Interactive TV: A step ahead for imparting education in India

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"The number one benefit of information technology is that it empowers people to do what they want to do. It lets people be creative. It lets people be productive. It lets people learn things they didn't think they could learn before, and so in a sense it is all about potential."

Abstract-**Adaptation of new teaching methodology is still a big issue in Indian context. The chalk and board method is found suitable for pedagogy. The problem of the possible lack of engagement by learners within traditional learning environments can possibly be improved by the utilization of new technologies. Interactive TV can be a solution to spread education across the country with its attractive features. In this article author is trying to elucidate the magnitude of Interactive TV as a helping hand to extend the scope of education and also to catch the attention of the learners in an innovative mode.**

Key words- Interactive TV; t-learning; digital TV; Broadcast TV

I.INTRODUCTION

India is going to experience a paradox of nearly 90 million people joining the workforce but most of them will lack requisite skills and the mindset for productive employment according to a report in DNA. Education system's failure is leading to social issue of income inequality. Certain policies need to be implemented to improve India's education system and reduce inequality.

Technological advancements ease the scope of shaping the thoughts into reality. There is increasing recognition that e-learning through an Internet-enabled computer will not solve all the problems of increasing learning opportunities in the home. Although it varies across different countries, the penetration of Internet-enabled computers into the home is beginning to level off at around 25% to 35% in Indian homes. However, the penetration of televisions in Indian homes is already around 65%. So the reasoning goes - TV is widely available across the world. As digital TV develops it could offer various forms of interactivity. Interactivity is considered an important aspect of the process of learning – so TV could create new ways of increasing interactive learning opportunities in the home.

One important tool to achieve this is to ensure multi-platform provision of services. Everyone will want to have a PC for services, especially for online public services, which are available over different terminals such as TV sets or mobile phones.

A. Role of Interactive digital TV within an e-learning strategy

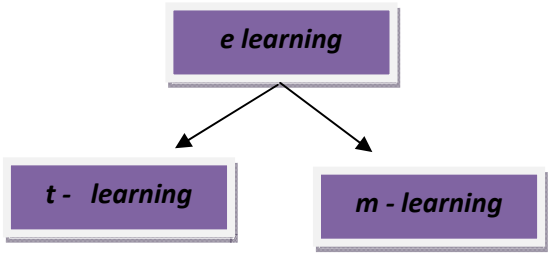
The important reasons, why it is important to consider the role interactive digital TV for e-learning strategy is:

- Most people have access to a television in their home.
- Not every household will have an Internet-enabled computer.
- The TV is an easy to use device.
- People tend to trust the content that is on the TV.

The TV has the potential for reaching more people and offering learning opportunities than traditional learning institutions can do.

B. What is t-learning?

The term "t-learning" has been adopted as shorthand to mean TV-based interactive learning. T- learning is about having interactive access to video-rich learning materials primarily within the home, through a TV or a device more like a TV than a personal computer. Like the TV, the device would have to be a so-called "consumer" device – which is easy to use and as reliable as a television, a microwave or a refrigerator.



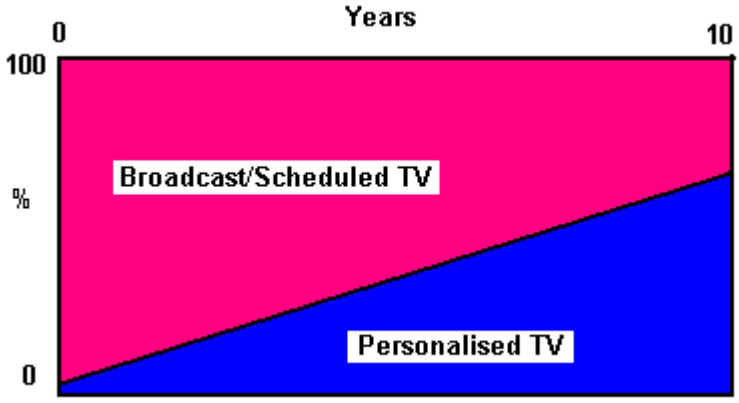
t-learning with access through a home-based TV or similar device but could significantly enhance the learning experience in a way that Internet-based e-learning cannot currently do. Of course, t-learning need not take place in the home, but if it is accessible in the home, it could equally be accessible from another fixed location like the school or workplace or a community-learning centre.
Development of t -learning is still primarily in the hands of broadcasters and service providers – who have tended to see their role as informing, entertaining and educating people rather than offering more structured and engaged learning. However, within certain learning contexts these "edutainment" services are generally educationally sound and certainly create interest in using a TV as an active learning medium compared to a passive learning medium – but they are only the very first stages of such developments.

II. WHAT IS DIGITAL TV

Up till about 4-5 years ago most TV signals were broadcast in an analogue format. However, nowadays a large number of TV channels are broadcast in a digital format via satellite, cable and terrestrial. As most TV sets can only receive analogue signals a "set-top box" is required to receive the digital signal using a digital tuner and then convert the signal to an analogue format for viewing on the existing TV. The set-top box is connected between the TV and the source of the signal. Although there is some integrated digital TV sets being used - incorporating the digital tuner and some other features of the set-top box – most households that have digital TV tend to have a separate set-top box. The set-top box is more like a consumer device than a computer and tends to be more reliable although its functionality is more limited.

Digital TV can roughly be divided into two types: -

- Broadcast or Scheduled TV
- Personalised TV



Likely Digital TV Trends over the next 10 years

In short term everyone that has a TV will continue to be receiving broadcast or scheduled TV with a tiny percentage receiving personalised TV. However, increasingly over time personalised TV services will start to become available and eventually most people will receive a hybrid of both types of services in the medium to longer term. In the longer-term it is likely that the majority of people will use their TV most of the time for personalised on-demand services occasionally receiving live broadcasts for major events.

III. WHAT IS INTERACTIVE TV?

Interactive television (iTV) is a two-way interactive service provided through television, enabling audiences' greater choice, control, and customization over their viewing experience. Through new digital technologies, interactive television services such as video-on-demand, enhanced television, interactive program guides, and email are just some examples of the next generation of digital programming over cable, satellite and terrestrial broadcast television.

It is the set-top box that tends to be at the core of controlling the various forms of interactivity. Signals are sent from a remote control device or sometimes a remote keyboard to the set-top box where they are processed in various ways. Sometimes, interactivity is only between content held in the set-top box or pulled down from the broadcast stream. If the set-top box is connected using a return channel like an existing telephone line, information can be sent to a central control that could send content back by via the telephone line or via the broadcast stream.

Interactivity through digital TV

Interactivity through digital TV can take place in a number of ways. What follows is an attempt to try to categorize the different forms of interactivity in order to better understand how they work. However, in reality broadcasters or service providers often use a combination of the different types within one interactive service.

- Navigation

  Because of the large number of channels available through interactive TV, an electronic programme guide is essential for the viewer to find and select programmers. The service provider is responsible for this guide, which tends to be organized according to different fields. Selecting programmers through an on-screen electronic programme guide is the most commonly used form of interactivity using a remote control.

- Enhanced TV

  A number of options are available for enhancing the viewing experience through the use of interactivity of existing TV programmes. Selecting options from a menu to get to additional information can be achieved by pressing one of the four coloured buttons on the remote control. This has been possible when watching the football World Cup in a number of countries that were offering interactive services. While watching a football match, for example, it was possible to select a different angle, see a repeat of the last goal and get additional information about each team and the players. All these are enhancing the existing viewing experience.

- Channel independent interactive services

  The method used is really an advanced form of the method used to access tele-text. Upon selecting a particular option, a module is downloaded into the very limited memory of the set-top box. This usually takes a few seconds, as the viewer has to wait until that particular option becomes available from the broadcast carousel.

- Interacting through the return channel

  Another way of interacting is through the return channel. In the case of satellite and terrestrial this is through a telephone connection to the set-top box. For digital cable this is through the cable network. Utilising the return channel enables viewers to respond to questions through yes or no or multiple choice questions and also enables viewers to vote.

- Web on the TV

Some service providers offer this capability through their set-top box if connected to a telephone line or digital cable. In addition, there are some dedicated web via TV set-top boxes that connect to a TV and to a normal telephone line. Both methods have the same type of limitations.

Relatively simple web sites with limited text per screen and without elaborate graphics and animations can be viewed quite adequately on a TV. However, existing low cost set-top boxes generally can't cope with web sites that require additional software to be downloaded before they can be viewed properly. This includes viewing streaming video. Unfortunately, current web via TV devices do not appear to really offer a solution for more engaged learning.

- Personalised TV

New developments around what could be called personalised TV are starting to emerge, which potentially could offer new ways of enabling high quality interactive engaging learning materials. However, only a few services are currently available across the world. They take the form of: -

- Video or Content-on-demand services from remote servers
- Home storage using personal digital video recorders

Both functions are similar to that of videocassette recorder - stop, start, pause, rewind and fast forward. In some instances it is even possible to stop a live broadcast and start it again at the point the viewer has left off. Programmes can be searched for using menus and in some instances using keyword searching. Sometimes it is even possible for the service/device to learn viewer's preferences and automatically select programmes matching the viewer's interest. It is also likely to be possible very soon to access and interact with multiple-media content in a similar way to interacting with an educational CD-ROM.

IV . INITIATORS OF LEARNING

For the purposes of understanding the role that interactive digital TV may have for increasing learning opportunities in the home is also useful to divide learning into three different types or initiators of learning.

1. Curiosity-led learning
2. Problem-led learning
3. Curriculum-led learning

1. Curiosity-led learning

This is likely to take the following forms: -

- Enhanced TV on-demand model - an extension of the enhanced TV model is where the same production may be re-purposed for an on-demand serviced. TV and then later as a video-on-demand service.
- Broadcast TV with Interactive Services - in the form of quizzes and multiple-choice questions – closely linked to TV programmes and produced as part of a TV produced.
- Video-on-demand – nationally or internationally produced materials - like aid charities or environmental groups – some material may be free and other material might request a donation. Advertisers are also likely to sponsor materials informing viewers about awareness of subjects like cancer etc. Advertisers could also use this medium to inform a viewer about their own products or the issues to address when buying a particular product.
- Video-on demand locally produced materials - perhaps with the assistance of local specific interest group like a history society.

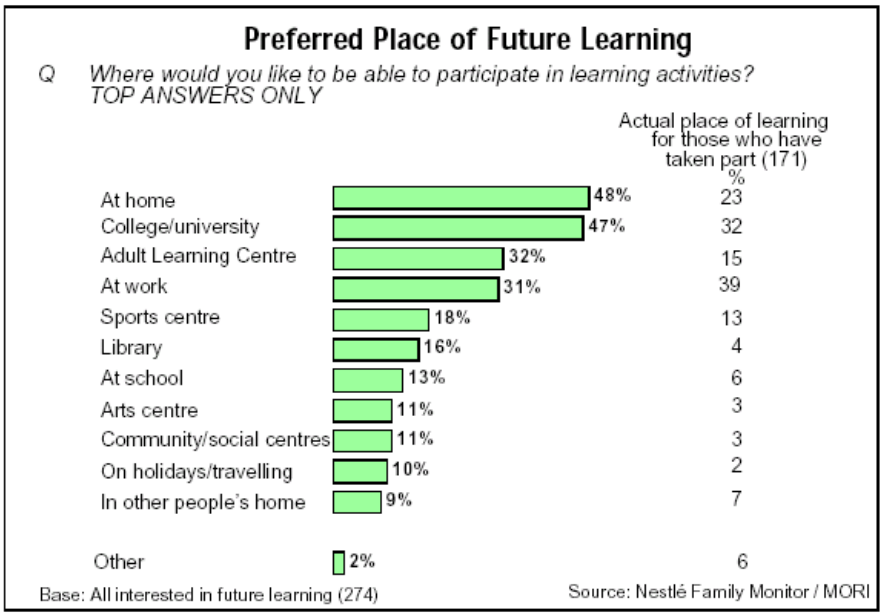
2. Problem-led learning

This is likely to take the following forms: -

- Broadcast TV with Interactive Services – useful information provided through multiple menus but mainly in the form of text and graphics. The content will be produced by a wide variety of stakeholders who want a relatively simple way of widely making information available to households via the TV as well as via the web.
- Video-on-demand services – in the area of leisure learning like cooking, hobbies and improving skills in sports - that will be as a purely commercial venture and in areas like healthcare that could be funded by the public sector.
- Live Personal Adviser – a new commercial personal adviser market is also likely to develop for a wide variety of services particularly in the area of financial advice and other higher value services or “do it yourself” (DIY). Some personal adviser services like healthcare and local government services are also likely to emerge - funded by the public sector.

3. Curriculum-led learning

- Distance learning Courses – Some providers of distance learning courses are likely to move towards offering on-demand learning content particularly when it can be enriched with high quality video-content or widen participation to learning if accessible through TV. The providers of such services are likely have national and international markets for such services – some may be funded entirely or partially by the public sector and other courses may be part of a continuous professional development package (CPD) – subsidised or not subsidised.
- Curriculum enhanced learning resources – might emerge funded by the public sector and perhaps by educational broadcasters – mainly public sector and a few commercial providers. Some material may be free and others may be chargeable. They would be used to enhance the national curriculum in schools or colleges and meet specific adult educational needs.
- Live Personal Tutor – some personal tutor services are likely to be a replacement to the private paid home tutor that is thriving in some markets. Other commercial personal tutor services will emerge particularly in the area of language learning and support services for institutional-based courses. Other live personal tutor services could form part of a blended learning offering either as distance learning or a campus-based course.
- Locally produced learning materials – are also likely to develop by existing locally based learning institutions as part of a blended learning on and off campus solution.



V. COMPLEXITIES

Complexities are making it difficult for existing educational broadcasters to decide how best to utilise interactive digital TV services when they are available. Only a few well resourced and generally public service broadcasters have started to make some offerings. Existing players who are already established in the "learning business" are very reluctant to enter this market due to the potential high costs of developing for multiple platforms and the uncertainly of getting any return on investments. Only very recently have there been signs that a few new players have started to enter the leisure learning end of the market – initially with video-on-demand offerings.

Prospects for development of interactive digital TV learning services with Countries

Country	Prospects		
	High	**Medium**	**Low**
Austria			x
Belgium			x
Denmark			x
Finland		X	
France		X	
Germany		X	
Greece			x
India		X	
Ireland		X	
Italy	x		
Luxembourg			x
Netherlands		x	
Portugal			x
Spain		x	
Sweden	x		
United Kingdom	x		

(Shaded area indicates the level of prospect)

VI. CONCLUSION

1. In the emerging era of lifelong learning - learning will take place in wide variety of context and locations in which informal and non-formal learning will increasingly become as important as the more traditional forms of formalized learning.
2. Policies are already being directed towards the use of information and communication technologies for increasing learning opportunities – although this has tended to focus more on the use of a computer connected to the Internet.
3. Today's scenario requires solutions and devices that people are familiar with, and feel comfortable in using, whether, in their own homes or on the move.
4. Television, plus other future personal devices developing from mobile telephones; and games consoles are all familiar tools that have the potential to also offer new learning opportunities in this way.
5. The home is already considered to be an important place of learning, with some evidence to suggest that there is an increasing preference for people wanting to learn in the home.
6. The television is a familiar and reliable consumer device. It is also perceived to be a source of learning although in its more traditional role it has tended to be used in a passive viewing mode and perhaps not encouraged active and engaged learning.
7. Traditionally television has tended to be used as an informal mode of learning. Therefore enhancing learning opportunities through the use of interactive digital TV solutions could help in achieving this aim.
8. Therefore, ICT policies that are aimed at encouraging increased and widening participation in learning should consider the role that interactive digital TV solutions have in creating new learning opportunities in the home.

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