The Pedagogical Potential of Tablets and Mobiles in Classroom Teaching

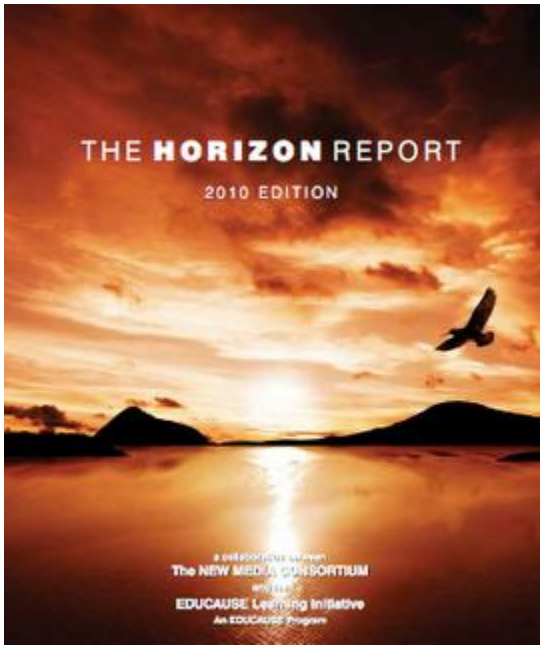
Prof. M.M. Pant

Emerging Innovations in Education: Horizon Report - 2010

- Mobile Computing (1 Year or Less)
- Open Content (1 Year or Less)

- Electronic Books (2-3 Years)
- Simple Augmented Reality (2-3 Years)

- Gesture-based Computing (4-5 Years)
- Visual Data Analysis (4-5 Years)



Horizon Report - 2011

- Electronic Books (1 Year or Less)
- Mobiles (1 Year or Less)

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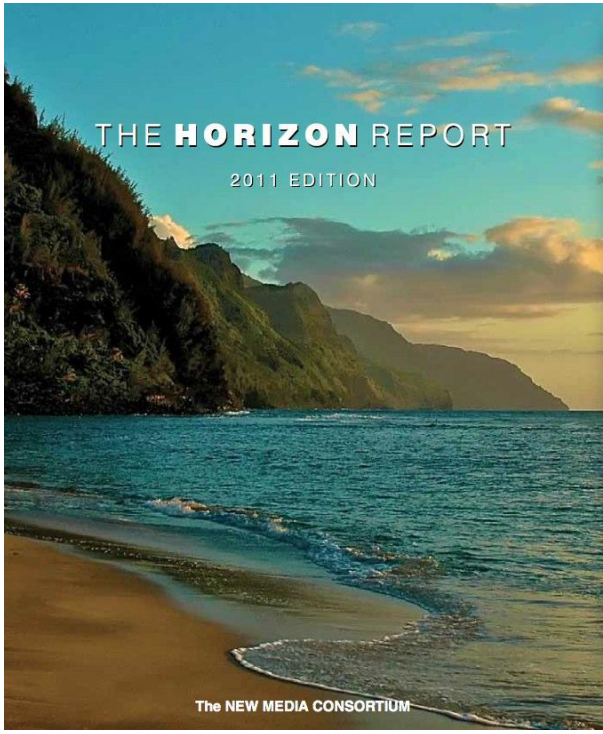
- Game-based Learning (2-3 Years)

- Gesture-based Computing (4-5 Years)
- Learning Analytics (4-5 Years)



Horizon Report - 2012

- Mobile Apps (1 Year or Less)
- Tablet Computing (1 Year or Less)

- Game-based Learning (2-3 Years)
- Learning Analytics (2-3 Years)

- Gesture-based Computing (4-5 Years)
- Internet of Things (4-5 Years)

RIL Plans to Offer 4G on Tabs

Company to launch tablets for Rs. 3500 and bundle it with data offers as low as Rs. 10 for 1 GB by 2012-end

File Sizes in Different Formats

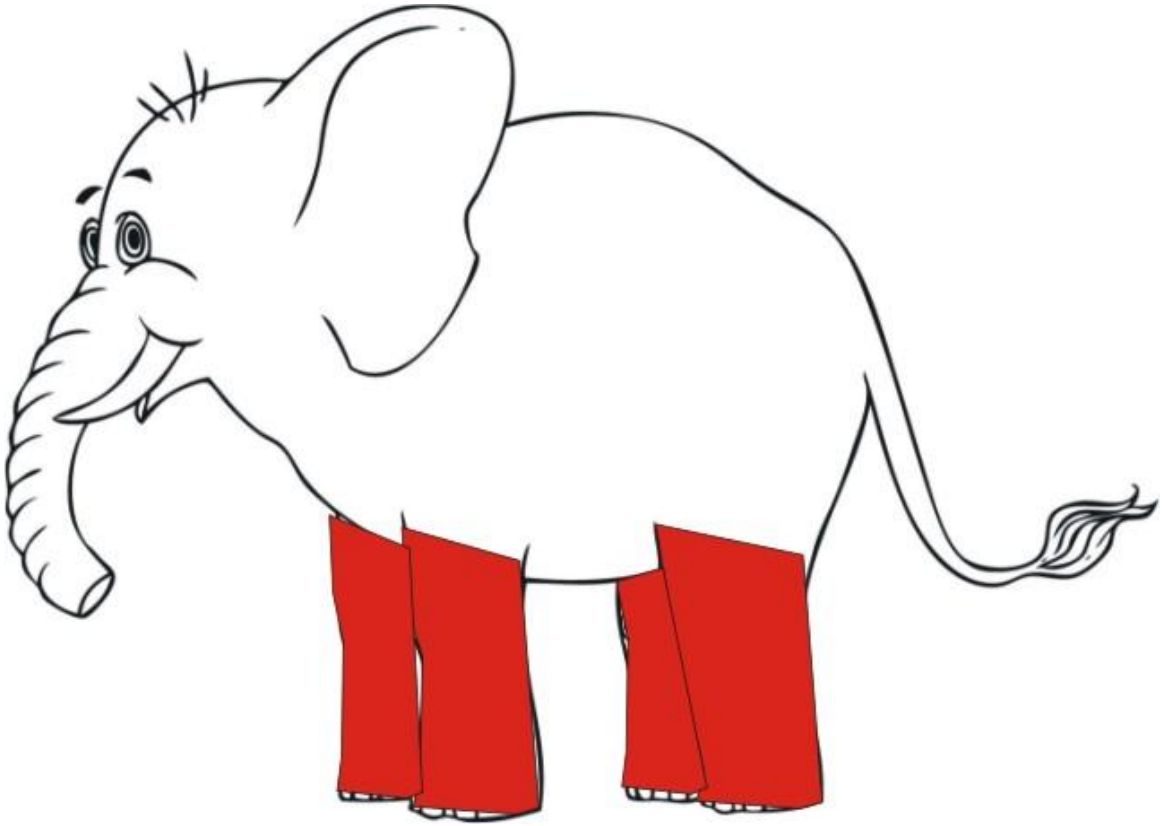
S. No.	File Type	Pages/ Duration	File Size (approx)
1.	Text file without any formatting	10 pages	12 kB
2.	Doc file without images	10 pages	40 kB
3.	Doc file with images	10 pages	150 kB
4.	PDF normal	10 pages	200 kB
5.	PDF with images	10 pages	500 kB
6.	Sound File - MP3	5 minutes approx	5 MB
7.	Photograph - (low res.)	1	100 kB
8.	Photograph - (high res.)	1	2.5 MB
9.	Flash Video	5 minutes	15 MB
10	Video (low res.)	5 minutes	500 MB
11	Video (high res.)	5 minutes	1 GB

Six Blind Man and Elephant

1st Man

"Hey, the elephant is a pillar,"

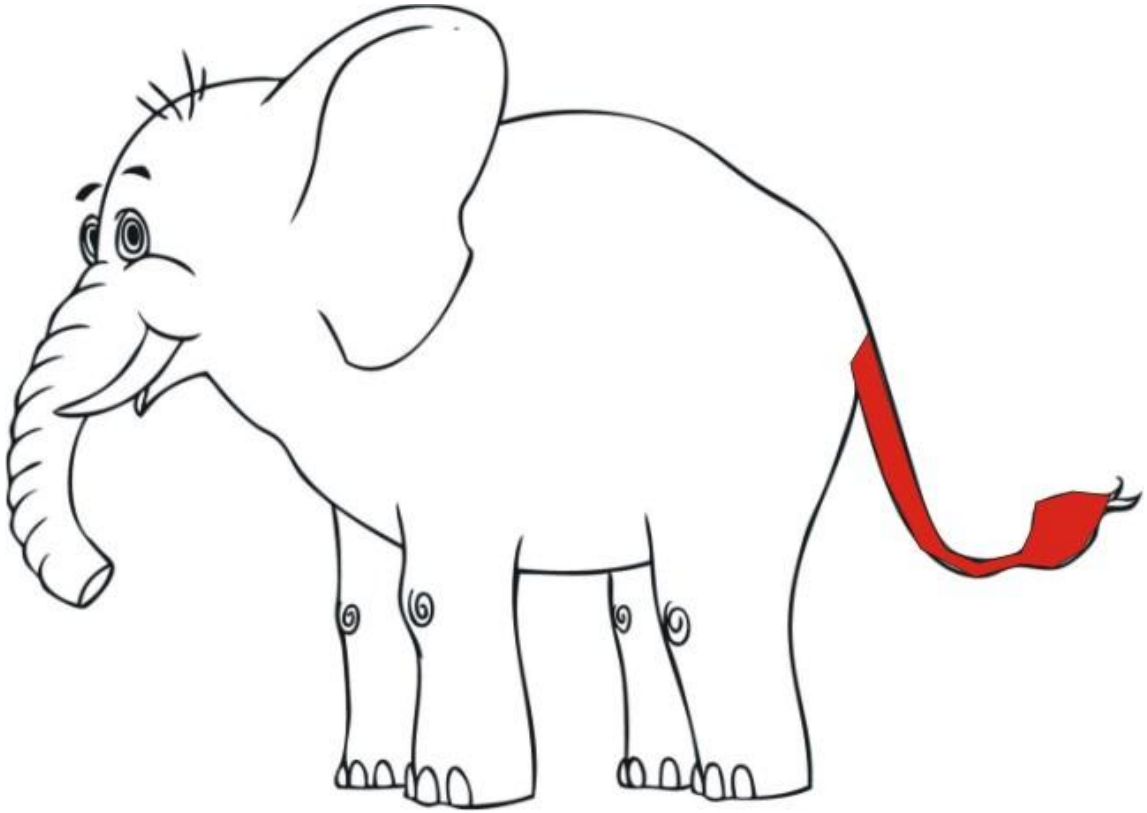
— said the first man who touched his leg.



2nd Man

"Oh, no! it is like a rope"

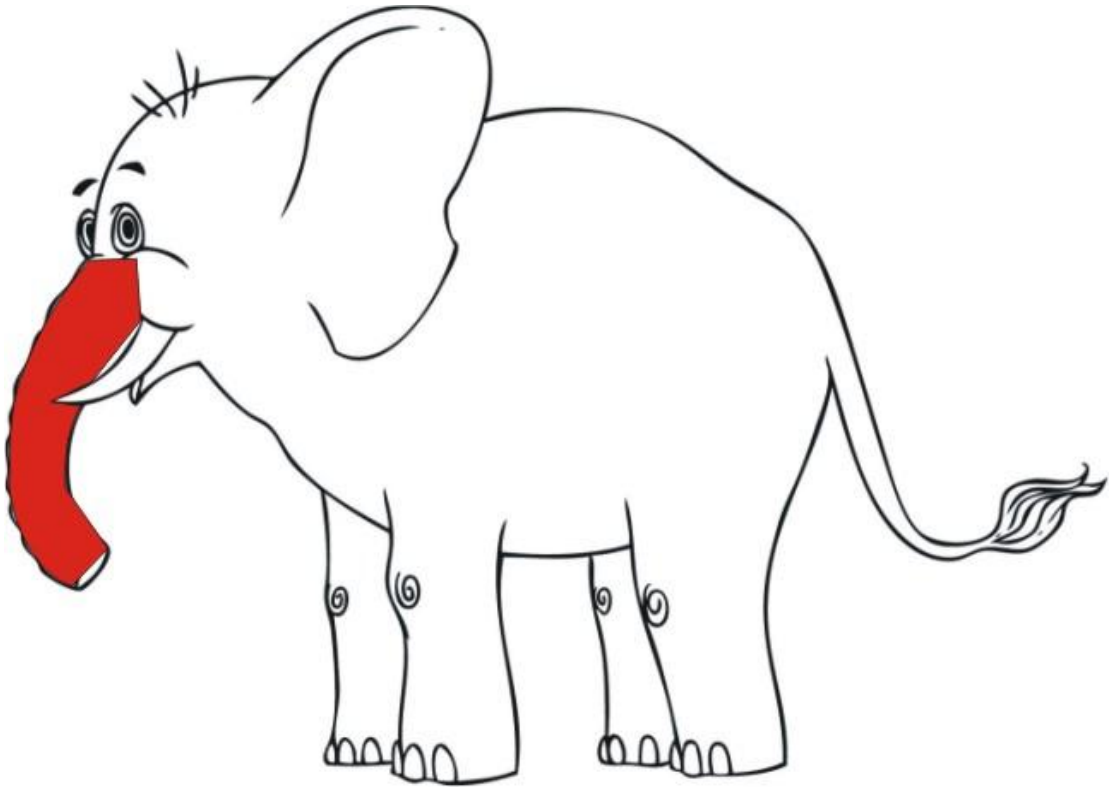
—said the second man who touched the tail.



3rd Man

"Oh, no! it is like a thick branch of a tree"

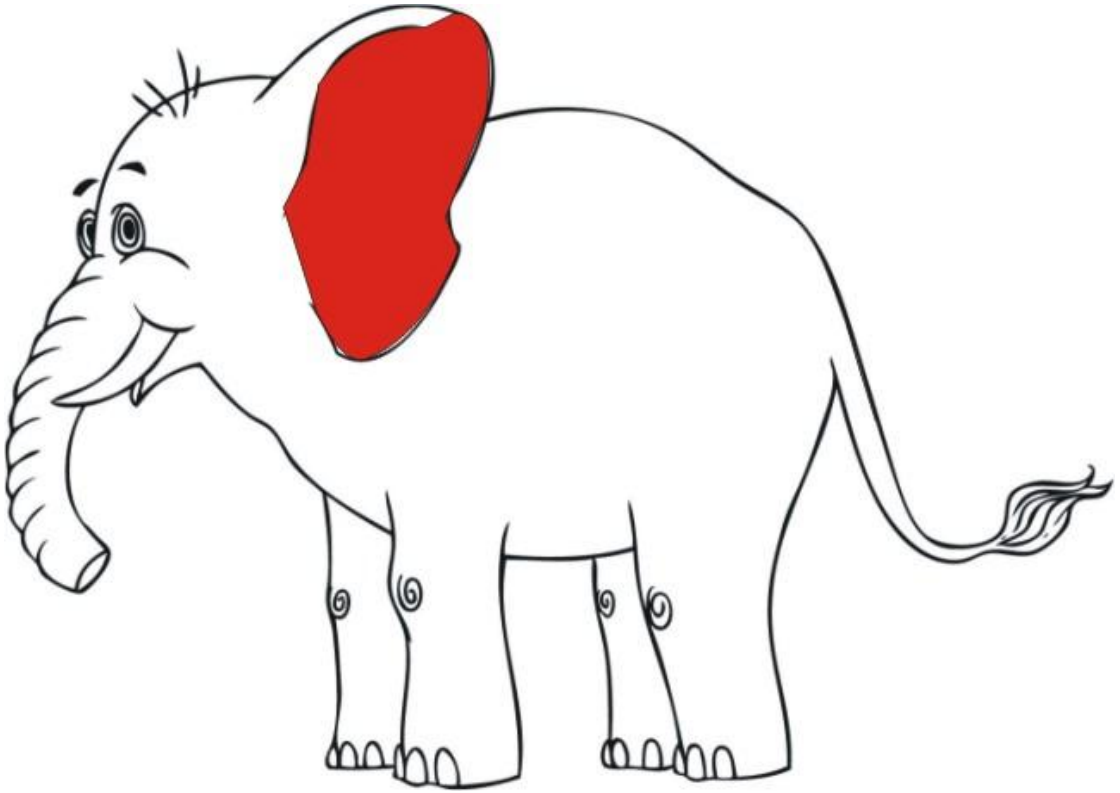
—said the third man who touched the trunk of the elephant.



4th Man

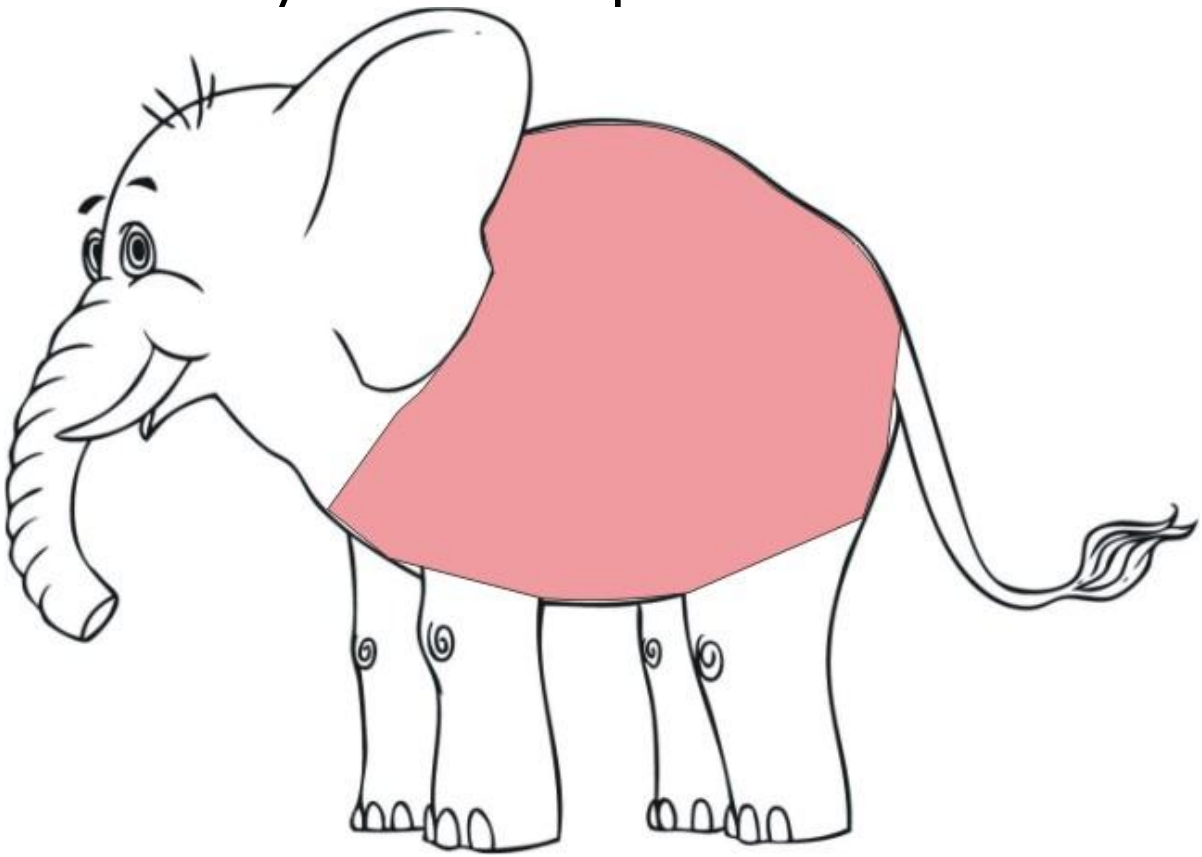
"It is like a big hand fan"

—said the fourth man who touched the ear of the elephant.



5th Man

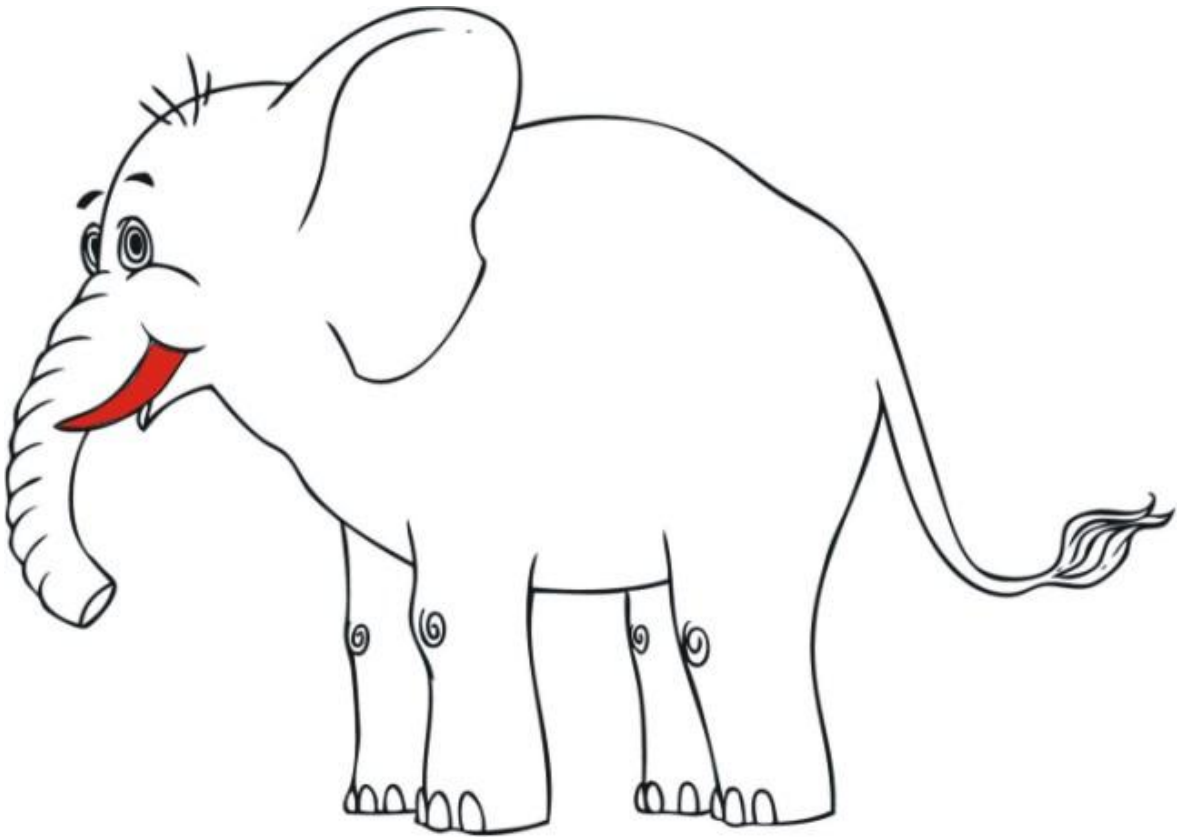
- "It is like a huge wall," said the fifth man who touched the belly of the elephant.



6th Man

"It is like a solid pipe"

—said the sixth man who touched the tusk of the elephant.



Similar views on the Mobile

It is a Phone /Audio-player

It is a Camera

It is a TV / Video-player

It is a Reading/Writing Device

It is Communication Device

Range of Handheld Devices

Basic Mobile

- **Phonebook:** 50
- **SMS :** Yes
- **Network:** 2G Network, GSM 900/1800
- **Display:** Monochrome Graphic (Black & white) 96 x 95 pixels
- **Ringtones:** Monophonic Ringtones
- **Games:** 2 (Snake & Space Impact)
- **Talktime:** upto 3 hrs

Feature Phone

- **Messaging:** SMS, MMS, Email
- **Display:** VGA, 640x480 pixels TFT colour Display
- **Memory Card Slot:** MMC, 32 MB card
- **Recording:** Audio, Video recording
- **Ringtone:** Polyphonic
- **Network:** Bluetooth, 2G (GSM 900/1800/1900)
- **Loudspeaker:** Yes
- **Talk-time:** 2 to 4 hrs.

Smart Phone

- **Screen Size :** 3.5 inch (LCD)
- **Resolution :** 640 × 360
- **Processor :** 680 Mhz
- **Platform :** Symbian ^3, Windows, Android,
- **RAM :** 256 MB
- **Internal Memory :** 140 MB
- **Memory Card:** Support upto 48 GB
- **Connectivity :** Bluetooth, Wi-Fi, 3G
- **Camera:** 5 MP
- **Video Recording:** HD
- **Messaging:** MMS, Email
- **Battery life:** 720 minutes

Pads & Tablets

- **Display Size :** 10.1-inch (1280 x 800 pixels)
- **OS:** Android, iOS, Windows, BlackBerry
- **Processor:** 1 Ghz dual-core
- **Internal Memory:** 16, 32, 64 GB
- **Camera:** 2MP Front, 3MP Rear
- **Connectivity:** Bluetooth 3.0, Wi-Fi 802.11a,b,g,n, 3G
- **Battery Life:** 5-7 hours

The XO : OLPC

- **Display Size :** 7.5-inch, 1200×900-pixel
- **OS:** Linux
- **Processor:** 433Mhz AMD Geode processor
- **Internal Memory:** 1GB of SLC NAND flash memory on board
- **External Memory:** 4 GB
- **RAM:** 256MB of dynamic RAM
- **Camera:** VGA
- **Connectivity:** Wi-Fi
- **Battery Life:** 3 hours
- **Price:** $100

Ultrabook

- **Display:** 13.3-inch 1366 x 768 LED-backlit TFT high-definition widescreen display
- **Processor:** Core i3, i5, i7
- **Operating System:** Windows 7
- **HDD:** 240, 320, 500 GB
- **RAM:** 4 GB
- **Battery life:** upto 8 hrs.
- **Weight:** 1.3 - 1.5 kg

Netbook

- **Display:** 10.1-inch glossy screen has a native resolution of 1024x600
- **Processor:** 1.33GHz Intel Atom N435
- **Operating System:** Windows 7
- **HDD:** 240, 320 GB
- **RAM:** 1 GB
- **Connectivity:** Bluetooth, Wi-fi
- **Webcam:** Yes
- **Battery life:** upto 3-4 hrs.
- **Weight:** 1.3 - 1.5 kg

Notebook

- **Display:** 14.1-inch diagonal WXGA anti-glare (1280 x 800 resolution)
- **Processor:** Intel® Pentium® dual-core mobile processor T3200
- **Operating System:** Windows 7
- **HDD:** 120, 160, 250 GB
- **RAM:** 1 GB-4GB
- **Connectivity:** Bluetooth, Wi-fi
- **Webcam:** Yes
- **Battery life:** upto 3-4 hrs.
- **Weight:** 2.5 kg

Laptop

- **Display:** 15.4-inch wide screen
- **Processor:** Intel Core 2 Duo, I3, I5, I7
- **Operating System:** Windows 7
- **HDD:** 120, 250, 500 GB
- **RAM:** 1 GB-4GB
- **Connectivity:** Bluetooth, Wi-fi
- **Webcam:** Yes
- **Battery life:** 2-3 hrs.
- **Weight:** 2.8 kg – 3.8 kg

OMG! It's a Tremendous Learning Device

Is it wise to ban it in the Classroom ?

- Mobiles are banned in all CBSE Schools
- In fact, the restriction has been imposed on use of cell phones by anyone on school campus, be it students, teachers, or any other working staff. The purpose of this move is to recreate the good old cellular phone-free, distraction less environment in educational institutions.
- Gujarat bans use of mobiles in Schools
- Karnataka bans use of mobile in Schools

So, why are we giving Aakash ?

- **New Delhi:** Indian students are likely to be provided with Akash tablets.
- This information was given by D. Purandeswari, Minister of State for Human Resource in written reply to a question in Rajya Sabha on Friday.
- According to wikipedia, Kapil Sibal has said that a million students will be provided with Aakash in 2011.
- In another report it was stated that 50 lakh such devices will be sold in 2012.

We need to Transform them into Learning Devices

Features of a Learning Device

These Devices can be LearnTABs™ or LearnPADs™

LearnTAB™

PORTABLE LEARNING

Screen Size : 7 inch (LCD)
Resolution : 800 × 480
Platform : Android 2.3 Gingerbread
Processor : 1.2 Ghz "triple core"
Internal Memory : 4 GB, support upto 32 GB
RAM : 512 MB
Connectivity : Wi-Fi, external 3G dongle support
Camera: 1.3 MP front camera
Battery life: 4 hrs.
Weight : 400 grams

LearnPAD™

KNOW EVERYTHING. LEARN ANYWHERE

IN-DASH LEARNING PROGRESS

Screen Size : 10 inch (LCD)
Resolution : 1024 × 600
Platform : Android Honeycomb 3.1
Processor : Unknown
Internal Memory : 16/32/64 GB
RAM : 512 MB
Connectivity : Wi-Fi, 3G, GPS
Camera: 0.3 MP
Battery life: 8 hrs.
Weight : 675 grams

Categories : Level-1 (*)

- Minimal Learning Features
- Mostly from Website
- **How to use Handhelds for Learning (1/2 day tutorial)**

Categories : Level-2 (**)

- All Features of Level 1 (*)

PLUS:

- Some pre-loaded Apps
- Useful sites saved on favourites
- Weekly updates (pre-paid)
- Access to English Language Learning Suites (Pre-paid)

Categories : Level-3 (***)

- All features of Level 2 (**)

PLUS:

- Pre-loaded General Purpose Learning Apps (free as well as paid)
- Membership of APPs Club

Categories : Level-4 (****)

- All features of Level 3 (***)

PLUS:

- Pre-loaded curriculum based Apps (Maths, Science, Social Science)
- Support from 12 hour help-desk

Categories : Level-5 (*****)

- All features of Level 4 (****)

PLUS:

- Personal remote tutor
- Coaching / Mentoring by a Community of high achievers who are ex-IITians, ex-IIMers and Internationally educated, as well as their cognitive surplus.

Rated by Teachers, Users (Learners) and New Age Educational Specialists

- Commonwealth of Learning has created a framework for assessing the usefulness of multi-media content for learning.
- We are in the process of building on those ideas and other methods for curating Apps and other learning resources to come up with a ratings system.
- Inputs from Subject matter experts
- Feedback from learners
- Opinions of Educators

Limitations:

- Distraction
- Need for a new Pedagogy

- Resources developed abroad suitable only for a very small segment of our learner population.
- Localisation of content & learning support.
- Limited availability of suitable Learning Apps.
- Lack of Teacher Preparation.

Distraction:

- This was given as the main reason for banning mobiles in the classroom.
- The CBSE Board explains its decision pertaining to cell phones having become a "serious cause of distraction, lack of concentration, anxiety, fear and sometimes even misuse. Even if the mobiles are in silent mode, they can be a source of disturbance within the classroom as students can make use of Short Messaging Service (SMS) during the class or even during an assignment. The cameras which are a common feature now in most mobile phones can also be misused."
- Young persons have a wandering mind and today's generation can multi-task, but authority sees this as distraction.

New Pedagogy

- All pedagogical principles were developed in the context of young learners in a classroom for pre-defined learning outcomes.
- Then there was ' andragogy' by Malcolm Knowles for adult learning.
- We are now in the situation of life-long learning and development of generic skills of learning and thinking.
- We have named this new methodology ' Live Learning'

About APPs and Learning

- Apple's slogan " There's an App for that"
- There are a few hundred thousand Apps for each of the platforms.
- But very few relevant Apps for our needs.
- Also language is an issue.
- Appsineducation.blogspot.com
- Appitic: iPad Apps curated: http://appitic.com
- Apps for Teachers: appolocious.com
- www.iear.org
- www.bestappideas.com

No Teacher is Left Behind

- The good news is that it is much easier to use Tablets and SmartPhones than it was to use desktops in the past.
- An induction/ kick off program can be done in 2 half day (3 hours each) instructor led sessions with one hour of pre-program prep and 3 hours of follow-up.
- In other words a 10 hour program that can be delivered for all teachers of all Institutions. All teachers can be covered within an academic year.
- Continuous support by membership of a learning community.

More Tap iPad Apps for Bio Lessons

The Economic Times, 10th May 2012

Use of Apple's tablet as a teaching tool is going to see increased usage across Indian schools

NEENU ABRAHAM
BANGALORE

Shivakumar, principal of Delhi Public School, Surat, was fascinated by the educational apps on the App Store which matched his school's curriculum. And soon he started encouraging his teachers to use iPads for research.

"While teaching the parts of the body, we use an app where the visual body is displayed. Curious students were allowed to tear down the ribs with this app, see what each rib is made up of and rearrange them back. This form of teaching has a greater impact on students who understand the concepts better than those who learn their subjects by rote," he says.

Beginning this academic year, many schools across India will be formally including iPads as an educational tool for students. It has already started in a phased manner in schools like Delhi Public School, Surat, where over 600 students from kindergarten to Class 2 have started working on iPads. In many others, like the Canadian International School, Bangalore, all the students from classes 8 to 12 have been asked to bring their own iPads when they start the academic year. And at schools under the Universal Educational Group, over 20,000 students have already been given access to iPads.

Using iPads as an educational tool is not new. But the scale of adoption will be going up this academic year, mainly because of the efforts of tech-savvy school principals. "All 200 teachers at his school were provided individual iPads which they connect to TV sets provided in individual classrooms," says Shivakumar.

For students who wanted to do practical worksheets, an iPad lab was opened where they could spend some time. Worksheets based on specific topics are downloaded from the App Store and given to students to solve, says Shivakumar.

"For instance, if algebra is taught, a number of fun games related to it are downloaded and students work on it during their spare time," he says.

To take the concept home, the school encouraged parents to be part of their 'iPads at home' programme wherein they were asked to assist children with their project work and studies by using iPads at home. "Of the 1,200 students in the primary classes, 600 parents use iPads to help their children in their studies," he says. Those parents who don't have iPads can use the traditional worksheets to help their children. While it is still an optional tool at Delhi Public School, Surat, at others like the Universal Educational Group, iPads have already become part of the curriculum. A 60-member tech team is initiating the group's 20,000 students spread across different schools in Maharashtra and the UAE on iPad use. Each child at these schools is given access for 20 minutes a day to use iPads. "While students from nursery to class 2 are taught with the help of iPod Touch, all students from Class 3 are given access to iPads," says Jesus SM Lall, Chairman & CEO, Universal Education Group.

"We had piloted the project in 2009 and it has been implemented full scale," he says. "We give them limited access to iPads because we don't want to replace the traditional style of teaching," says Lall. The group's technology team and teachers have compiled an entire library of apps under various subject categories to be used by each class. "This includes everything from alphabet to pictures to stories to rhymes," says Lall.

Teach Thru Tech

- **Using iPads has** already started in a phased manner in schools
- **The scale of adoption of iPads** will be going up this academic yr, mainly because of the efforts of tech-savvy school principals
- **A pilot study on the use** of iPads shows that a class created own personalised content when a topic was given to work on with the help of iPads

Another tech-savvy principal, Avnita Bir of RN Podar School (affiliated to the CBSE board), Mumbai, is now allowing her students to bring iPads to school if they want to. She finds it of particular help to CBSE students who, unlike other educational boards, have to score marks based on a continuous assessment pattern. "Students have to thoroughly understand the concept, if they have to answer the questions," she explains.

A pilot study on the use of iPads was conducted at her school for class 7. What interested her was the fact that the class created his/her own personalised content when they were given a topic to work on with the help of iPads. "While teaching history, for instance, we ask the students to create cartoon strips or create a short video clip using their iPads on the subject they are learning," says Bir.

"Very often, no two projects created by students are the same. Different aspects on the same subject are brought out. The end result is that the class creates its own learning content," she explains. Breathing life into content with the help of iPads has been the main focus of schools like the Canadian International School, Bangalore, where all the 200 to 250 students from classes 8-12 will start this academic year with iPads.

"Textbooks are static. This is the reason why we encourage students to take photographs of flowers and trees in the neighbourhood when we teach them aspects of plant life," says Melanie Kells, Dean of Studies, Canadian International School, Bangalore.

"Once this is done, we ask them to upload these photographs on iPads and annotate the content. They are encouraged to do project work on iPads and then take printouts for the final submission," she says.

"Teachers have been using this in a big way," she says. "They design the content to be taught with the iPads." "Students are able to create their own personalized content and are able to thoroughly understand the concepts," she says. Talking about the security issues involved, as students may tend to use the Net for the wrong reasons, Ms Kells says: "Measures are built within the iPads which identify certain words and immediately block them. In the primary classes, the students are given access to iPads only under a teacher's supervision."

More Tab iPad Apps for Bio Lessons

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This Academic Year many Schools will be using iPAd

- Beginning this academic year, many schools across India will be formally including iPads as an educational tool for students.
- It has already started in a phased manner in schools like Delhi Public School, Surat, where over 600 students from kindergarten to Class 2 have started working on iPads.
- In many others, like the Canadian International School, Bangalore, all the students from classes 8 to 12 have been asked to bring their own iPads when they start the academic year.
- And at schools under the Universal Educational Group, over 20,000 students have already been given access to iPads.

Teachers using iPads connected to TV's in Classrooms

- Using iPads as an educational tool is not new. But the scale of adoption will be going up this academic year, mainly because of the efforts of tech-savvy school principals.
- "All 200 teachers at his school were provided individual iPads which they connect to TV sets provided in individual classrooms," says Shivakumar.
- For students who wanted to do practical worksheets, an iPad lab was opened where they could spend some time. Worksheets based on specific topics are downloaded from the App Store and given to students to solve, says Shivakumar.

Also iPad Labs and iPads @ Home

- "For instance, if algebra is taught, a number of fun games related to it are downloaded and students work on it during their spare time," he says.
- To take the concept home, the school encouraged parents to be part of their 'iPads at home' programme wherein they were asked to assist children with their project work and studies by using iPads at home. "Of the 1,200 students in the primary classes, 600 parents use iPads to help their children in their studies," he says.
- Those parents who don't have iPads can use the traditional worksheets to help their children.

iPod Touch and iPad in Use

- While it is still an optional tool at Delhi Public School, Surat, at others like the Universal Educational Group, iPads have already become part of the curriculum.
- A 60-member tech team is initiating the group's 20,000 students spread across different schools in Maharashtra and the UAE on iPad use.
- Each child at these schools is given access for 20 minutes a day to use iPads.
- "While students from nursery to class 2 are taught with the help of iPod Touch, all students from Class 3 are given access to iPads," says Jesus SM Lall, Chairman & CEO, Universal Education Group.

Teachers Compiled an Entire Library of Apps

- "We had piloted the project in 2009 and it has been implemented full scale," he says.
- "We give them limited access to iPads because we don't want to replace the traditional style of teaching," says Lall.
- The group's technology team and teachers have compiled an entire library of apps under various subject categories to be used by each class.
- "This includes everything from alphabet to pictures to stories to rhymes," says Lall.

Making iPad Optional in Classroom for Students

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- She finds it of particular help to CBSE students who, unlike other educational boards, have to score marks based on a continuous assessment pattern.
- "Students have to thoroughly understand the concept, if they have to answer the questions," she explains.
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Student Created Learning

- What interested her was the fact that the class created his/her own personalised content when they were given a topic to work on with the help of iPads.
- "While teaching history, for instance, we ask the students to create cartoon strips or create a short video clip using their iPads on the subject they are learning," says Bir.
- "Very often, no two projects created by students are the same. Different aspects on the same subject are brought out.
- The end result is that the class creates its own learning content," she explains.

Much better than Textbooks

- Breathing life into content with the help of iPads has been the main focus of schools like the Canadian International School, Bangalore, where all the 200 to 250 students from classes 8-12 will start this academic year with iPads.
- "Textbooks are static. This is the reason why we encourage students to take photographs of flowers and trees in the neighbourhood when we teach them aspects of plant life," says Melanie Kells, Dean of Studies, Canadian International School, Bangalore.
- "Once this is done, we ask them to upload these photographs on iPads and annotate the content.
- They are encouraged to do project work on iPads and then take printouts for the final submission," she says.

Creating a Walled Garden

- "Teachers have been using this in a big way," she says.
- "They design the content to be taught with the iPads."
- "Students are able to create their own personalized content and are able to thoroughly understand the concepts," she says.
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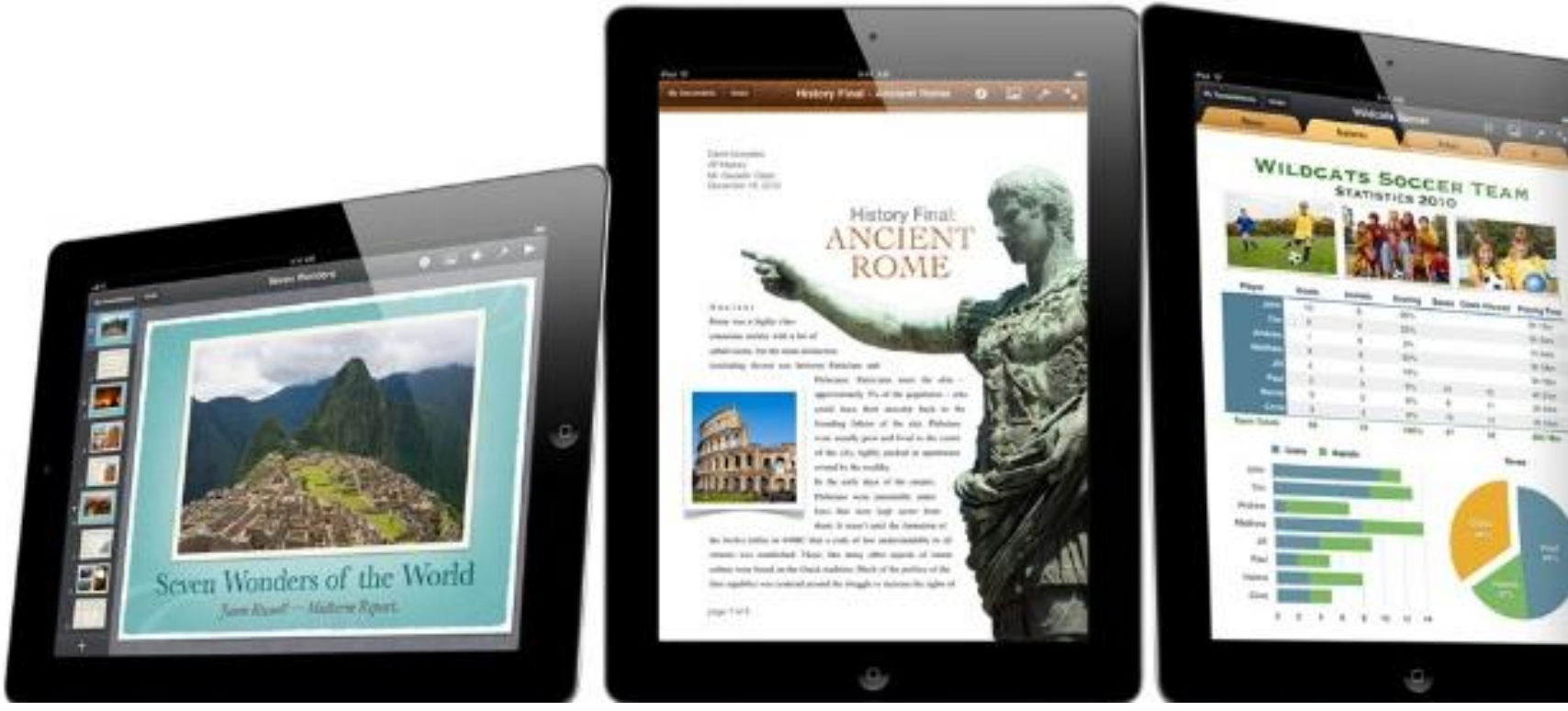
- A pilot study on the use of iPads shows that a class created own personalised content when a topic was given to work on with the help of iPads.

6 Reasons
Tablets are ready for the Classroom

1 Tablets Are the Best Way to Show Textbooks

- Tablets are capable of offering enhanced eBooks featuring images, video and audio.
- These elements are impossible to include in print or in a standard eBook.



2 Classrooms are ready for Tablets

- Though tablets are a recent phenomenon, many students have been using smartphones for years, and are already well-acquainted with touch-screen technology.

3 Tablets Fit Students' Lifestyles

- The appeal of tablets to students is obvious: They're thin, lightweight, and spring to life without delay, making them much easier to use for learning than a desktop in a computer laboratory.

4 Tablets are a great way to access the web

- Some of the most innovative software around is being developed specifically for tablets.
- Many exciting educational apps are now available
- In fact, tablets' current shortcoming — limited multitasking — could be their greatest asset in education, as it forces students to focus on one task at a time

5 Tablets Integrate with Education IT Trends

- Cloud-based solutions have become ever more popular with colleges and universities, which are looking to deliver synchronized experiences that are device agnostic.
- Tablets align well with this trend, given their portability and options for constant connectivity.
- With tablets and cloud-based systems, students can work anywhere on campus and make sure that their work is saved in a central location and accessible from all of their devices.

6 Tablets are Becoming More Available

- One of the primary reasons that tablets have been slow to penetrate the higher education market was their limited availability.
- As these issues are resolved over the coming year, expect to see more and more tablets popping up on campuses.
- Lower price points will make tablets even more appealing to colleges and universities.

Thank you !

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http://mmpant.wordpress.com/