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Prof. M.V. Mathur
Memorial Lecture

GLOBAL TRENDS IN HIGHER EDUCATION IN THE BACKDROP OF NEP 2020

By

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Former Chairman, UGC

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ABSTRACT

Higher education plays a pivotal role in propelling a nation forward by empowering its individuals with the knowledge, skills, and other critical abilities needed to fuel economic growth, drive innovations and building a shared citizenship. By prioritizing access to quality education and fostering research and innovation, developed countries have uncompromisingly created enabling conditions for their institutions to carryout groundbreaking discoveries and innovations that fuel their economic progress. Indian higher education system has also made significant strides since independence, but much leaves to be desired insofar as quality is concerned. There are valuable lessons that need to be learned from leading global institutions and all ideas of complacency jettisoned to make the Indian system competitive at the global level. It can be brought to fruition provided higher education institutions are made self-reliant and the responsibility of their governance is given to visionary leaders.

Introduction

Chairperson of today's program, Dr. Dev Swarup, Vice-Chancellor of Baba AmteDivyang University, Jaipur,Professor VinishKathuria, Director, Institute of Development Studies, Jaipur, Professor Ramesh K. Arora, Professor K. L. Sharma, ProfessorBhagirath Singh, Prof. Pema Ram, all other eminent academicians and invited guest who have taken time off to be a part of this program.

It is, indeed, a matter of great honour and a very special privilege for me to deliver the sixth Prof. M.V. Mathur memorial lecture at IDS, Jaipur. It is with a sense of great respect and admiration that all of us have today gathered not only to pay our homage to Professor M.V. Mathur but to celebrate a well-lived life.

I take this opportunity to compliment and congratulate the beloved daughters of Professor M.V. Mathur who thought it fit to create an endowment to organize the memorial lecture in the sweet memory of their beloved father. I can understand that while for the daughters it is a big emotional connection, it is going to benefit the coming generations for years together. This is how the significant contributions are made by the good minds born in the family of Professor M.V. Mathur. I would like to congratulate all them for their thoughtful gesture highly appreciated not only by the citizenry of the pink city but also by the academic fraternity across the institutions.

Professor Mathur was not an ordinary person. He was a person of exceptional abilities. Professor VinishKathuria has talked about his seminal contributions that continue to resonate beyond the boundaries of classrooms and public offices. Professor Ramesh K. Arora has highlighted about his socio and personal qualities and the legacy that he has left behind because Professor Arora is the one who had the fortune of seeing Professor Mathur from a very close quarter. I have known Professor M. V. Mathur only through his writings as also through his subordinate colleagues whom I joined a little later when I got an opportunity to head the institution that was initially established and nurtured by Professor M.V. Mathur in the name of Asian Institute of Educational Planning and Administration. Later, this very organization was renamed as National Institute of Educational Planning and Administration (NIEPA) and I took over as its director first and subsequently its Vice-Chancellor when I got it elevated as an institution Deemed to be University in the year 2006.

What is so very special about Professor M.V. Mathur is that he belonged to a class that was inspired by the ideals of freedom struggle and which is why he was very different from us. Unfortunately, most of the present generations of people have even forgotten the ideals of freedom struggle that were lived by Prof. Mathur in every sense of the word. Professor Mathur was not merely an economist he rather gave altogether a different kind of orientation to the planning process of our country that

was of paramount significance during the early years of independence. Professor M. V. Mathur made noteworthy contribution as a Member of the Education Commission (1964-66). Some of the vital recommendations of the Commission were the outcome of his worldwide views and in-depth understanding of complex educational issues.Having regard to the changing scenarios, Prof. Mathur alsowanted to change the Asian Institute of Educational Planning and Administration into a Commonwealth Institute of Educational Planning and Administration but somehow that idea could not fructify. Indeed, he was a man of great ideas. He was from amongst those visionary leaders who would not easily give up even in the most trying conditions and because of that he was highly respected amongst his fellow colleagues, amongst the political executives and even in the bureaucracy. He belonged to the class, that would walk into the offices of the Prime Minister and the President of India and the Secretaries of different ministries without an appointment and the bureaucracy and the political executives would consider it an honour to hold long hours discourses with him.

Yesterday I shared with both Prof. VinishKathuria and Professor Ramesh K. Arora some interesting anecdote about the likes of Prof. M. V. Mathur. They had the highest level of comradery as they were driven by the ideals of the freedom struggle at that point in time. That was the time when India was not the Indiaof toady. We were spending only 0.64% of the GDP

on education and yet because of the visionary leadership of the likes of Prof. Mathur we could lay the foundations of the most premier institutions. They envisioned the foundation of such a futuristic model of institutions that even after over seven decades ofindependence we could not come up with an alternate model of educational institutions in the country.

They were the people who laid the foundations of numerous institutions both at national and state levels. That was the time (1950-51) when theliteracy rate was around 18% and the Gross Enrolment Ratio (GER) in higher education was less than 1% and yet they envisioned that each learner must have access to quality learning opportunities.Yet they envisaged that if we were to become a progressive society, we would have to impart education of the level whereby we could not only create educated and skilled workforce but also cement confidence in one another and treat everyone with dignity and respect. They were the great advocates of inquiry-based approach of teaching and learning so that we could churn out children with scientific temperament and attitude.

The leaders of that era knew the significance of education and which is why you would find that education, equality and social justice were the main subjects of discourse during the freedom struggle movement. But it seems that after independence these three subjects namely the education, the equality and the social justice seem to have not received the desirable attention and because of which we continue to live in

highly stratified society. A society wherein the chances of individual's mobility are very-very narrow and restricted. Such a situation you all would agree is neither good from the economic perspective nor from the political perspective. The stratification of society is so because we still believe in hierarchical values and attitudes which are deeply entrenched in our society. Further stratification of the society was even forewarned by the Education Commission in 1966. The Commission in its report envisaged the social function of education in the context of nation building for forging a sense of unity in diversity and for building a shared citizenship for a democratic, social, secular and egalitarian society.

Now the question arises what have we done in the last seven decades. One can safely present two different perspectives. One could start comparing India of 1947 with India of 2025. But that comparison would not be meaningful because India of today is far more resourceful than India of 1948-49 or of 1950-60. Of course, since then we have traversed a long distance. We have created a gigantic system of education in the country. There is nothing wrong in taking pride in our achievements. We have created more than 19 lakhs schools, which are providing access to education to about 27 Crore children in the age cohort of 3 to 18. We have about 89 lakhs teachers engaged in the sector ofschool education. In higher education we have around 56,000 higher educational institutions. We are the largest system of higher education in the world in terms of number of institutions.

We have 44 million students enrolled in higher educational institutions. The Gross Enrolment Ratio (GER) in higher education has reached from less than 1% in 1950-51 to 28.5% in 2024. We have more than 1.6 million teachers engaged in the sector of higher education. We have more than 1,168 degree awarding institutions in the names of institutions of national importance, central universities, state universities, institutions deemed to be universities and around 50,000 colleges offering undergraduate and postgraduate programmes. Besides, we also have around 12,000 stand-alone institutions offering certificate and diploma programs at the post-secondary stage.So, if you share those figures at the international platform, they're surely mind-blowing figures. But when it comes to quality much leaves to be desired that I will be reflecting a little later after highlighting the societal aspirations from education.

The societal aspirations at the international level were expressed twice inmodern times. First time it was done after the end of the World War-Iin 1924 in the city of Geneva. One of the resolutions related to education that I would like to share with you mentioned that the children must be given the tools for their natural development and those who were backward must be supported by the nation states and that the children must be placed in a position where from they can make a decent living. Not much had happened since the world was again pushed into the world war-II in 1939. After the end of the world war-II, the world leaders this time assembled in the city of Paris in 1948

and came up with the Universal Declaration of Human Rights. I would like to draw your kind attention to Article 26 of the Universal Declaration of Human Rights- 1948. It was indeed a historic moment wherein the world leaders had agreed on a common agenda to shape up the world for a better place to live in by empowering people through education. There are three parts of Article-26. Because of the time constraint, I will like to draw your attention only to part one which deals with education. There are five assertions in part one. It says that everyone has the right to education, and that the elementary education or fundamental stage of education shall be made compulsory, and that the elementary education shall be made available free of charge, and that the professional and technical education shall be made accessible to all the eligible population, and that the higher education shall also be made accessible to all based on merit. Ifwe carry out a dispassionate analysis of the education systems at the global level we find a common pattern in the developed economies. They seem to have evolved their systems around those five stipulations of Article-26 part-A. They ensured the universalization ofschool education long-long ago. They have created outstanding infrastructure for professional and technical education for the eligible population and when it comes to higher education their higher education is driven by merit and merit alone which is why they are ahead of others. But if we carry out an honest analysis of our own system, we find that we have not been able to universalize elementary education let alone universalization ofschool education. Every class in the

country happens to be a terminal class. Children leave out after grade one, grade two, grade three, and so on and so forth. And, these children don't leave on their own but the irony is that they must leave because they are pushed out of the system. The system doesn't support them. We have been talking about demographic dividend for a very long time but when it comes to higher education, I'm sorry to say that by and large it is nowhere in the reckoning at the global level. We have only a handful of institutions of higher learning out of such a gigantic system that can compete only in a few areas of study with the leading institutions of the world.

When we look at the global rankings, we find that amongst the top 10 institutions of higher learning as many as four are from the United States of America (USA), four from Great Britain, one from Switzerland and one from Singapore. None of our institutions figures in the first ten. Our institutions do not even figure in the top fifty nor even amongst the top hundred.Though there are surely certain reservations about global rankings,I also have reservations, but that is considered a yard strict today at the international level.When we browse through the list of top hundred institutions of higher learning, we find that there are 26 from USA, 14 from England, five each from France, Germany and China. China in the recent past has done exceedingly well. China has come up with double first-class project in which they identify the potential institutions as also the potential departments and then they provide them

additional resources on a prolonged basis. As a result of that five universities from China have figured in the top hundred in the QS global ranking of 2025. The first institution of ours is IIT Bombay which is ranked 151st, Indian Institute of Science Bangalore is ranked 211th.

The first and the foremost issue that requires urgent attention in the country is the issue of access.When we look at the Gross Enrolment Ratio (GER) in higher education, we find that we are 12 percentage point lesser than the world average. The world average is 40% andwe are at 28.4%. Most of the expansion that has taken place in higher education in our country has beenad-hoc and arbitrary. We have pockets in the country where the number of higher educational institutions per hundred thousand population is as high as 47 and as low as 4 or 5. In the National Education Policy (NEP) 2020 now we have set a goal for ourselves to attain the GER of 50 percent within 2035. What does it mean? It means that every second child in the age cohort of 18 to 24 will be on the campus of higher educational institutions. Now the question arises how are we going to realize this cherished goal of the NEP 2020. I believe this is a doable proposition provided we make sure we grow at an annual growth rate of 4.2%. We can do it provided we follow a multipronged strategy. Firstly, we need to maximize the residual capacity of existing institutions especially of those where the number of students is very low. Secondly, we need to restore the credibility of the Open and Distance Learning (ODL) system,

which we had introduced in mid 1960s. Thirdly, we can do it provided we have a fusion of the offline mode of delivery with online mode of delivery and with the ODL mode of delivery. Fourthly, we can do it provided we set up newer institutions in areas where the institutional density per 100,000 population is lesser than the state average.

The second important issue is about the gender parity in higher education. The global data reveals that in the last two decades the participation rates of women at the international level has increased at a much faster pace from 19% to 43% than the participation rates of men from 19% to 37%. The participation rates of women have also outpaced the participation rates of men though marginally. But when we look at the participation rates of girls in STEM disciplines (science, technology, engineering and mathematics) wefind that the participation rates of girls in STEM disciplines is 18 percentage point lesser than boys in our country. And, when we look at the participation rates of children coming from the marginalized sections of the society on the campuses of the premier institutions despite reservations, we find that it is dismally poor. This can be overcome only when we provide appropriate interventions not only at the higher education level but also at the secondary and senior secondary levels of education.There is an urgent need to direct the girl students of grade 9^{th}, 10^{th}, 11^{th} and 12^{th} towards exact sciences and mathematics. If we would not motivate them; if we would not provide appropriate

academic interventions, the transition rates of girls and children coming from marginalized sections of society will continue to remain low. Universities need to play a proactive role in this direction. They need to organize the special orientation programs for the girl students of grade 9^{th}, 10^{th}, 11^{th} and 12^{th} during the weekend on their campuses with a view to ensuring not only the gender parity but also increasing their transition rated.

The third issue that I would like to flag is about the access and opportunities for physically challenged children in higher education. World Health Organization (WHO) data reveals that there are about 1.3 billion people in the worldwho are suffering from one kind of *physical disability* or another. We know that education of children with physical disabilities is hindered because of multiple reasons including physical access, discrimination and prejudices, etc. When we compare our data with that of the USA and UK, wefind huge disparities. While almost 25% children with physical disability of one kind or the other are the bachelor's degree holders in the USA, and approximately 22% in the Great Britain, only 6% boys and 3% girls with physical disability are the bachelor's degree holder in our country. The kind of improvisation that the USA and UK have made needs to be carried out in our country to ensure inclusivity on the campuses of our institutions.

Another issue that I would like to flag is about the *skilling gaps*. The fourth industrial revolution impelled by artificial

intelligence (AI) and emerging technologies, robotics, etc. have created a huge skill gap all over the world. Responding to the concern, the leading universities of the developed economies are coming up with short-term tailor-made programs for two sets of students. They have realized that this revolution has created two classes of students namely the traditional students in the age cohort of 18-24 and non-traditional students in the age cohort of 24 and above. These universities while have revised their syllabi for the traditional students, they are developing tailor-made programs for those who are already working but now they are finding themselves inadequate because of the invasion of technological revolutions like artificial intelligence, wearable technology, virtual reality, virtual augmentation, cloud computing and all that. Therefore, these people want to go back to their alma matter to reskilling and upskilling themselves.

We have been following the traditional way of human resource development approach to prepare the skilled workforce in our country for a very long time. I am not undermining the significance of that system but that system has lot of limitations. If one enters a toy making profession once he or she gets stuck in that profession for life.Besides, there is no certification, nor any accreditation in such skilling because of which all opportunities get shut down for individuals to transit from one vocation to another. There was a person who is known as the father of economics Adam Smith. Adam Smith in the 18th century had said and I quote that “the real asset of a nation is not

the gold and the silver but the educated and skilled workforce". Another takeaway for us is that we need to give vocational orientation to education right from early years of schooling to higher education besides developing tailor-made programs for the non-traditional students as well. Only then we would be able to harness the benefits of demographic dividend that we have been talking about for a long time. The National Education Policy-2020 has in fact warned us that this demographic dividend is not going to last for ever and that we should lay greater emphasis on skilling and reskilling. But in our country the public perception about vocational education is so poor that nobody wants to go in for that. For a very long time we did not have even the materials available in the regional languages. We thought that the regular teachers would be able to handle the vocational programs without giving them any specific training and we are continuing to commit that mistake. We will have to have standalone institutions for certain trades. We'll have to see what kind of programs could be offered in vocational areas by the conventional institutions. What kind of additional features would be required for which the money would be required? So, the teaching community needs to prepare the list of trades that can be offered in the existing institutions without any additional features,another list of trades that would require expansion of physical and human resources and another list of trades that would require stand-alone institutions. Besides, it would also require alignment of courses with the National Occupational Standards (NOS) and Qualification Packs (QP) laid down by the

Sector Skill Councils with a view to ensuring comparability of skills at the global level.

Another important point that I would like to flag is about *teaching and learning*. For long, we have been following the traditional mode of teaching and learning, whereas the world has switched over to inter-disciplinary teaching and learning. I was inaugurating a conference on the philosophical works of Professor D.P. Chattopadhyay in Goa, and before going to that conference, I thought that I should find out how the subject like philosophy is taught in the leading universities of the world. So, I went through the curriculum of certain leading universities of the world. Some of you may be surprised, that they have integrated a discipline like philosophy with artificial intelligence, with biotechnology, with mathematics. Whereas we consider philosophy as a luxury discipline. Most of us get carried away only by economic considerations when it comes to choosing of courses. By and large we consider that it is only the engineering and the allied disciplines or the medicine and the allied disciplines which can provide a fillip in life. But somehow, we forget that humanities, social sciences and languages are extremely necessary to prepare good human beings. We have not learnt from our own mistakes. When we created IITs in 1950s, the first IIT was created in Kharagpur in 1951. At that time, we did not have the Department of Humanities and Social Sciences in IITs. But soon we realized that what are we preparing these engineers for, if they do not

understand the fabrics of their society, if they do not understand the economics, what are we going to do with these engineers? Having realized that the Departments of Humanities and Social Sciences were created across the IITs. You can't become a good teacher without understanding the Philosophy of the subject that you are teaching. Because each domain of knowledge has its own philosophy.

When I was taught photosynthesis, I was taught photosynthesis as a biological process. I was never ever taught that there is a quantum physics involved in it, there is a chemistry involved in it, there is a geography involved in it, there is an art involved in it, there is a language involved in it. When I was taught chemistry, I was taught periodic table as a chart. These are the elements. These are the atomic numbers and atomic weights and this is all about the distribution of their electrons, protons and neutrons. That is what I was taught. But at a much later part of my life, I realised the significance of those elements in day-to-day life. We are continuing with the teaching the same way on most of the institutions. We need to switch over to interdisciplinary teaching and learning without which we would not be able to sole real world's complex problems.

We need to appreciate that the law of learning tells us that learning is the best when the child knows why should she learn. why should she study? why should they study Pythagoras? and why should they study quadratic equation? and why should they

study molecular rearrangement and atomic structure? But now the time has come when we need to switch over to *inter-disciplinary* teaching and learning. There are challenges involved in it, but it is worth considering. We need to know now that the new knowledge lies at the intersections of different disciplines. Pick up the list of the last 10 years Nobel laureates and you will find that majority of them are those who have defied the basic boundaries of a discipline. So, this is another takeaway for us to switch over to thematic approach of teaching and learning, to switch over to project-based teaching and learning, to switch over to team teaching to make teaching and learning more interesting, more useful as also to compete at the global level.

I would like to flag another important issue that we have underscored even in the NEP 2020 and that is about diversification of campuses in terms of student population especially the international students. This has always remained a major concern in Indian higher education.Countries that have addressed these concerns have become the most sought-after destinations for higher education. The number of international mobile students has tripled from 2 to 6 million in the last two decades. America, Canada, Australia, UK, China, South Korea, and Singapore continue to attract large number of international students due to their proactive policies. Of them, America remains the most sought-after destination for international students for centuries. America is hosting over one million

international students followed by Canada (800,000), UK (679,000), China (500,000), and Australia (450,000). These countries are deriving significant benefits out of their proactive policies.

Indian institutions are not having a good track record when it comes to hosting of international students. India is hosting about 47,000 international students. There are only a couple of universities that attract international students.The highest number of international students are enrolled in under-graduate programs like engineering, business administration, and basic sciences. Most of the international students come from five countries like Nepal, Afghanistan, Bangladesh, Bhutan, UAE.We need to work a lot to attract a greater number of students from other parts of the world like China has done in the recent past. The NEP has laid lots of emphasis for the diversification of campuses. So much so the policy has envisaged that each institution will have a separate office for the international students. We need to formulate proactive policies for international students besides creating supernumerary seats and developing reasonable physical facilities and even scholarships and teaching assistantship like in overseas universities.Therefore, the key takeaway for us is that we need to come up with proactive policies and need to learn from the great experiences of the countries which have in the recent past increased the intake capacity of the international students.

Another important concern that I would like to highlight is about the disparities in academic attainments that exist within the institutions and across the institutions. The biggest challenge for us to narrow down these disparities with a view to increasing educational attainments. While some of the leading institutions have made substantial improvement in narrowing down such disparities, it remains a serious issue for most of the institutions in the developing world. Basically, this problem arises when either of the two major stakeholders namely the teacher or the student fails to meet educational aspirations and educational expectations. Such failures happen often due to inadequacy of preparations on the parts of both the teacher and the student.These disparities are largely attributed to two major factors of them, one relates to teaching methods and assessment procedures adopted by individual teachers, and another relates to obliviousness of students about their obligations.

There may be a series of shortcomings on the part of teachers in achieving educational goals. The first and the foremost may be about their inability to organize educational experiences in a hierarchical order. The second may be failure to communicate subject matters in a manner that can motivate and inspire students to learn. The third may be inability to make use of suitable teaching aids which can facilitate learning across all types of learners. The fourth may be ineptitude to establish open learning environment where questions, comments and interactions are encouraged. The fifth may be ineptness to relate

teaching and learning with social and physical conditions that exist around learners. The sixth may be inability to customize learning sequences, use of multiple criteria of assessments which can measure cognitive operations at different levels. The seventh may be unfamiliarity with the art of developing well-articulated reports of students' progress both on cognitive and non-cognitive learning outcomes.

Similarly, there may be several failings on the part of students in accomplishing anticipated academic standards. The first and the foremost may be lack of attention and preparedness to work hard. The second may be lack of inquisitiveness to pursue and gain new knowledge and skills. The third may be absenteeism of engagement in classroom activities. The fourth may be inability or shyness to ask questions. The fifth may be laziness in turning in assignments. The sixth may be lack of strong sense of responsibility, team spirit and conscientiousness. Like that here may be many more shortfalls of other kinds which can act as stumbling blocks in attaining academic standards.

Such disparities can be overcome to a great degree if teachers and students across the institutions are systematically made aware of their role and accountability by resorting to subject-specific benchmarking of learning outcomes with the help of subject specialists. One of the biggest advantages of such an exercise is that on the one hand it lets every teacher know about his or her role and accountability in terms of teaching methods, experimentations, demonstrations, simulations, use of

audio-video materials, use of multiple sources and multiple criteria of assessments of students' potential, and on the other hand it also alerts students about their obligations in terms of ability to learn as an outcome of guided learning, peer learning and self-learning and preparedness to work hard to gain new knowledge as also keenness to excel.

Such an exercise, of course, would require a clear-cut break up of all curricular, pedagogical, and assessment activities in the form of a matrix.This would be in line with the outcome-based approach of teaching and learning which is a necessity in a diverse system like ours where parity of standards both within and across the institutions remains a major concern. This is a reform that should be on the priority agenda of each institution.

Yet another important issue that is staring in the face of all the institutions of higher learning across the world is the quality of higher education. Quality in higher education is a multidimensional, multilevel and dynamic concept that relates to the contextual settings. Worldwide there are around 345 quality assurance bodies that are operating. These bodies are laying greater emphasis on qualification frameworks.At least 116 countries have developed National Qualification Frameworks (NQFs) addressing higher education. They are using these frameworks for curriculum development, students' mobility & recognition of credentials. Global ranking has given rise to lots of concern in higher education. Some of the leading universities continue to dominate in global rankings that are based on

multiple parameters like academic reputation, expert opinions, citation per faculty, employer reputation, international faculty, faculty-student ratio, international students, etc. The data from QS Ranking 2025 reveals that out of the top ten universities, 4 universities were from the United States of America, 4 from Great Britain, one from Switzerland and one from Singapore. A little extension of the list shows that out of top 100 universities, 24 are from USA, 15 from UK, 9 from Australia, 5 from China, 5 from Canada, 4 each from Germany, South Korea, and Hongkong and 3 each from Sweden, Switzerland and Singapore. None of the Indian universities has figured in the list of top hundred universities. It is noted that about90 Indian institutions had participated in QS ranking 2025. Of them, it was IIT, Bombay that was ranked 118th followed by IIT, Delhi at 150th and Indian Institute of Bangalore at 211th. Rest of the institutions were way below. It is true that some of the parameters used in global ranking do not find favour with our institutions making them lose major points. Nevertheless, there is a need to learn from those countries which have improved their rankings in the recent past. For instance, Chinese universities have improved their ranking at global level in the recent past by way of introducing the double first-class scheme in which they have identified high-performing individual institutions and individual departments and provided them substantial resources for the promotion of research on prolonged basis. There is a need to identify at least fifty-sixty promising institutions and provide them greater resources on a protracted

basis to enabling them to compete in this fiercely competitive world.

We all know that universities have to fulfill twin obligations. On the one hand they have to serve the society by way of preparing educated and skilled workforce and on the other hand they have to take the society to the next stage of development through research and innovation.It is evident that there are very few research-intensive universities at the global level. Majority of these universities are public institutions. A research-intensiveuniversity must be truly an international university. They are expensive institutions wherein meritocracy takes precedence over everything else.Teachers in such institutions must be highly competitive and collaborative. While research remains the central focus of such institutions, they do not neglect teaching.

An analysis of top fifty universities with maximum number of Nobel prizes reveals that the US universities continue to dominate at the global level. If we look up for top ten universities with maximum number of Nobel prizes, we find that there are 7 universities from the US followed by 2 from UK and one from France. If we go a step further, we find that of the Top 50 Universities with most Nobel Prizes, 26 are from the US, 8 each from UK and Germany, 2 each from France and Switzerland and 1 each from Denmark, Netherlands, Austria, and Sweden. Harvard and Columbia are on the top of the world with 151 and 101 Nobel prizes respectively.

American universities continued to dominate the global scenario in higher education research for fairly a long period of time. However, in the recent past they seem to have been outpaced by the Chinese universities in terms of volume of research.US has about 266 research intensive universities.US universities publish more than 702,840 academic papers per year. Their share in global research turns out to be around 17%. US spends around 3.46% of its GDP on research and innovation. China has about 160 research intensive universities. China is following a "Double First-Class" policy to promote research in their universities. They are focusing on individual departments as also on individual universities and providing them sufficient resources on a prolonged basis. Chinese universities are contributing more than a million research papers per annum. Their share in global research has reached around 19.67%. In the last two decades China has substantially increased its funding. It is spending 2.43% of their GDP on research and development.

Great Britain has about three-dozen research intensive universities. Of them, Oxford Cambridge and London School of Economics continue to dominate at the global level. UK universities are contributing more than 236,000 academic papers per annum. Share of UK universities in global research turns out to be around 7.50%. UK is spending around 2.91% of their GDP on research and development.

India has about 200 research institutions including standalone institutions, research labs and universities. Hardly 10% of the Indian universities might fall in the category of research-intensive universities. Indianinstitutions are publishing around 275,367 research papers per annum. Their share in global research is around 8.05% that is slightly higher than the UK but way below China and the USA. This is primarily due to low level of investment in research and development. India is spending only 0.65% of their GDP on research and innovation. What is to be noted is that even with such an insignificant investment Indian scientists have improved their share in global research. India needs to invest much more to increase its standing at global level in terms of both volume and quality of research.

One more important point that I would like to highlight is about financing of education in general and higher education in particular. We all know that adequate financing of higher education continues to be a worldwide issue. While some countries have established better models of financing their higher education, others are still struggling to come up with reasonably creditable models. There are countries wherein public universities continue to receive greater support from both provincial and federal governments. They do not make distinction of any kind between public & private universities when it comes to financing of research. Western universities have a culture of collaboration with industries and business

houses for the purpose of mobilizing their resources. Besides, they also have a great culture of attracting additional resources through philanthropy, donations & endowments. It is through the diversified models of financing that they make substantial investment on education. Countries like the US, Canada and Australia continue to spend more than 6% of their GDP on education for a long-long time. UK and China are spending more than 4% of their GDP on education.

Public expenditure on education in India although has seen a significant growth over the years but its goal of incurring 6% of the GDP remains a distant dream. India laid a very good foundation of the most premier institutions even when it was struggling hard to mobilize resources. With a very insignificant allocation of only Rs. 64.5 Crores in 1951-52 for education, India came up with a blueprint of institutions of international fame. Although now the overall public expenditure on education has grown substantially to Rs. 37,000 crores due to expanding base of the education system, it is still way below than what was envisaged (6% of the GDP) by the Education Commission in 1964-66. Although one might argue differently insofar as per capita public expenditure on education or rate of growth in public expenditure on education are concerned as the per capita expenditure on education rose from Rs.1.8 in 1951-52 to Rs. 5555.8 in 2018-19 and the rate of growth in public expenditure has been 14.67% per annum over the last seven decades, but the reality remains that the country has not yet fulfilled its

obligation of incurring public expenditure of 6% of its GDP on education that according to the Education Commission (1966) should have been achieved within 1986 in a phased manner.

It is evident that there has been a notable increase in the centre's contribution to financing of education, but the share of the state governments has not matched in the same proportion because of their weak resources. Analysis of the budgeted expenditure on education in India for the fiscal years 2021-22 reveals that the total public expenditure incurred on education was 4.12% of the GDP. The percentage of India's GDP spent on various education sectors turned out to be 1.79% on Elementary Education, followed by 1.04% on Secondary Education, 0.77% on Technical Education and 0.52% on Higher Education. These figures are way below than what was envisaged by the Education Commission in 1966. This requires incremental increase in public expenditure on education if the country must prepare educated and skilled workforce needed by the modern world.

As against the public expenditure on education, the private expenditure has increased at a faster pacein the recent past. Consequently,the cost of higher education has increased in leaps and bounds making it not only harder to the weaker sections of the society but also clogging the issues of access, equity and quality in higher education. It hardly needs any mention that increased privatization of education has far-reaching policy implications, particularly concerning affordability, access,

equity, and quality. The governments, where privatization has outpaced public education, should provide specific interventions in terms of subsidies to both the students and the institutions to address the issues access, equity, affordability and quality.

Concluding Remarks

I would like to conclude by saying that higher education is undergoing significant shifts in recent years. With this rapidly changing landscape, the public perception about the value of higher education delivered by most of the institutions is also fluctuating. Today people have started asking insightful questions for which higher educational institutions have weak answers. People are looking for answers how higher education is going to prepare youth for tomorrow's world which is not certain, how it is going to respond to present and future skill requirements, how it is going to respond toemployment opportunities that are arising due to artificial intelligence, automation, and other emerging technologies and how institutions are going to meet the post-admission requirements of the deserving and needy students.

The overall situation of the Indian higher education system is not inspiring from any standard. The access ratio continues to be several notches lower than the world average. Similarly, the gender parity and social parity continue to remain very weak and so is the situation of quality in terms of success rates as also in terms of volume and quality of research. Public funding to higher education is also not showing any promising trends. Most

of the public resources are consumed by centrally funded higher educational institution leaving little scope for other sets of institutions. The job market is making a profound influence on enrolment trends in certain areas of study. There are some professions which are showing a surge in job demand while others are shrinking. This is eventually posing problems for the universities to come up with high-opportunity programs on the one hand and sustain those areas of study which are continuously registering declining trends in enrolment. There is also an acute shortage of visionary leadership capable of anticipating recent trends and evolving new educational offerings needed by the modern society. As a result, the growth of higher education has been stunted and the sector is unable to meet the growing demand access, equity and quality at home nor it is able to make a mark in global competition.

Clearly the Indian higher education is facing challenges that are multifaceted and interconnected. The current trends highlight the need for a reimagined approach on the one hand to strengthen the school education as the success of higher educationdepends upon the feeder cadre and on the other hand to give futuristic orientation to higher education. It warrants a switch over from the conventional mode of teaching and learning to interdisciplinary teaching and learning coupled with subject-specific benchmarking of learning outcomes and maximizing the use of technology. Universities are required to collaborate with private entities and business houses to mobilize

resources. They should improve their capacity to forge linkages with industry. There is also a need to scale up the capacity of teachers who besides handling large-sized classes also develop the capacity to conceptualize high-opportunity programs in emerging areas of study. Above all, we need leaders who are capable of envisioning anticipated shifts and take timely measures. Thus, the key lies in continuous adaptation and evolution of educational offerings in line with recent trends in this ever-evolving economic landscape.

Anyway, ladies and gentlemen I would like to take this opportunity to express my very sincere thanks and gratitude to the members of the family of Professor M.V. Mathur for creating this platform at the Institute for Social Development at Jaipur where we get an opportunity not only to pay our homage to the great son of the soil but also to learn from the significant contributions made by Professor M.V. Mathur. He was in the planning process, let me tell you he had left a legacy which has propelled the economy of the country in those trying times.I would like to extend my sincere thanks and gratitude to Professor Vinish Kathuria, the Director of the IDS for providing me this wonderful opportunity to share some of my thoughts with the learned audience.I am also extremely grateful to Professor Ramesh K. Arora Ji. I am fortunate to have received his affection in very significant measures for a long time. He helped in ample measures through his academic contribution when I was serving the University Grants Commission (UGC) in

the capacity of the Chairman. I am also equally grateful to my colleague Dr. Dev Swarup, the chairperson of today's memorial lecture for having taken his time off and to be with us. I know he is looking after two universities. He must be a busy man and yet he chose to be with us. I am also extremely grateful to all the distinguished members present in this hall who have devoted this part of the day in the memory of Professor M. V. Mathur whose legacy will continue to guide all of us forever.

Thank you very much andwishingyou all the very best.

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BRIEF CV OF PROF. VED PRAKASH

Prof. Ved Prakash is a renowned Academician and policy maker in higher education. During his stellar academic career spanning over four decades, he has held several key positions in education planning and policy making. He is the former Chairman of the University Grants Commission (UGC), New Delhi from 2013 to 2017. Before that he was the Vice Chairman of UGC from 2009 to 2013. He is the former Director and founding VC of National Institute of Educational Planning and Administration (NIEPA), New Delhi (2005-2009). He has been the Advisor to the erstwhile Planning Commission in Education (2002). He has served as Professor in NCERT, New Delhi and as Associate Professor in Institute of Banking Personnel Selection, Bombay. He has authored over hundred publications which include books, edited volumes, monographs, teachers' handbooks, professional research papers and articles in national and international journals and research reports.

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