

# Computer Based Technologies for the Modern Teacher

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**Abstract:** *With the modern development of technology in all spheres of life, the modern teacher cannot do without it. Technology in education is a must core subject for any modern teacher. Although it has its merits and demerits, its upon the teacher to develop his skills in identifying, selecting, developing, utilizing and storing of modern technological teaching and learning resources that are becoming compulsory to use in class. In this paper, we are going to discuss the different technological tools that a modern teacher can use to complement his teaching. Csikszentmihalyi's flow theory was used to show the importance using technology in the classroom.*

## 1. Introduction

In the last ten years, technological advancement has changed drastically. A good example is the difference between a television set manufactured ten years back and the modern smart TV. There exist a lot of differences in terms of efficiency, audio\_ visual quality portability and compatibility with other devices like flash disks and computers. A phone manufactured fifteen years ago, cannot as well compare to the current smartphones, which have additional features and are more efficient and has multiple usage than the old phones.

Apart from fast technological advancement, it has also penetrated in all spheres of life be it entertainment, education, social networking, multi channel communication among others. Due to this advancement, the modern teacher ought to make use of technology in the learning process. Fortunately, most of the technological tools are readily available as opposed to yesteryears.

The known benefits of using technology in class are many. Technology makes student active in class and reduce boredom. It also encourages cooperative learning and gives essential technological skills to students, which they can apply in work environment after graduating.

On the side of the teacher, technology will assist him in preparing and organizing his lessons for a whole term, developing interactive content, motivating students in class, making the lesson interesting, instant self evaluation and assessment of learners.

In this paper, we are going to discuss the different technological tools that a modern teacher can use to complement his teaching, together with their merits and demerits. Csikszentmihalyi's flow theory was used to show the importance of using technology in the classroom. In this paper, we are going to discuss the different technological tools that a modern teacher can use to complement his teaching. According to Csikszentmihalyi 1997, a good flow will only be created when the teacher is aware of the entry behavior of the students especially the skills that can guide him to use technology, which will provide the correct level of challenge to the students.

Before we start discussing the various computer based technologies, we have to say that the modern teacher must have three items. These are a laptop, Personal Digital Assistant (PDA) and a good internet connection. A PDA is a hand held gadget like a tablet or a smart phone that has the capabilities of a small computer.

### 1.1 Teaching and Learning Technological Resources

There are so many teaching and learning technologies which the teacher can use in his profession. Before choosing any category of the technological resources, the teacher should consider the following factors:

- 1) **Subject:** The teacher should select the technological tools which are relevant to his subject. For example, a language teacher cannot use lab experiment videos to teach sentence structure.
- 2) **Instructional Objectives:** The teacher should select and utilize technological devices that can make him achieve the instructional objectives of his class. For example, a photograph of a leaf can not be used to teach the students to pronounce the sound /b/
- 3) **Portability:** The technologies chosen should be easily portable and moved from one class to another and from office to class.
- 4) **Availability:** The teacher should select resources that are easily available in his environment.
- 5) **Cost:** The technologies selected should be cost effective in terms of purchase, maintenance and storage.
- 6) **Entry behavior of the students:** The teacher should select the technologies, which the students can easily manipulate and use.
- 7) **Manipulation skills of the teacher:** The teacher should select a technological tool that he is used to and can operate. Imagine a situation where a teacher is not able to switch on an LCD projector in class!
- 8) **Environment:** The teacher should select a technological tool that is environmental friendly in that it does not pollute air, soil, water sound, etc. a situation where a technological device brings unnecessary disturbance should be avoided. The teacher should also ensure that the technological tool selected could be manipulated in his environment. A good example is ensuring availability of electricity and Internet.
- 9) **Time:** The technologies selected should be time friendly in that the operational time like opening the device should not take most of the time allocated for the lesson.

A modern teacher who aims to use these technologies needs to have a personal laptop and internet connection. We will divide the technological resources in four major categories as follows:

- 1) Teacher preparation technologies
- 2) Presentation technologies
- 3) Storage technologies

## 1.2 Teacher Preparation Technologies.

Before the teacher goes to class, he has to prepare. In the preparation stages there are some technological resources that he can use.

### a) Word processing applications

The teacher can use this available applications to prepare schemes of work, lesson plans, type his notes, set examinations, prepare charts, tables, graphs etc.

Advantages of word applications are that they are free and available in all modern desktop computers, laptops, tablets and smartphones. It is also easy to use if the teacher has typing skills. The teacher can save his document easily for future use. It is easy to edit it. The teacher can easily insert photographs, illustrations to a word document. The teacher can also embed video and audio clips and play them on the word document. According to Melendez (2018), Word application has the following advantages: Enables multiple people to work on one document like when preparing a term paper where several students can work on one project, the teacher is also enabled a wide choice of fonts, text colors which can make his presentation attractive.

Disadvantages include that the teacher need to be skilled in typing, copying, inserting, pasting, deleting and operating words applications. It's prone to plagiarism since it is easy to copy one's content and paste it. Another disadvantage is that it requires power to function.

### b) PowerPoint application

The teacher can use this application to prepare point form content to present in class. PowerPoint is normally presented in slides form, which can be made attractive to ensure the learners respond to them positively.

Advantages of PowerPoint application is that the teacher can insert any kind of media which can be played or operated in class. For example, the teacher can insert pictures, drawings, audio clips, and videos. According to Sheehan (2019), the teacher can print the slides and give the students as handouts. Additionally, the teacher can present to a larger audience than when using word applications and it is easy to present in class. PowerPoint provides for 'secret notes which only the teacher can see when presenting to the class. PowerPoint application is also free and available in all computers.

Disadvantages of PowerPoint is that the teacher needs some advanced skills than word applications to prepare a presentation. Another disadvantage is that it requires power to function.

### c) Excel Application

This application can be used by the teacher to prepare charts, tables, which he can copy, and paste in word or PowerPoint presentations. It also it has inbuilt mathematical formulas which the teacher can use in grades calculations

Advantages of excel application is that the teacher can use it to prepare colorful charts by just entering the data automatically. This application is also free and available in most computers.

Disadvantages of this application is that, it requires advanced skills for usage. Electricity black out hinders its function in lesson preparation

### d) Audacity audio soft ware

Although there are several audio soft ware, audacity is the most recommended because of its several advantages over others: it is free to download and use. It is easy to use since it requires minimum operational skills. The teacher can use this soft ware to record and edit audio clips for class use. Its disadvantage is that it requires MP3 player and speakers for the learners to benefit from it. Electricity black out hinders its function in lesson preparation.

### e) Searching engines

The teacher can use search engines to search and download lesson contents while preparing the lesson. The search engine include Google, Yahoo, baidu, Aol, ask.com DuckDuckGo etc.

The advantage of Search engines is that they provide readily available content in all field. They are also time saving and are free to get.

The disadvantage of relying on this search engines is that they require internet connections to search for content. The teacher should be careful when using this search engines since authenticity is not 100 per cent guaranteed. Search engines also encourage laziness and plagiarism.

### f) Internet videos sites

There are several internet video sites that the teacher can use to access videos to use in lesson preparation and presentation. Some of the top video sites include; YouTube, Vimeo, Metacafe, Dailymotion, Veoh, The internet archive, Twitch, The open video project, 9Gag, Ted Talks etc.

Advantages of video sites is that the teacher can download or live stream videos that can be used in his subject area. The teacher can also prepare videos and upload in some of the sites like YouTube and use them in his class as well as earning from the sites through subscriptions. Its time saving since it requires internet only.

The disadvantages of internet video sites include the high cost of internet charges for downloading and live streaming the videos. Inappropriate pop ups and advertisements. The teacher need to be careful while downloading the videos in order to avoid non authentic videos.

**g) Audio books sites**

The teacher can use these sites to get audio books for all students and also special students especially those who are visually impaired. Some of the best sites for audio books include: librivox, lit2Go, Loyal Books, Mind webs, Open culture, Overdrive, Podiobooks, Project Gutenberg, Spotify, Storynory, SYNC etc.

The advantages of audio books are that they can be accessed easily and they are free. It saves time, it serves best where books are minimum or not available.

Disadvantages of the audio books are that they require Internet to download and live stream, cannot function where there is electricity black out.

**h) Still photos/images sites**

Still photos/images can be used to supplement lesson preparation and presentation. They exist in different forms, colors, shapes that are attractive and more appealing to the learners. The sites include: google images, unsplash, Gratisography, Morguefile, Pixabay, Stockvault, Pikwizard, Rawpixel etc.

The advantages of using this sites is that they are free, readily available and there exist wide range of images.

Disadvantages of using this site are that they require Internet.

**1.3 Presentation Technologies**

After the preparation of the content, the teacher is now ready to go to class. In class, the teacher has to present the content. In presenting the content, he has to use presentation technologies. In this section we will discuss some of the best presentation technologies the teacher can use in class.

**a) Smart board**

A smart board is an interactive electronic white board, which has replaced the chalkboard, whiteboard and overhead projector. The smart board has a lot of multifunction. The teacher can write his notes using a special pen and then convert the notes to word or pdf font and save them for future use. The smart board can also act as a touch computer screen where the teacher can download his notes from his email, can search the web for other content and can also present his power point or word presentation. The teacher can use the smart board to present pictures, videos, audio clips, simulations and other interactive formats. The teacher can also invite the student to interact with the smart board.

- Advantages of using smart board are: is paperless technology, a multimedia platform, it improves teacher-student interaction.
- Disadvantages of using smart boards is that it's expensive in terms of maintenance, purchase and repair. It is very delicate and it requires advanced skills for the teacher to utilize it optimally.

**b) LCD projector**

This projector has replaced the old fashion overhead projector. If the school cannot afford a smart board, the LCD is the next option. This machine is normally connected to the

teacher's laptop and it projects its content to a screen or a white painted wall. As the teacher manipulates the computer, the projector projects the content to the wall.

- Advantages of LCD are that it is cheaper than the smart board, easy to use and to maintain. Its major disadvantages its heavier and cumbersome to carry around.

**c) Pocket sized projector**

It functions in the same way as the LCD projector. Its significance is that it's portable and therefore more efficient than LCD.

**d) Flat screen television.**

The teacher can also use the flat screen television to present his content in the class. The television can be connected to a computer using HDMI cable and it will act like a big computer screen. Other televisions models need not to be connected to a computer because it can act as one if connected to the Internet. The teacher can manipulate the smart television by touching its screen just like using a smart board.

- Advantages of using televisions are that it's cheaper than a smart board and easy to use. Its maintenance cost is also low. Its disadvantages include: its cumbersome.

**1.4 Storage Technologies**

After preparing his content, the teacher needs secure storage resources for the content. Modern storage technologies include: computer hard disk memory, email, flash disks, SD cards, external hard disks and cloud.

**a) Computer hard disk**

The teacher's laptop has an internal hard disk memory (HDD) which provides the first storage facility of the content. Its advantages include: the teacher can access it and utilize the content whenever required. The teacher may also decide to share the content to other teachers and students. The disadvantages of using computer hard disk memory disk include: it can crash and lead to lose of stored data, the data may also be corrupted by a computer virus, the computer can be stolen and the data security become compromised.

**b) Email**

The teacher can save his content by emailing to himself or by creating another content email, which he can use to store his teaching resources. If used wisely, this method is virus free, and the teacher can easily access his content wherever he is using another device. The teacher can also share it easily with others by just forwarding the content from his email. On the other hand, emails have minimum storage space for bulky content (unless the teacher uses Google drive). Secondly, if the email is hacked, the security of the data will be compromised.

**c) Flash disks**

Flash disks are small portable devices embedded with good memory. The teacher can store his content in the flash disks through the USB. Advantages of flash discs are that they are portable, have big storage capacity and have high speed of data transfer and are compatible with several other devices. On the hand, they can easily get lost because of their size, with time; being infected by virus can corrupt them. Additionally, most flash disks do

not have encryption capability, which can lead to unsecure data.

**d) SD card**

It's a small storage medium. Just as the flash disk, it is cheap, portable and can be used in computers, smartphones and digital cameras. However, it can break easily, it has a short life span and it is delicate.

**e) External hard disks**

This are hard disks that the teacher can buy to store the data outside the computer. They have large capacity for data storage; they have fast speed, durable and portable. On the other hand, the external hard disks can be damaged easily, attacked by worms and virus. They can also get lost.

**f) Cloud storage**

This is a service where the teacher's data can be stored and managed remotely and he can access it anywhere by using the Internet. This method is secure as compared to email, it can be used to share with others, and the data can be accessed from any location through the Internet. The disadvantages are that you need to have Internet to get the data. Security of data is not guaranteed because of the remote storage.

In conclusion, the modern teacher has a wide range of easily available technologies for his everyday use. The only thing he needs to do in order be at abreast with the technological changes is regular training on the technologies.

## References

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