

To,

**The Director,**

Department of State Educational Research and Training  
Bengaluru

**Subject:** Submission of Position Paper

Respected Madam,

I am herewith submitting the Position Paper on Linkage between School Education & Higher Education, as desired by the Department of State Educational Research and Training. The work done by the team is consolidated as per the expected norms to suit the convenience of taking the work done further.

The paper is presented in two parts: the first part is presented in a form showing the correlation of the Position Paper with the NEP aspirations. The second part of the document has the original expected format in a detailed manner. Each part has both the English and Kannada versions.

I thank you for the opportunity to work for the cause of the new Education Policy.

Yours faithfully,

sd **Dr. H.S. Nagaraja**

Chairman, Position Paper

Chief Mentor, Prayoga, Bangalore

**Department of State Educational Research and Training**

Bangalore

**Position Paper**

On

**“Linkage between School Education & Higher Education”**

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28<sup>th</sup> February, 2022

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# Executive Summary and Anchor to NEP 2020

(Correlation of the Position Paper with the NEP aspirations)

## 1. Structure of the school education system

- In the existing model of school education, a student doesn't have the flexibility to choose subjects based on one's interest or one's future career options. This leads to pressure on students, sometimes resulting in frustrations and student dropout situations from schools.

In keeping with the recommendations of the NEP 2020, it was strongly felt by the committee that a student should get flexibility in the choice of subjects one can choose. This will also enable the student to evaluate oneself with one's interest and aptitude to migrate either towards skill-oriented courses or towards higher education.

- The requirements of learning levels of science and mathematics at the secondary school level for students seeking skill-based, job-oriented courses, and for those seeking higher/university education, are not the same. However, in the present situation, it is added pressure for those seeking job-oriented courses, and inadequate for those seeking university education.

It is therefore felt necessary to introduce higher-level science, mathematics, or any other relevant courses based primarily on the individual's requirement for higher education. And those who seek skill-based, job-oriented courses can choose subjects that are relevant for their professions (for example, a student interested in a career in Tourism and Hospitality can choose subjects like History, Archeology, Culture and Communication). This gels well with the recommendation of the NEP 2020. Some subjects a student can choose can also be relevant to the regional needs (for example, fisheries for students in coastal areas, food processing in intensive agricultural belts, and so on).

- In the school education system in Karnataka, in the (10+2) model, a student could exit at the end of Class 10 and pursue job-oriented education. Till Class 10, there is no choice of subjects which would help a student to pursue job-oriented education.

In the new model, since a student is generally expected to exit at the end of Class 12, provision is made to choose subjects which would help in the pursuit of job-oriented courses.

- The present system of school education appears to be highly biased in favour of students seeking higher education. Much of the workforce today, that is needed in the society, need the background of high-quality, skill-based, job-oriented education.

The NEP recognises this problem, and identifies the need for organised vocational education to be part of the schooling system. Accordingly, a mature society, in order to create entrepreneurial capabilities and a large amount of jobs through self-employment, for both rural and urban population, needs to evolve by strengthening job-oriented education. The role of the National Skill Development Corporation (NSDC) becomes important in designing, implementing and certifying such choices and levels of subjects to create a highly knowledge-based, skill-oriented human resource at the school level.

## **2. The learning platform**

- The existing model of learning in the school system is almost completely driven by rote memory. This does not enable a student to understand the process of science, and hence, he/she is not able to appreciate concepts in the subjects of their study, and also their applications. Further, the journey restricts the student to the lower-order thinking skills (remembering and understanding). The student is not enabled adequately to acquire critical thinking and higher-order thinking skills.

In the NEP 2020, the above problem is addressed through inquiry-based, experiential learning of science. The same was unanimously felt necessary by every team member as the need of the hour. This can be achieved by each school being provided with a state-of-the-art laboratory. Wherever this is not feasible, a school cluster model can be established with a centralised lab facility. Such a facility can be either a standalone unit, attached to a district and taluka Science centre, or can be part of an institute of higher education.

In the Humanities and Social Sciences also, experiential learning can be enabled by adopting suitable pedagogical models, such as roleplaying, dramatization, storytelling, model making, miniature parks, etc. Further, provision for individual pace of learning, peer learning, team tasking, building communication abilities, can all be adopted in such experiential learning.

## **3. Disparities in educational facilities**

- In most states, including Karnataka, there are disparities in the distribution and affordability of educational facilities, and awareness of education and employment opportunities.

This can be addressed with the suggestion of creating Special Education Zones. While the idea of Special Education Zones mentioned in the NEP 2020 is a big welcome change, in order to help the upliftment of under-represented sections of the society, it

is equally important to create world-class infrastructure on a PPP model, with a focus on futuristic plans for the development of the right human resource for the country.

- In the present system of school education, there is neither an effort to identify a separate roadmap for gifted students, nor pathways for their journey to become future thought-leaders. Exceptions to this are very limited, as can be seen through the KVPY and NTSE scholars getting admissions in a few institutions.

For the large population and the talent pool, particularly in the rural segment, a separate pathway for the bright and high achievers should be institutionalized, through the initiative of Special Education Zones.

#### **4. Continuity between school curriculum and higher education**

- Until Class 10, students are enrolled in a curriculum which is not too bulky or heavy, and there is not much overload. During Class 11 and 12, the bulk of the curriculum rises steeply. Also, in the present 10+2 model, many students move to a new academic and social environment during Class 11 and 12, which, along with their heavy burden of preparing for competitive exams and the course load, causes them much stress and anxiety.

In the NEP 2020's 5+3+3+4 model, this pressure gets reduced to a great extent because of the '+4' stage being a single unit. The curriculum should be uniformly distributed amongst the four years of study, without any steep rise, enabling a smooth and seamless transition in terms of a gradual rise of level.

The objective of the final 2 years of the school level should **not be** a steep rise in content and level to meet the diverse requirements of courses in higher education like engineering, medical, basic sciences, law, economics, and so on. Rather, the aim should be to imbibe a functional knowledge of these domains, the skills and abilities required to become a self-learner, and a holistic approach to different disciplines.

- In the present system, the preparation needed for students to procure admissions in institutions of higher education is too harsh and stressful. The selection process for such institutions implies a separate kind of preparation for which, in most places, there is little to no support from the institution of their study. Also, the time needed for this is not available because of the bulk of the syllabus. The model of board exams bears no semblance to the model of entrance exams. The teaching-learning models for the board and entrance exams are also quite different. In addition, a student has to write a large number of exams for admission to different institutions. In some instances, the board exam marks have no bearing on the admission to certain courses (example: NEET for medical admissions).

There is a need to establish a teaching/evaluation system common to the school exams (particularly classes 11 and 12) and the entrance exams to be written by a student for

admission to institutions of higher education. A single examination, along the lines of the GRE, GMAT, etc., with provision to choose from a combination of subjects and levels, along with a basic paper to suit the requirements of admissions to all institutions of higher education in the country, should replace the large number of existing independent entrance exams. Absence of such a system, which meets the complete requirements of a student, would cause a lot of hardship to all students, particularly to those in the rural and socio-economically underprivileged groups.

If such an examination is held only once in a year, it may be that a student who is genuinely unable to attend the exam (due to a health upset, family emergency, or lack of confidence/competence) may lose an entire year in pursuit of his/her personal goals, or end up with a poor performance. If such an exam is held at least 2 or 3 times in a year, it will offset such situations, and a bright, committed student can improve his/her performance by taking the exam again.

#### **5. Awareness of educational and career opportunities**

- At present, very few schools run some awareness programs for their students about future educational and career opportunities. Most students, especially those from rural and underprivileged groups, remain unaware of the diverse opportunities available to them beyond their school education.

This can be addressed by setting up of a system by the school education department, which will provide the required guidance to every student, through personal motivation and awareness sessions, as also a dynamic digital platform.

#### **6. Teaching gap**

- In the present system of school education, the topics for the board exams do not completely match with the topics required to prepare for certain entrance exams, such as IIT-JEE. This causes additional problems for the student in terms of time requirements and effort.

This can be eliminated by having common topics of study at the '+4' level of school studies, even if there are different boards of study in the country.

#### **7. Evaluation**

- The existing model of school system relies heavily on a single exam at the end of course. Marks scored in tests, quarterly and mid-term exams have no weightage.

This can be addressed by continuous and summative assessment, particularly for lab work and projects. The assessment methodology should be designed by an expert

committee, and be followed in all institutions. The records of such exams must be preserved, in the interest of uniformity of standards and fairness.

- In the present system, the evaluation through the end-course exam primarily tests the rote memory and the lower-order thinking skills (such as remembering and understanding).

Unlike the present model, the NEP 2020 intends to build higher-order thinking skills in students. This can be achieved by changing the evaluation model. Since the learning levels of students is decided by the kind of evaluation, it is necessary that the evaluation should focus on higher-order thinking skills.

## **8. Coordination between school education and higher education**

- At present, there is no body/agency to study and understand the academic and administrative linkages between school education and higher education. This often leads to a situation of discontent and disconnect between the two over what happens as academic initiatives, learning levels, etc. It is important to realise here, that the output from the school is essentially the inputs for higher education.

This can be addressed by the formation of a permanent committee comprising of representatives from both school education and higher education systems, which, at regular intervals, study and monitor the connectivity. Some of these aspects are:

- Continuity of pedagogical models from the student perspective and requirements of the learning objectives and levels.
- Evolving appropriate evaluation procedures.
- Conducting pilot studies on the requirements of both groups.
- Periodic faculty exchange to appreciate the changes to be brought about.

## **9. Teacher development**

- In the present system, there are workshops, seminars, summer schools, etc. organised by the state departments and its subsidiaries such as DSERT, DIETs, RIEs, and so on. In most cases, teachers attend these programs, but are not evaluated for their deficiencies and acquisition of new-age skills to match the changing needs.

Particularly in light of the big gap in the domain and pedagogical requirements of teachers arising out of the implementation of the NEP 2020, teachers need to be upgraded and upskilled to meet the demands. This cannot be fully met by short-term programs. In fact, teachers require long-term offline and online programs at regular intervals, for sustained competence-building. A separate agency should design, conduct, and evaluate the programs and their participants to cover all the teachers in the state.



# NEP 2020

## Position Paper – Linkage between School Education and Higher Education

(Detailed version submitted as the first document)

### Introduction

School education provides the learning foundation for the entire life's journey of an individual. With this being so important, school education should provide the right environment for the physical, intellectual, and emotional development of a child. The system should have extremely competent, passionate, and humane teachers who shower love and care for the development of the child's identity and positive growth. This is the core requirement of the teacher, particularly during childhood education. Learning at this stage should be part of fun and play, and should never deter the curiosity-driven exploratory trait of a child. The curriculum design should incorporate the requirements for cognitive development, starting with enabling concrete experiences, to attaining abstract reasoning by the time the child completes the school education. The child should also be able to think scientifically, and be able to understand one's interest and aptitude to identify what to pursue as one's career. A good learning system should help the learner to understand what to learn and how to learn. Pursuing any great coursework without understanding how to learn makes no sense. Hence, it is extremely important for the teacher to enable the child to gradually become a self-learner and acquire the confidence of learning one's requirement with reducing support from the teacher. Since learning is a lifelong process and no one can teach all the requirements of life in any school or college, enablement of the child's journey towards this direction should start at the school level.

In the state of Karnataka, the school system so far has a (10+2) year model, starting from Class 1, at the age of about 6 years, extending up to 18 years. The pre-school has been kept out of the purview of school education till now. Appreciating the critical development of the child in the pre-school stage, which impacts all the later learning, the New Education Policy has brought into the fold of school education, the 3 years of pre-school learning. The new policy envisages a 5+3+3+4 year model, starting from the age of 3 years to 18 years.

School education so far has been considered as general education that a student receives. School education has not been designed to enable the acquisition of skills leading to employment. A substantial percentage of students who complete 12 years of schooling, starting from class 1, and attain 18 years, are rendered with a lack of specific skills needed to be employed or carry out vocational trade.

Most individuals who complete school, pick up vocational trades for a living with near zero or no formal training, and therefore find themselves seeking jobs with sub-optimal skills and productivity. As a result, they find themselves at the receiving end of the job market, and having to deal with low wages and unsustainable jobs.

Those individuals who seek vocational training have to enrol for additional courses, such as the ITI, diploma, etc., to acquire specific skills leading to employability. Many of these courses neither provide universal recognition and acceptability, nor ensure adequate levels of skill for the individual. It might not be incorrect to say that school-level education has been in favour of those who want to pursue higher education. Reasonable levels of abstract knowledge, beyond what can be termed as functional education, are part of the schooling curriculum, particularly in classes 11 and 12. Since the curriculum at the +2 level has been reconciled primarily with the needs of the competitive exams in the recent past, it is also another indicator of favouring higher education seekers. It is also important to note that no such alignment in the school curriculum has been made to facilitate individuals who seek vocational skills or training.

Further, for a balance in the society in terms of availability of skilled human resource, there has to be an emphasis on quality vocational training as well as higher education. It has to be noted that both vocational skills and professional competence acquired through higher education are equally necessary for a balanced and self-sustaining society. Economic rewards, and social recognition, available through the two streams would be comparable in a mature society.

The secondary stage of school education proposed in the NEP provides the right opportunity to encourage and appropriately support students who seek employability through vocational skills, and those who seek to pursue higher education.

Further, the present school-level education system is trapped predominantly in a rote memory model, without enablement of higher-order thinking skills. Also, the rat race for qualifying in the competitive examinations has made students gobble up undigested food. The burden of the quantum of content at the +2 stage has made the situation worse. The ‘how much’ to learn has killed the ‘what and how’ of learning.

*“Learning is an experience. Everything else is just information.” – Albert Einstein.* The New Education Policy has therefore aptly suggested experiential learning through an inquiry-based approach as the model.

#### **a) Higher Education – Desired Scenario**

For the nation to spring back to its past glory and prosperity in all spheres, the domain of higher education should make great strides. This implies both the quality and diversity of

higher education. This is possible by raising the standards of learning with more hands-on experience and an inquiry-based approach. Extensive lab work in the case of science and engineering courses, and extensive field work and project-based courses are needed at the higher education level. The other important change in the higher education segment is the introduction of interdisciplinary learning, leading to creative, innovative and futuristic initiatives. There is a need to catch up with the progress made by the developed countries, and also to meet the challenges ranging from global warming to space exploration endeavors. This can only be achieved through basic research and translational research of the highest quality. A large number of universities which are, at present, mere teaching universities, have to transform themselves into research universities.

In this direction, universities and other research organisations should rise up, solve real life problems and get funded by industries. At the same time, it is the responsibility of corporate houses to engage with the educational enterprises of the country to work towards producing better human resource capital for their work and contribute to the economic progress of the nation.

#### **b) Vocational Education– Desired Scenario**

Much of the workforce today offering services based on vocational skills required for various segments of the society, such as construction, healthcare and nursing, hospitality, etc., have not had appropriate, structured and high-quality training. It is important to realise that human capital, with these skills, meet most of the needs of the society. The people required in the society in this segment outnumbers those with higher education qualifications. NEP recognises this problem and, identifying the need for organised vocational education to be part of the schooling system, aims to fill a big lacuna.

Vocational training, while primarily focussed on helping individuals acquire employability skills, should also enable entrepreneurship capabilities. A mature and self-sustaining society can create more jobs not necessarily through creating large enterprises, but through creating larger self-employment opportunities for both the urban and rural population.

High quality vocational training, which is a very important aspect recognised in the NEP, can help create trained human resource for societal needs. However, our schooling system which, so far, is biased in favour of higher education, has not provided the necessary importance for this significant type of education. Students who would otherwise thrive in vocational courses, feel left-out and inferior in the current curricular structure of schools. Due recognition, when given to the vocational courses, can increase creation of productive human resource and health of society.

The vocational courses offered as part of the schooling system should meet the following requirements: high-quality knowledge and skills, acquirable through participative learning for

the relevant segment, knowledge of the environment in which the skills can be deployed such as marketing & sales, basic finance, communication, etc.

## **Linkages**

Keeping the above points in view, deliberations were held by the team members to identify the factors that would best describe the context to arrive at the linkage parameters. Some of the primary factors are –

- In the present system, Class 10 would be the terminal stage for school education, whereas it is Class 12 in the proposed system.
- In the present system, no gainful employability is possible for students seeking jobs at the end of 18 years of schooling, in the absence of vocational skills and professional competence.
- Students have to face a scenario of writing several entrance examinations of different colleges, universities, IITs, IISc, IISERs, deemed-to-be universities, private universities, medical colleges, etc. These examinations are of different standards and contain different areas of study. There are also problems of exams being conducted at different locations, modes (offline/online), apart from the burden of prohibiting cost for students.
- The present system does not have a permanent academic governing body at the +2 level.
- There should be a single agency to ensure smooth and seamless transition from the school level to the higher education level. The requirements of higher education entry-level should be clearly communicated for implementation at the school level, and vice-versa. Such a system should be a dynamic one.
- There is absence of a permanent Quality Management Agency, to conduct pilot studies and evaluate the learning outcomes. Also, there is no mechanism as of now to look into issues like diversity, equality and inclusivity. The relevance of this is highly critical for implementing the NEP, since feedback, course-corrections, fine-tuning, etc., become essential for achieving the desired results.

The following linkages evolved out of the deliberations –

1. Course Linkage
2. Curriculum Linkage
3. Pedagogical Linkage
4. Administrative Linkage
5. Evaluation Process and Admission Linkage

## 6. Academic and Research Linkage

### 1. Course Linkage

The school education during Secondary Stage (classes 9-12) should consist of such subjects which can enable a student to choose either skill-based jobs or higher education, at the end of Class 12. Also, learning should be a comfortable exercise for the student and the focus should be on enabling skills, in addition to the content. A wide variety of choices should be available for a student to choose from, along with a few core subjects.

<b>Existing</b>	<b>Proposed</b>
1. A student can drop out at the end of Class 10, with a certificate.	1. A student can get a certificate only at the end of Class 12.
2. The core subjects, such as Mathematics, Science and Social Science, along with three languages, are taught till Class 10.  During the next 2 years of PU education, a student chooses a combination of 2 languages and 4 core subjects. With a subject chosen from the NSQF list, students can drop 1 language from Classes 9 to 12.	2. A student can choose from a variety of subjects right from Classes 9-12 to meet the requirements of either an early job opportunity, or for personal interest, or for higher education. This would help the students build creative capabilities.  Some of the subjects like science and mathematics may be required both for students pursuing vocational courses, or higher education. Students intending to pursue higher education need to learn the relevant subjects at greater depths and higher levels of abstraction. At the same time, students seeking vocational courses for employment have to acquire more functional knowledge of the subjects, more hands-on and application skills. Thus, it is imperative to offer a few subjects at multiple-levels relevant to the streams.  The vocational courses can vary based

	<p>on the requirements and the entrepreneurial opportunities in the region. For example: fisheries might be relevant in the coastal region, while tourism and hospitality can be relevant in other areas.</p>
<p>3. For Classes 1 to 10, the DSERT, with its subsidiaries DIET, BRC, CRC etc., performs the functions of academic planning, evaluation, and some action research. However, there is no such independent body at +2 level.</p>	<p>3. A single body should govern the academic aspects of the entire course of 5+3+3+4 pattern.</p>
<p>4. On completion of 2 years of PU education, a student pursues higher education by joining an undergraduate degree course of their choice. Most degree courses are stream-specific, and a few courses allow lateral entry. There are some 5-year degree courses, such as medicine, integrated law programs, management programs, integrated programs in IISERs, IITs, IIITs etc.</p>	<p>4. After Class 12, students have a greater flexibility to choose subjects of their choice in their undergraduate degree courses. Migration between vocational study programs and university programs is possible. This enables a seamless rise in both the content and competence acquisition. Students also get to study from a large pool of elective subjects.</p> <p>This enables multi-dimensional thinking, creative and innovative solutions, and opens up multiple career prospects.</p> <p>A student completing a vocational course during the secondary stage should receive a certificate of skills that is recognized for employment.</p>
<p>5. Towards the end of their +2 stage, students take competitive entrance exams to pursue CA, CS, ICWA etc.</p>	<p>5. In Classes 9-12, students can choose elective subjects which would strengthen their subject knowledge and skills to pursue courses of their choice in job-oriented courses/higher</p>

	education.
6. There are limited options for students to pursue fine arts, tourism, hospitality and other subjects, during their school education.	6. Students can choose such elective subjects right from Class 9.

## 2. Curriculum Linkage

Curriculum Linkages between school education and higher education should take into account the following factors:

- The curriculum development should be continuous, with a gradual increase in both the context and content
- The variety of subjects provided to the student should help acquire a multidisciplinary approach
- The curriculum development should incorporate acquisition of higher-order thinking skills needed for both skill-based, job-oriented courses and also higher-education seekers
- The curriculum development should also provide for advanced-level courses in chosen subjects needed for students with higher aspirations for their professional pursuits, through skill-based, job-oriented courses and also higher-education seekers
- During the last four years of school education, i.e. 9th to 12th standard, as part of curriculum, the students should be oriented on - choice of higher education courses, type of higher education institutions available, career opportunities available, an overview of employment market, contemporary and future skillset requirements, entrepreneurial opportunities in various sectors etc. This effort will enable the students at the finishing school stage to have better clarity and connectivity with higher education.

<b>Existing</b>	<b>Proposed</b>
1. There is little scope for pursuing learning in areas of interest and capabilities of a student	1. There is scope for choosing from a wide selection of subjects based on individual interests and capabilities leading to diverse skills and innovative pursuits.

<p>2. The subjects that students learn up to Class 10 helps them pursue their 2 years of PU Education comfortably, with the basic knowledge of mathematics, science, and social science. There is a curriculum linkage that exists at this stage. In their +2, students focus on selected subjects of study, which suits their higher education course needs.</p>	<p>2. Students will be allowed to choose a creative combination of subjects in Classes 9-12, where they will study a few core subjects, and a few subjects of their choice. Therefore, a mechanism to address this change, and adoption of the new model is needed.</p>
<p>3. Learning happens in the form of knowledge transfer.</p>	<p>3. Hands-on learning will happen during Classes 9-12, which will enable students to get more practical exposure, and become skillful and employable.</p>

There is a need for formation of a coordinating committee to establish linkages between the curriculum of school education and higher education. This initiative brings in continuity and bridges the gap between concepts and skill component of school education and higher education.

### 3. Pedagogical Linkage

Pedagogy is most commonly appreciated as a term for methods and practice of teaching. It encompasses the study of how concepts (or skills) are taught in an educational setting. In other words, pedagogy dictates how the teacher-learner relationship is structured and therein, how the teaching-learning process occurs. Choosing a pedagogy depends on factors such as the level of the learners, and the concept/subject to be taught.

For a given pedagogy to be effective, assessment/evaluation strategies should also be systematically identified. Irrespective of the level of instruction (school, college, or university), the most common pedagogy in India is seen to be the typical chalk-and-talk instructional approach, where the learner is a passive receiver of information conveyed by the teacher. However, this approach has been demonstrably ineffective, as it does not kindle the curiosity of the students or foster their higher-order thinking skills. Education researchers have been researching various pedagogical approaches, and the most successful method is the one which is student-centric and based on the constructivist theory of learning.

Pedagogies such as active learning, experiential learning, inquiry-based learning, project-based learning, etc., have been found to be very effective for teaching science and math at all levels of school education. For language and social science education, some of the commonly-used pedagogies are role-playing, storytelling, dramatization, communicative language teaching, experiential learning, form-focused teaching.

E-Teaching & Learning through AVRC & EMRCs (Audio Visual Research Centres) can be initiated by the Subjects experts from Higher Education Institutions to the Teachers and Students of School Education.

<b>Existing</b>	<b>Proposed</b>
<p>1. The Teaching-Learning Process (TLP) prior to the internet era at the school level was predominantly highly content-based. Some schools have now introduced digitally-enabled learning tools.</p>	<p>1. The pedagogical tools suitable for the learning stages will be chosen and used in the Teaching-Learning Process. Adequate use of technology should be brought into the school system, to achieve the defined goals through blended learning. The teaching learning process will aim to be child-centric.</p>
<p>2. Studies have shown that the impact of rote memory, practiced for so long, has resulted in more of information transfer, restricting learning to mainly the lower-order thinking skills. Higher-order thinking skills have not been built adequately into the school education.</p>	<p>2. The emphasis is on competency-based learning outcomes and making learning experiential in all the subjects. Models have been evolved based on the subjects, cognitive development of students*, and skills suitable for different levels. Students will be enabled to become self-learners.</p>

\*The following table indicates the proposed grade-appropriate pedagogical model:

<b>Student Grade</b>	<b>Proposed pedagogical model</b>
<p>Pre KG to Class 2 (5 years) Foundational Stage</p>	<p>Participatory and Joyful learning</p>

Classes 3 to 5 (3 years) Preparatory Stage	Pedagogy-based Content learning approaches
Classes 6 to 8 (3 years) Middle School	Exploratory learning approach
Classes 9 to 12 (4 years) Secondary School (the pedagogical approaches mentioned in the policy document may also be brought in here)	Content, Skill and Choice-based experiential learning and constructivist approach, which leads to higher education

*These are suggestions and not to be taken as universal.*

#### **4. Administrative Linkage**

Karnataka, unlike some states, has a (10 + 2) year program. In the light of the new education policy, the +2 program - called the PUC - has to integrate into the new model of (5+3+3+4) year scheme. This leads to a situation of an administrative machinery of merger which is a one-time task. Beyond this, there is a need for a permanent administrative set-up/agency to connect the school-level education system with higher education, consisting of both the skill based, job-oriented programs and the university programs. The requirements of the higher education system at the entry-level, and that of the school education system at its exit-level should seamlessly merge.

Also, the rapid advances of research in science and technology happening in different parts of the world, necessitates the need to quickly engage in putting up measures for an early change in the input quality of our human resource in the country. There is a constant need for the two stages of education to communicate with each other, for optimal performance of both. Such a body should be able to evaluate the human resource needs in the state, both in terms of the size and quality, and communicate with the education authorities at the national level. This would prevent a situation of both disuse and shortage of the human capital. It can function like what NASSCOM did to the IT industry in the country. SATS must be fetched from the school education system to the UUCMS (Unified university and collage management systems) of the higher education system. This will help track the academic history of a student and evaluate the progression as a function of the facilities, attention etc. This body can also work on planning and implementing a model for the career growth of a teacher. In fact, a conscientious, efficient, and passionate teacher starting at the school level should be able to move into a higher education system. The converse can also be enabled. This body

can also work on models for appraisal and mobility of teachers based on their performance as suggested in NEP rather than simply on the number of years of service.

## **5. Evaluation Process and Admission Linkage**

Admission to most of the higher education courses is based on competitive exams conducted at the national-level or state-level by government agencies or individual universities and institutions. Students after class 12 write one or more of these exams in the pursuit of admission into graduate-level courses. Lack of seamless integration between school and higher education has given rise to two major problems:

- a) A student is forced to write more than one entrance exam for admission to a desired professional course. Example: a student is likely to write exams like JEE, CET and a host of other exams conducted by various universities/colleges to seek admission to an engineering course. The schedules of these exams overlap, leaving students running helter-skelter. This creates tremendous stress on the student's learning, mental health, performance capability, apart from high cost and time inputs.
- b) The various competitive exams conducted have their own evaluation approaches, formats and norms. These are entirely different from the board exams conducted by the school boards/PU board. Admission to most higher education institutions do not consider the board exam marks at all, and some provide a weightage of 50% only. This has resulted in a scenario where students, through private coaching, have to prepare for competitive exams that the school doesn't prepare them for. This is a significant strain on the time, workload and expense for the student. Further, since the competitive exam score matters and not the board exam scores, the board exams have lost their importance.

A solution that fixes both these problems has to be evolved by creating an academic body that:

- a) seamlessly aligns the learning objectives of the schooling system and those that are evaluated by the competitive exams for securing admission to higher education
- b) aligns the evaluation approach adopted by the school system and those adopted for admission to higher education.

This committee believes that this is an activity that needs significant involvement. Additionally, a separate body consisting of representatives from school education and higher education has to be set up to evolve a solution that reconciles school-level learning and admission to higher education.

## **6. Academic and Research Linkage**

In school education, students should be encouraged with projects such as ‘Inspire’, DST-sponsored projects, etc. Such projects will motivate the children to develop interest in scientific research. Projects are effective learning tools for children.

In the new pattern, more scope should be created for hands-on and experiential learning, so that students acquire an exploratory approach through the learning exercise. This helps them acquire capabilities of solving real-life problems in the long run. The research institutes across the state should collaborate with schools. The corporate R&Ds should actively involve with the schools, and identify a few students in each school and encourage them to take up live projects connected with their curriculum. Science laboratories with state-of-art infrastructure should be established with corporate support through CSR funds, and children should be encouraged to spend reasonable time in such laboratories and get hands-on experience. Similarly, psychology labs, business labs, language labs, and so on, should be established to provide practical exposure to the children. In addition to science research projects, schools must create opportunities for students to involve in social research and innovation, which would not only expose students to societal challenges, but also inspire them to find solutions that cut across disciplines to address those challenges.

In the higher education sector, preparations are being made to establish a State Council for Research and Innovation (SCRI). A similar body at school level can be established to provide linkage to the body at the higher education level. Coordination between these two bodies will enable the students at the school-level, particularly the fast learners, to use the facilities in the higher educational institutions such as colleges/universities, and exclusive research labs. This can be an enhanced activity, particularly during the period of holidays for schools. School teachers should become part of this exercise of doing advanced experiments in such institutions to help students better. This, in addition, enables committed teachers to move up the career path.

There is no linkage between teachers working at the school-level and higher education-level. Also, there is no vertical advancement of teachers after 12th standard. So, it is proposed to create a career ladder after 12th standard for the teachers to get into higher education. Sharing of resources and research experiences between school teachers and higher education faculty members is required to connect both the domains. Also, Research and Development in Higher Education should include redefining and re designing of the curriculum, teacher capacity building and effective use of ICT and E-Learning and Teaching pedagogy.

### **Continuous assessment of school-level outcome and higher education input needs**

The expected outcomes of school education, in terms of knowledge and competencies of students, are being redefined consequent to the NEP. However, whether these are achieved to the levels needed for higher education institutions, has to be understood through in-depth and

consistent studies. This, done by research agencies, will help understand the situations and the changes required to enhance the quality of school education.

### **Alternate paths for gifted learners**

NEP recognises that students who have special competencies and interests in a specific realm should be provided opportunities to learn beyond school curriculum in the areas of their strengths. A scheme for identifying and nurturing such students, who are the likely thought-leaders in that domain, need to be established. A framework necessary for such students to be guided and mentored to excel in their areas of interest should be created. Universities, research intuitions, industries, and other centres of excellence should be co-opted for this purpose. Mentors may be identified to guide groups of such gifted students.

### **Recommendations**

1. An agency to oversee the following be created:
  - a. Approval of right infrastructure in the school system to ensure facilities for experiential research with special reference to creating appropriate labs
  - b. Monitor the implementation of the NEP to achieve the desired learning outcomes
  - c. Carry out a few pilot studies in the early stage to undertake course corrections
  - d. Enable the availability of the right learning resources
  - e. Strengthen good libraries (physical and digital) to make both students and teachers get driven towards the goals.
  - f. Evaluate the effectiveness of the implementation at regular intervals.
2. Upgradations to teachers' competencies be ensured by an agency:
  - a. Acquisition of the required competence is the criterion, and not just attending the training programs
  - b. Teacher assessment and incentivisation should be rigorous
  - c. Provision for teachers from higher education to teach school-levels during sabbaticals.
3. Establishment of a research organization, and tie-ups with R&D institutions
4. Establishment of a Quality Assurance body:
  - a. To primarily work on comprehensive, appropriate learning outcomes of the students, and move completely away from rote memory models
  - b. Carry out research to develop new evaluation techniques

- c. Enable smooth, stress-free admission mechanisms for students at higher education institutions.
5. As part of the curriculum, orientations on career opportunities, and various courses and institutions available for higher education, should be provided to students at the last stage of schooling in the 5+3+3+4 pattern. This will enable students to have a better understanding of their career goals, and better preparedness to rise to the expectations of the higher education needs.
6. In light of the proposal of the NEP 2020 to identify and categorize Higher Education Institutions (HEIs) as Type-I (Research Universities), Type-II (Teaching Universities) and Type-III (Degree Awarding Autonomous Colleges), students at the school-level should be aware of the new architecture of the Higher Education system of the country. Hence, an Institutional Linkage should be developed between schools and higher education institutions of different types. Regular interaction, sharing of information, and faculty & student exchange between schools and higher education institutions is suggested for better connectivity.
7. Coaching for various entrance examinations should be offered as part of school education. The pressure on the students and parents to join private coaching can be curbed by providing specialized coaching to the desired children in the school. This will groom them for the entrance examinations for various higher education courses, and competitive examinations for employment purposes.

## References

Findings from education research strongly indicate the need for incorporating research-backed pedagogical strategies that have a positive impact on student achievement in courses. The committee has vast personal and professional experience, which enriched the discussion, and consequently, the contents of the position paper. In addition, the team held several informal discussions with school teachers, principals, administrators, leaders, and their counterparts in higher education, in order to incorporate their inputs into the deliberations. Sustained literature review has been conducted, and earlier reports on the topics have been referred. The team has taken into consideration the essential features of these studies while preparing the position paper. Some of the reference documents have been mentioned below:

1. An Australian Government documents lists an ensemble of teaching strategies titled ['High impact teaching strategies'](#) along with their effectiveness, with reference links and a brief example for each strategy

2. An OECD research project called '[Innovative pedagogies for powerful learning](#)' lists six pedagogical methods across disciplines that include: Experiential learning, Blended Learning, Gamification, and Discussion-based teaching
3. McGill University: '[A teacher guidebook for experiential learning](#)'
4. A study titled '[Strengthening STEM Instruction in Schools: Learning From Research](#)' highlights key points to improve student achievements in high school.
5. A UK Government document on effective pedagogical methods titled '[What makes great pedagogy? Nine claims from research](#)'.