



TOOLKIT SECTION 3.

Digital /Visual Tools for **RESEARCH + PLANNING**



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3. Digital/Visual Tools for Research + Planning

For engineering and vocational educations teachers and students alike, formatting and keeping your research organized can be a challenging task.

In this section of our Visual Literacy for Engineering Education toolkit we introduce some digital/visual tools which teachers and students can use to research and plan projects.

- 1 Diigo
- 2 Pearltrees
- 3 Labster
- 4 Dropbox



Diigo “In a Nutshell”

Diigo is a social bookmarking website that allows signed-up users to bookmark and tag web pages. Additionally, it allows users to highlight any part of a webpage and attach sticky notes to specific highlights or to a whole page.

These annotations can be kept private, shared with a group within Diigo, or be forwarded to someone else via a special link. Diigo can very effectively be used to help students learn how to manage online content using the various Diigo features.

It's flexible use, makes Diigo a great research and planning tool for engineering educators and students alike. Diigo can be used to help develop collaborative research skills by accessing the Diigo account as a group for a shared task.





Diigo Advantages

- Enhances the cohesion of research groups on specific issues by navigating through information that has been tagged by researchers and/or users.
- Enables the organization and management of relevant information for professors as well as researchers, university students, etc. building knowledge cooperatively.
- Diigo enables one to visualize the actual interests of a researcher through his tag cloud.



Diigo Disadvantages

- Can only be used online, no offline functionality
- Requires good teamwork skills and good group working skills
- Time Limit – sometimes passwords automatically change meaning potential loss of work.
- Limited Printing capabilities
- Free Account - While Diigo is free for all educators or teachers that successfully apply, the free account gives limited access to the various online tools offered by Diigo.

Feedback/Insights

“

“Diigo is the ultimate classroom research tool for project-based learning in engineering education.”

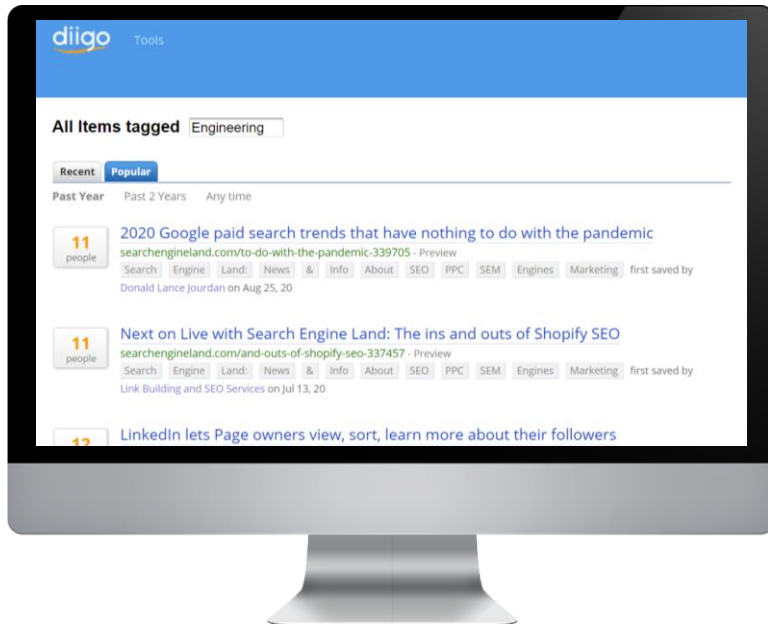
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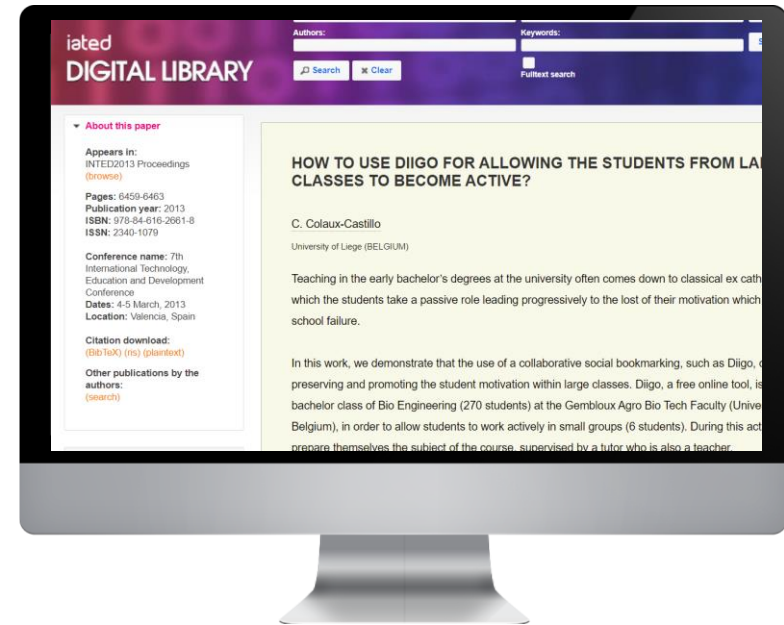
Engineering Educator, Poland



Diigo - In Action



Explore curated research related to Engineering on DIIGO - [Engineering | Diigo](#)



Diigo is used in a bachelor class of Bio Engineering (270 students) at the Gembloux Agro Bio Tech Faculty (University of Liege, Belgium) in order to allow students to work actively in small groups of 6 students. [Read more](#)



Pearltrees “In a Nutshell”

Pearltrees is a social bookmarking tool that allows the users (engineering educator and students) to save websites in lists which can be tagged with words that identify them.

Pearltrees is a creative and visual way to save and manage the users favourite websites or ‘pearls’ as they are known. ‘Pearls’ – websites, files, photos and notes – can be saved and organised into what’s known as ‘Pearltrees’. These ‘trees’ can be created and organised around subjects of interest.

Using Pearltrees is simple. Simply create a ‘tree’ called ‘Research Project’ and start to save ‘pearls’. Visually, the Pearltrees used to have a tree-like structure much like mind mapping, now it is more of a dynamic grid which arguably gives a much more orderly appearance.





Pearltrees Advantages

- Visual – it is a creative and accessible way to manage information
- Intuitive – it is simple to setup, use and browse
- Can be accessed on computers, mobile phone and tablet devices
- Scope – websites, files, photos and notes can be saved
- Collaborate – users can work together to create ‘pearltrees’
- Pearltrees can be easily shared through Twitter, Facebook and Google+



Pearltrees Disadvantages

- In most cases information is retrieved from links to websites so Pearltrees competes with usual browsers and their bookmark feature.
- Their updated version is less visual as they no longer resemble the tree feature

Feedback/Insights

“With Pearltrees, we create virtual libraries and global communities of practice that collaborate to curate content. It is an excellent tool that helps us educators organize and update curated content for best practices in all 21st Century skills.”



Engineering Educator, Ireland



Pearltrees - In Action



Once logged in you can view and search peartrees for public engineering peartrees for inspiration [Like this Electrical Engineering example](#)



This video tutorial shows what a great tool Pearltrees is for collecting, storing and sharing digital content. This short tutorial provides an intro to Pearltrees navigation and basic features. [Source](#)



Labster “In a Nutshell”

Labster is a science-based video game which allows users to role-play conduct experiments and tests to answer real world problems. Engineering educators can use Labster’s virtual labs to help motivate and engage students by introducing and reinforcing science concepts, preparing for empirical experiences, providing opportunities to master skills/techniques and, as lab replacements for online learners.

As a visual literacy tool, Labster can be used to develop 3D visualization in to help learning complex problems. It also helps the development of critical interpretation and use of visual technologies.





Labster Advantages

- As well as visual literacy, it supports inquiry-based learning, critical thinking and successful problem solving.
- Gives an economical opportunity to perform expensive empirical works
- Offers the opportunity of a virtual experience on the correct use laboratory equipment.
- Good alternative to real labs as they help students to understand the principles behind the experiment.
- Easy for students' Learning progress tracking.



Labster Disadvantages

- Does not offer a free access.
- Long load screen times which does bring about frustration with users and facilitators, especially when there are a limited class time.
- Limited number of Virtual labs.
- The labs offered by Labster are sometimes not as intuitive.

Labster Feedback/Insights

“Labster best suits high school students ready to meet its advanced expectations: Students will find a great resource in this tool. We use of Labster site's questions and animations can really spark connections between procedures and processes”



Engineering Materials Educator



Labster - In Action



Concrete Materials Testing:
This example shows an engineering lab to test the properties of concrete materials and learn the key properties of durable concrete



In this virtual lab freshmen engineering students are able to understand the different steps of the wastewater treatment process, Understand how micropollutants can influence aquatic organisms among other interesting topics



Dropbox “In a Nutshell”

Dropbox is a well known and popular cloud storage solution which is renowned for its ease of use. Dropbox is primarily being used in many small businesses as a shared storage solution for all sorts of documents, resources, and projects. According to Dropbox, over 600,000 companies and institutions worldwide are using the cloud based software. This makes it a useful tool for engineering students to become familiar with in preparation for the world of work.

Dropbox's education solution connects with best-in-class learning management systems like Blackboard, Canvas, and Moodle, as well as popular communications tools like Slack and Zoom. And with Dropbox Paper, educators and students can bring engineering education to life by creating and collaborating together in one online workspace.





Dropbox Advantage

- It has excellent collaboration tools that make collaborating on shared documents simple and effective
- It offers seamless integration with both Microsoft Office and Google Docs.
- Dropbox pricing isn't too bad, either, and its "smart sync" feature keeps hard drive storage in check
- You can open a free Dropbox account with 2GB of storage space, allowing you to sync your files across three devices.



Dropbox Disadvantage

- Lacks zero-knowledge encryption
- More expensive
- Poor privacy

Feedback/Insights

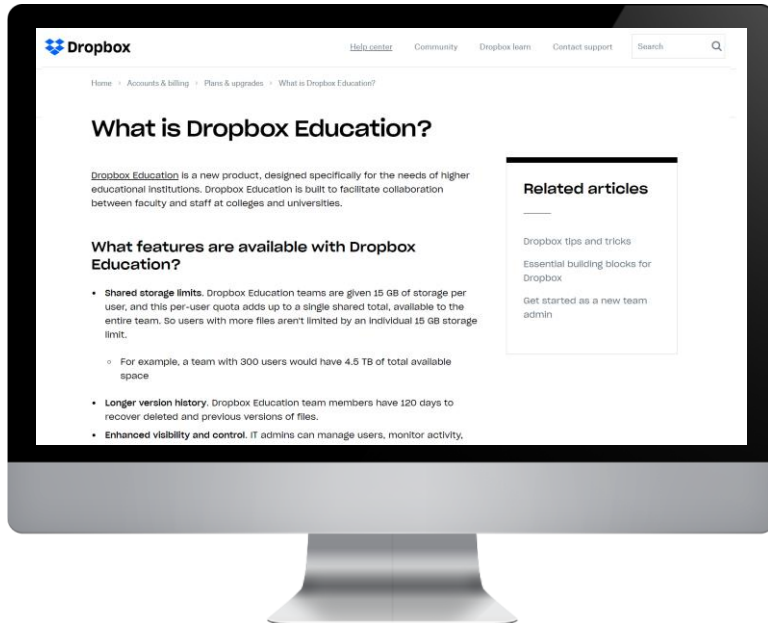
“
For file management, research and planning, my choice of tool is Dropbox. I find the UI of Dropbox and its implementation into the computer's OS to be excellent and incredibly intuitive.
”



ICT Engineering Educator, Poland



Dropbox - In Action



Dropbox Education is a new product, designed specifically for the needs of educational institutions. [Find out more](#)



The engineering behind Dropbox – an interesting look into how the tool works explained by two Dropbox engineers! [Source](#)

Next up...

Section 4 - Digital/Visual Tools for the Preparation of Schematics & Diagrams

