

K-YAN: EXPLORED AND EXPLAINED

Bikash Barai

Assistant Teacher

Dalsingpara Sree Ganesh Vidhyalaya High School

Alipurduar, West Bengal, India, 735208

Abstract: *This review article is about a revolutionary tool of educational technology named as K-Yan, developed in India to meet the need of providing quality education to the community through group learning in developing countries. K-Yan is found to be most effective tool that promotes CAL and utilizes elements of ICT for making teaching-learning process efficient, effective, productive and equally enjoyable for both teacher and students. This review article explored and explained all the innovative features and usefulness of K-Yan in context to school education.*

Key Words: K-Yan, Computer aided learning (CAL), Information and communication technology (ICT), teaching-learning, Community learning.

1. Introduction.

The credit of inventing 'Knowledge-Yantra' commercially known as K-Yan goes to Dr. Kirti Trivedi of IIT Bombay in the year 2004 as an all in one community computer. It was considered as the world's first integrated multimedia device for group learning or community learning needs. K-Yan is a tool which integrates a fully functional computer, data projector, TV tuner, audio system, optical drive and projected smart board with digital pen (as shown in figure 1).



Figure 1: A typical model of K-Yan for Schools

Infrastructure Leasing & Financial Services Limited (IL&FS) is a private sector company that is actively working for the development of innovative world class infrastructure in country and creating value added financial services to become a proactive partner in India's growth. IL&FS partnered with twenty two states of India for skill and educational development, as a part of this partnership IL&FS-Education has commercially producing K-Yan and providing it to government schools under various projects. As per IL&FS data (Ilfsindia.com, 2018) K-Yan has transformed 22,000 classrooms across India into digital classroom, empowering 1,00,000 teachers and helping 3 million students to learn in a more interactive way. IL&FS has also developed educational content like digital text books, charts, animations etc. that comes pre-loaded with K-Yan. K-Yan is an important tool ICT with capability to support CAL and it is designed to replace many old tools of educational technology (ET) to improve teaching-learning outcome.

2. Specifications of K-Yan.

K-Yan comes with very robust modern specifications that meet the need modern productive, efficient and digital classrooms. Technical specification of K-Yan (K-Yan, 2018) is given in table 1.

Table 1: Technical Specification of K-Yan.

Brightness	3000 lumens
Contrast ratio	18000:1
Lamp life	5000 lamp hour
CPU	Intel i3, 6 th generation
Memory	4 GB (RAM)
Graphic card	Integrated Intel graphic card
Storage	500GB and above
Optical drive	DVD drive
Audio	Internal amplifier, 30 watt stereo speaker, external speaker connectivity and microphone input.
Connectivity	6 USB Port (4 ports 2.0 and 2 Ports 3.0) LAN: 1xGbps Inputs: VGA out for connecting external monitor
Interactive hardware	Camera, sensor and digital pen with in-built Virtual Interactive software to convert any Wall or Surface as Digital Board
Operating system	Windows 8 or 10

3. Features and usefulness of K-Yan in teaching-learning.

K-Yan has now become an integral tool of educational practices of many private as well as government schools. It is the versatile features of K-Yan that makes it a true multipurpose device. Based on the author's experience and various related studies some of the key features and their utility in teaching-learning are explored below:

3.1. Digital smart board with pen: With camera-sensor, digital pen and built-in software (named as InteliSpace) the K-Yan can convert any white smooth wall into interactive smart board (as shown in figure 2). This smart board was found to be very useful for teacher to present lesson, draw diagrams, maps, and charts and also to write texts (Barai, 2018). Students can use it to present projects, play interactive quiz or to answer multiple choice questions. Some of the features which were frequently used by author during science and mathematics class are: - Torch light: used to highlight or focus on screen contents, curtain: used to hide portions of screen as per need, geometry tools: used extensively for teaching geometry chapters of mathematics, apart from these screen capture tool, draw and erase tool and multiple color ink tools were also very useful while conducting teaching-learning process interactively in the classroom and lab. All these features can be used either by mouse or with digital pen. The pen comes with an in-built rechargeable battery.

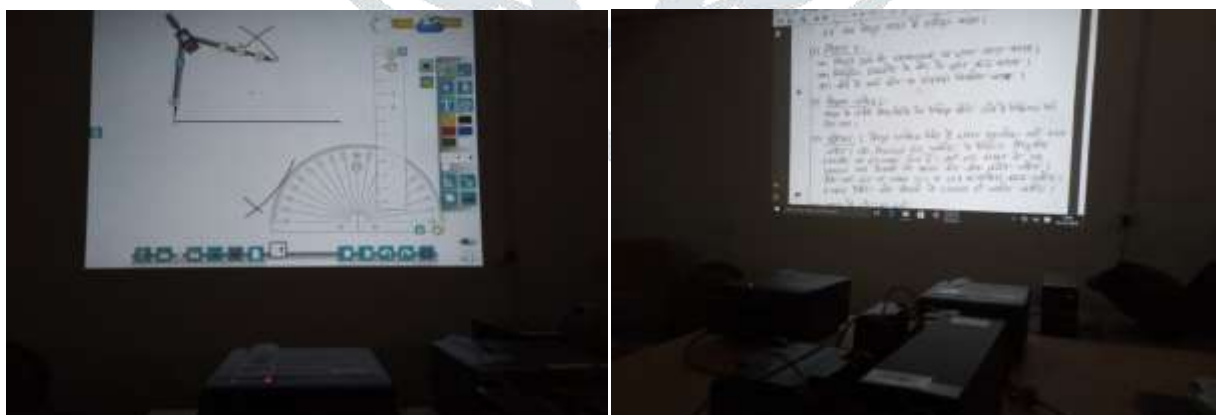


Figure 2: Digital Smart Board in Use During Mathematics and Science Class.

3.2. IL&FS educational content: Some models of K-Yan also come with pre-loaded educational contents (as shown in figure 3 for illustration) developed for various secondary and higher secondary boards of India and other countries. Author along with fellow teachers utilized the pre-loaded content for last three academic years and found it as good as printed textbooks. Though contents for all the subjects like Hindi, History and Geography are not included. The presentation of chapters is very intuitive and they promote active learning where students are the center of teaching-learning process. Subjects like English contain exercise after each chapter where students can make response in smart board and check it for correct answer. All important and difficult

words in chapters can be selected with mouse or digital pen to show their meanings and other grammatical properties. It also contain a library of animated videos and pictures categorized class and subject wise that was used very effectively for presenting various topics, phenomenon and experiments of Physics, Chemistry and Biology by teachers of the respective subjects.

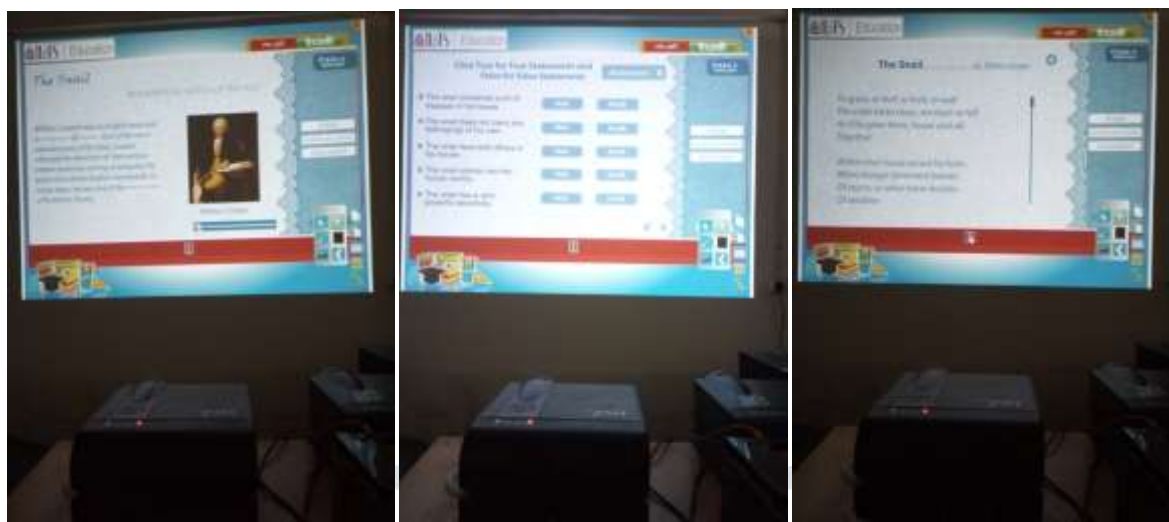


Figure 3: IL&FS Educational Contents for Second Language-English.

3.3. Audio-Video capabilities: K-Yan can be used as projector with in-built audio system. This feature makes it a great tool to show presentations and educational videos. This feature makes it a versatile tool of ET not only for schools but also for training teachers or during workshops, as study by Barai (2018) showed that trainers considered K-Yan very effective and useful during personal contact programme for primary teachers pursuing diploma in elementary education. The presence of optical drive further enhances its multimedia capabilities. It can be attached to external speakers and microphone so one can use it for addressing large classrooms also with ease.

3.4. Full PC like experience with access to internet: With wireless mouse, keyboard, multiple USB ports and Windows operating system it is a complete computer capable to do all works that can be done on desktop computer. Like any other computer it can access internet with mobile or LAN data. Easy access to internet helped the teachers in browsing and utilizing the cloud contents for educational and teaching-learning purposes (Barai, 2018). Author founds its large storage capacity hard-disc very helpful and used it for storing all short of knowledge based contents like notes, class presentation, photos, videos and diagrams etc.

4. Disadvantages.

Based on author's user experience and various studies conducted related to K-Yan it was found that like most of the new technology it also has some issues or disadvantages. Initial cost of K-Yan is high in comparison to normal PC and projector but considering its usability and multipurpose capabilities it is a value for money tool. Studies by Barai (2018) revealed that pre-loaded contents are not sufficient to completely replace the use textbook. Software issues and glitches are there that degrade the overall user experience. K-Yan comes with batteries and UPS unit which are heavy and hence restricts its mobility to some extent. Though digital pen is very innovative but using it for writing long text on smart board is difficult as it doesn't recognize the input accurately always. So if developers overcome these issues in future updates then definitely K-Yan will touch new high of success in meeting its goal of education for community with quality.

5. Conclusion.

In 21st century K-Yan can be considered as an ultimate all-in-one tool of educational technology designed to meet the need of group or community learning. Based on its features and utilities mentioned earlier in this review it may be considered as a tool of both ICT and CAL since it meets the requirement for a full fledged computing device that helps in teaching-learning practices with internet capabilities that qualifies it for a tool based on ICT. Studies (Barai, 2018) showed its potential and popularity among teachers in schools as well as teacher-trainers. Despite of having some minor disadvantages it meets the criteria of all-in-one tool of educational technology. This machine though developed in India now being used in many developing nations as it is cost effective and promotes group learning through activities hence very helpful for populous and developing countries.

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