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CCL GUIDE: LEARNING STORY

CONTENT CREATION

What is the Content Creation scenario, and how to use it?

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WHAT IS MEANT BY 'CONTENT CREATION'?

> Much of what can be seen online on websites —such as YouTube, Facebook, Twitter, or Wikipedia — is based on activities where content is mixed together. Content is thus not fixed and static, but rather moving from user to user and from context to context. This "content in motion" is an interesting process to study, along with how we conceptualize content production as a cultural process. (Erstad, 2010, p. 58)

This idea from Erstad helps frame the use of learning methodologies and strategies supported by the creation of materials by students. In this perspective, students are no longer the usual consumers but producers or creators of content. The increase in content production has been exponential since the widening of internet access and easy access to devices like digital cameras, MP3 readers and tablets, especially after the introduction of social media tools and technologies. Much content is reused existing content easily shared on the internet. Young people's interest in this creation process is interesting to explore. "Digital media is part of growing up today, but at the same time it varies a lot how young people use these media for different purposes. Still, despite variations in the number of young people that can be described as active content creators, the way some young people have taken up these media as creative tools raises important questions about social practices among youth and especially how these developments challenge basic conceptions about education, schooling, and learning." (2010, p. 62).

Our interest in this paper is narrower and focuses on the creation of ‚learning objects', because of their educational nature and purpose. Therefore a good understanding of what learning contents and learning objectives are is crucial.

WHAT ARE LEARNING OBJECTS?

The concept of learning objects (LO) is not a completely stable concept, having matured over the last forty years. The learning technology Standards Committee of the Institute of Electrical and Electronics Engineers (IEEE), has defined the learning object through the standard IEEE LTSC 1484.12.1: "a learning object is defined as any entity - digital or non-digital - that may be used for learning, education or training"(IEEE, 2002). A different definition evolved and was published in 2005 by the same working group (IEEE, 2005): "Learning Objects are defined here as any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning." Other definitions of a learning object are: "'a digitized entity which can be used, reused or referenced during technology supported learning' as it focuses on two attributes: that LOs must be digital and must be part of a learning event"(Rehak & Mason, 2003, p. 21), and a simpler definition: "a resource which helps a learner achieve a particular learning objective"(Littlejohn, 2003, p. xv).

For our purposes, it is important to see that the concept is highly related to the use of computers in education. In the end of the 1960s, Ralph Gerard, considered by some researchers as the founder of the concept of LO, referred to the need of the school to produce "shorter instructional blocks" (Gerard, 1967), learning materials

aided by computers (CAL – computer-aided learning) in order to be used autonomously by students. Gerard recommended that "[i]n order to build a course, or a shorter instructional block, for CAL, the objectives of each exercise must be distinct, the reasoning sharp, the logic sound, and the facts and responses correct" (p. 221) and drafted a concept of learning object as follows:

> "productively integrating books (via microform), sound records, movies, video materials, any recorded form of man's collective experience and creations, into computer-mobilized resources. Included also are: better understanding of the learning process and learning how to best aid learning-when to instruct or drill or examine or answer or discuss with the student"(p. 220).

To sum up, the LO concept has developed from the idea of splitting the curricular contents in small reusable components, oriented to specific objectives, to more complex concepts. The current concept of LO includes, for example, the technology used, the possibility for reuse and its size and granularity, metadata or information that describes the LO, the differences between content and structure, its internal logic and the possibility of information gathering.

In order better to define the concept, Churchill (2007) proposes to consider a learning object as (a) an instruction or presentation object, (b) a practice object, (c) a conceptual model, (d) anything digital and (e) anything digital and non-digital. Based on these criteria, he created a classification system of the LO: presentation, practice, simulation, conceptual models, information and contextual representation.

TABLE 1 TYPES OF LEARNING OBJECTS (SOURCE: CHURCHILL, 2007, P. 482)

LO type	Explanation	Simple example
Presentation object	Direct instruction and presentation resources designed with the intention to transmit a specific subject matter	An instructional sequence on the classification of triangles
Practice object	Drill and practice with feedback, educational games or representations that allow for practice and learning of certain procedures	A quiz question requiring a learner to use the representation of a protractor to measure angles and answer a question regarding the ratio between base and height of the right-angled triangle
Simulation object	Representation of some real-life system or process	A simulation of a compass allowing a learner to draw a geometric shape (e.g., equilateral triangle)
Conceptual model	Representation of a key concept or related concepts of the subject matter	A representation that allows for the manipulation of parameters of a triangle, which in turn changes displayed modalities such as visual representation of a triangle, and numerical values of sizes of its angles and sides, and displays a graph showing changes in relationship between sides or angles
Information object	Display of information organized and represented with modalities	A representation that allows learners to change angles and sizes of a triangle and, based on configuration, to obtain information such as the type of triangle illustrated, a picture showing it in real-life and a short description of its properties
Contextual representation	Data displayed as it emerges from a represented authentic scenario	A representation that shows real-life examples of triangles (e.g., roof of a building) and allows a learner to use representation of a tool (e.g., tape measure) to collect data about dimensions of these triangles

Although "[T]he main idea behind learning objects is that they are to exist as digital resources separated from the learning task in which they are used" (Churchill & Hedberg, 2009, p. 451), this is the approach to the concept of learning object we will adopt in this text.

THE CONTENT CREATION PROCESS

The content creation process that has both educational or commercial goals is a widely studied process and dynamic both in terms of strategies and execution methodologies. Nowadays, in education, digital means as a distribution vehicle are almost mandatory to the content creation process. Our approach to the content creation process is based on this assumption.

THE ADDIE MODEL

For a long time content creation models have contained the same basic ‚ADDIE' stages: analyze (A), design (D), develop (D), implement (I) and evaluate (E), as in Figure 1 below.

	Analyze	Design	Develop	Implement	Evaluate
Concept	Identify the probable causes for a performance gap	Verify the desired performances and appropriate testing methods	Generate and validate the learning resources	Prepare the learning environment and engage the students	Assess the quality of the instructional products and processes, both before and after implementation
Common procedures	1. Validate the performance gap 2. Determine instructional goals 3. Confirm the intended audience 4. Identify required resources 5. Determine potential delivery systems (including cost estimate) 6. Compose a Project management plan	7. Conduct a task inventory 8. Compose performance objectives 9. Generate testing strategies 10. Calculate return on investment	11. Generate content 12. Select or develop supporting media 13. Develop guidance for the student 14. Develop guidance for the teacher 15. Conduct formative revisions 16. Conduct a Pilot Test	17. Prepare the teacher 18. Prepare the student	19. Determine evaluation criteria 20. Select evaluation tools 21. Conduct evaluations
	Analysis Summary	Design Brief	Learning Resources	Implementation Strategy	Evaluation Plan

FIGURE 1 ADDIE APPLIED TO THE SYSTEMATIC DESIGN OF INSTRUCTION (SOURCE: BRANCH, 2009, P. 21)

ANALYZE – Analysis comes from answers to a group of questions that identifies the target-public or audience, establishes goals and defines objectives, evaluates the distribution options or product presentation, defines functions and responsibilities of each one or of each team, establishes a calendar, working methodologies and other pedagogic considerations related, for instance, to learning styles, interests and students competences.

DESIGN – Design concerns research, systematization, planning and development, evaluation and management of the process of content creation. Starting from a logic protocol of intervention, based on observation and analysis, strategies are defined and redefined that are the most suitable for a certain result to be achieved.

DEVELOPMENT – The development stage focuses on tool and resources selection and the content creation process itself, the most obvious stage of authorship. It is in this phase that there should be a clear and complete action plan, and where resources are organised and the necessary materials hosted. Development also involves the use of planning and encoding tools such as storyboards and concept maps.

IMPLEMENT – The implementation stage is the one that realises the development plan, where the dreams of the creators take place. It is a stage of continuous reorganization where mistakes are fixed that arise during the process until a prototype is created.

EVALUATE – Lastly, evaluation consists of systematic repetition of analysis and comparison with the objectives of each stage of the process. Evaluation is formative during the creation process but summative at the end, allowing feedback about the transfer of the knowledge, successive levels of the objectives, the balance between costs and results and students attitudes.

The ADDIE model has been reformulated and redefined by several researchers of the instructional design area, though here we focus on two models that cover this subject.

THREE-PHASE DESIGN

The first proposal concerns an ADDIE functional scheme, introduced by Sims and Jones (Sims & Jones, 2002), consisting of a three phase design (3PD), as shown in Figure 4.
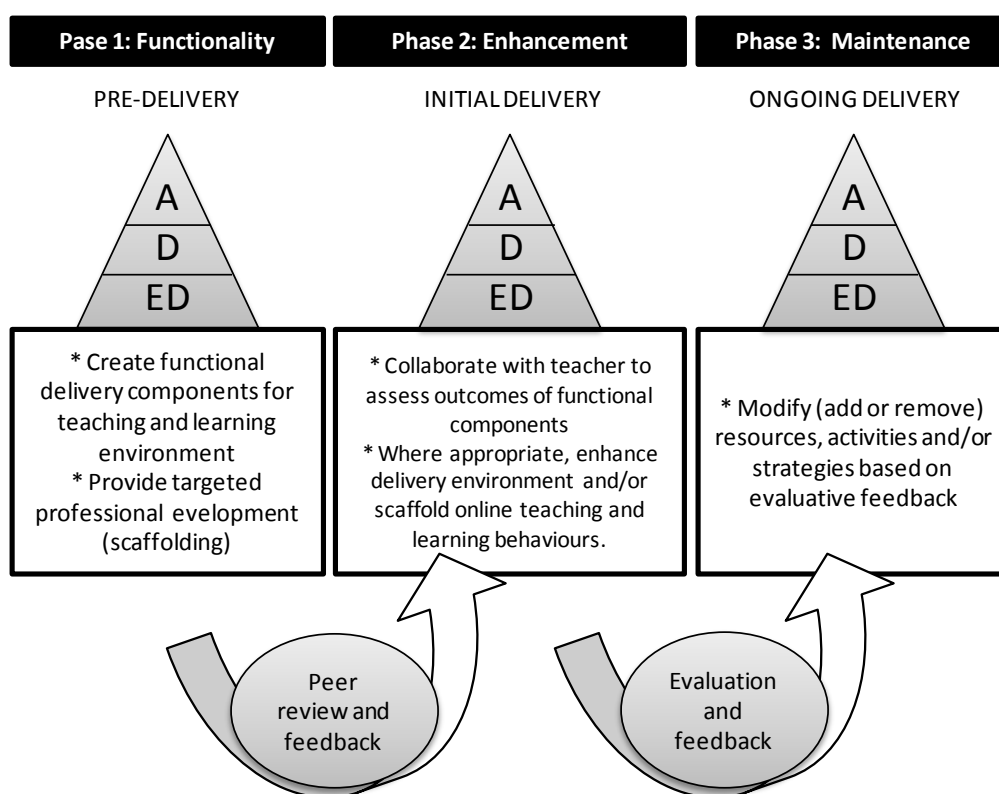

FIGURE 2 THREE-PHASE DESIGN & SCAFFOLDING (RECONSTRUCTED FROM: SIMS & JONES, 2002)

These authors emphasise the fact that the creation process is a team process, integrating the notion of interactive development or consecutive approaches. In a first interaction, the learning environment will offer the requisite components and conditions, able to include objectives and a preliminary analysis of the needs to obtain the desired results. In the following interactions, the development will be reinforced with generational changes. "The model therefore reinforces both the team-based approach to the design and the provision of resources as well as an iterative development process. One of the essential aspects of the model is the specification of baselines in levels that correspond to these iterations – the first relating to course functional and essential components, the second to multimedia enhancement or interactivity and the third to ongoing maintenance. These iterations are identified within the strategy as three scheduled phases of development that integrate both a methodological approach to unit development, scaffolding and quality controls and assurance" (Sims & Jones, 2002) as can be seen in Figure 2 above.

KEMP'S INSTRUCTIONAL DESIGN MODEL

In 1985 Jerrold Kemp developed a model of instructional design, later reevaluated (Morrison, Ross, Kemp, & Kalman, 2011) which highlights four nuclear elements: students objectives, methodology and evaluation, taking into account content design as a continuous course in which redefinition is present at all stages.
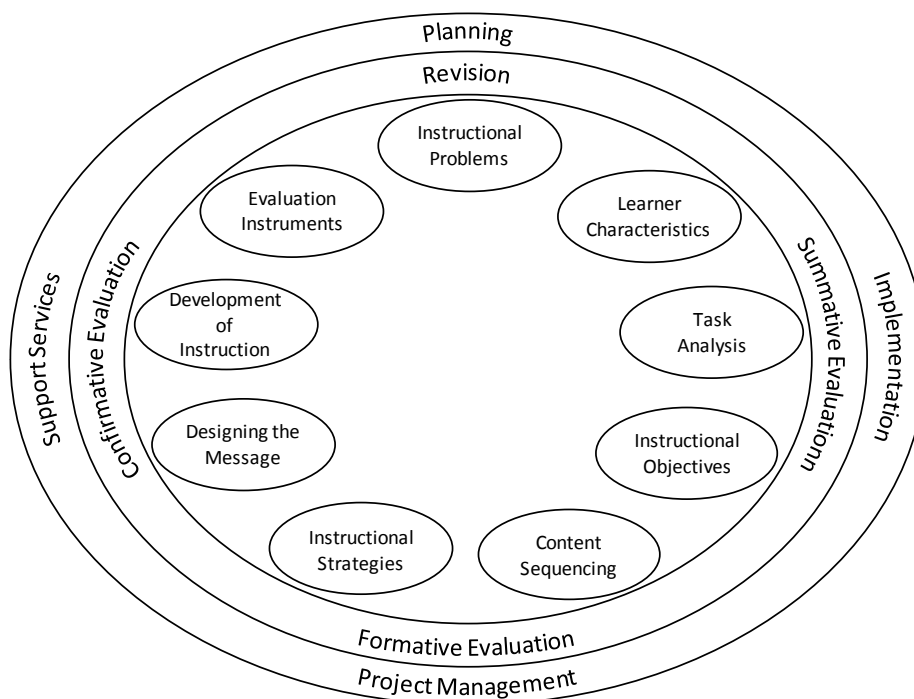

FIGURE 3 COMPONENTS OF THE INSTRUCTIONAL DESIGN PLAN (SOURCE: MORRISON, ET AL., 2011, P. 12)

This model introduces nine components (1) Instructional Problems, (2) Learner Characteristics, (3) Task Analysis, (4) Instructional Objectives, (5) Content Sequencing, (6) Instructional Strategies, (7) Designing the Message, (8) Development of Instruction, (9) Evaluation Instruments, as in Figure 3.

According to Kemp's model, the stage of **(1) "Instructional Problems"** matches the identification of the addressees', audience or "client" needs, usually the supervisor of the audience. In **(2) "Learner Characteristics",** the analysis aims to identify the features of the context and of the addressees'. It is a stage of information collection, such as for instance, about students' backgrounds. **(3) "Task Analysis"** is the stage to "determine

what knowledge and procedures you need to include in the instruction to help the learner master the objectives."(Morrison, et al., 2011, p. 15). The stage **(4) "Instructional Objectives"** clearly identifies which results the student should achieve and **(5) "Content Sequencing"** refers to the order in which the information is presented, in a logical way to the learner and in a way that it makes success achievable. The **(6) "Instructional Strategies"** are the different ways to present information and ideas, arising from a simple analogy to a more complex simulation. On the **(7) "Designing Message"** level which is sometimes replaced by "Instructional Resources", the authors want us to understand it as a pattern group of images and words used in the communication with the students. This is the last analysis and design stage, following the first stage of the development phase. **(8) "Development of Instruction"** is, therefore, the stage that brings everything together to produce the finished educational content. It can for instance, combine the videos and audios, the texts, the images and web pages. The last stage concerns **(9) "Evaluation Instruments"** used to evaluate how students achieved the proposed objectives. The evaluation tools are very important because efficiency and accuracy depend on the perception of the whole process. Tools that are familiar to students, such as questionnaires and checklists, can be used, or other more innovative tools, like portfolios.

The Kemp model presents a group of interaction domains concerned with evaluation, supervision, management, formation, feedback, support and planning that are present throughout the content creation process.

Having analysed these two models of the content creation process, we can conclude that, whatever model best answers to needs, both include stages of analysis, design, development and evaluation.

CHALLENGES

The first challenge in content creation relates to copyright, something students do not easily understand and one that even teachers may struggle with. Authorship rights apply to anything created by third parties which we might use as our own product. After all, whenever we give away online any paper, we hope that authorship is respected.

Every country has its specific rules about authorship rights and there are also universal rules that all should respect. In the meanwhile, there are currently different forms and levels of content licensing that is important to be aware of. One example is the Open Source Initiative (OSI, 1998) embracing a wide group of open licensing for content and software; another is Open Access, founded by the Budapest Open Access Initiative, following a meeting that took place in Budapest, designated to allow the open access to school and scientific literature (BOAI, 2002) and the licensing given under the organization Creative Commons. Creative Commons is a nonprofit organization "that enables the sharing and use of creativity and knowledge through free legal tools" (Creative Commons, 2001), under licensing forms with different opening levels according to its ends.

Beyond the challenges created by the licensing of elements that teachers and authors might wish to embody in projects, there is a wider range of challenges.

Let's start by considering the decisions that the teacher has to face. For example, how should one present information to students in such a way that learning is optimized? How to plan, develop, and evaluate activities that allow students to use concepts and principles that help them to develop a deeper understanding of the contents? How to enhance the development of skills and competences of all students?

In this, the teacher is also confronted with the challenge of understanding and evaluating the educational value of each experience, as Earnshaw and Vince highlight (2001). "When is the interaction with digital media fun, educational, and engaging? When is it useful or just flashy?" (Earnshaw & Vince, 2001, p. 5). The same authors focus on the technological challenge, as the aim is that technology can integrate information into contexts. "These may be languages, formats, and/or modalities. It may involve fusing financial data with pictures, with text, and with surveys all in multimedia forms and content. Although much of this is happening today (with traditional media), when one considers that digital media will be increasingly interactive the challenge grows."(p. 6)

According to Lippincott (2007), "new media literacies, research skills, and technical skills must now accompany the development of written skills for students so that students will be able to engage in today's communities in a meaningful way." On the other hand, Elizabeth Daley (Daley, 2002) broadens the definition of digital literacy, believing that the multimedia language of the screen has become vernacular in our days, enabling complex meanings to be built, no matter the text, allowing ways of thought, means of communication, research, publication and teaching, in its essence, different from the text, considering that those who are in fact, 21st century literates are those who learn reading and writing the multimedia language of the screens.

Georgy Cohen (2012) offers some useful suggestions, for example, that one should activate the community in real time; this is to say "pay attention to what is happening in the world at large. (…) If there are current events with relevance to your organization, ask people to weigh in while they're still hot topics of conversation." He also suggests that we leave the expertise of students to take the main stage in the projects they take part, that we look for and take over the contributions of the community, allowing them to be the experts. Sometimes, "getting your community involved in content creation is as simple as asking the right questions. Use your social platforms, newsletters, and other touch points to solicit responses to queries. You want your audience members to be interested in you, so it's only fair to show some interest in them" (Cohen, 2012). The author also mentions the use of multimedia elements, suggesting the use of distribution services of music and online soundtrack to do research on "relevant themes - they could be related to travel, holidays, exercise, geography, current events, you name it - and use your social platforms to ask people to suggest songs they think would fit."

HOW TO USE THE CONTENT CREATION SCENARIO?

In order to develop learning activities to create content activities like Dream, Explore, Map, Make, Ask, Re-Make and Show can be useful.

The goal is to create useful interactive content for tablets in STEM education or other subjects e.g. an interactive online textbook, a short learning sequence or a game. From the beginning, students should have a good understanding of the pedagogic purpose of the activity, of the objectives and the expected results and how the produced contents will therefore be used. This way, they will understand well the demands and goals of the activity. Students are expected to self-organise their working groups, supported by the teacher and based on decisions arising from previous discussions.

Teachers' roles are very different from the traditional role: they are a coach and their role is mainly supportive, but the teacher should have a clear idea of the pedagogical goal before starting to work. He/she may need to develop different educational approaches for different complexity levels, e.g. preliminary instruction on the topic will be necessary for students with little or no pre-knowledge before the brainstorming is effective, especially in subjects where contexts are new or of high complexity.

Dream

The teacher should explain clearly the tasks to be assigned, taking into account the topic negotiated between the teacher and the students.

Once the final product is agreed upon and having established an action plan to reach that objective, the teacher should be clear about expectations and ambitions bearing in mind the curricular orientations and time restrictions. Fewer and less time consuming learning resources, combined with phases of reflection and discussion, will make the performance more predictable and motivating. It is important to be aware of the need to define a target public, or audience/user of the learning objective and its distribution channel, for example, by the means of an app store, a web page, etc. Afterwards students can organize themselves into teams, forming groups based on their personal interests. The next step is to distribute roles to each member of the group.

Students could choose between the following roles:

- Team Leader – plans the activities and helps each team member to complete their work.
- Team Reporter – reports to the teams their progress and individual progress. The Team Reporter is in charge of producing progress updates explaining what each of the other team members are doing.
- Organiser – organises the online tools, meetings and webinar.
- Lead Researcher – leads most of the research. Each team selects a team name and creates a team blog where they will report their progress.

The teacher should provide students with a challenge to research a topic on a controversial issue which they are interested in and which fits within the curriculum. Next, students should decide on their research questions, which they can do through a traditional brainstorming using post-its, or other, richer, environments favourable to the development of creativity, like interactive whiteboards, a camera to capture and picture the groups' post-its, mind mapping tools or other tools, including the online ones.

The teacher monitors the planned tasks and ensures that the necessary skills are in the group and keeps an eye on the rationale why pupils chose one approach rather than another. Considerations about the appropriate level of required pre-knowledge should be critically debated as part of the learning setting.

Throughout the activity students and the teacher should reflect upon the importance of formative assessment and progress monitoring, using for example blogs and e-portfolios. In addition, a collective e-portfolio can show evidence on accomplishments.

Online tools you might use:

TeamUp (http://teamup.aalto.fi is a tool that helps organizing group work online, following the criteria established by the teacher. The rapid reorganization and interactive characterization of the grouped members is one of the main advantages of TeamUp.
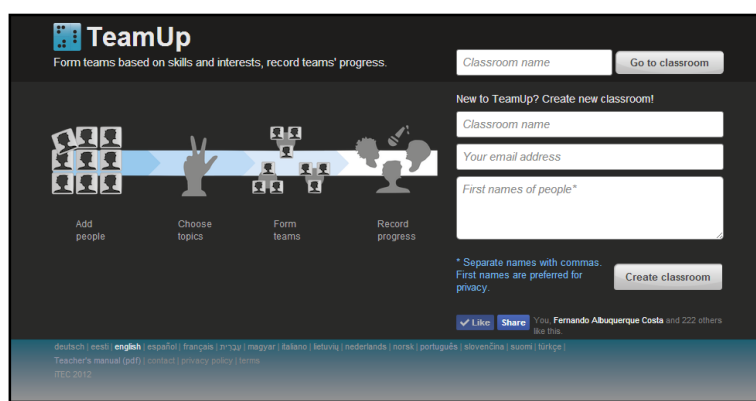

Padlet (http://padlet.com/) is a web application which allows the expression of ideas on a topic and how to organize them easily. It may be useful to present a proposal for a work project, to design a project or learning scenario. Padlet allows embedding online documents (e.g. images, video, pdf, etc..), and documents that can be uploaded from the computer.
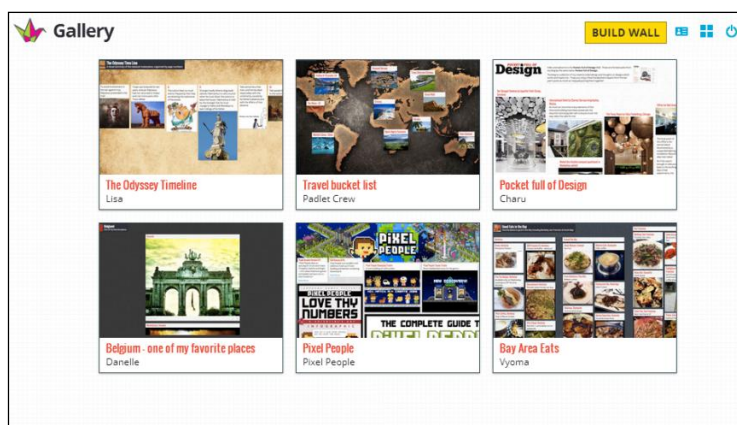
Lino-it (http://en.linoit.com/) is a web application similar to a corkboard where you can post sticky notes, creating a structure of information you collect. One can express themselves with text or graphics, video or files existing online or uploaded from computers.
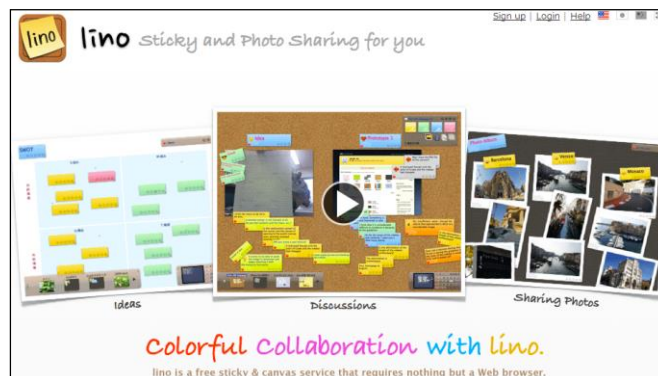
Reflex (http://reflex.aalto.fi/) can be used to register in audio the daily or weekly views of the students and build a time line with those reflections. Its didactic use can focus on the systematic record of the progress (evaluation) or ideas about new projects, developments and creative suggestions that make learning easy.
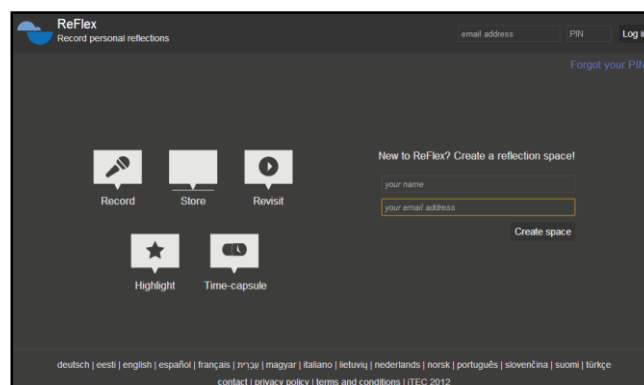
FolioFor.me (http://foliofor.me/) is an online system for creating e-portfolios based on Mahara. It allows documents to be uploaded (from the computer or online documents).
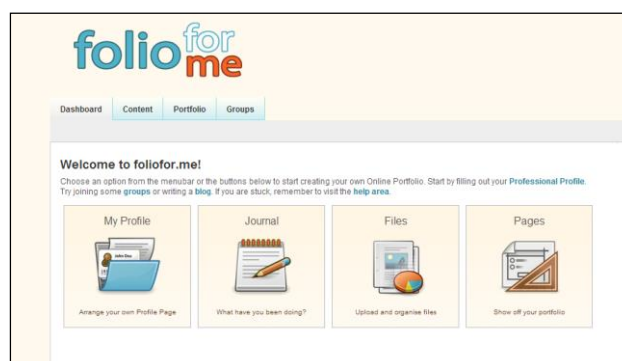
Explore

Learning activities "Explore" can take place in an open learning centre and the classroom or outside school. Students explore different types of resources and check them against a checklist provided by the teacher or created by themselves with quality criteria.

Students work over an extended period in small groups where individuals are responsible for different parts of the learning and content production. So they should be responsible for teaching other elements in the peer group, the core knowledge and skills. Students could create small 'knowledge nuggets' or interactive flashcards with the information, images and videos collected, in order to demonstrate learning, shared with peers and teacher, who is to provide expert feedback.

Experts, e.g. librarians, can give advice and suggest other techniques or resources.

Online tools you might use:

Evernote (http://evernote.com/) is a multiplatform tool resource organizer which stores documents online in one place. Evernote allows you to record internet markers while surfing, making it easier to return to important sites, create annotations, web clips, files, scans and images and save all in the same place. You can access these documents from a web navigator or a digital device like a personal computer, an iPad or a smartphone. This way, it is easy to organize clippings and documents to a presentation, a creative project, a pastime. The fact that we can keep different resources in the same place makes the planning of projects and activities easier. As it is suitable to different devices, if they have internet access, the synchronization between devices is automatic.
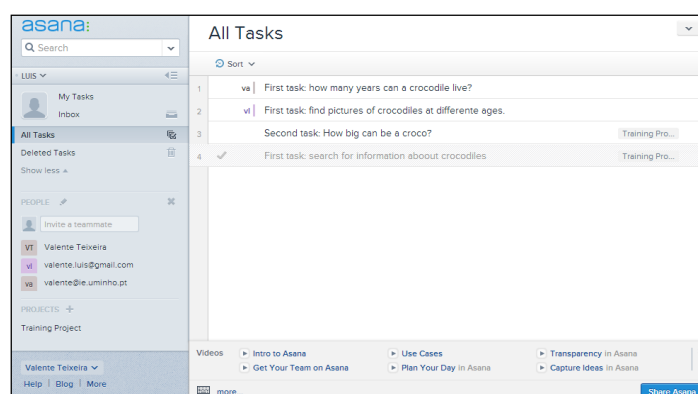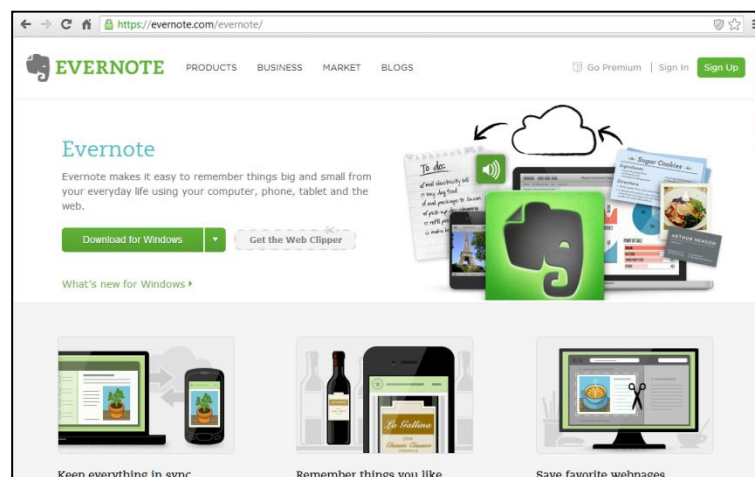

Diigo (https://www.diigo.com) is a multi-tool for personal knowledge management. With Diigo you can select, highlight, annotate and save clips of information online.
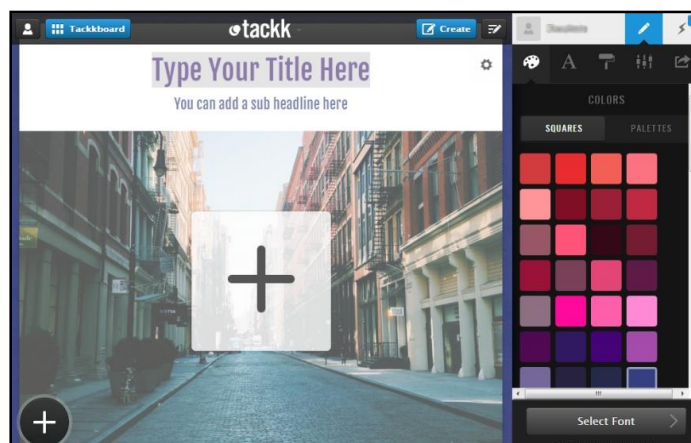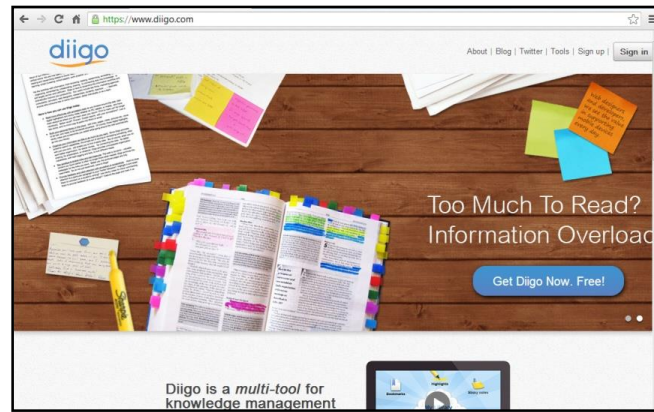
Google Calendar (https://www.google.com/calendar/) is an open source tool that can be used online to manage shared activities. The calendar can be synchronized with desk software with similar features.
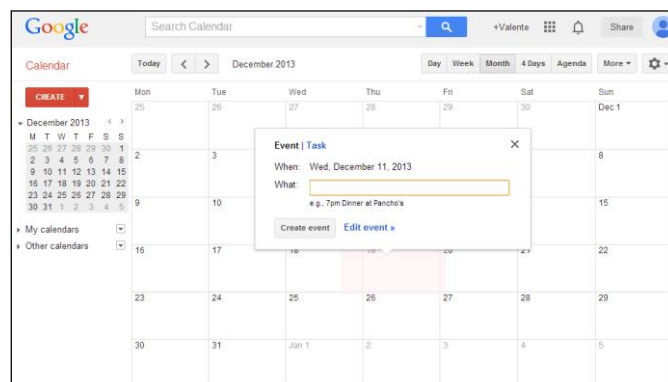
Asana (https://app.asana.com/) is a free and easy to use online Project manager which allows for managing tasks given to different elements of the working group. Although it is aimed at professional users, it seems practicable with school students.

TACKK (http://tackk.com/) is a very easy and fast blog system, which does not need a login. It allows you to customise and share content one wishes to publish and receive comments on. One can upload photos, videos, maps and sound tracks.
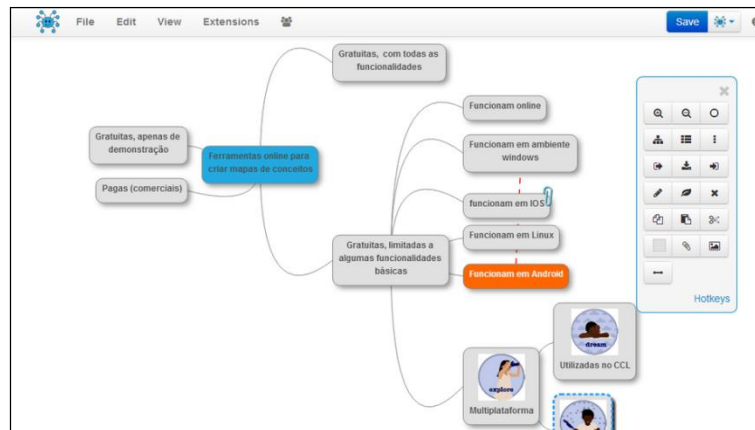
Map

The goal of the Map activity is to identify the best resources for the agreed learning objective, applying negotiated criteria. Students should make a further selection of resources and explore them deeper by rejecting some and identify gaps where there is a need for new resources. It may be necessary to fine-tune the project plan, develop the next steps in a more concrete way.

The activity should promote the correct use of referencing conventions when using digital content, e.g. Creative Commons–licensed material where appropriate.
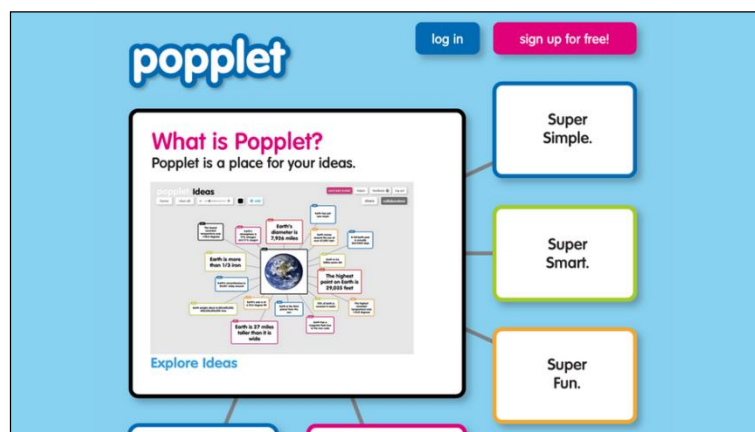
Activities can take place outside school, e.g. at home, library, café or elsewhere. Students can use mind mapping applications and other software to take notes, create a shared space, for example in the cloud or a closed learning environment, in order to provide students with the opportunity to publish and showcase their illustrations, demonstrations, digital stories, etc. Peer review can be useful if students create the content and give it to another group to get feedback. Peer learning and peer support among students', help each other to create valuable learning experiences. At the end of mapping, the Lead Researcher shares the findings with the group, e.g. using tablets.

Online tools you might use:

MindMup (http://www.mindmup.com) is an Internet application to construct concept maps, which easily integrates with Google Drive. Groups can collaboratively edit, share and export concept maps in different formats (e.g. PNG, HTML, FreeMind).

Popplet (http://popplet.com/) is an Internet application that can be used to record a brainstorming session, allowing people to express their thoughts about a certain topic in an easy and visual way, organizing ideas and concepts and their relations by linking them, creating a mapped structure of concepts, ideas or flow options. The application allows for a collaborative use by different users, from any kind of device. It is a multimedia friendly tool, free-form or a real-time wiki.

Make

It is important to keep the idea in mind that production and learning are strongly related to each other i.e. learning takes place during this process. Students create a digital resource (learning object) like a movie or a game, for example, using cross-curricular competences. They create a storyboard, e.g. in a blog or learning journal, to demonstrate their understanding of the topic, and add content material that supports that story. Peers provide feedback which will then again be considered in the improvement of the resources.

Learning environments will depend on chosen tasks and outcomes, but can be outside school depending on the chosen outcome. The activity should be performed in groups. The use of tablets, and other digital tools for registration, as well as cameras and video cameras, such as editing software for audio and video annotation, becomes very relevant at that stage.
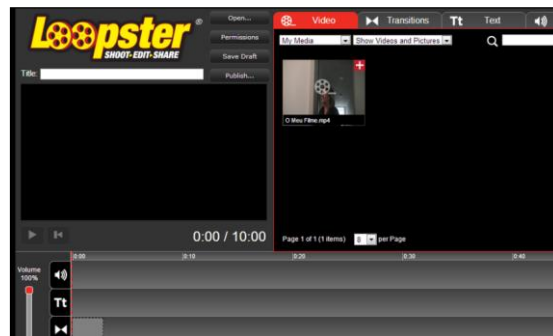
The teacher should encourage the use of digital tools. While monitoring progress and inquiring teams working in class he/she can encourage discussions between groups. By supporting their learning, evaluating and suggesting alternative strategies or tools, the teacher has an advisory, specialist and manager role, crucial to the success of the project. Students demonstrate their learning by creating weekly summaries, possibly using an e-portfolio. The teacher can monitor the progress by using a checklist for quality control, and students' self-assessment.

Online tools you might use:

WeVideo (https://www.wevideo.com/) is an online video editing tool enabling the use of our own resources (sources of video, images and audio). The interface is simple and intuitive. Once the video is rendered it can be published directly in a video distributor channel like YouTube or Vimeo or shared online through Google Drive or DropBox for instance.
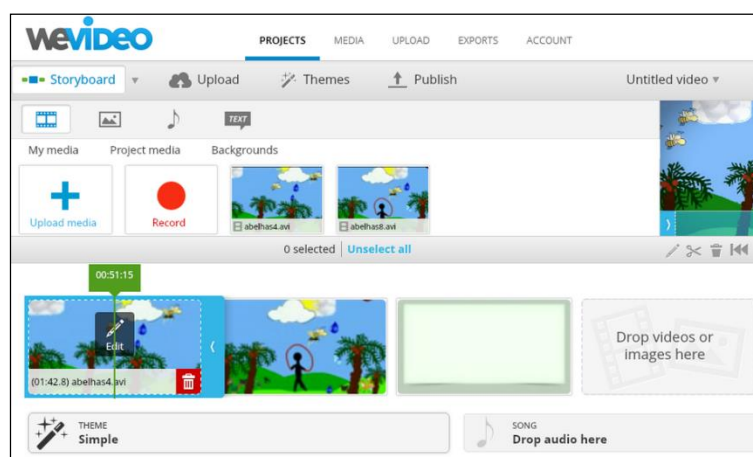
Loopster (http://www.loopster.com) is an online application for nonlinear video editing, using a traditional interface. Resources like audio, video and images can be transferred from the user's computer. The storage capacity is 2.5 GB and the lifetime of the resources is 1 month only. After editing, the system renders the video and sends an email message with a link to the video. Users can decide if the publication is public, personal, or restricted.

Prezi (http://prezi.com/) is a virtual whiteboard to create presentations enabling people to see, understand, remember and share ideas with other people.
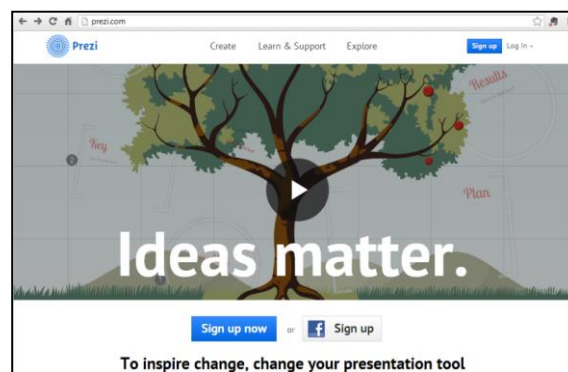
Snap! (http://snap.berkeley.edu/) is a visual, drag-and-drop programming language. It is an extended reimplementation of Scratch. It also features first class lists, first class procedures, and continuous added capabilities that make it suitable for a serious introduction to computer science for high school or college students. Snap! runs in your browser. It is implemented using Javascript.

Alternatives to Snap!

For online use: Scratch (http://scratch.mit.edu/)

For desktop computers running Windows, Apple OS or Linux: eToys (http://www.squeakland.org/)

For PC Windows or Xbox: Kodu (http://www.kodugamelab.com/)

Ask

In the Ask activity students present results to other groups in different phases in order to get answers and feedback, for example:

1. What does their family think of it?

2. What does their class/teacher think of it?
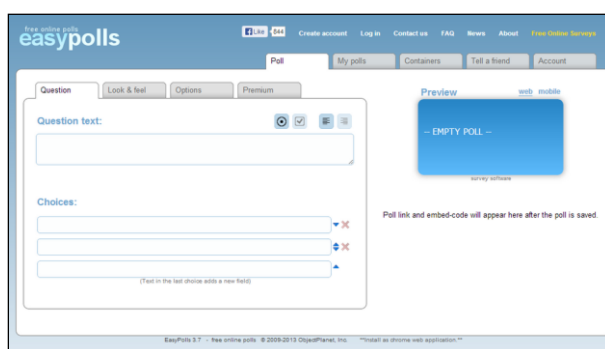
3. What will the world think of it?

The Learning environment should be a formal moment, in class, using digital technologies and tools like blogs, ePortfolios or wikis if necessary to share interim results.

The teacher's role is to give feedback and oversee peer review in a safe environment. Students present and give feedback on others, they also learn from the process: the importance of learning from each other – listening, accepting criticism, making constructive suggestions, assertiveness. Immediate peer feedback during the content creation phase and sharing interim results can boost reflection. Feedback from third parties is crucial but has to be safe.

To assess the work done, it should be considered the audience, learn from the feedback and take lessons.

Online tools you might use:

EasyPolls (http://www.easypolls.net/) is a very effective and comprehensive system to conduct online polls. Students can use this feature to decide on various options or to choose the subjects of their discussions.

ClassDojo (http://www.classdojo.com/) is a class manager and student progress tracker and is fully online. Teachers can use it to record student learning and share it with them and with their families, while maintaining and updating assessment and information. Students can access a set of reviews and information about their performance which contributes to self-regulation of their attitudes and behaviors. Family members can also track the progress of students, accessing information and reports that the teacher saves on the platform.
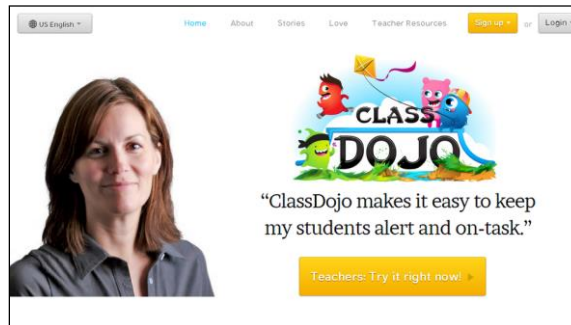
Re-make

In the Re-make learning activity, students integrate feedback to further develop the learning object. The goal is to ensure that the content produced is of sufficient quality to be used for subsequent teaching and learning, possibly also in other schools. The role of students is to construct the learning objects with the help of experts, if necessary. The teacher is the coach, giving support if students become blocked. The teacher should monitor the activities, ensuring that all students are involved in the redesign of tasks, assessing, suggesting and motivating them to improve their projects. The activity can take place in any environment, using the same tools, depending on the chosen outcomes.

Show

This activity corresponds to project completion, and aims to present, publish and distribute the learning object in an app store, upload to an educational portal, write an article on Wikipedia, etc. The content should be accessible from a range of places and contexts, and adapted to different user needs, including those with special needs. The teacher collects resources, investigates the possibility of making resources available under OER license or Creative Commons. The learning environment may be the classroom in order to show to each other the virtual platform for publication, like a portal, VLE, Wikipedia or app store. Digital technologies and tools used depend on the chosen outcome. Assessment should include teacher assessment and peer review during the final showcase moment. The teacher collects and stores evidence of collective and individual achievement. All stakeholders must give feedback.

Follow up: content produced is used for teaching purposes.

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