school in England, and the other in a higher education health care setup, both discuss 'personal mastery' in the light of creating a set of practices to enable all

individuals to develop a personal vision that feeds into a collective commitment. It further manifests in discussions of those potential realities, creation of good learning conditions and use of new tools which are more effective in teaching and learning (Hill, 2019; Laksov & Tomson, 2017). A study called attention to administrative leaders who have become change agents in bridging the vision and reality of quality management processes at the three universities, and how they work around their personal mastery to learn effectively and perform their responsibilities (Liu & Liu, 2018). While this was a finding in universities, a study on libraries highlighted how the goal of personal mastery is pursued by its staff; they attend mentoring programmes arranged by the institution, set goals and monitor their progress closely, attaining the goals through the City Council's Learning and Development Centre and City Council's policies such as the Study Assistance Policy.

In another study, Singaporean schools claimed that the Professional Learning Community concept helped teachers take enhanced responsibility of their professional development while developing the required competencies. For curriculum development and innovation, the "Teach Less and Learn More" policy was floated. The Singaporean government gave extra funding and was committed to the slogan of "Bottom-Up Initiative, with Top-Down Support" (Hairon & Dimmock, 2012). All these initiatives show that there might be a leadership commitment to encourage personal mastery.

Enhancing the findings on teachers' personal mastery behaviours, another research on principals of schools in Singapore talked of how practicing personal mastery and personal vision gives a sense of purpose. Without this, the principals claim that they would not be having a sense of direction to run the schools. Participants of the study also claimed to have support from the Ministry of Education for their professional development, which encouraged them to attend training and seminars (Retna, 2011). Here it was seen how the support of government shall be a major propelling factor for principals to upgrade themselves.

Other studies referred to personal mastery in the context of encouraging more individualised learning through the following: more extensive use of independent study, increased attention to differences in students' interests organised around special projects, having an integrated practice setting along with study, mentoring, and coaching the newcomers in the institute (Admiraal, *et al*, 2019; Harrison *et al*, 2016; Elmore, 2018; Maley *et al*, 2015).

The next few paragraphs cover the interrelationship between mental models and systems thinking.

The Interrelationship between the Second Discipline (Mental Models) and Systems Thinking

Seven studies, mentioned in this article (Hill, 2019; Laksov & Tomson 2017; Jensen 2014; Hairon & Dimmock, 2012; Retna, 2011; Elmore, 2018; Maley *et al*, 2015) focus on mental models of members of the organisation like teachers, leadership, students, flexing their existing mental models, and incorporating new ways of thinking.

Experiential learning is an important aspect of the mental model discipline. Six studies mention experiential learning as willingness to try new strategies and ideas even though they risked making mistakes, the ability to showcase different ideas and discuss mistakes openly, entering in professional debates, conducting problem-solving experiments, and

having a supportive learning culture. (See Trevitt, 2017; Hill, 2019; Bak, 2012; Tezcan-Unal *et al*, 2018; Harrison *et al*, 2016; Maley, *et al*, 2015.) Some studies also talked about innovative ideas to change rigid mental models and ways of thinking (Trevitt, 2017; Hill, 2019).

One study which explored the role of the student learning community (SLC) in supporting LO conditions confirmed that SLC provided conditions for teachers to change their mental models (Hill, 2019). To add to the findings, another study found that to achieve personal mastery, one has to overcome the rigid mental models and fixed ideas, change one's way of thinking, and acknowledge the strengths and weaknesses which are a result of unquestioned mental models (Retna, 2011).

Next we shall deal with the interrelationship between shared vision and Systems Thinking.

The Interrelationship between the Third Discipline (Shared Vision) and Systems Thinking

Mentions of shared vision were made by eight studies shortlisted in this research (Hill, 2019; Bak, 2012; Handley & Read, 2017; Liu & Liu, 2018; Trevitt, 2017; Tezcan-Unal *et al*, 2018; Admiraal *et al*, 2019); Maley *et al*, 2015. These studies involved universities, libraries and schools.

In a university study, the academic staff did not attach much importance to shared vision as their roles were highly fragmented. However, the administrative staff could highly relate to shared vision (Bak, 2012). In contrast, in another study on city libraries, it was mentioned that the City Council states its broad vision as "Townsville – Vibrant, Progressive, and a Great Lifestyle." The staff had a shared vision of one-library service and hence did not work in silos despite being in different departments. The library's vision was 'connections for life' with a strong emphasis on customer service and lifelong learning. It was informed by the Council's vision and values (Handley & Read, 2017). Hence, the interconnectedness of the vision of different aspects of the system was observed. Another study mentioned that universities also collectively took to the shared vision of building a culture of quality (Liu & Liu, 2018).

Few other studies also stated that schools developed Shared Vision for teaching and learning, some developed a printed vision, some also developed methods to communicate the vision through various channels (Trevitt *et al*, 2017; Tezcan-Unal *et al*, 2018; Admiraal *et al*, 2019; Maley *et al*, 2015).

We now move on to explain the interrelationship between team learning and systems thinking.

The Interrelationship between the Fourth Discipline (Team Learning) and Systems Thinking

Team work, team learning, engaging in dialogue, internal networks are some of the key terms which were coded in the research and explain the concept of team learning as a part of systems thinking.

About encouragement to team learning, one study revealed that students were encouraged to ask more questions and be open to discussion and dialogue with teachers and thus engage in team work. The aim was to dispel the belief that authority and hierarchy should be followed strictly and teachers cannot be questioned. It was found that this led to

school improvement (Hill, 2019). Furthermore, a study on how systems thinking played a part in school principals' decision making, keywords related to team learning like willingness to learn from others, collaborative decision making, consult those around oneself, were mentioned (Shakeda & Schechter, 2019).

In a study on higher education institutions, teams were encouraged to design and implement common examinations and assessments (Tezcan-Unal *et al*, 2018). Additionally, in universities, team learning was exhibited through discussions around lessons (Liu & Liu, 2018).

The City Library not only worked with a shared vision, but the staff is also involved in learning from each other to break silos: they were given rotational duties in the organisation so that they learn all aspects of work and learn from each other (Jensen, 2014). Similarly, in the National and State Libraries Australia Learning, the working group was made to influence policy and develop tools to guide learning and literacy practice in association members (Tait & Blinco, 2014).

Other studies releveled the existence of work-based learning activities including mentoring new teachers, peer observation and peer review, restructuring the physical space to promote collaboration, teachers evaluating their classes together, teachers of different schools sharing professional relations to exchange ideas and learn, attending workshops and masterclasses; informally organised networks for the study were also done (Admiraal *et al*, 2019; Harrison *et al*, 2016; Elmore, 2018; Maley *et al*, 2015).

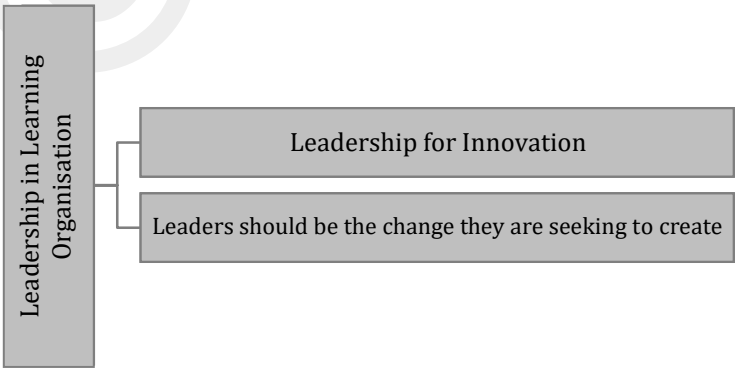
Many studies mentioned that exchange of dialogue and sharing internal networks was an important aspect of the LO structure. (See Trevitt, 2017; Hill, 2019; Liu & Liu, 2018; Tezcan-Unal *et al*, 2018; Tait & Blinco, 2014).

The last theme explored by the author is 'Leadership in LO.' This is dealt with in the following section.

Leadership in LO

FIGURE 3

Theme 3: – Leadership in Learning Organisation explored with 2 factors, namely, Leadership for innovation and Leaders should themselves be the change which they are seeking to create.



The third theme identified by the author from the studies of the meta-analysis is Leadership in an LO. Figure 3 explains the third theme that the issue of leadership in an LO has been explored with 2 factors, namely, Leadership for innovation and Leaders should be the change which they are seeking to create.

Findings of a study in the Australian National University confirmed that the role of a leader is pivotal in shaping the learning experiences of the members of the organisation and in inspiring others in the process of learning. It is exemplified that leaders should "be the change they are seeking to create." The study concluded stating that high levels of self-understanding, along with a proactive, informed and reflexive stance, is increasingly being demanded of academic leaders (Trevitt, 2017). Another study on universities as LOs states that for a shared vision, supportive leadership and participative policy making is required (Bak, 2012).

Leader is a change agent who outweighed the benefits of change as compared to the old quality management processes. This was mentioned in a study that also highlighted the importance of a leader himself to be practising personal mastery and gaining knowledge to effectively perform his responsibilities (Liu & Liu, 2018).

Four other studies revealed leaders' behaviours in an LO, like collaborating, creating a safe working environment, asking probing questions, getting committed to a bottom-up approach with top-down support, being supportive towards creating learning networks and curriculum changes. (See Hairon & Dimmock, 2012; Tait & Blinco, 2014; Tezcan-Unal *et al*, 2018; Admiraal *et al*, 2019.) One study talks about leaders attending workshops and lectures, mostly outside school, to support school policies and organisational changes (Admiraal *et al*, 2019).

All the above studies and their motivating thoughts may point out to the leadership themselves practising Peter Senge's five disciplines — personal mastery, mental models, shared vision, team learning and therefore systems thinking as a result of effective synchronisation of all the other four disciplines.

Another practice which leaders followed in LOs is that they themselves sought to be innovative and encouraged innovation by relieving people of work pressures (Trevitt, 2017; Hairon & Dimmock 2012; Tezcan-Unal *et al*, 2018). This finding was supported with another study; three universities were studied for implementation of the new Quality Assurance Framework. It was observed that in all three universities, leadership played the role of overseeing the initiative along with the other stakeholders (Liu & Liu, 2018).

The role of a leader in libraries as educational institutions was also studied to a considerable extent. In a study on City Libraries at Townsville, it was concluded that the Leadership Management Team at Townsville City Council is steering the organisation towards the ideal of an LO (Jensen, 2014). A study on the Northern Territory Library mentions the role of a leader in seeding an LO (Tait & Blinco, 2014).

Studies also showed that the role of leadership was to unravel the shared pictures in order to garner a genuine commitment to a shared vision which was communicated in these educational institutions (Trevitt, 2017; Tezcan-Unal *et al* 2018; Admiraal *et al*. 2019; Maley *et al*, 2015).

Conclusion

We live in a world with complex organisational structures that are influenced by multiple forces of change and this is also applicable to the educational environment. Educational institutions do not work in isolation; they are also complex systems. There are many forces of change affecting them (Moloi, 2007; Shipton *et al*, 2013; Karanikola *et al*, 2019). Consequently, this research attempted to investigate the reasons why educational institutions need to adapt to the concept of LO and the corresponding learning behaviours which would demonstrate their ability to cope with complexity and change.

As suggested by the literature, there are several studies in the area of application of LO in educational institutes, but very few are qualitative in nature. Qualitative studies are important for pointing out to the behavioural aspects of how learning is practised in educational institutions. This meta-analysis was carried out to bring out the fundamental themes and sub-themes that relate to behaviours of LO in educational institutions.

The themes that emerged after the coding and grouping process, narrate the interconnectedness of change in the institutions with the learning that takes place in them. A common thread passes through the three themes of Change Management, Systems Thinking, and Leadership in LO, weaving a complete scene through the landscape of these educational institutions across many locations on the globe. The research questions 'What is the reason or cause behind education institutions to become an LO?' and 'What are the behaviours that people undertake in education institutions where they practice LO disciplines?' are explored in detail in the analysis section.

In conclusion, this study brings out the behaviours that educational institutions could follow while facing change. The article details that if the leadership support is provided, then possibly the change may occur smoothly. It is a summary of how effectively an LO can be created in educational institutions if the three major themes are understood and applied in an adequate manner.

We now come to the shortcomings that were observed in the research process and offer some suggestions for the benefit of researchers and students who are concerned with this field of study and want to engage in further research.

Drawbacks and Suggestions for Further Research

This meta-analysis covers studies from various locations; however, the studies are not representative of all regions around the world. The study has its own limitations regarding the kind of articles being used for analysis; this is due to the nature of databases searched and the limitations the author faced in getting full access to the articles. Such a study may also be subject to the concerned author's biases while creating the themes and sub-themes due to the nature of questions that author is trying to explore. Another limitation of the present study is that only qualitative studies have been used.

Researchers could, therefore, do well to incorporate a further search of other databases and also include researches from those parts of the world which are not represented in the current meta-analysis. The author has used themes of LO based on Peter Senge's model as that is what all studies have used and related their findings to. Researchers in the future could look for studies by other authors too.

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Book Reviews

CHAVAN, B. S.; AHMAD, Wasim and GUPTA, Raj Kumari (Eds.) (2022): ***Comprehensive Textbook on Disability***, New Delhi: Jaypee Brothers Medical Publishers (P) Ltd, ISBN: 978-93-54-65551-7 (Paperback), 614 Pages, Price: ₹ 1295.00

The world is still going through the uncertainties created by the COVID 19 pandemic with its endless mutations. Education for every student from pre-primary to higher education has been impacted by the lockdowns, closures and frequently changing guidelines. Mental health is now emerging as a concern where rehabilitation is becoming a necessity rather than a choice for the systems across the whole spectrum of population. Many of us use the term rehabilitation in association with medical conditions such as congenital or acquired disabling conditions. However, there are already discussions that well-being and rehabilitation are twin processes and, as a corollary, rehabilitation services are required for the non-disabled as well. Pandemic has brought the issue to centre stage. The NEP 2020 is already in the process of being implemented and has, in its Chapter 6, fully endorsed the Right to Persons with Disability Act (2016). Yet it is very rare that you get the easily accessible and comprehensive material for ready reference at one place. It is also important to discover, learn and appreciate that the line between the Abled and the Disabled is very thin and we all need to change our perceptions so that Human Rights and Right to Education can be actualised for all persons across genders and many such cross-cutting phenomena. The Persons with Disability are not a commune by themselves.

Incidentally, while these lines were being written, the Finance Minister, Nirmala Sitharaman announced on 1 February 2022 the launch of a National Tele Mental Health programme, saying that COVID-19 pandemic has accentuated mental health problems in the people of all ages. “The pandemic has accentuated mental health problems in the people of all ages. To better the access to quality mental health counselling and care services, a National Tele Mental Health programme will be launched," she said while presenting the Union Budget 2022-23 in the Parliament on the day. Ms Sitharaman then added, "This will include a network of 23 tele mental health centres of excellence with the Nimhans (National Institute of Mental Health and Neurosciences) being the nodal centre and IIIT Bangalore providing technical support."

When we came across this book in December 2021, our first thought on reading the title was about why the word textbook was used. We come across textbooks in schools but in higher education and otherwise, this term is rarely used. As per the Library & Information Science Community, “A textbook is a book of instruction. Its primary aim is not to impart information about a specific subject but to enable one to develop proper understanding of the subject” (https://www.lisbdnetwork.com/text-book-definition-and-meaning). Seen in this framework, we feel the title is really attention catching and motivates one to explore the book.

The book is organised in 80 chapters across 19 sections: (1) Understanding Disability, (2-6) Intellectual Disability, (7) Hearing Impairment (8) Visual Impairment, (9) Cerebral Palsy, (10) Other Disabilities including Muscular Dystrophy, Blood Disorders, Neurological Disorders and Physical Disorders including Leprosy Cured, Acid Attack Victims, Dwarfism etc. (11) Multiple Disabilities, (12) Disability and Mental Illness, (13) Genetic Disorders Associated with Disability, (14) Early Intervention and Early Childhood Education, (15) Curriculum Development, (16-17) Socio-Cultural Variables in the Field of Disability Rehabilitation Status of Research, (18) Legislation Policies and (19) Special Issues Related to Disability. In this manner it covers the historical and legislative provisions as well as all the disabilities currently covered by the Right to Persons with Disability Act (2016), and also provides the reader a chance to understand the disability in the larger framework of challenges and opportunities in the social, technological and educational contexts; at places it is also valuable for allied health professionals and others to understand the mental health issues and genetic contexts wherever applicable.

The book has been compiled and edited by Dr B S Chavan, Dr Wasim Ahmad and Prof Raj Kumar Gupta. The former two have been active in the field of Mental Health and Intellectual Disabilities, while Prof Gupta brings her experience as an education specialist with the background of special and inclusive education. Unfortunately, last year we lost Dr Chavan who has been the leading force behind this book when the process of publication may have been in progress.

Bonus is the Overview by Dr Srinivas Murthy, who was formerly with the National Institute of Mental Health and Neurosciences (NIMHANS). Here he reflects on the 50 years of our perception of persons with disabilities being less than human and equals (p: xxvii) to their RIGHTS under the UN Conventions. He has been in this field for decades — both at the national and international levels — much before the challenge had been addressed by the RPWD Act 2016 and the situation now created by the pandemic. To quote his words to qualify calling this overview a bobus, "*I have had a privileged position to reflect on the last 50 years of progress in India and other countries. I want to recapitulate these experiences as they also reflect the developments of the last 50 years."* Dr Murthy has lucidly organised his overview under 7 broad themes across these sections and chapters: 1. Changes in the way marginalised persons are now part of the mainstream of society; 2. Advances in medical understanding of the causes and corrections of disability; 3. Development of welfare services; 4. Legislative changes; 5. Changes in the attitudes of the community; 6. Community as the place of care and support; and 7. International conventions.

As a reviewer, I would like to highlight two main themes which we come across many chapters:

1) *Forces that have shaped the lives of persons with disability and their caregivers*: This needs special attention of readers as they go through the related chapters looking at the role of communities as well as caregivers as society's response guides our values and actions (Chapter 6 and 13).
2) *Advances in medical understanding of the causes and corrections of disability:* These have been covered in Chapters 2-5.

It is important from the viewpoint that medical professionals like doctors, allied support staff, nurses, and many others play a significant role in identifying the challenges that in

some cases can be identifies and today also addressed even in during pregnancy. But today we need to understand these in a simple language so as to appreciate the capabilities instead of developing only negative and deficit perceptions. Even issuing a disability certificate at times is not appropriate especially for many disabilities classified as intellectual disabilities by the RPWD Act. We need to come out of age-old conceptions and appreciate the developments.

There is a very specific reason for the selection of these two themes. As this book is published by a publisher of medical books, many may wonder about its relevance to other sectors like education, psychology, social work, sociology and so on. We all are part of the society/community; maybe we are here in different roles but each of us contributes to actualising our place in the personal, social, emotional and governance role of not ourselves alone but also those around us within the family, neighbourhood, work places, public places, etc. Hence exploring and learning is a continuous self-regulated process and disciplinary boundaries which, as the NEP 2020 observes, need be merged for larger good.

I am saying these things with an eye on the contexts in which we live as informed citizens. Thanks to technological developments and multiple devices that one can access, newer and newer areas of interest and concern are also evolving and growing. We see many case studies and true stories of parents, siblings and other persons of the community, who would like to access such materials as are simple in language but give us insights. This book does so, covering all aspects in one volume which can be part of one's personal collection of books also. The book will be useful for all types of readers such as professionals at all levels (such as education, health, social justice, social work, rehab and allied health services), students (medical and non-medical), and general public and even media persons. It will be a rich addition to the all the libraries in universities, in all types of colleges and other education institutions as inclusion, equity and quality are the intent and spirit of modern times.

T-12/702, Valley View Estate, Gwal Pahari, G- F Road,
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Sudesh Mukhopadhyay
drsudesh.mukhopadhyay@gmail.com

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