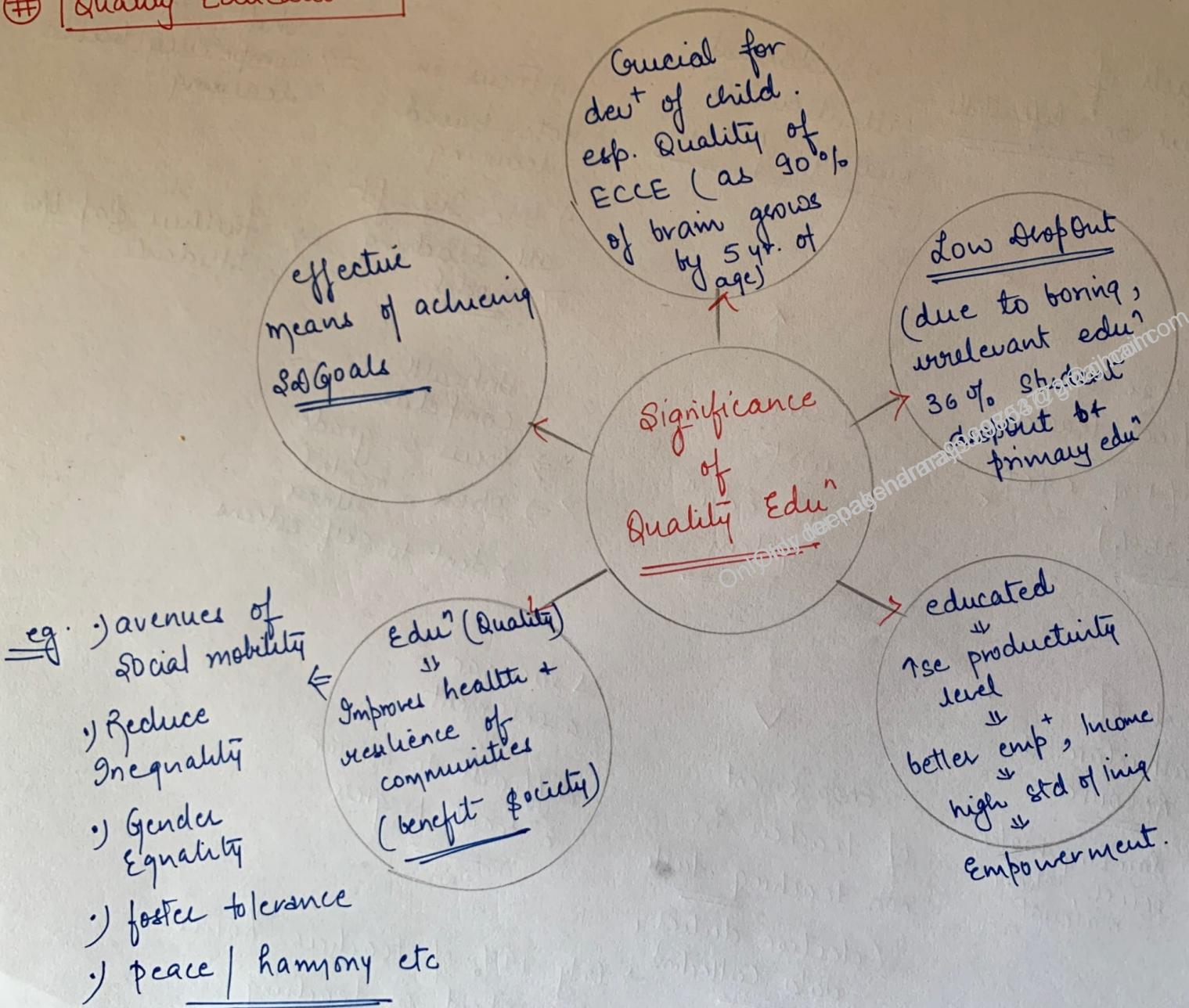
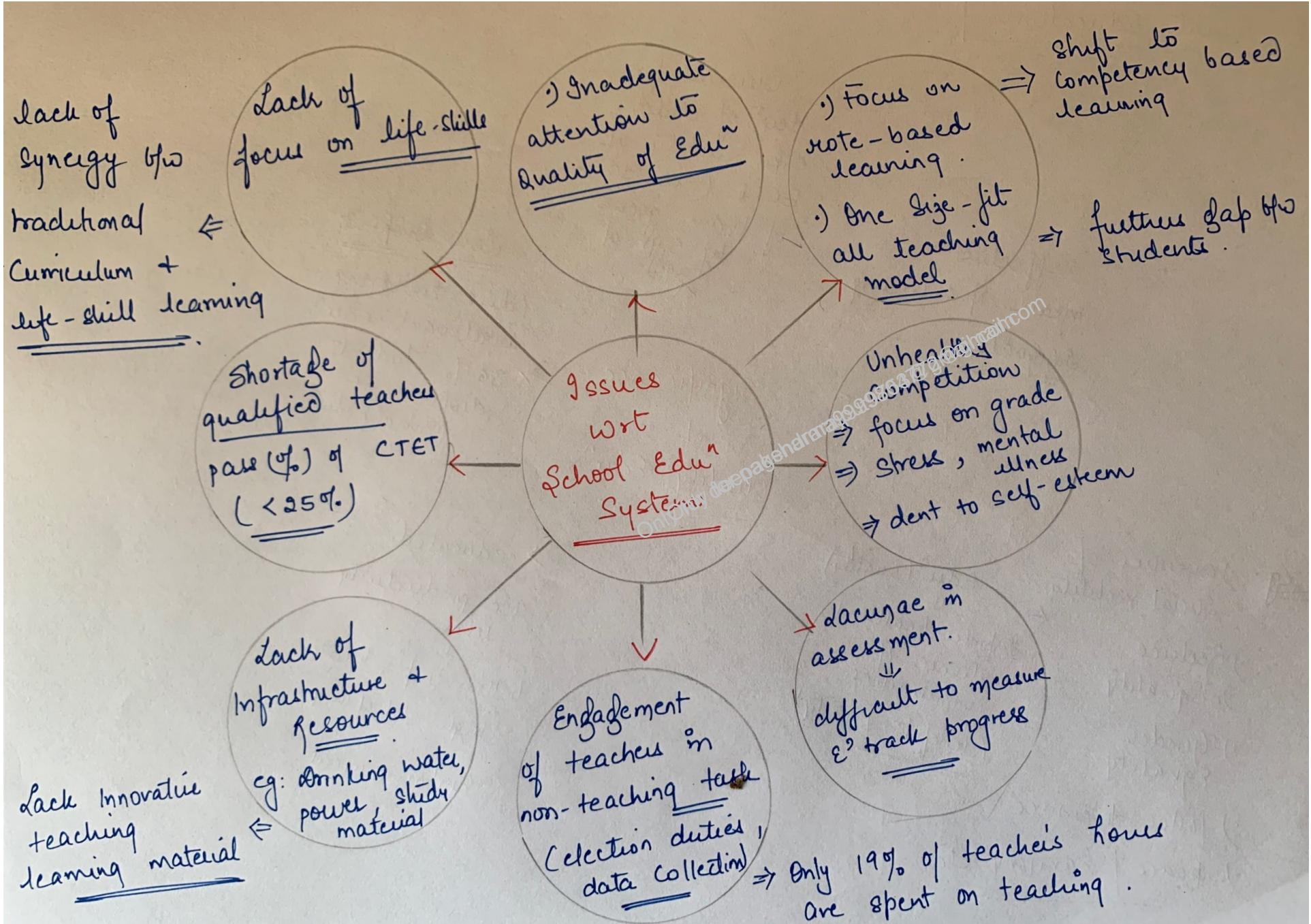


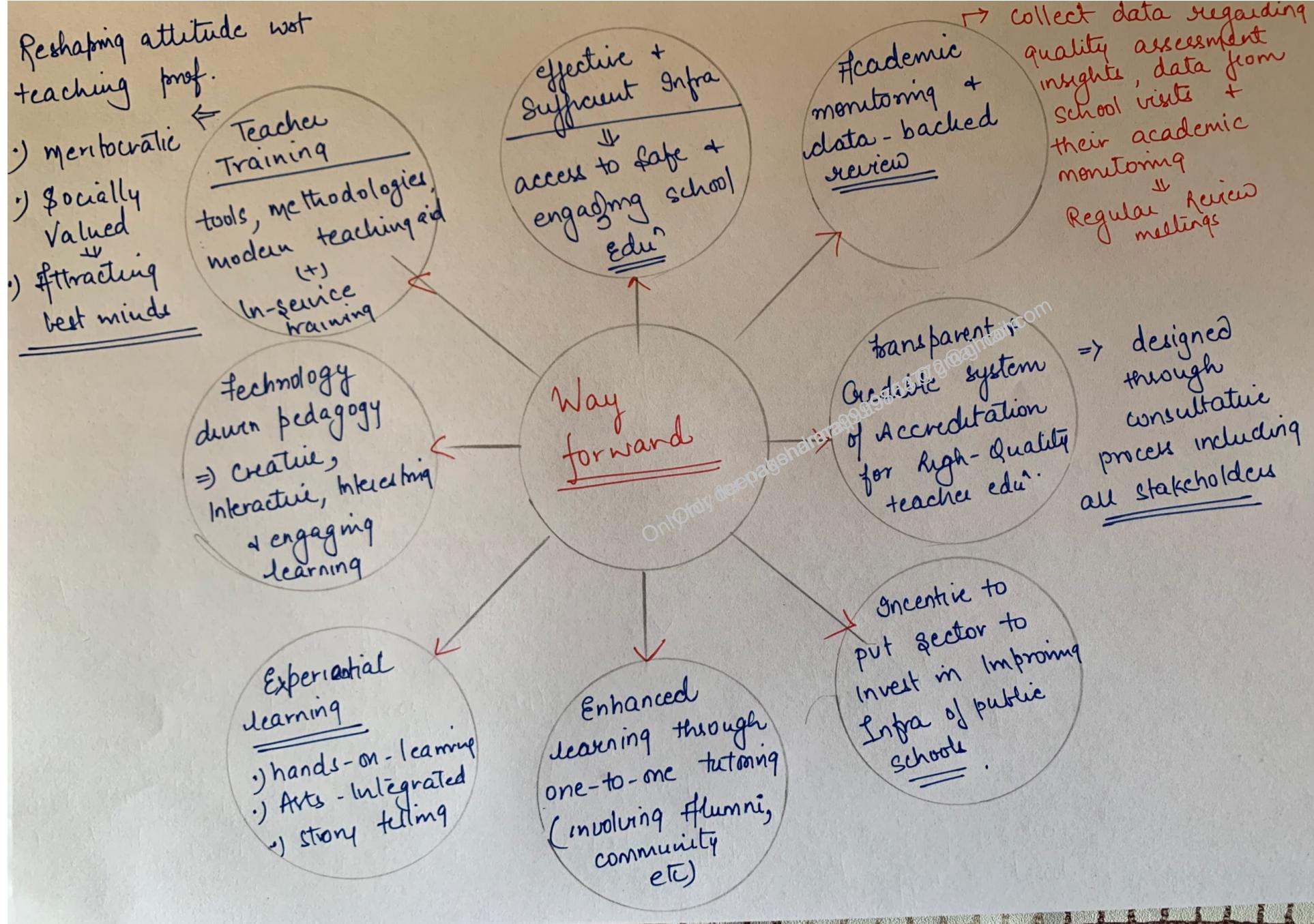
Only deep learning  
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Only deep learning



## Quality Education







- ↳ Household survey
  - ↳ Conducted annually since 2005
  - ↳ One-on-one oral assessment
  - ↳ Includes both in-school & OoS children
  - ↳ It focuses on basic skills
    - ↳ Reading
    - ↳ Maths
  - ↳ Ltd to Rural areas
  - ↳ Citizen-led Survey.
- # National achievement Survey

- ↳ School-based survey
- ↳ pen-paper test
- ↳ It considers children enrolled in govt & govt aided schools
- ↳ It looks at wider variety of skills
- ↳ conducted in both rural & urban areas
- ↳ conducted by NCERT

*The 2023 survey focused on an older group of 14-to-18-year-old children, specifically on their ability to apply reading and math skills to everyday situations, and their aspirations. It also sought to capture their access to digital technology, and whether they possess the skills to use it.*

*The ASER 2023 ‘Beyond Basics’ survey was carried out among 34,745 young respondents in 28 rural districts in 26 states, including two districts each in Uttar Pradesh and Madhya Pradesh.*

### **What did the survey seek to measure?**

We had four broad buckets to measure — activity, aspiration, awareness in general, and ability. When we surveyed the same age group in 2017, on the ability front, we did the basic survey on reading and arithmetic; this time there is also a mapping of how ready the children are for everyday activities.

We also added the digital component because a lot has happened in the last 4-5 years to allow for some self-reported questions, such as, ‘do you know how to use a cell phone?’ The survey also included doing some tasks with a phone, such as setting an alarm or searching for information online.

## **What are some key findings from the survey?**

- First, children in this age group are doing multiple things, even though that is not always captured by the education sector or the job market. Around 30% are already working, often for their parents.
- About **one in four children** in the 14-18 age group still **cannot read a Std II-level text fluently in their regional language**.
- Across **enrolment categories**, **girls do better than boys in this respect**.
- **More than half** struggle with division (3-digit by 1-digit) problems, a skill that is usually expected in Std III or IV.
- About **57%** can read sentences in English;
- more than **73%** among them can also tell their meanings.
- **Boys do better than girls in both arithmetic and English reading**.

- The digital component is interesting because, at one level, it shows that **everybody knows how to use the basic thing**. But they're not using it in depth; they're using the surface layer, say, mainly engaging with social media
- **About 90% of surveyed households had smartphones. Of the surveyed children, almost 95% boys and 90% girls could use a smartphone.**

Among those who can use a smartphone, **two-thirds reported using it for an education-related activity** during the reference week, such as watching online videos related to studies, solving doubts, or exchanging notes.

**Close to 80% reported using their smartphone for an entertainment-related activity**, such as watching a movie or listening to music.

**The majority of respondents in Class 11 or higher were studying humanities-related subjects**

## Key Findings

Parameters	Trend
Overall enrollment in age group 6-14	98.4%
Proportion of 15-16-year-old girls not enrolled	7.9%
Children taking Paid private tuition classes from 1 <sup>st</sup> to 7 <sup>th</sup> standard	30.5%
Reading ability of class 3	20.5%
Arithmetic ability (subtraction) of class 3	25.9%
Average teacher attendance	87.1%
Schools with drinking water available	76%
Schools with useable girls' toilets	68.4%

## # All India Survey of Higher Education Report

⇒ Who Publishes :- Ministry of Education

⇒ Key features :-  
    ) Annual web-based survey

    ) conducted since 2010-11

    ) It portrays status of higher edu<sup>n</sup> in India

    ) Conducted under Central sector scheme

    ) Higher Education statistics & public information system  
(HESPIS)

    ) Based on voluntary uploading of data by Inst<sup>n</sup>

    ) Covers Inst<sup>n</sup> categorized into 3

        ⇒ Universities

        ⇒ College / Inst<sup>n</sup>

        ⇒ stand alone Inst<sup>n</sup> (Run diploma level Prog)

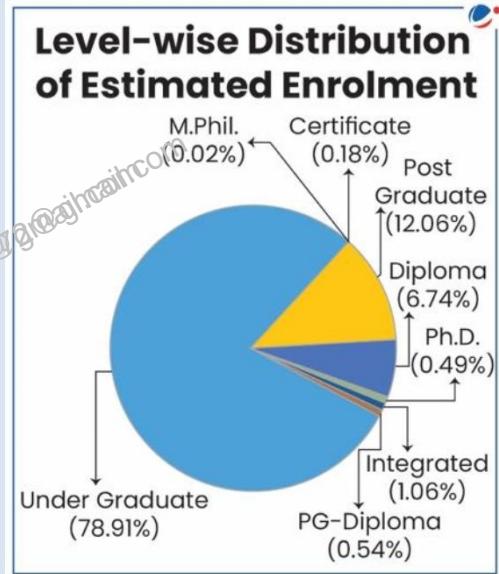
## About the All-India Survey on Higher Education (AISHE)

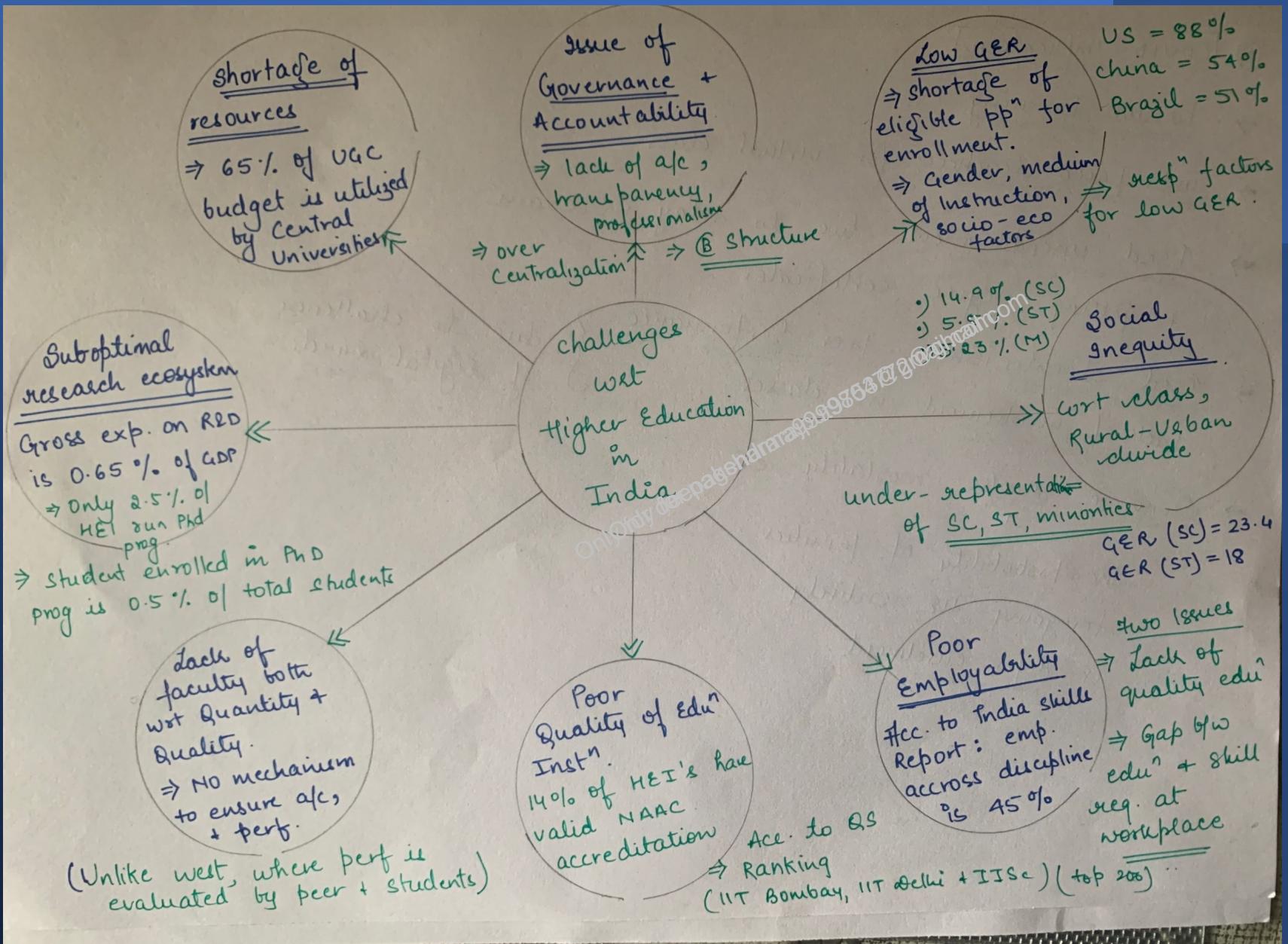
- The All-India Survey on Higher Education (AISHE) was initiated in 2011.
- The survey has been conducted since the XII Five Year Plan under the scheme Higher Education Statistics and Public Information System (HESPIS).
- The Survey intended to cover all the Institutions in the country engaged in imparting Higher Education.
- For the first time, all the major Stakeholders in Higher Education, such as the University Grants Commission, All India Council for Technical Education, Medical Council of India as well as State Governments participated in the data collection exercise.
- The entire survey was conducted through Electronic Mode and a dedicated portal was developed for this purpose.

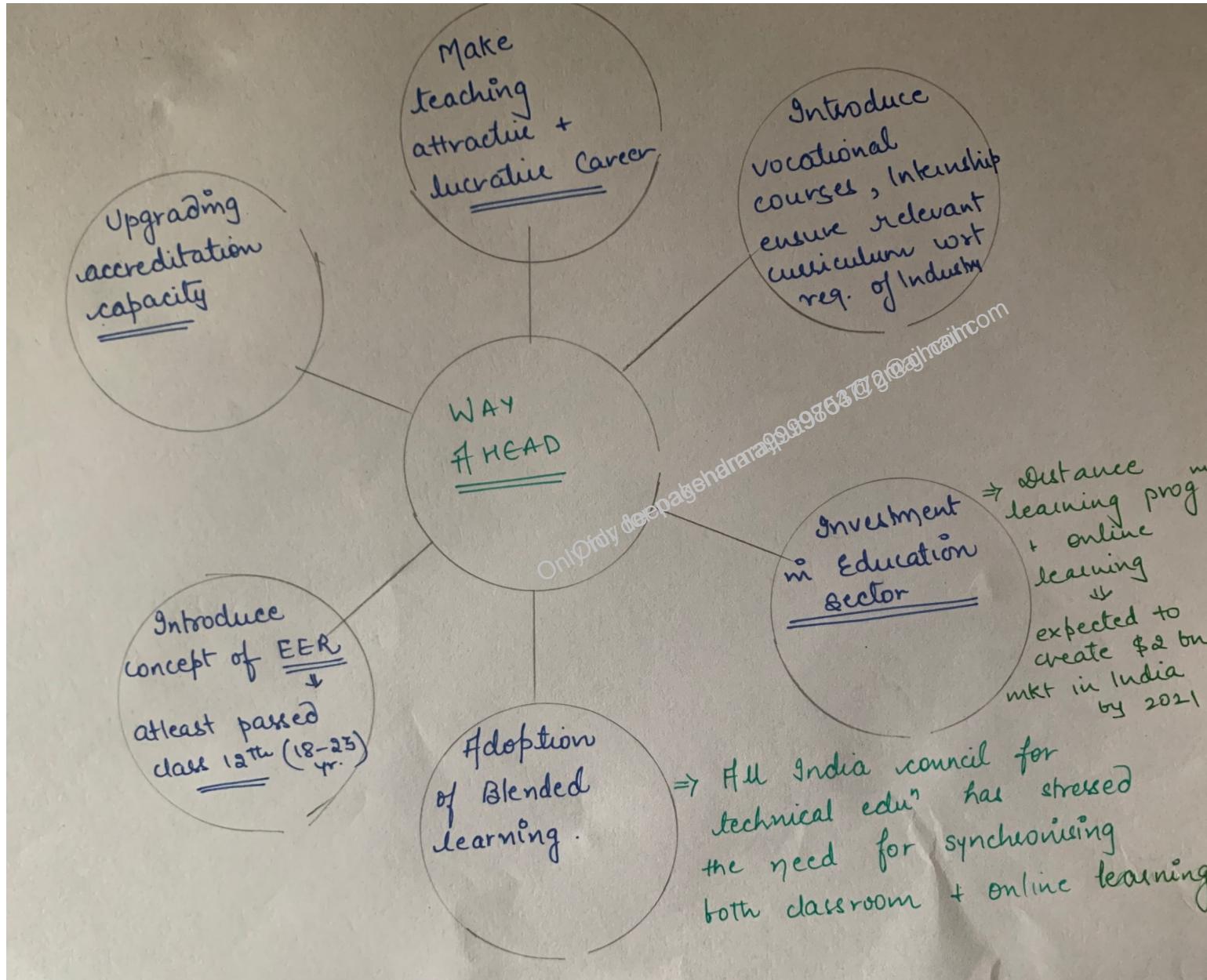
The Institutions, under AISHE are classified in the following three broad categories: -

- **University/University Level Institutions:** - The Institutions which are empowered to award degrees under some Act of Parliament or State Legislature.
- **Colleges/Institutions** which are not empowered to provide degrees in its name and therefore are affiliated/ recognized with universities.
- **Stand-alone Institutions (not affiliated with universities):** These Institutions generally run Diploma/PG Diploma level programmes for which they require recognition from one or other Statutory Bodies. E.g. Polytechnique.

<b>Number of Institutions</b>	<ul style="list-style-type: none"> <li>The total number of Universities / University level institutions registered is <b>1,168</b>, Colleges <b>45,473</b> and <b>Standalone Institutions 12,002</b>.</li> <li>17 Universities (of which 14 are State Public Universities) and 4,470 Colleges are exclusively for women.</li> <li><b>Government Universities constituting 58.6% of total Universities</b>, contribute 73.7% of total enrolment, Private Universities account for 26.3% of total enrolment.</li> </ul>
<b>Student Enrolment</b>	<ul style="list-style-type: none"> <li>The total enrolment in higher education has increased to nearly <b>4.33 crore in 2021-22 from 4.14 crore in 2020-21</b>. <ul style="list-style-type: none"> <li>The estimated Gross Enrolment Ratio (GER) in Higher Education for the age group 18-23 years in India is 28.4.</li> <li>GER in HEIs is significantly low as compared to the global average of 40%.</li> <li>For Scheduled Caste and Scheduled Tribe students, the GER is 25.9 and 21.2 respectively.</li> </ul> </li> <li><b>Gender Parity Index (GPI)</b>, the ratio of <b>female Gross Enrolment Ratio (GER)</b> to male GER is <b>1.01 in 2021-22</b>. <ul style="list-style-type: none"> <li>GPI has continued to be above 1 since 2017-18 i.e., female GER continues to be more than male GER for fifth consecutive year.</li> </ul> </li> <li>Undergraduate level enrolment is highest in <b>Arts (34.2%)</b>, followed by <b>science (14.8%)</b>, <b>Commerce (13.3%)</b> and <b>Engineering &amp; Technology (11.8%)</b>.</li> </ul>
<b>Infrastructure for Institution</b>	<ul style="list-style-type: none"> <li>Availability of different infrastructural facilities in HEIs in 2020-21: <ul style="list-style-type: none"> <li>Libraries (97%)</li> <li>Laboratories (88%)</li> <li>Computer centres (91%, 86% in 2019-20)</li> <li>Skill Development Centre (61%, 58% in 2019-20)</li> <li>Connectivity to National Knowledge Network (56%, from 34% in 2019-20)</li> </ul> </li> </ul>
<b>Representation of Foreign Students</b>	<ul style="list-style-type: none"> <li>India hosts 46,878 foreign students, with <b>Nepal leading at 28%</b>, followed by <b>Afghanistan at 6.7%</b>.</li> <li>The highest number of foreign students are enrolled in <b>Undergraduate courses, (74.8%)</b> followed by <b>Post Graduate courses (15.8%)</b>.</li> </ul>







## 6.2. NATIONAL CURRICULUM FRAMEWORK FOR SCHOOL EDUCATION (NCF-SE)

### Why in the news?

**Ministry of Education** recently released NCF-SE, which was prepared by the National Council of Educational Research and Training (NCERT).

### About National Curriculum Framework for School Education (NCF-SE)

- NCF-SE aims to positively transform the school education system of India through positive changes in the curriculum, including **pedagogy**.
  - **Pedagogy** is the method and practice of teaching used in classrooms by the Teacher to help students learn.
- It is the **curriculum framework for the 5+3+3+4 design of schooling** as proposed by the National Education Policy 2020 (NEP 2020).
- The **NCF-SE was last revised in 2005**, and the existing sets of NCERT textbooks were prepared using it.
- The **National Steering Committee**, under the chairmanship of **Prof. K Kasturirangan**, was formed to create a **curriculum aligned with the NEP 2020**.
  - NEP 2020 recommended the formulation of a new and comprehensive **NCF-SE** and **State Curriculum Frameworks (SCFs)**.

## National Education Policy 2020

### Aims

- At increasing the public investment to reach **6% of GDP** at the earliest.
- Increase the GER to 100% in preschool to secondary level by **2030**, whereas GER in Higher Education, including vocational education, from 26.3% (2018) to **50% by 2035**.

### Features

- New Curricular and Pedagogical Structure (5+3+3+4)
- Ensuring **Universal Access at All** Levels of schooling from pre-primary school to Grade 12.
- **Setting up of a new National Assessment Centre, PARAKH** (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development).
- A separate **Gender Inclusion fund** and **Special Education Zones** for disadvantaged regions and groups.

## New Academic Structure



- ◆ New pedagogical and curricular structure of school education (5+3+3+4)
- ◆ 3 years in Anganwadi/pre-school and 12 years in school

### Secondary Stage(4)

4 Years (Class 9 to 12)  
(Age 14-18)

Multidisciplinary study, greater critical thinking, flexibility and student choice of subjects.

### Middle Stage(3)

3 Years (Class 6 to 8)  
(Age 11-14)

Experimental learning in the sciences, mathematics, arts, social sciences, and humanities.

### Preparatory Stage(3)

3 Years (Class 3 to 5)  
(Age 8-11)

Play, discovery, and activity-based and interactive classroom learning

### Foundation Stage(5)

2 years (Class 1 & 2) (Ages 6-8)  
3 years (Anganwadi/  
pre- school/Balvatika) (Ages 3-6)

Multilevel, play/activity-based learning

## Key Highlights of NCF-SE

- **Curriculum framework:** NCF-SE designed it in a 5+3+3+4 (in terms of ages) for schooling in place of the present schooling structure of 4 stages.

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- **Existing four stages based on age groups:** Foundational Stage for ages 3-8, Preparatory Stage for ages 8-11, Middle Stage for ages 11-14, and Secondary Stage for ages 14-18.
- **Board examinations:** For Grades 10 and 12, all students will be allowed to take Board examinations **on at least two occasions** during any given school year, with only the best score being retained.
- **Pattern of study:** should move to a **semester design** instead of an annual exam.
- **Multilingualism and Indian Languages:** All students are to be proficient in at least three languages, at least two of which are native to India.
- **Flexibility and Choice in the Secondary Stage:** No hard separations between academic and vocational subjects or between science, social science, art, and physical education.
  - Students can choose interesting combinations of subjects to receive their **school-leaving certificates**.

- **Vocational Education:** Proposes engagement in the three different forms of work – work with life forms (agriculture, animal husbandry), work with materials and machines, and work in human services.
- **Rooted in India:** Contributions to the knowledge in various disciplines by Indians from ancient to contemporary times have been integrated into the curricular goals of all school subjects.
- **Capacities for Scientific Inquiry:** Science Education emphasises the development of capacities for scientific inquiry along with acquiring knowledge of fundamental theories, laws, etc.
- **Interdisciplinary Areas of Study:** It has been introduced as a separate subject of study in the Secondary Stage.
- **Environmental Education:** It is given due emphasis across all stages of schooling, culminating in a separate area of study in the Secondary Stage.
- **Other features:**
  - Renewed emphasis on **Art and Physical Education & Well-being**.
  - Principles to ensure **equity and inclusion in all its aspects**.
  - Multidisciplinary education to develop an integrated and holistic perspective and learning.
  - **School culture and practises** are to be developed

## **Need of NCF-SE**

- **Contemporary Framework and National Standard across India:** Enabling harmony and cogency in school education across Indian states while recognising that **school education is the domain of states.**
- **Knowledge-based approach:** The current educational system is focused on creating exam-focused individuals rather than fostering a knowledge-based approach.
- **Improving Quality of Teachers:** The curriculum for the specialisations within the Integrated Teacher Education Programme (ITEP) is based on the curriculum and pedagogy of the NCF to improve the quality of teachers.
- **Involving new techniques:** Such as reading and writing on screen-based devices, are the rising norms among people.
- **Holistic growth of Students:** The curriculum for the four stages of schooling is designed based on considerations of child development, conceptual development, and the appropriate modes of inquiry at each age range.

## Concerns with NCF-SE

- **Over-centralised curriculum design:** As it is contrary to the **concurrent nature of education in the federal structure** and the role of states in ensuring cultural diversity and equity.
- **Logistical challenges:** Conducting the Board exam twice a year requires a feasibility and logistics check.
  - Also, students might get under stress twice due to the board exam in the same year.
- **Manpower shortage:** Low availability of language teachers, and manpower shortage exists more in government and aided schools.
- **Limitation of Schools:** Many schools might not be in a position to offer the entire range of disciplines in Grades 11 and 12.

## Way forward

- **Higher education revamping** for syncing with the new framework enabling easier transformation from school.
- **Stopping Discriminatory and Exclusion practices in Schools** which hampers the student's ability to choose the subject as per his/her choice.
- **Improving student-teacher ratio:** According to the Ministry of Education, in Primary Schools, the pupil-teacher ratio, which was at 43 in 2010-11, has come down to 26.3 in 2020- 21.

- **Increase in Public investment:** Total expenditure on education for the year 2020-21 is 4.64%. However, it is still below the target of **6% of GDP** under NEP 2020.

## ④ Pvt. Sector participation in Edu' system

- ) Premise :-
  - pvt sector steps in when govt has ltd resources to provide universal access to edu'.
  - In edu' sector, pvt sector is required to operate on not-for-profit basis.
  - pvt sector in edu' can fn in 2 ways :-
    - (a) Pvt finance Initiative :- long term contract, where there is significant asset ownership by pvt sector
    - (b) Contracting out :- offering specific asset investment by pvt sector

#

Need for pvt-sector participation

↳ India spends around 3% of GDP on edu' sector (less than) proposed 6%.

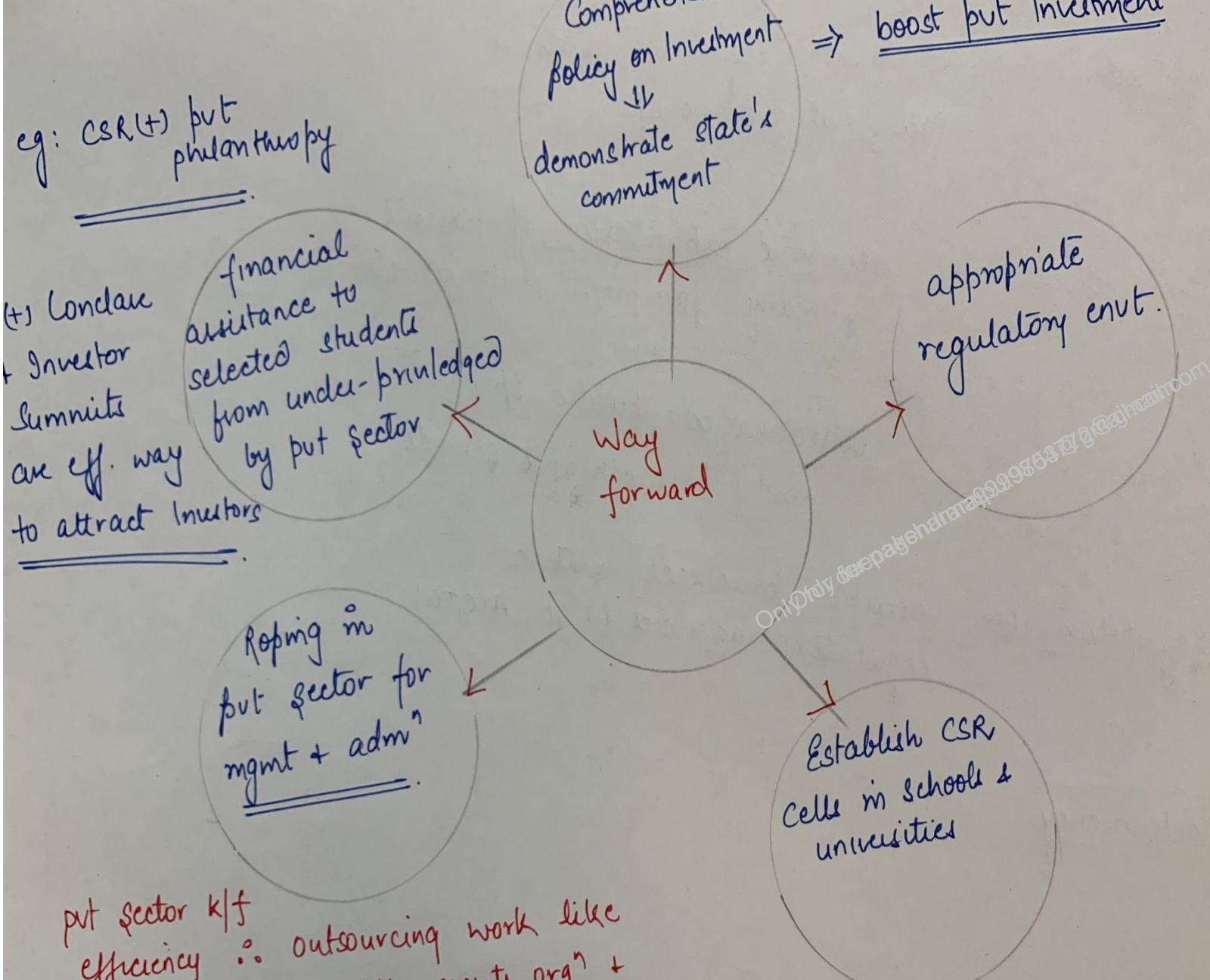
↳ pvt sector can instill fresh thinking into higher edu'.  
→ Improve quality of edu'

↳ Collaboration b/w Industry & academia is key to catalyze  
Innovation & growth in tech'gy.

↳ pvt philanthropy → financial resources  
(+) broader vision + mission  
to edu' system

## ④ challenges wrt put sector participation :-

- ↳ privatization of edu' ⇒ exclusion of poor, girls + marginalized groups.
- ↳ Commercialization of edu' ⇒ economic exploitation of parents by many for-profit put schools.
  - (+) discouraged public spirited put/ philanthropic schools.
- ↳ inefficient Regulation (+) corrupt practices within regulatory agencies (UGC, AICTE)
- ↳ issue of Black money



## ④ Edtech Sector in India :-

- ↳ #about :- ) Refers to 'Education Tech'  
↳ uses computers, computer program + edu system to provide  
learning + training to student + employees.
- ↳ Edtech Industry is expected to reach US \$ 4 bn by 2025
- ↳ ( $> 4530$ ) EdTech companies
- ↳ Major start ups in India : BYJU's, Unacademy, Toppr etc.  
Coursecraze, Udacity, Skissoft etc.

## Key categories of online education

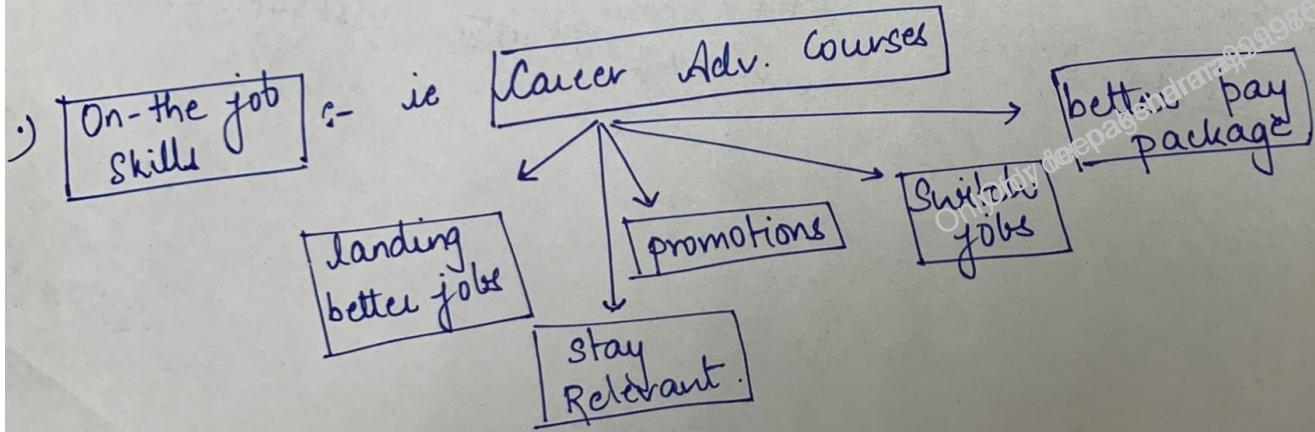
	Primary and secondary supplemental education	Supplement to school learning for students enrolled in primary and secondary classes in school
	Higher education	Provide an alternative to traditional higher education courses
	Test preparation	Online programmes aimed at coaching students in preparation for competitive examinations
	Reskilling and online certifications market	Courses designed to assist users in skill enhancement, which may result in certifications
	Language and casual learning	Learning of non-academic subjects such as spoken English and playing guitar



## ④ Advantages of Ed-Tech :-

- flexible learning option
- Cost-effective
- Gamification & Rise of Edutainment :-

Learning through games & puzzles make it easier for students to understand concept.



- It can help in supplement the [conventional model]
- It helps in breakdown of geog barrier
- access to high quality 'edu'.
- Supplement govt's digital push : 'Digital India' + 'Skill India' were launched to spread digital literacy, create a knowledge-based society + implement 3 principles 'access, equity, quality' of 'edu' policy.

## Need for Regulation :-

- ↳ Disruption to conventional learning (due to pandemic)
  - ↳ switched to digital or online models.
  - ↳ Crucial to be mindful of gaps in the digital exp.
- ↳ checking Cyber Threats :- To prevent Cyberbullying (+) monitoring content wrt suitability for minors ensuring protection of students from phishing scams. screening of teachers / instructors / content creators etc.
- ↳ Privacy policies of EdTech companies are indecisive + ambiguous & assume the consent & resp. lie with user.
- ↳ e-learning might restrict the development of social skills among students
- ↳ To protect rights of minors
- ↳ False promises made to parents (activation of auto debit features)
- ↳ delivery, less skills / reskilling of educators, standardization, implicit influence on career dec'.
- ↳ Biased content etc.

## ④ WAY FORWARD :-

- Need to explore the use of low-cost digital platform  
(eg: Kerala's neighbourhood study centres)
- Ensure adequate opportunities for social bonding
- Invest in emotional well-being of students
- Contact details of data privacy + legal offices of EdTech firms should be made available to end-users.
- facilitate awareness campaigns , conduct regular auditing  
(By govt. edu' deptt (+) edu inst")  
+ perf reviews of EdTech prog



## Artificial Intelligence in Education

↳ [PREMISE] :- "State of Edu" Report for : Artificial Intelligence in Edu"  
India, 2022

Released by UNESCO

- ↳ [ABOUT] :-
- It aims to guide stakeholders for leveraging AI in Edu'
  - Outline opp & challenges for AI in Edu'
  - 4<sup>th</sup> edition of Report

- ↳ [HIGHLIGHTS] :-
- India has highest relative AI skill penetration rate (3.09 times global average)
  - AI has contributed in Edu' to reach \$7.8bn by 2025 at a rate of 20.2% CAGR (Mkt for AI in India)
  - AI in Edu' ⇒ regular upskilling of teachers
  - It focuses on tutoring systems. ⇒ Comprehensive & personalized Intelligent

- .) India leads in terms of women with AI skills
- .) Women ac for  $\frac{1}{3}$  of AI-related scientific publication
- .) In 2018, India had world second largest AI talent pool  
(22% of women)



## Why in news?

Recently, UNESCO launched '**State of the Education Report for India, 2022: Artificial Intelligence in Education**'.

### Key highlights of the report

- **India's current status in AI**
  - India has the **highest relative AI skill penetration rate** (3.09 times the global average).
- AI in Education systems have **contributed to reach US\$7.8 billion by 2025 at a rate of 20.2% CAGR**.

### Challenges in the adoption of AI in the education sector

- **Lack of comprehensive policy** for integrating AI in the education sector.
- **Inadequate States capacity and human resources availability** to cope with the speed of innovation in the field of AI.

- Low expenditure on Education which is under 3.5% of GDP compared to a global average of 4.2%.
- Digital divide like 54% of the population in India does not use the internet.
- Ethics transparency possibility of algorithmic biases, digital or data colonialism

(controlling of data by a few countries), misuse of data generated.

#### Initiatives taken by India to Promote research in AI

- **Responsible AI for Youth:** It was created by the Ministry of Electronics & IT in collaboration with Intel India and the support of the Ministry of Education.
  - It is open to school students studying in classes 8-12 across India to foster a deeper understanding of AI-tech and encourage youngsters to become human-centric designers.
- **US-India Artificial Intelligence Initiative:** To foster AI innovation by sharing ideas and experiences, identifying new opportunities in research and development, and bilateral collaboration.
- **National Artificial Intelligence (AI) Mission:** It was launched by the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC).
  - It works with extensive academia-industry interactions on developing core research capability at the national level including international collaborations.
- **AI in Schools:** As part of the National Education Policy (NEP) 2020, AI will now be a part of the Indian school curriculum.

## Way ahead

- **A comprehensive State policy** to make India world's centre of AI innovation to have robust regulatory framework to prevent data misuses, ensure privacy and transparency.
- **Harness basic technologies in a smart way** like providing AI-powered learning tools via short messaging service (SMS).
- **Intelligent tutoring systems**, a computer-based learning system that uses AI to track student progress, and help them learn new skills.
- **Public-private partnership to strengthen AI training and research**, facilitate **sharing of material and financial resources**, aligning educational programmes with **labour market needs**.
- **Data anonymity and promoting algorithmic fairness by** data cleaning and editing before entering them to AI.