Cloud based Tools & Applications for Learning

PDST TECHNOLOGY IN EDUCATION
Promoting and supporting the integration of ICT in education

(How can 'Cloud based Tools and Applications improve the learning environment for schools?)

Learning Context

Schools are increasingly using a wide range of useful cloud based tools and applications to support teaching, learning and assessment. These applications can be used to support, enhance and positively transform the learning experience in order to improve learning outcomes for pupils and students. Many applications are free and provide a diverse and evolving range of possibilities to enhance learning. **A key question is if and how can cloud based tools and applications improve the learning environment for schools.**
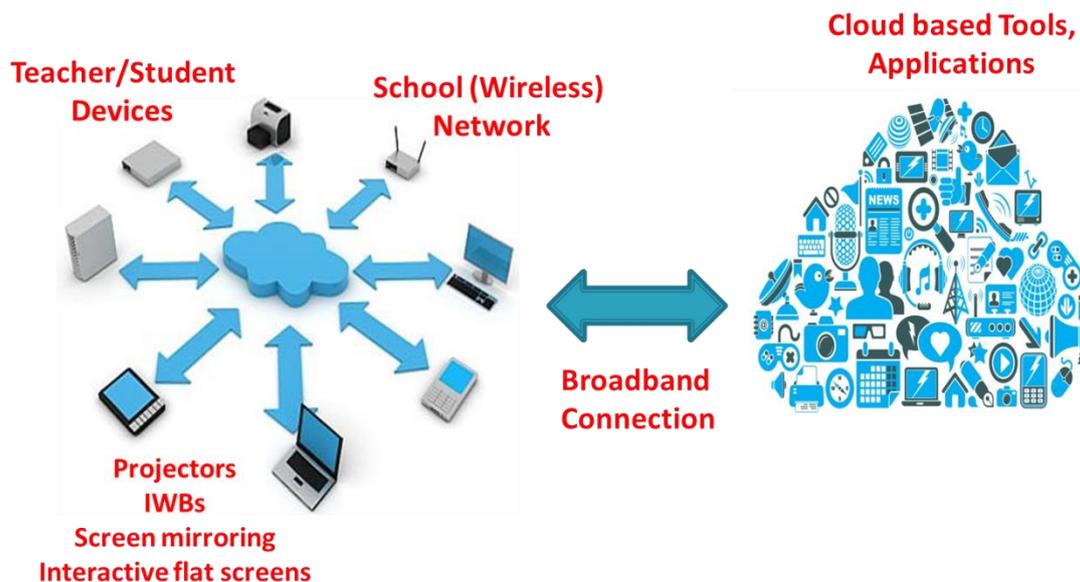
'Cloud Tools /Applications' in the context of schools ICT infrastructure

Though schools have much in common, in terms of learning objectives, each school is different in terms of its' own unique blend of requirements, priorities, and challenges. When considering **cloud based tools and applications,** school management and the ICT coordinating team need to first consider school learning priorities and outcomes rather than just focus on the technology aspects. This may include:

- As part of school self-evaluation process, identify school learning priorities and outcomes
- School e-Learning plans should form an integral part of wider school planning
- Consider how effective use of ICT could help achieve the learning outcomes

Some target objectives for the school might be:
- To facilitate a better learning environment in schools and classrooms
- To transform the learning environment to improve learning experiences and outcomes
- To provide more flexibility for teachers to experiment with different cloud based applications
- To try out free cloud based tools and applications without having to invest in local servers
- To more effectively utilise students owned technologies (eg., student tablets) in classrooms
- To investigate if ICTs can assist in achieving these objectives
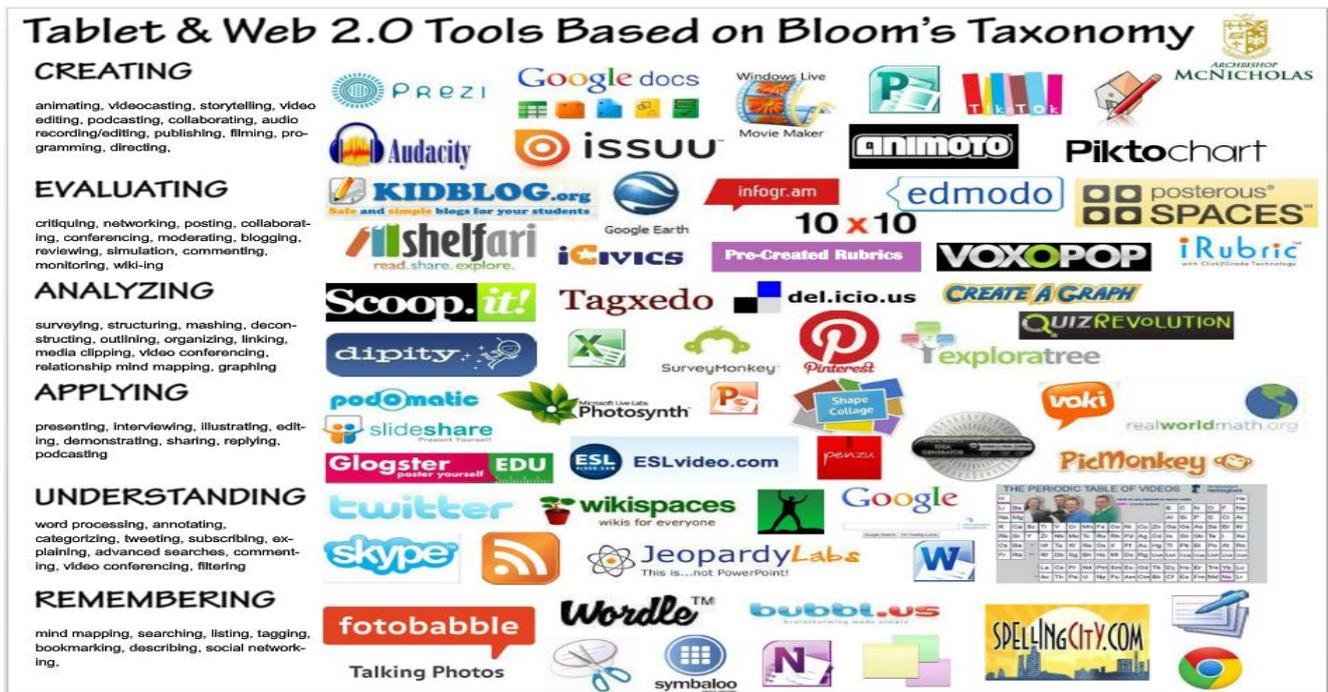
Cloud based tools and Applications (from 2012)

The image above gives a summary flavour of the diversity and range of **cloud based tools and applications** available in an educational context. In this case they are categorised in a basic mapping to Bloom's taxonomy for learning. Web 2.0 is a term used to describe the second generation of web tools and applications that facilitate the ability of teachers and pupils to interact, collaborate, and share information online. Many cloud based applications can support pupil or student centered, and can support differentiation to support the individual needs of students. Given that cloud base applications can be accessed with school, home of other locations, and can support many different types of devices, they integrate well to an 'anytime, anywhere, any device' model of learning.

What are Cloud based Tools and Applications?

Cloud based tools or applications are online or web based applications that are accessible generally via a web browser. They range from basic websites to complex and highly interactive online learning environments (OLEs). Many are free for education or may have basic versions which are free, while possibly charging for more advanced functionality. Some are subject specific (for Maths, English, Science etc.,) while others such as online learning environments can be used to support any subject area or topic.

Today more services, tools and applications are being provided 'in the cloud'. For example, both Google and Microsoft now offer internet cloud-based office productivity suites (word processors, spreadsheets etc.) in the form of Google Apps and Office365. Internet based cloud based data storage services such as Microsoft's Onedrive and Google Drive Apps for Education, are increasingly popular with schools. Mobile apps for smartphones, tablets and other devices facilitate simple access to and synchronisation of files and folders across multiple devices, while services such as Apple's iTunes/iCloud and Google Play offer cloud storage and other services.

Cloud based tools and applications are provided using a technology generally referred to as cloud computing. School Principals and teachers are only too well aware that technology changes, and young learners thrive in that changing world of technology. Cloud based tools and applications bring flexibility and new possibilities for improving pedagogy as well as a new set of challenges in how to make best use of the potential of the cloud. Here you will find a brief overview of cloud computing and some aspects to consider when deciding if it is right for your school.

Tools /Application Focus	Examples of Cloud based Tools and Applications
Portal for educational content	Scoilnet.ie
CPD Platform	TeacherCPD.ie
Productivity applications	Google Apps for Education, Microsoft 365
Online Storage, File Sharing	Dropbox, Google Drive, iCloud, Microsoft OneDrive
Virtual Learning Environment /Online Learning Environment	Edmodo, Schoology, Schoolwise, Google Classroom
Maths Applications	Khan Academy
Video Sharing Service	Youtube
Blogging Platform	Wordpress, Kidsblog
Online Presentations	Prezi
Surveys	Survey Monkey
Sharing presentations	Slideshare
Microblogging	Twitter
Photo Sharing	Instagram
Schools Administration System	Vsware.ie

Examples of just some Cloud based Tools and Applications that are used in Education

Benefits of Cloud Model
1. Provides a flexible, scalable, cost effective model that does not tie schools to out-of-date infrastructure or application investments
2. Offers the flexibility to meet rapidly changing software requirements for today's and tomorrow's teachers and students.
3. Allows software standardization, a wide range of applications, and easier maintenance through centralised updates
4. Enables rapid development and deployment of complex solutions without the need for in-house expertise
5. Can eliminate the upfront financial burden of deploying new technologies through either a free or 'pay-as-you-go' model
6. Supports different teacher and student devices (tablets, laptops, desktops etc) both inside and outside the school infrastructure
7. Increased flexibility for teachers, who can select from a wide range of cloud based applications which best complement their curriculum and approach at any given time.
8. Cloud computing allows for cost- and energy-efficient centralization of school infrastructures. It takes advantage of cloud based server capabilities to adjust allocation based on demand.
9. Remote management and maintenance can save time and increase security. For instance, an application or operating system served by the cloud can be upgraded once at the cloud based server level, rather than on each individual platform.

What needs to be in place to support cloud computing?
Reliable high quality broadband is important for working with cloud based tools and applications. While some cloud servicers or 'apps' can support offline access to an extent, good broadband connections are required in order to fully use applications and services hosted in the cloud. Cloud services can place a significant load on school networks and broadband connections, particularly in larger schools where large numbers of pupils have their own mobile learning devices (for example using BYOD) and staff are likely to require simultaneous, concurrent access to cloud services. Ideally the use of cloud services requires both good upload as well as download broadband capability to be available.

Connectivity to Wireless Networks
A school using mobile learning devices for teachers or students to access cloud services will need to have a **'fit-for-purpose' wireless network** in place, so that these devices can access the network or internet. Accordingly schools should review the **Guidelines on Wireless Networking at www.pdsttechnologyineducation.ie/technology**.

Deciding on a suitable solution
Before a school makes a decision on a suitable solution, it would be important that the school is confident that the approach they wish to take is the 'right learning choice' for the school. Seeking advice from a similar type of school that is already successfully using a cloud based approach is an excellent way of getting relevant up to date information and feedback on the cloud based service. It is recommended that where possible schools evaluate the service before purchasing, for example evaluating a free or a (30-day) trial version of the service. Following this evaluation the school should be in a better situation to make a decision to proceed to use the service further or not.

Sources of further advice and guidance, links:

Infographic on Cloud computing in Education
http://www.crucial.com.au/blog/2014/07/17/infographic-cloud-computing-in-education/

Wikipedia: Cloud Computing
http://en.wikipedia.org/wiki/Cloud_computing

Benefits of Cloud based learning
www.teachthought.com/technology/4-benefits-to-cloud-based-learning/

Google Apps for Education
http://www.google.com/intl/en-GB/enterprise/apps/education/
https://www.google.com/edu/

Apple -iCloud
https://www.apple.com/icloud/

Microsoft in Education
http://www.microsoft.com/en-us/education/products/office/default.aspx#fbid=RYchpUxOCU5

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www.pdsttechnologyineducation.ie/technology