

EXPLOITING DIGITAL RESOURCES IN UNIVERSITY EDUCATION

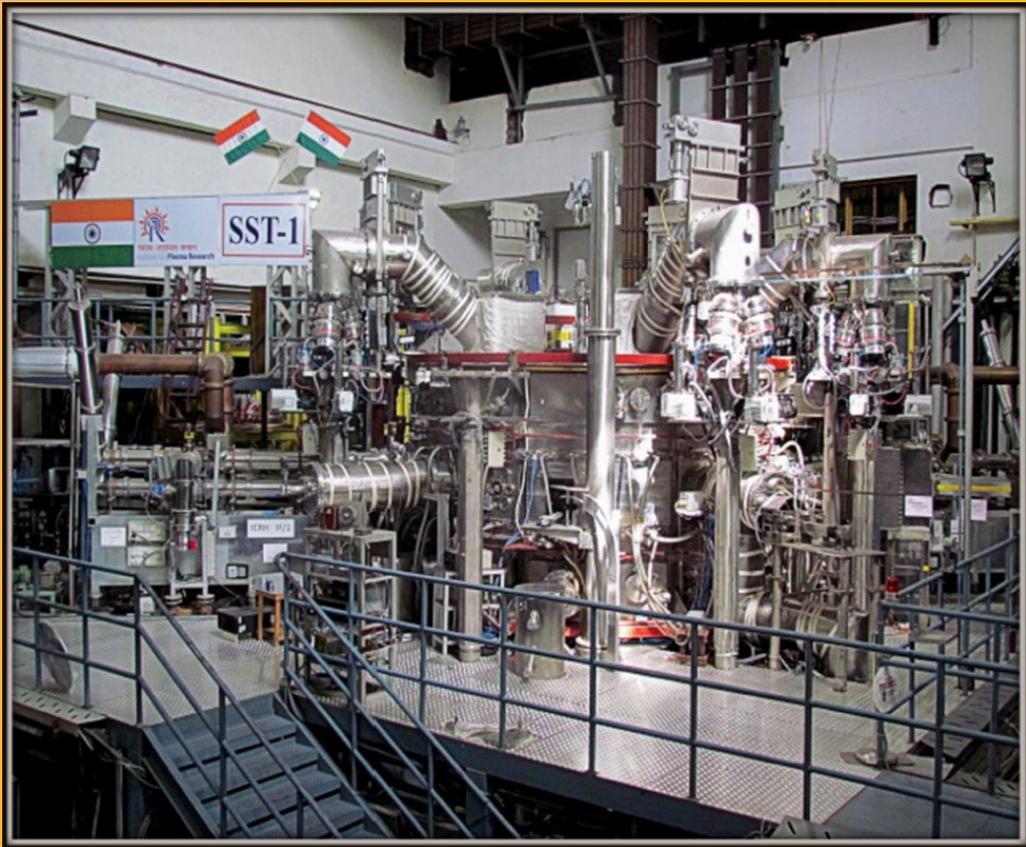
P. I. JOHN

**Orientation Lecture to New Students
Mahatma Gandhi University, Kottayam
Jan 6, 2021**



- **Institute for Plasma Research (IPR)**
- **Department of Atomic Energy**
- **National Centre for Plasma Physics**
- **Thermonuclear Fusion Research**
- **Industrial Applications of Plasma**





SST Tokamak



ITER-INDIA

ANTYA SUPERCOMPUTER

FCIPT



36 Million students in college
in a population of 1.3 Billion.

That is a less than 3 %.

You belong to a special class
because you are so rare.

I wish to congratulate you for
being that rare class of
people.

In India, just a quarter of youths aged 18-24 years go to college

India's Gross Enrolment Ratio
(GER) in higher education, %

GER total

25.8

Male

26.3

Female

25.4

TOTAL
ENROLMENT
36.6
million





Being so special, it goes without saying that you have to devote all your effort in learning what the college teaches you.

Your Advantage that people of my generation did not have.

I am referring to **the digital technology.**

This is the technology that has made laptops computers and smart phones possible.

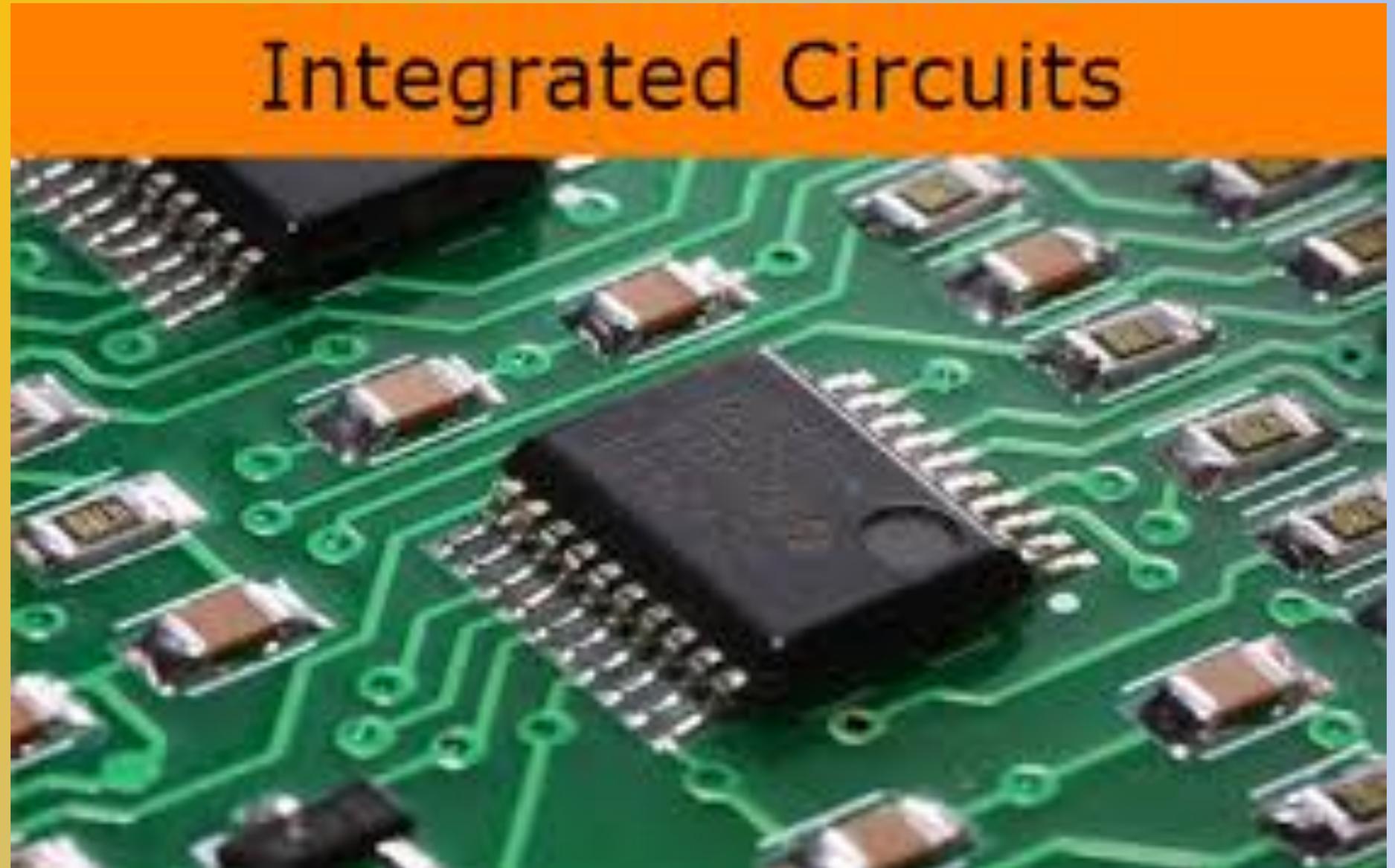
What I want to do in this talk is to show how these devices can empower your education.



Evolution of Digital Computing Power over the years.

Vacuum Tubes
to ICs

Millions of
Transistors

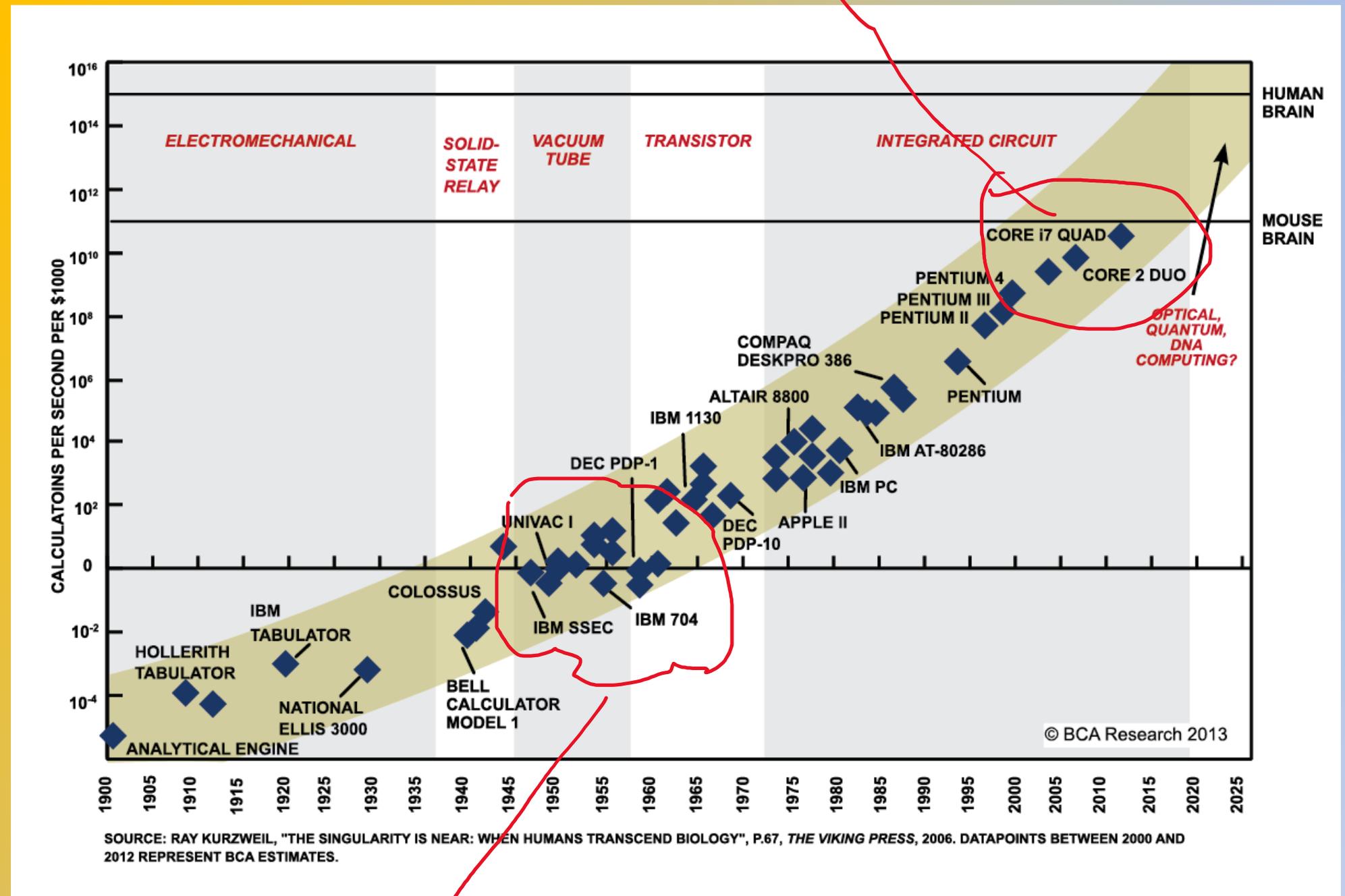


Scaling down the size of electronic components like transistors.

Doubling the number of components on an integrated circuit each year would steadily increase performance and decrease cost

Moore's Law

Gordon Moore
INTEL Corp



Today's smartphone is more powerful than the mainframe computer NASA used to send astronauts a to the moon.



Cray-2 Supercomputer of mid-1980.

The Apollo 11 computer had a processor which ran at 430 KHz. The latest iPhone's processor is estimated to run at about 2490 MHz.

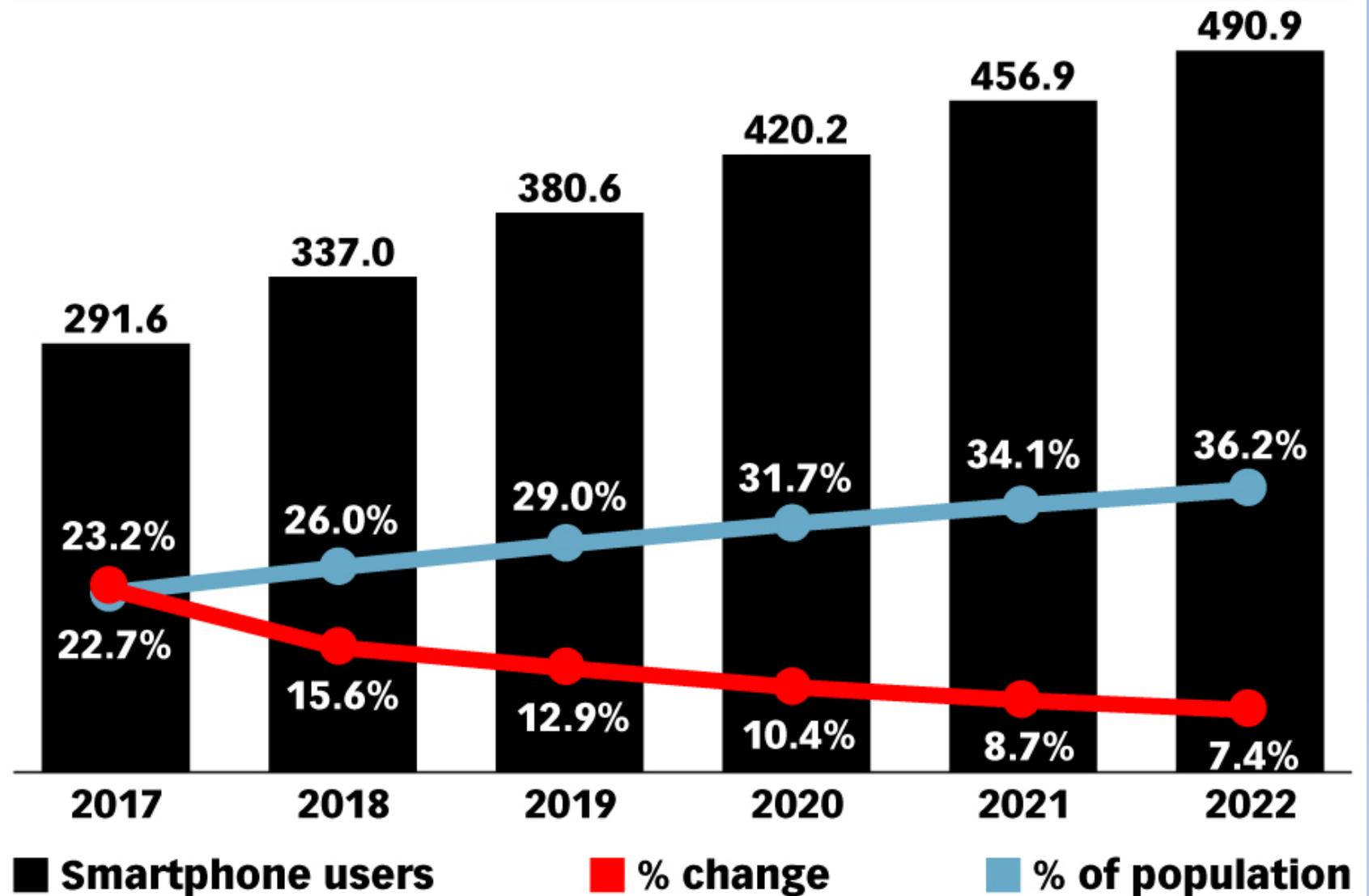
An advertisement for the OnePlus Nord smartphone. The ad features the phone in a dark gray color with the "Never Settle" slogan on the screen. Text includes "OnePlus Nord", "Pre-selling available at HomeOffice and select Digital Walker branches.", "09.08.20", "Gray Onyx 12GB + 256GB P25,990", and "18 Months Warranty".

Over 42 crore Indians are now using smartphones

Over 32 % Indians are now accessing wireless broadband through smartphones.

Smartphone Users and Penetration in India, 2017-2022

millions, % change and % of population



Note: individuals of any age who own at least one smartphone and use the smartphone(s) at least once per month

Source: eMarketer, April 2018

Can cell phone be an educational tool?

Ways Mobile Technology has Changed Modern Education System



The proliferation of smart-class technologies, where a classroom becomes a ‘connected’ entity, has also dramatically altered the learning experience.

Connected classroom, with access to the internet, a projector and sound capability, allow learners to learn through more immersive and entertaining ways;

Good for non-metropolis regions where students wouldn't have access to a great museum, or good libraries.

Students can now watch videos on their subjects, of their favourite speakers, take virtual tours of places-of-interest, watch lessons & demonstrations on key academic concepts.

Evernote



You can capture, organize and store digital information with your phone, web browser or laptop.

Evernote has apps for Android and iOS as well as desktop apps for Windows and OS X.

Can access through a web browser and use several different browser extensions to capture snippets of web pages





Samsung Notes

4.1.04.16

SAMSUNG ELECTRONICS CO., LTD.

You can easily jot down notes with Samsung Notes, an Samsung app.

This app can not only create plain text notes, but also notes with photos, audio files and even videos.

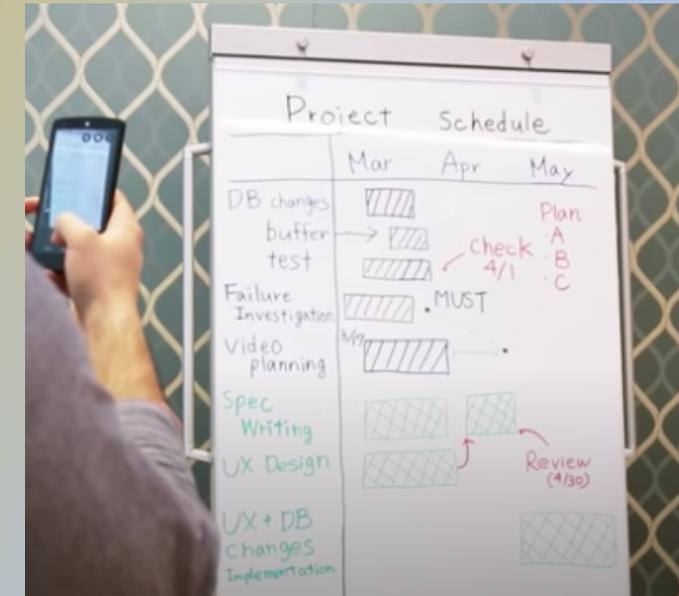
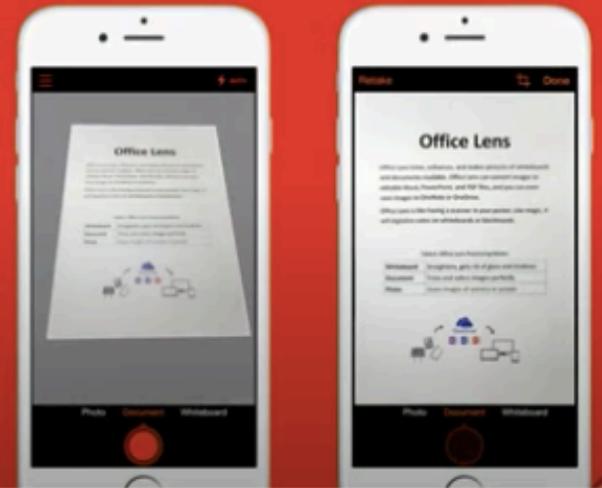
You can write or draw with your fingertip or a stylus.

Integration with Microsoft makes the notes accessible across all your devices.





You can use Office Lens to convert images to PDF, Word and PowerPoint files, and you can even save images to OneNote or OneDrive.



Office Lens can be synced with OneNote and OneDrive.

Office Lens allows you to make instant scans with the camera on their smartphones.

The app identifies the dimensions of the document you wish to scan, crop, and make the image crisp and tidy. Images on whiteboards can be turned into Word documents.

scanned documents such pictures, texts and whiteboards, can be saved with ease and efficiency.



Speech to Text app allows dictation of text messages instead of typing.

It uses speech to text voice recognition technology. It can learn your voice and dictation style because it has Artificial Intelligence tech.



If you select Email using the "Send"-button, a new email is automatically sent

Savings in time can be up to 80%.

Speechnotes is also excellent for speech to text application.



Google Drive

Keep everything. Share anything.



Google Drive is a useful cloud-based file storage and synchronization system.

Google Drive offers 15 GB free storage.

You can drag and drop files

Syncs your documents to the cloud automatically.

You can do file sharing, which is useful if you want to transfer large files.



Dropbox



OneDrive

Coursera Online Degrees Overview

Coursera offers hundreds of Massive Open Online Courses to anyone interested in gaining basic understanding of a wide array of topic and subjects. Courses offered is taught together with hundreds of universities and companies.

Since 2012, Coursera has been adding 6M new learners annually by offering innovative products - Courses, Specializations and now Degrees!



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TED helps expand the boundaries of thought and imagination for every single age.

Great for students, instructors can make use of TED for their classes.

TED provides some of the most empowering messages for my students.

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Provides options for connecting with student and professional communities associated with specific organization and institutions.

Photoshop, Lightroom, Illustrator, InDesign, XD, Premiere Pro etc.



Online PDF search engine that lets you search, preview and download e-books.

Over 75 million eBooks, magazines, articles, and more that are indexed and discoverable directly



Categories that include Business & Career, Art, Environment, Health & Fitness, Lifestyle, and Biography.



Editor's Pick and Most Popular that can help you find something.



Most of the global publications, New York Times to Economic Times; New Yorker to Manorama Week bring out a newsletter to which you can subscribe freely.

Can read what the world thinks in the confines of your study every day and be informed.

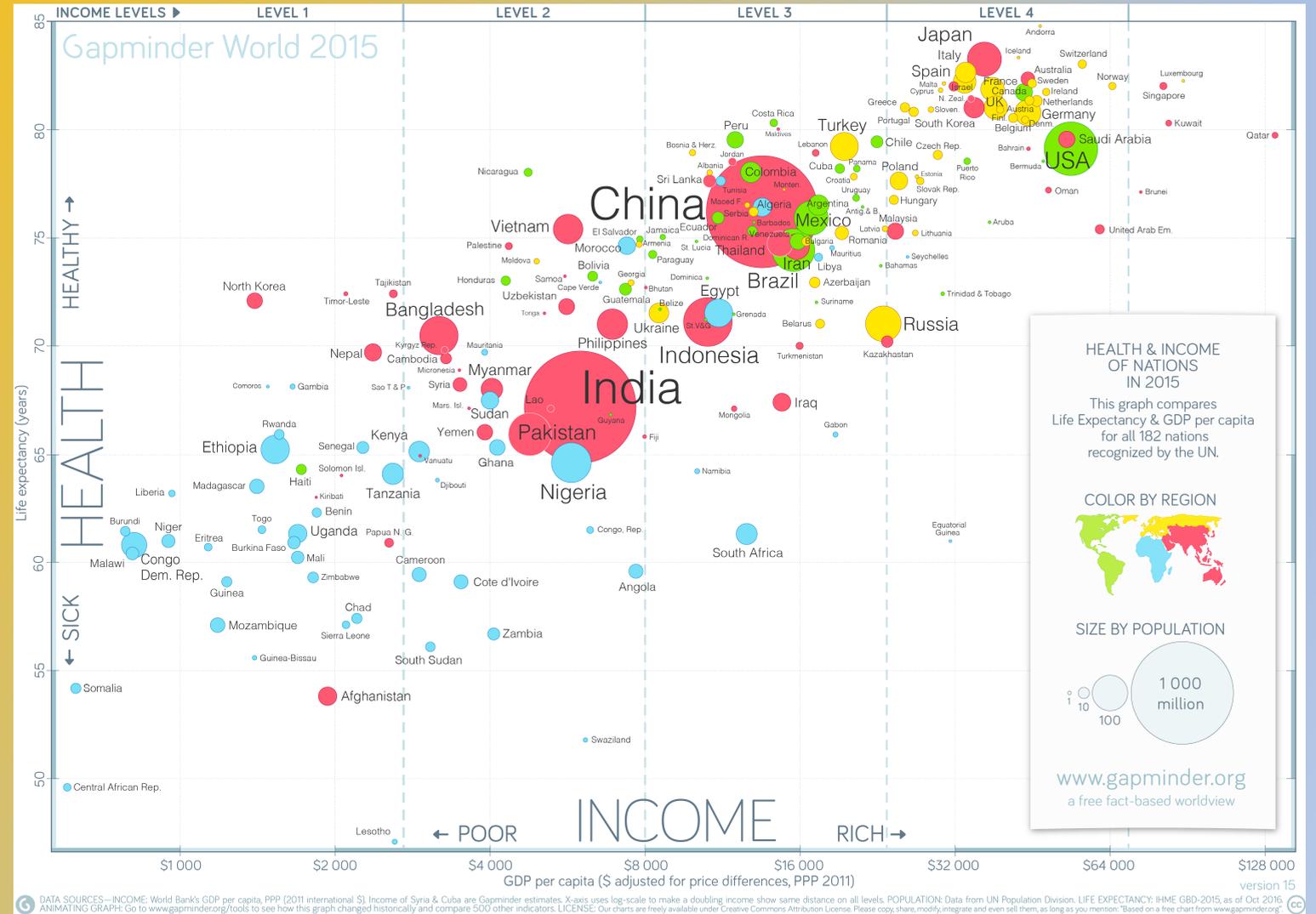
Gapminder

Hans Rosling.

Developed innovative data visualizations.

The bubble chart software Trendalyzer was acquired by Google in 2007

Global statistics from big data providers.



Life Expectancy and GDP

Visualization, Animation, and Simulation

Visualization, animation, and simulations are different ways of representing abstract concepts in an interactive way.

Dynamic visualizations show the progression of a concept along with the state changes.

A number of tools are available that support the creation of a wide array of visualization

Simulation is an advanced version of visualization where a complex model changes its state following user inputs and pre-determined rules

Simulations have been used in many areas of higher education ranging from social science to medical schools

CONCLUSION

Powerful digital tools are available to you at affordable prices because of the digital technology advancement.

World's libraries are open to you.

Your productivity is enhanced using note taking applications.

Carry your entire office with you with Google Drive.

Whatever you come across can be stored in Evernote for later reference. You can skill your self in any topic that you want. You can enjoy inspiring talks in TED talks.

If you are resourceful and creative, you will find many ways to use them to your advantage in education and life.

MG University can take an initiative in demonstrating practical means of adapting Digital Resources to enhance the quality of University Education both inside and outside classrooms.