



PRACTICAL SKILLS EVALUATION
WITH DIGITAL TECHNOLOGIES IN
TEACHER EDUCATION



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D-Eva Training

*Self learning resources for assessment with digital technologies
Material for academic staff*



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Presentation

This material is intended for university academics working in the field of education, especially in teacher training, who want to expand their knowledge and skills to carry out competency-based assessment processes with digital support.

The material is structured into four parts. The first provides a general description of the basic concepts related to formative assessment. The second part presents some strategies for peer assessment and self-assessment using digital tools. The third part expands on additional strategies, particularly related to digital portfolios. The final part focuses on ethical aspects of digital assessment.

Each section focuses on the most basic and relevant theoretical knowledge, accompanied by examples of digital tools to facilitate their practical application.

Section 1. Formative assessment

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Abstract

This micro capsule examines the role of assessment for learning afforded by formative assessment as opposed to summative assessment which generally is aimed as assessment of learning. In addition to background information and contexts there are a range of approaches to formative assessment and tools that may be utilised in the process.

Key words:

Assessment. Formative. Summative.

Introduction

What is formative assessment?

Assessment refers to any method by which a learner and/or those involved in the monitoring and support of a learner can gauge where they are in terms of reaching specific goals and standards. Assessment can take place at any stage in that journey, be undertaken by a range of individuals including the learner themselves and should be the subject of feedback to aid progression.

Generally, assessment falls into one of two categories:

Summative: A means of evaluating a learner often at the end of a unit of learning and comparing it against a standard or benchmark. Summative assessments are often high stakes as they can be seen as a gate which opens or closes in terms of continuing learning, or informs choices in terms of the learners next steps. A summative assessment often takes the form of a standardised, timed, silent examination where a bench mark is set for specific grades and pass marks. These may be institution or nationally determined. Feedback is often limited to a grade or a pass/fail decision.

Formative: Varied forms of assessment that take place throughout the course of learning and aim to identify where improvements can be made and how near the learner is to their end goal. Assessment can be done by the learner, peers, teachers and tutors, related experts such as industry or professional practitioners. The assessment is ideally linked to clear assessment criteria which can be outlined alongside standards in a rubric. It can relate to whole or part goals ie larger assessments can be broken down into smaller ones. They can and should be varied and their key purpose is to guide the learner, through feedback, to improve their work, identify gaps and to work toward the final goal or goals.

Institutional and national policies on assessment differ. Some countries have a national examination system which determines access to Higher Education or training and a selective education system and an emphasis on summative assessment whilst others do not select and use on only formative

assessment with very few exceptions. Others have a mix of formative and summative in relation to 'gatekeeping'. Irrespective of which system dominates formative assessment and ongoing feedback is a vital part of a learners experience and support system.

This document has a focus on formative assessment including reference to a range of digital tools that can aid this process.

What is it: Critiques of Summative Assessments and the rationale for Formative Assessment

Even where a programme of learning has been the subject of formative assessments in various forms, including practice for the summative event there are several criticisms to be made of the use of summative assessments.

1. Some national examination systems such as A levels use papers that can be predictable. An experienced teacher can, to an extent, game what any given years examination will include based on patterns from previous years. They will also know where the marks for responses are allocated. They can focus on aspects of the subject curriculum that they expect to arise in the summative examination and can drill model answers based on the mark scheme. Learners may spend significant amounts of time learning examination technique and may achieve high marks using model responses. They may have learned a limited amount about the subject in comparison with learners who have covered the whole curriculum, have spent little time on examination technique or drilling model answers and who obtains a lower grade because they spent time writing excellent, well evidenced material that falls outwith the mark scheme. It could be argued that the former has learned to conform to a the specific summative assessment technique of the examination and has evidenced recall whilst the latter has demonstrated a high level of knowledge, understanding, analysis, critical thinking etc in terms of the subject studied. It could be argued that this means obtaining a high or low grade in a standardised national examination is neither a valid or reliable judgement of a learners knowledge or potential in that subject area.
2. The notion that a summative assessment is a fair and empirical judgement of a learners ability and potential assumes that all learners have equal access to the learning process. In terms of standardised national examinations this is clearly differentiated in terms of resources:
 - an experienced subject specialist or not
 - the number of hours access to the subject specialist teacher
 - the amount of individual attention that can be accessed
 - the level of access to physical resources such as texts, equipment, facilities, quiet space
 - non institutional situations such as space and time
 - health
 - social factors such as caring responsibilities, finance
 - stress factors associated with exams, in particular high stakes exams

It is clear that some of these factors are relevant whatever the learning program and its assessment methods however formative assessment is varied and flexible with the possibility of improving, changing or adding based on feedback and can take many forms. Summative assessment is often one chance, no feedback to improve and limited format. For many learners this has a negative impact on mental health, in particular with high stakes examinations. Obviously other factors are at play in terms of the individuals response to stress and pressure exerted by family. Rodway et al (2016) found that exam stress and exam failure was one of the key causal factors in teenage suicide in England. Other sources such as the Indian Governments Crime figures reported in the Hindustan Times in November 2022 found 4000 teenage suicides directly related to examination factors between 2016 and 2017. This consideration alone should make practitioners evaluate the necessity of summative assessments and consider the benefits of formative assessment.

Why is important

Preparing the ground

Reliance on formative assessment and its efficacy is dependent on the conditions in which it takes place. The introduction of diverse and creative forms of formative assessment, the specifics of which will be discussed later, means that learners must have a high degree of trust in the group or class. Relationships must be positive and trusting and there needs to be (in some instances) a shift in the teaching methods and attention paid to the class atmosphere. For example peer feedback needs to be supported by some learning how to give supportive feedback and how to be critical in a useful way. Simple techniques such as “two stars and a wish” can be used. Methods and content will be determined at the level of study – very young learners can hold up one of three faces – happy, neutral or sad whereas those in higher education might provide a witness statement of how a presentation is received and understood. Use of peer feedback has to have a positive class atmosphere in order to be of use and this does not simply happen but has to be managed by the teacher and learners. Detailed information on the teaching techniques, class atmosphere and related issues such as status treatment can be found in Cohen (2014), Gilles et al (2010), Gorski et al (2014), Wallace et al (2014) and Petursdottir (2018).

Using techniques which require positive interdependence, varied forms of communication, open tasks, specific instructions, collaboration and co operation, the inclusion of intercultural skills, detailed criteria, rubrics with standards prepare the ground for varied formative assessment and associated feedback and are all discussed in detail in the texts referenced above although this is not an exhaustive list.

What are the benefits

Intercultural Education and Skills

One of the goals identified by the International Commission on Education for the Twenty First Century (Delors et al 1996) was ‘Learning to live together, learning to live with others. This type of learning is probably one of the major issues in education today’. The extent to which this goal has been realised is to say the least patchy. However, the inclusion of Intercultural Skills has progressed and Intercultural Education which moves away from the one sided integration of the Multicultural approach to one of mutual integration has gained ground. Importantly it is an area that when embraced can go a long way to providing the right environment for diverse formative assessments.

Detail on Intercultural approaches can be found in Gilles (2010) Putnam (2008) Sierens (2000) and Petursdottir (2018). Intercultural approaches define culture in a broad way meaning that all classrooms (and societies) are intercultural as they are comprised of individuals with different backgrounds, values, attitudes, socio economic background, opinions, tastes etc.

Clearly the goals set by the Commission are not deliverable through traditional obedience and conformity models of learning or traditional standardised summative assessments. However, the adoption of varied techniques, the inclusion of co operative learning and the inclusion and assessment of intercultural skills can address the key objectives set by the Commission: Learning to learn, learning to be, learning to do and learning to live together. Intercultural competence means being in possession of the skills and competences needed to live and thrive in a pluralistic and diverse society. Wagner (2008) lists seven survival skills for careers, college and citizenship:

1. Critical thinking and problem solving
2. Collaboration across networks
3. Flexibility and adaptability
4. Initiative and entrepreneurialism
5. Effective oral and written communication
6. Accessing and analysing information
7. Curiosity and imagination

Drawing on areas such as cognitive science we know that attention to teacher talking is limited, that subject silos input barriers to understanding, that active is better than passive which should lead to critiques of traditional classrooms and one of the oft cited stumbling blocks to moving away is the prevalence and importance placed on summative assessments. In some areas this impacts on teachers in the form of assessment of their ability – exam results become their success criteria. However the key questions that need to be asked of the traditional classroom are:

- How much useful interaction takes place between learners?
- How much opportunity or guidance toward critical thinking and creativity is there?
- How do they learn that working together often produces better results than working alone?
- How do they come to understand that contemporary life requires a range of competencies where all they are evaluated on is reading, writing and memory?
- How useful are the norms of do your own work, dont pay attention to other learners, dont ask their advice or give advice, only listen to the teacher, keep your eyes to the front and be silent?
- Why do learning plans and goals tend to be imposed rather than negotiated?
- How much is learned and retained or the subject of useful feedback when using summative assessment?

Which leads us to:

Conditions of effective implementation

Assessment for, not of, learning

Formative assessment is an opportunity to give feedback to the learner about how they are progressing toward a desired goal. The specific actions taken within a formative assessment opportunity will also provide learning as it is carried out, both for the learner being assessed and frequently their peers.

Ideally formative assessment will:

- Use peer and self assessment once learners have been helped to use, give and receive the same
- Use varied forms of creative approaches to assessing the learners understanding
- Provide opportunities to acquire a range of intercultural skills and cultural capital
- Establish a class room culture that encourages interaction and use of assessment tools
- Provides feedback on learner performance on a regular basis
- Involve learner in planning and carrying out assessment and wider learning goals
- Provide an opportunity to learn from mistakes or shortfalls and encourage an open mindset

Co operative learning and group work can be assessed. In group work or co operative learning students can evaluate their own work and set goals for the next class. These can be in terms of their intercultural and subject aspirations. The inclusion of intercultural skills and assessment of these can provide an aid to classroom management if transitioning away from traditional methods. Evaluation of the groups processes can be done via the group or individually. The teacher can provide an evaluation on specific criteria drawn from the rubrics associated with the task. The teacher can give evaluations to specific students on specific aspects of the task. These should take the form of letting the learner understand where they sit in relation to the success criteria. Peers can also give feedback and review one another's contributions and give constructive feedback on how and where improvements can be made.

Any and all of the above can form a whole or partial task in relation to the main learning goal. In giving feedback and taking part in evaluating the learners are understanding how to be critical about their own learning and how to self evaluate their progress. With this mode of formative assessment the assessment in itself is a learning opportunity particularly when formulated to include peers either as viewers or feedback agents. Further, as assessments become more creative and differentiated by format they can provide a bank of learning materials for future learners or useful products to enhance interviews and applications or simply as a way of sharing learning with family members or friends and importantly enhancing intercultural skills.

Feedback

Formative assessment should include a range of feedback, ideally related to a clearly structured rubric which outlines the learning aims and statements of standards. This can be produced in collaboration with the learner and guided by the teacher who can advise on standards relevant to the learning stage. The vehicle for demonstrating the learning can also be subject to collaboration. Feedback can be given by peers, teachers or relevant others. Additionally self evaluation can take place.

Feedback and grades do not sit well together. Black and William (1998) found that when grades are attached to feedback the feedback is diminished by the grade. Groups and individuals need to have some way of finding out if they are on the right track. They need to know whether what they have done measures up to the set criteria and what they can do to make improvements if necessary. Cohen (2014) 'Feedback needs to be considered quite apart from grading'. When using Formative feedback for learning tasks must have built in evaluation of success and all feedback must be clear, honest, specific. Where peer feedback is used the group must receive some training on how this should be undertaken. The key to effective feedback is through causing deep thinking in the learner, increasing reflection in the learner, providing guidance on how to improve and negotiating the options for the next steps.

Spendlove (2015) identifies six steps of feedback:

1. Identify the success criteria for the activity - involving the learners in the process
2. Learners begin their journey - working on the task
3. Learners reflect - peer-to-peer and self-reflective feedback against criteria
4. Working on improvements - learners, with peer support and feedback, set targets for improvements
5. Midway feedback - teacher gives feedback on the learner's reflections and ways of improving
6. Moderation and feedback - on the task against the criteria, along with setting future targets

Formative assessment has ongoing feedback at its heart and the following should be born in mind:

When giving feedback

- try and make it a positive process. The purpose is to improve the outcome
- Be specific. What needs to be improved on. What does 'good' mean or look like.
- Try 'Two stars and a wish' structure. Outline two things that you like about the work and something that you wish was different
- Provide specific suggestions. What needs to be done to improve the work. The key message should be that you care and what to help improve the work

When getting feedback

- Listen and don't get defensive. Allow the person to share their thoughts without interruption
- Ask questions to deconstruct the feedback. Avoid engaging in debate, instead ask questions to get to the root of the issues being raised and possible solutions to address them
- Remember the benefit of feedback, namely, to improve the work and meet the expectations of the criteria

Formative assessment should be assessment for learning and feedback is a central part of the process. It should not be a one-way street rather, assessment for learning has feedback from teacher to learner and from learner to teacher in an ongoing dialogue which has a focus on learner improvement.

Digital tools

There are a range of digital tools to aid formative assessment including:

- [Formative](#) Lets you assign activities, receive results in real time, and provide immediate feedback.
- [GoSoapBox](#) Works with the bring-your-own-device model and includes an especially intriguing feature: a confusion meter.
- [IXL](#) Breaks down options by grade level and content area.
- [Kaizena](#) Gives students real-time feedback on work they upload. You can use a highlighter or give verbal feedback. You can also attach resources.

- [Mentimeter](#) Allows you to use mobile phones or tablets to vote on any question a teacher asks, increasing student engagement.
- [Pear Deck](#) Lets you plan and build interactive presentations that students can participate in via their smart device. It also offers unique question types.
- [Plickers](#) Allows you to collect real-time formative assessment data without the need for student devices.
- [Quick Key](#) Helps you with accurate marking, instant grading, and immediate feedback.

Key points of implementation

Communicating Learning

The outcome of the learning can be demonstrated in many formats. Moving away from traditional methods of assessment means that a range of intercultural skills can be assessed alongside the core learning aims. Further, there are opportunities for creativity and to increase cultural capital. Using creative and diverse formative assessment methods means that learning becomes more than the sum of its parts. Additionally, more contemporary skill sets can be practiced such as technology, communication, critical thinking, problem solving, team work etc. Essentially assessment is asking a learner to communicate what they have learned, and communication takes many forms.

Academic Poster

Using a template learners can select and display information that they decide is key to the topic and can create a poster which can be in itself the product for formative assessment. It could be presented in a Q and A forum, as a video with explanation, as a series of posters or as part of a display. Whilst the key learning goal can relate to a specific academic area for assessment a range of other skills are utilised including selecting information, critical thinking, graphics and basic technology skills, image selection etc. In presenting the poster in a specific forum oral communication is practiced and can be assessed if required.



Creative and Diverse Assessment Methods in the 21st Century

Assessment for Learning

Assessment for learning is the function of learning means that the learner forms an ongoing relationship with a assessor in a continuous basis. The assessor itself is an opportunity for learning rather than simply measuring or producing order. Best practice means that the learner is involved in planning the learning, seeing feedback from both peers, teachers, experts.

Assessment for learning describes where the learner needs to go, where they are now and what they need to do to get where they need to go.

Assessment for Learning
Five Key Strategies

- Sharing Learning Expectations
- Exhibiting Evidence
- Feedback
- Self Assessment
- Peer Assessment

Peer Assessment

How to peer-assess

It's important when you are peer-assessing someone's work to provide them with honest and helpful comments. Follow these steps for perfect peer-assessment.

- Be respectful**
Give specific feedback on what you liked about the work and what you thought could be improved. Be clear and honest. Feedback is not criticism.
- Even better...**
What can your partner do to prepare for their work? Give clear and honest feedback about the aspects you appreciate.
- Be helpful**
If you can give a tip to help someone improve their work, please do. It's a great way to help them learn.

Tip:

- Avoid any comments about spelling and handwriting, unless you can't read the work.
- Make sure your statement you write is detailed and of least two lines worth in it.

Helpful sharing www.compassion.com

Rubrics

Rubrics have been used as a means of communicating expectations for an assignment, providing focused feedback on works in progress, and grading final products. Although educators tend to define the word "rubric" in slightly different ways, the commonly accepted definition is a document that outlines the expectations for an assignment by listing the criteria, or what counts, and describing levels of quality from excellent to poor.

Rubrics are often used to grade student work but they can serve another, more important, role as well. Rubrics can't teach as well as a teacher. When used as part of a formative, student-centered approach to assessment, rubrics have the potential to help students develop understanding and skills, as well as make dependable judgments about the quality of their own work. Students should be able to use rubrics in many of the same ways that teachers use them—to clarify the standards for a quality performance, and to guide ongoing feedback about progress toward those standards. The creation of a rubric is an area where students can become co-creators of learning.

When a teacher fails to share and discuss a rubric with the students they are effectively asking the students to win at a game to which they have never been given the rules.

Co-creation of Learning

- Do not be too strict in defining all steps of the learning process
- Create an atmosphere of trust
- Make it clear that you are not... but you are not... and you are not...
- Give feedback on the work
- Make it clear that you are not... but you are not... and you are not...
- Give feedback on the work
- Make it clear that you are not... but you are not... and you are not...
- Give feedback on the work

Diverse Methods of Assessment

Film, Image, Puppetry, Presentations, Academic Posters, Memos, Portfolios, Webpage, Blog, Song, Dance, Play, Conference, Graphic Novel, Essay, Exam, Design, Installation, Exhibition, Memos, Publication, Debate, Leaflet, Poster, Community Activity, Journal, Research Project, Team Activity, Model, PDI, Use of Photographs and Photo-Essay, Q and A.....any way that the learner can demonstrate learning. The more active and participatory the more likely the information will be retained.

Intercultural Competencies

Mass education is no longer about training obedience and conformity for the factory system. It is about learning to live, work and learn in diverse societies. This means that opportunities must be found in and around main subject areas to build in the learning of skills needed to do this. Intercultural competencies consist of a variety of skills.

Communication.....Creativity.....Cooperation skills.....Timekeeping.....Employability.....Listening.....Acceptance of difference and diversity.....Team taking.....Presenting, finding and interpreting information.....Critical thinking.....Problem solving.....Citizenship.....Sustainability.....Environmental and Global awareness.....Giving and receiving feedback.....Empathy.....Kindness.....Perseverance.....Flexibility.....Independent working.....Resilience.....

All classrooms are intercultural, even when they are ethnically homogenous, learners will have differences in health, socio-economic status, academic background and ability, learning style, family for many poor, race, ethnicity, religion, confidence, motivation and arrangement of other factors and influences. Culture is about much more than ethnicity.

Learning Pyramid

10%	Listening
20%	Reading
30%	Audiotape
60%	Discussion
75%	Practice doing
90%	Teach others

Gardner's Multiple Intelligence Theory

The Multiple Intelligences theory states that each individual has a unique combination of eight different intelligences. These intelligences are: Linguistic, Logical-mathematical, Spatial, Musical, Bodily-kinesthetic, Intrapersonal, Interpersonal, and Naturalistic.

Co-operative Learning

Co-operative learning is not the same as group work, where already established hierarchies can be replicated.

Learners must first be prepared through tasks which enhance the classroom and test status.

Intercultural competencies should be considered and can be enhanced through high-achieving students building on their skills.

Co-operative learning depends on all learners being involved in tasks equally and specific roles are given in such as timekeeper or material manager to ensure all learners have access to the task.

Teamwork and collaboration are required to complete tasks and no one has finished unless everyone has finished.

Tasks should be written to allow all learners to display and use their skills and competencies not just in terms of their subject knowledge but importantly their intercultural competencies.

Questions should be open and products should allow for creative and choice.

Information and knowledge is obtained actively by both a producer of a product within the groups to share and a consumer of presentation and products from other groups. The variety of products should cover a range of learning styles.

Learning styles should not be seen as a fallback choice for individual learners, as the preferences that have been established and can be enhanced and extended.

"No one can do everything but everyone can do something"

Further information

Some good examples come from Yale

Title

Authors

Intro

1. 2. 3. 4.

Methods

1. 2. 3. 4.

Results

1. 2. 3. 4.

Discussion

1. 2. 3. 4.

Main finding goes here, translated into plain english. Emphasize the important words.

Take a picture to download the full paper

Extra Tables & Figures

Source: Flaherty, 2019

Flaherty, C. (2019, June 24). *There's a movement for better scientific posters. But are they really*. Inside Higher Ed. <https://www.insidehighered.com/news/2019/06/24/theres-movement-better-scientific-posters-are-they-really-better>

Some good places where to download templates are:

- **Genographics**
- Poster Presentations
- Makesigns
- Poster session
- Colin Purrington blog (și pe grupul Pimp My Poster de pe Flickr special creat)
- PhD Posters
- University of Buffalo (are sablon digital)
- Poster presentation - Psychological Science

Further reading; blog **BetterPoster**.

Short Play or Role Play

Most classes now have the resources to be able to film, record and store moving images. Smart phones and other devices are easy to use and allow presentations not just to be pre prepared, edited, and improved but also to be stored as learning material for future learners or viewed for revision.

Learners are not actors – nor do they need to be. However, even the shyest learner can be involved in a team making a film, play or role play by writing the script, finding locations and props, researching the material. Using puppets or masks may encourage learners to become involved and this often motivates them to move to the 'front'.

Presenting information in a visual form provides peer learning for the wider group and can improve cultural capital. Other benefits include:

- Increased confidence
- Communication skills
- Technical skill
- Media awareness

Examples:

Some psychology students had to explain the different theoretical approaches to criminal behaviors. They made a small stage set and some puppets and acted out the trial of a criminal. Each witness was a different psychologist giving possible reasons for the deviance.

Students were asked to compare two sociological theories. They made a bar set and used finger puppets 'sitting at the bar' to debate the two theories. There are a range of finger puppets representing a range of individuals from literature, science, politics, art etc. from <https://philosophersguild.com/collections/plush-finger-puppets>

Digital tools which may be of use:

<https://www.nwea.org/blog/2021/75-digital-tools-apps-teachers-use-to-support-classroom-formative-assessment/>

- [Animoto](#) Gives students the ability to make a 30-second video of what they learned in a lesson.
- [AudioNote](#) A combination of a voice recorder and notepad, it captures both audio and notes for student collaboration.
- [Edpuzzle](#) Helps use video to track student understanding.
- [Flipgrid](#) Lets students use 15-second to 5-minute videos to respond to prompts. Teachers and peers can provide feedback.
- [QuickVoice Recorder](#) Allows you to record classes, discussions, or audio for projects. Sync your recordings to your computer easily for use in presentations.
- [Vocaroo](#) Creates audio recordings without the need for software. Embed the recording into slideshows, presentations, or websites.
- [WeVideo](#) Lets you use video creatively to engage students in learning. Teachers and students alike can make videos

Photo Essay or Exhibition

A photo essay aims to tell a story but instead of words images are used. Learners can start to build up a library of images that related to their studies as mobile devices become popular. The work of Bruce Davidson, Walker Evans and Andre Kertesz are good examples of photo essays. Collections of photos could be arranged as:

- Graphic novels with text and mixed media (drawings, computer graphics)
- A montage or collage of images
- story board
- wall display
- A web page
- On social media platforms

In 1996 Richard Billingham published a book of photos entitled 'Ray's a laugh'. It documented his family and the poverty and deprivation that they experienced. Billingham's photos of his alcoholic father and his obese, chain-smoking mother and their way of life showed a human and touching side to what some would call 'Underclass lifestyle' – moving away from the grotesque stereotype often seen.

Images can illustrate contrasts – such as the difference in urban landscapes occupied by different socio economic classes. The use of photos can also underpin understanding of photos as part of the research process – as primary sources of personal documents or social record, as a basis for content or semiotic analysis. Younger learners might take photographs of different plants or rocks. A language class could make a glossary and take photos of the words they wish to illustrate.

Installation and other Creative forms

An installation is an art form that is usually temporary. Kaprow (1958) described the process as creating an environment. Installations often seek to engage a range of sensory experiences – and learning that does this is more likely to be retained – if you add smell and image to words they are often recalled more easily.

A group of Icelandic artists collaborated on an installation project which consisted of a room with video projections on all four walls of lava molecules giving the appearance of bouncing toward the viewer. At the same time a soundscape was played, air was blown into the room, the floor had been engineered to give a shaking effect and the smell of sulfur was added. People were only allowed into the room one at a time and had to remove their shoes. Projects like this allow people with different skills to work together and to learn from one another.

Opportunities may be present to work with a range of cross subject groups – chemistry students creating the smells, hair and fashion student's costumes, joinery students and so on. Ceramic artist Barnaby Barford creates artworks made from found objects and broken ceramics. His recent work 'The Big Win' is a series of scenes made up of broken porcelain figures and odds and end in which he tells the tale of a 'chav' (sic) that wins the lottery, spends it all and returns to poverty.

Blogs, Wikipedia, e portfolios and debating on the internet

Outside of class times you can set up and engage in online debates. This might be possible through VLEs and internal systems with chat facilities, via social media or through specific bulletin boards. Contributions to such debates can be pasted into e portfolios to build up evidence and give feedback.

Credit could be given for adding material or correcting material on Wikipedia. This would also lead learners to understand the possible problems associated with the quality of material available for research purposes – if you can alter it so can anyone so how reliable is it?

A blog might be a way of spreading out an assessment over a series of entries or to monitor the learning process. A blog is often written as a form of conversation. Blogging for Dummies: <http://www.dummies.com/how-to/content/writing-a-good-blog.html> suggests that there are three key principles in blogging –

- Develop a writing style and tone appropriate to your subject material
- Post often even if posts are short
- Allow readers to comment on your posts

A student group social network site can have many uses:

- Support and encouragement from current and ex students and staff
- A repository for media items found by students and staff
- A community which includes staff, students and interested parties
- A legacy of material such as filmed assessments for future students
- A site for organization
- A photo album
- A form of contact outside of class hours
- A platform to solve minor problems before they grow into major ones
- An opportunity for those less confident in speaking in front of groups to air their opinions

Use the Environment

Using outside space or public buildings can have several advantages and can be the site of both formative and summative assessment in addition to providing:

- A change in the learning environment
- Movement and fresh air
- Practicing intercultural skills such as communicating with unfamiliar others
- Finding new interest in communities and the facilities therein
- Real life interaction with artefacts and sights
- practicing skills other than reading and writing

Trips and visits can present many learning opportunities but need to be well planned and prepared. However, it does not need to be a trip away - just going outside can have its advantages. If there is a park or recreation area this can be used to set students a 'walk and talk' or 'walk and think' task which will be more interesting (and healthy) than sitting in the classroom. A clear rubric detailing standards and actions should ideally be negotiated with students prior to organized trips and should include intercultural skills as this enables considerations such as safety and public behavior standards to be clearly understood and an issue of progress rather than conflict.

An Example: A specific building could be used for a range of subjects and provide assessment opportunities.

- researching, which is the oldest building in their town, the history of the town, how the buildings functions have changed over time.
- measuring height and area calculated for mathematics, the materials used in its construction
- arts and crafts could be identified within the building.
- photographs, drawings, and models could be made of the building or a timeline of its construction and use
- stories, poems, or plays could be written about the building
- a range of intercultural skills as appropriate to each summative step can be given

Wikipedia

Is Wikipedia a credible resource?

Much criticized by educators around the world for questionable content quality, superficial information, or irresponsible use by students, the largest encyclopedia of freely user-generated and edited content can become a teaching resource that, used correctly, it contributes to filling content gaps, at the same time enabling students to make a significant contribution to the dissemination of knowledge. Thus, according to some professors from the prestigious Harvard University (Meishar-Tal, 2015), attitudes regarding the popular online encyclopedia have changed over time, with a series of courses including in the curriculum as assessment tasks the creation or editing of Wikipedia pages (Bosco Mendes et al., 2021).

The myth that Wikipedia should not be used as a research source, that the information included is not credible as a source of information/documentation, is debatable given that some pages are subject to rigorous editing (sometimes thousands of times) and some data they are even thoroughly vetted, making Wikipedia an "accessible tool for fact-checking and combating disinformation" (Maria, 2021).

As educators, what remains for us to do is to teach students to use Wikipedia effectively (how to search for information, how to analyze pages, etc.). A good start in this regard is the "[Teach with Wikipedia](#)"

program aimed at teachers who want to help their pupils/students make a real-world impact through their work¹.

Stanford History Education Group. (2020, januarie 23). *How to Use Wikipedia Wisely* [Video]. YouTube.. <https://www.youtube.com/watch?v=ZzcjS1aDojA&feature=youtu.be>

Further developments

Digital tools for formative assessment

There are a range of digital options for formative assessment and usage will be dependent on institutional factors such as subscriptions and preferences, age and stage of learners, access, and other factors.

A descriptor of 75 digital tools and links to them can be found at:

<https://www.nwea.org/blog/2021/75-digital-tools-apps-teachers-use-to-support-classroom-formative-assessment/>

- [Crowdsignal](#) Lets you create online polls, quizzes, and questions. Students can use smartphones, tablets, and computers to provide their answers
- [FreeOnlineSurveys](#) Helps you create surveys, quizzes, forms, and polls.
- [Gimkit](#) Lets you write real-time quizzes. And it was designed by a high school
- [Kahoot!](#) A game-based classroom response system that lets you create quizzes using internet content.
- [MicroPoll](#) Helps you create polls, embed them into websites, and analyze responses.
- [Naiku](#) Lets you write quizzes students can answer using their mobile devices.
- [Obsurvey](#) Designed to make surveys, polls, and questionnaires.
- [Poll Everywhere](#) Lets you create a feedback poll or ask questions and see results in real time..
- [Poll Maker](#) Offers unique features, like allowing multiple answers to one question.
- [ProProfs](#) Helps you make quizzes, polls, and surveys.
- [Quia](#) Lets you create games, quizzes, surveys, and more. Access a database of existing quizzes from other educators.
- [Quizlet](#) Lets you make flashcards, tests, quizzes, and study games that are mobile friendly.
- [Survey Hero](#) Designed to build questionnaires and surveys.
- [SurveyMonkey](#) Helpful for online polls and surveys.
- [SurveyPlanet](#) Also helpful for online polls and surveys.
- [Triventy](#) Lets you create quizzes students take in real time using individual devices.
- [Yacapaca](#) Helps you write and assign quizzes.
- [Zoho Survey](#) Allows you to make mobile-friendly surveys and see results in real time

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Section 2: Self and peer assessment with digital tools

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Abstract

In this micromodule, we'll focus on the potential of peer (PA) and self- assessment (SA) as assessment for learning strategies and we'll give some examples of how digital tools can facilitate the student's engagement with SA and PA with digital tools.

The module starts exploring the potential of PA and SA for learning, continues discussing some of the condition for their effective implementation. In addition, the module will present some examples of possible tools to be used in the assessment process. In the text, there will be find some practical examples, case studies or tool which could inspire the development of the assessment strategies in class. All of them serve as example and could be easily adapted to the teaching activity designed. It's not pretending to be an exhaustive one, however, the reader can take it as an inspiration for their practice in class, and a basic- medium level of digital competence have been considered.

Key words: 4-5 main concepts

Peer- assessment, self- assessment, feedback, peer- feedback, video assessment, digital tools

Introduction

The most frequent applications of technology in class with assessment proposes involve screencasting, screen recording, and digital feedback information provision. It is believed that uploading audio files of comments on students' work is advantageous since it allows for the provision of more extensive comments than may be available through the more conventional written medium (Merry and Orsmond 2008). Additionally, students may believe that audio feedback is more encouraging in tone and more personalized than written comments (Gould and Day 2013), easier to understand (Merry and Orsmond 2008), and more personalized (Gould and Day 2013). Perhaps because non-verbal cues like prosody, emphasis, and tone can all be given with audio feedback in ways that are just not possible with written feedback, students frequently perceive audio feedback as a type of dialogue (Nicol 2010, Mahoney et al. 2018). In fact, Mayhew (2017) makes the case that textual feedback does not always allow for social interactions. However, screencast feedback—in which the markers' verbal comments are accompanied by an annotated visual display of the students' work—offers the additional benefit of allowing markers to pinpoint the location of their

comments and demonstrate how to correct errors—offers greater individualization and personalization than written feedback (Henderson and Phillips 2015).

What is peer and self-assessment (PA and SA)?

Peer assessment is widely understood as the practice when students provide marks each other tasks. The process could involve grading or marking or could be limited only to providing comments on the other peer work. In this last case, the most common term is peer- feedback. The peer-feedback could be focused only on the process of giving peer- feedback, providing comments on a task or process or involve engagement in a dialog among peers. As part of the constructivist approach of education, feedback is considered to be a key component of the learning and assessment activity for the reflective construction of knowledge and lies in a transformed role for students in feedback and in a variety of forms: in targeting, generating and interpreting feedback and in communicating and engaging with it.

As feedback is considered as the learning component of assessment, peer-feedback is provided by equal status learners and can be regarded both as a form of formative assessment, the counterpart of teacher feedback (Topping 1998), and as a form of collaborative learning (Van Gennip, Segers, & Tillema 2010¹; among others).

The research evidence focuses on the strategies to make it more efficient and easier to be uptake. Actually, the process of generate feedback about the one peer or a group performance takes in the literature different forms and notions such as: peer- assessment, peer- grading, peer- evaluation or peer- feedback. It can take the form of an individual assessment or a group assessment. All the concepts are similar in a certain way, considering the potential of peer feedback to produce learning and to support students' improvement.

The self- assessment is the process in which students are engage in assessing their own work and could be use together with other forms of assessment, such as teacher's assessment or / and peer-assessment. Self-assessment is a critical part of any learning process and requires a higher level of reflective skills from the student. It can be done done informally or formatively prior to submission of work, or formally required as a contribution to the assessment process by a teacher. Self-assessment provides a formal means through which students reflection process can be encouraged or structured, and may be carried out on submission, after peer-assessment, or after receiving feedback and a grade. Self-assessment is subject to some issues concerning reliability (students under- or over-estimating their abilities); bias, that females tend to rate themselves lower than males (Langan, 2005 and Pope, 2005); and achievement as lower academic achievers may rate themselves higher than higher academic achievers (Boud et al., 1999; MacDonald, 2011).

Undependably of the forms taken by peer- assessment, this is not replacing the teachers' assessment, but it could complement it.

Why is important

Double et al (2019) summarized the main benefits of the PA. Authors, based on the revision of multiple studies pointed out in first place that the PA allows students to critically engage with the assessed material, to compare and contrast performance with their peers, and to identify gaps or errors in their own knowledge. The transversal students' skills are also developed through the

engagement in PA: allowing students to improve the communication of feedback, as peers may use similar and more accessible language, as well as reduce negative feelings of being evaluated by an authority figure, like teachers or tutor.

In order to maximize the benefits of peer assessment, a range of factors including characteristics of the learning environment, the student, and the assessment itself should be considered. Some of them are presented in the next section.

PA and SA have a series of strengths for students' learning such as:

- makes students more responsible for their actions, encouraging them to take an active role in their learning process;
- encourages a reflexive approach to learning, involving learners in judging their performance or that of their peers,
- develops and uses of evaluative expertise,
- encourage students to seek for feedback, so to take leadership and initiative in their learning and stimulates them to use the feedback for improvement.
- supports the learning process by providing an intermediate check of the performance against the criteria, accompanied by feedback on strengths, weaknesses and/or suggestions for improvement;
- In addition, the proactive feedback called feedforward tends to be more useful in order to enhance students' self-regulation and stimulate the learning process

What are the benefits and limitations of PA and SA?

In order to ensure that both peer and self-assessment are implemented effectively, there are some aspects we have to pay attention to:

First of all, we have to carefully design the learning scenario in which the assessment took place. Creating a safe learning environment and a culture of group trust are critical to ensure a proper engagement of students in peer and self-assessment processes.

Secondly, we have to **design the assessment task carefully and perfectly coherent with the curricular unit**. Including assessment in the overall curricular design is crucial in order to align all the components of the instructional process from the planning until the assessment and provision of feedback.

In the third place, **assessment criteria and ensuring a shared understanding of the assessment criteria** are strongly linked to better results. Transparent assessment criteria ensure the coherence between the self and peer- assessment grades and the teacher grades. Carrying out self-assessment after peer-assessment may give students a broader sense of how their performance correlates to that of their peers and the teacher's.

All these aspects are decisive, and teachers have to make sure all these previous conditions are fulfilled beforehand and previous to the implementation to any assessment processes.

In addition to all previous key aspects, and especially when it comes to the assessment with digital tools or in digital environments, there are a series of aspects we should consider that student's engagement is one of the determinants of a successful assessment process.

Studies conducted by Tai et al (2019) showed that student engagement is considered a factor in assessment success and both educators and students can have an impact on engagement. There

are many facets to student engagement, including behavioural, cognitive, and emotional components, with a holistic model now favoured by some researchers. The authors highlighted some of the conditions for promoting student engagement, including strategies such as:

- Identify and make explicit the relevance and authenticity of learning content and activities Students found more purpose for and motivation to learn when they could see how the activity or content could be applicable in their future professional practice. This is linked to the design of authentic assessment tasks, connecting learning to the potential applications and contexts.
- If digital context is used, teachers have to pay attention to create and stimulate opportunities for students' development of the sense of belonging and interactions. Digital platforms such Moodle or Teams easily allow student- teacher interactions or student- student interactions. They allow both formal and informal discussions and meetings can be encouraged through the provision of opportunities such as Blackboard Collaborate sessions or Teams groups and the linking up of students who share location, interest, or context.
- Build in feedback – with both peers and tutors Students participated in learning activities as a way to gain feedback information from their learning environment. Activities such as group discussion and peer feedback can enable students to compare their progress to peers, and check their understanding with their tutor in a formative sense.

The same study highlighted the importance of planning in the design of the peer-assessment processes. Watching the students' workload, time management and anxiety, as processes associated to successful implementation of any assessment process. Also, if any digital tool is involved, then the level of students' digital literacy should also be considered. This may require educators to take a programmatic/global approach to scheduling, but also encourage students to plan ahead, including requesting extensions in advance.

Some of the characteristics that have been proposed to maximize the efficacy of PA and include **anonymity** (students tend to engage more easily with peers if their assessors are randomly assigned or the confidentiality of the process is strictly maintained), **scaffolding** (students need to engage in PA processes gradually, from more easy task to the most difficult ones), **quality** and **timing** of the feedback (students have to possess a level of feedback literacy and be aware about the characteristics of a good feedback), among others.

Conditions of effective implementation

In this section we'll present some tools to support self and peer- assessment. Teachers have to choose the specific tools according to the learning objectives, the assessment design and the students characteristics. The selection of the assessment tools has to be made according to the assessment design and learning goals.

Salend (2009) proposes that teachers should consider a variety of factors when deciding whether and how to integrate digital assessment, including whether the assessment technique will:

- allow the teacher and students to measure meaningful skills and instructional outcomes in a direct and complete way
- be appropriate for the class (their age, developmental, academic, cognitive, language, social, behavioural, and technological levels)
- accommodate students' individual differences (e.g., disability, cultural and linguistic background, and socioeconomic status)

- help the teacher to plan, deliver, evaluate, and revise instruction to enhance student learning
- *there are also some technical aspects regarding which tool to use, is it free or emebed in the LMS, do I need an account, is it suitable for my subject, do I need some special equipment ...*

Some of the tools teachers can use are the following:

Digital tools

a) Rubrics.

A rubric is a tool for assessment of learning. Clearly defined expectations and criteria to assess performance levels for each criterion support consistency of assessment. They may also support students to reflect on and assess the quality of their own and of others' work. Rubrics are particularly useful for assessment of complex, contextualized problems (Company et al., 2017). Rubrics may be used to assess the quality of work in digital learning environments. They may be used formatively (to identify student progress and learning needs) or summatively (to assign marks). Criteria for assessment are adapted to the subject matter and learning goals. One example of a rubric used in a digital environment is proposed by Hung, Chiu and Yeh (2013). They describe 'theory-driven design rubric' to assess students' multimodal texts (e.g. web-pages, e-portfolios, digital storytelling). The rubric sets out criteria using a multi-literacies perspective, with criteria for linguistic, visual, auditory, gestural and spatial elements performances based on a 5-point scale (with 5 indicating 'excellent cohesion' and 1 indicating 'poor cohesion'). Cohesion in this study refers to '.... 'the way in which the various elements of the text are drawn together to achieve unity.' (Levy and Kimber, 2009, p. 493).

Co-Rubrics

Nivells		A		B		C		D		E		F			
		4	3	2	1	5	4	3	2	1	5	4	3	2	1
Puntuació	Paraulas Clau	Es compleixen totes les condicions. Paraules clau variades i adequades al contingut de l'entorn. Es mostren les etiquetes visibles al lateral.												5%	
	Imatges	Estan totes les practiques realitzades a classe, estan ben realitzades, amb la seva descripció i amb una estètica i bon gust correctes. Bona legible, links i fotos complementaris.												5%	
	Descripció de cada nivell	La beta del blog es legible i utilitza visual de format de la mateixa de manera adequada i sense abusos (color, negres, cursives, subratllats, ...). Establiments la beta es correcta.													
	Pes	Recursos visuals (imatges, vídeos, gdl...)	Es compleixen les dues condicions. Hi ha diversitat d'hipervincles i hipertextos i aquests no només reboten a les pàgines web dels programes/software sinó també a altres entorns i a pàgines complementaris d'informació.												5%
		Recursos visuals (imatges, vídeos, gdl...)	Combinat text i recursos visuals en gran part de les entrades, són variades de tipologia i aporrien valor al contingut, són de qualitat grafica i sonora i quan no són grimes, referencien factor a l'oc web i on les han extret.												5%

1.1. Fa propostes de trobada, d'organització del treball, etc.		1.2. Aporta la seva visió participant en la discussió de les idees		1.3. Pren la iniciativa en les tasques que es desenvolupen.		2.1. Acompleix amb les normes que el grup estableix.		2.2. Realitza les tasques assignades.		2.3. Acompleix amb els objectius establerts pel grup	
5%		5%		6%		5%		6%		5%	
Coev	Auto	Prof	Coev	Auto	Prof	Coev	Auto	Prof	Coev	Auto	Prof
3,5	4	-	4	3	-	3,5	4	-	4	4	-

Resultado de la rúbrica: Treball en equip

Alumno: [Redacted]

	Molt d'acord		Bastant d'acord		D'acord		Gera d'acord		Coev	Auto	
	4	3	2	1	5	4	3	2			
1.1. Fa propostes de trobada, d'organització del treball, etc.	Es compleixen totes les condicions. Paraules clau variades i adequades al contingut de l'entorn. Es mostren les etiquetes visibles al lateral.								3,5	4	
1.2. Aporta la seva visió participant en la discussió de les idees	Estan totes les practiques realitzades a classe, estan ben realitzades, amb la seva descripció i amb una estètica i bon gust correctes. Bona legible, links i fotos complementaris.										
Nota final										9,86	9,53
Nota global										9,73	

Comentarios de los compañeros: Mta havia treballat amb [Redacted] mha semblat una companyia d'equip de 10, no tinc cap queixa d'ella ni res negatiu. Ha estat un plaer treballar amb ella.
Comentarios del mismo alumno: Sobre el meu treball puc dir que he sigut eficient sobretot en buscar com fer allò que volíem al document interactiu. Penseu que el meu punt fort ha estat explorar a fons el programa i investigar com funciona, tot i que el meu grup [Redacted] ha treballat amb mi en tot moment i hem fet la major part del treball junts mitjançant una videoconferència.

<https://ca.corubrics.org/funcionament-corubrics-gafe>

- Video-based uploads of tasks performed in home environment using virtual environments
- Online simulation-based tasks (eg pre-existing computer-based sims) – see D-eva site.

- c. Providing a portfolio rather than making a single piece of work in a scheduled time frame (eg a series of videos showing development of an artwork/artefact).
- d. Critique and explanation of video practice – need to find or make videos and post online plus design a critique task for students.
- e. Real time observed practicals/”vivas voce” (direct interaction between student and teacher or student -students) (very resource intensive) – zoom or teams, etc

b) Video feedback

What is video feedback?

Sitting in front of a camera, webcam, or screen recorder and capturing your feedback is known as video feedback. Video feedback includes more visual features than verbal feedback or email-based feedback, making it a great supplemental tool. Information is retained more readily and effectively when learned visually. Investing in providing video feedback is a effective approach to develop a relationship with your students or colleagues. Giving video comments demonstrated to be more effective and engaging for students when combined with written feedback and complements it very well (Gould & Day, 2013; Voelkel & Mello, 2014).

Below we summarize some of the benefits of video feedback.

What are the benefits of video feedback?

- In comparison to emails and voice recordings, feedback is more personally expressed through videos. Although having a heartfelt feedback session face-to-face is still preferred, video feedback works well in a remote working environment, tutorial sessions with your students or with students in international internships. If it's an online video meeting, they can also ask you questions in advance when giving video feedback because students can still see your face. Compared with written comments which can be perceived incorrectly, video feedback allows receivers to address questions and clarify doubts.
- Video feedback can be also recorded which allow both receivers and senders to go back to the video and view it any times as needed. Also, as feedback makes sense only if allow receivers to interact with it and improve their tasks, recorded feedback facilitate the follow-up sessions and monitoring the task development during the process.
- In addition, video feedback permits sending the comments to a bigger number of receivers if the individual and personalized feedback it's not possible dur to time or space constraints. In this sense, video feedback is also cost and time efficient.

Digital tools as:

- Screenrecorder: Screen-o-Matic, ScreenPal, ScreenCastify
- Web camera recorder - Flip (former Flipgrid)
- Audio feedback (Vocaroo, Mote, Audacity, Kaizena as chrome extension)

c) Gamification and digital games

Digital games provide immersive learning experiences in a context and are good tools to offer real-time and integrated formative feedback that can benefit learners. Scaffolding can be used to

introduce increasing levels of complexity as learners progress through the game (Milrad, Spector and Davidsen, 2003). Bhagat and Spector highlight emerging technologies such as 'stealth' assessments (in which the learner is unaware that he or she is being assessed), automated concept map-based assessments that gather evidence about how learners think about a problem, visualisations that support learner self-assessment and self-regulation, and tools that support learner collaboration and social networking.

According to various studies, games increase motivation, support collaboration, aid in the development of digital literacy skills, improve attention and retention of learning, and provide opportunities for self-regulated learning (Annetta et al, 2009; Buckley and Anderson, 2006; among others).

d) Feedback with social-media

Students can benefit greatly from engaging in the feedback process with sources other than the educator (e.g., peers), both before and after submitting a task. Social and collaborative tools, such as discussion forums, Twitter, YouTube, wikis, and shared documents, can also help such endeavours. The case study Authentic feedback via social media proposed by the project [Feedback for learning](https://feedbackforlearning.org/case-studies-of-effective-feedback/case-study-2/) (Available here: <https://feedbackforlearning.org/case-studies-of-effective-feedback/case-study-2/>) is a good example of this. The instructor in charge of this digital media class used a Twitter hashtag to encourage students to tweet links to their work-in-progress assignments (blog posts and online videos). In the case, the instructor in charge of this digital media course used a hashtag on Twitter to encourage students to share links to their assignments that were still in progress (blog posts and online videos). After that, they were required to participate in brief feedback exchanges with peers studying the same subject as well as with customers, clients, and university social media profiles. This gave students the opportunity to get feedback on their performance from a variety of sources and gave them real-world experiences with actual feedback in a course that was centred around online identity and social media use.

Although creative, this feedback design might violate institutional rules in some situations, therefore we advise teachers to get permission before integrating social media into their lesson plans.

Overall, the case study presented amply demonstrate how technology may enhance efficient feedback processes in a variety of useful ways. It is encouraging to note that 72% of the 77 senior leaders we polled from 34 Australian universities about the project's findings believed it was crucial for students and teachers to have access to the right facilities and tools for successful feedback. However, 37% of respondents said their university has only made a small or moderate investment in this field. It is evident that more has to be done to persuade some institutions of the importance of technology in facilitating efficient feedback processes (please see the full details at: <https://feedbackforlearning.org/case-studies-of-effective-feedback/case-study-2/>).

Another case of use of social media in assessment, is presented by Pons & Fernandez²(2016). The authors implemented an assessment practice in which students were it has incorporated the use of Twitter as a learning activity (which constitutes 20% of the final mark for the course) where students can learn through collaborative work in a network context.

In addition, in order to analyse this learning from a social perspective, an evaluation process has also been incorporated a peer assessment process where students have had to provide constant feedback to their peers on the quality of their classmates' tweets and of the resources or materials that have been linked to them. During the course, students were asked to use Twitter with the aim, on the one hand, of disseminating interesting resources on the subject with their classmates, asking questions and sharing news and reflections. On the other hand, to promote peer assessment in such a way that they themselves had to assess the quality of the tweets of a classmate on the basis of a short form sent to them at the end of each subject. An initial introductory hashtag was used for the experience, and the students had a week to practise using the tool. The peer evaluation of this experience has been carried out by means of the use of an online form, specifically through Google Docs, which the students had to answer for each of the topics about the partner assigned to them. In total, they have answered four forms. The answers to these forms and the peer assessment were sent directly to the student in question so that he/she could have the feedback beforehand. The answers and the peer assessment were sent directly to the student in question so that he/she could have the feedback before starting the new topic and thus apply all the assignments /twits.

At the end of the chapter the authors provided a list of tools to facilitate students' engagement with social media as assessment tool. Among others, they proposed: Tweetchup, Evalcompes (It is a blog that includes a repository of instruments linked to competence to competency-based assessment); [Assessment commons](#) (a web including a variety of resources for assessment in HE).

At the end of the practice implementation, the authors administrated a survey and some of the conclusions demonstrated that student's participation on Twitter clearly show that it is still essential to work on the acquisition and development of their digital competences. It is assumed that students are familiar with the new technologies and are often considered to be digital natives. However, the results of this experience show that this is not the case. Through the results of the students' questionnaire, the enquiries made in class by the students or the messages from the students via e-mail, it is perceived that there are many students who have said that they have not used this tool so far or have shown difficulties in using it and even in the use of the online form for peer assessment.

Wikipedia as open-book assessment – see <https://wikiedu.org/teach-with-wikipedia/> or how to use Wikipedia as assignments, <https://www.frontiersin.org/articles/10.3389/feduc.2022.905777/full>

Key points of implementation

- Peer and self-assessment can be managed more efficiently and with less time commitment for both teachers and students by using digital tools or platforms. Throughout the semester, using PA and SA continuously help normalize a student-centered learning process and support students to improve their tasks and stress the idea of the continuous learning and self-regulation;
- As in any assessment practice, pay attention to the instructional design and integrate from the very beginning SA and PA in the curriculum planning.
- Do not forget to make visible and clear the assessment criteria and share them or co-create them with students.

- Support students understand the benefits of Sa and PE and the digital tool you have chosen for it and the predisposition to exercise it.
- Give the students examples of good executions so that they know what is expected.
- Accompany students in reviewing their learning progress and specifying how they can progress with autonomy and independence.
- Digital tools could facilitate students' interaction and engagement with feedback, and also allow them to engage with assessment and feedback in different ways, making the process more inclusive and closer to their real-life experience.
- The pedagogical potential should be an important part of the decision to adopt technology-enhanced assessment
- Consider always the added value of using digital tool in assessment, maximizing their benefits for both students and lecturers.

Further developments

Independently of the tools we use in SA and PA, lectures must take the following factors into account to make the most of the utilization these assessment practices:

- 1) The assessment aims and objective, as well as students digital competences have to be consider when we start designing the assessment process and tools.
- 2) It's crucial to students understand and engage with assessment criteria, so if you use rubrics or any other assessment tools, start discussing and explaining the assessment indicators at the outset of the course to help students understand their significance and establish expectations for the material;
- 3) Allow students time throughout the semester to interact with the assessment tool and to use it in various group assignments while keeping track of their development;
- 4) to encourage and motivate students' participation in SA and PA by emphasizing the value of these activities for their development of professional skills;
- 5) to discuss the SA and PA results at the conclusion of the process and to support their conclusions with further assessment data (such as lecturer or peer).

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Section 3: E-portfolio Assessment

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Reviewer: Gabriela Grosseck

Abstract:

This capsule provides an explorative insight into the concepts associated with the research area on the many dimensions that are related to the content, practicability, and outcomes of an e-portfolio assessment.

The starting point of this discussion is to provide a clear understanding of the project's practical nature and e-portfolio assessment. This will involve providing a detailed explanation of the concept and highlighting the different contexts in which it is applied.

Furthermore, the e-portfolio assessment framework is defined in terms of how it functions within the academic realm and its ability to enhance the transparency and credibility of professionals in the job market.

Finally, recommendations are then made on the channels and avenues that could be adopted to achieve more acceptable results in the assessment of e-portfolios.

Introduction

An electronic portfolio (e-portfolio, EP) can be regarded as a combination of projects and artifacts, accessible digitally or in electronic form.

They can be broken down into at least ten required elements that are expected, in a valid portfolio, ranging from, a student biography, course plan, reports and research, homework, projects and experiments, activities, summaries and conclusions, scientific material, audio and video clips, and samples of student performance (Mahasneh, 2020). Usually, is placed in the form of text-based, multimedia, graphic content, recordings of presentations, showcases, etc.

According to Hartnett (2015), information and data contained in the above can be used as a tool for engaging reflective practices among students or career persons. To document, evaluate and monitor one's capability, skills, and knowledge that paints a coherent picture or overview of an individual's (formal and informal) learning or practical (professional) experiences. By improving their self-understanding and becoming more attractive to showcase themselves, based on efficiency and effectiveness on a job, to potential employers or business partners. Or in some cases, get accredited and accepted into highly sought-after educational or professional programs.

What is it

Assessment made on an e-portfolio usually depends on the purpose for which the portfolio is being used.

The most authentic form of the portfolio is **the learning portfolio** as it yields valuable results that assess one's ability to think critically, work collaboratively and solve complex problems.

Usually based on six indices of reflection, namely, Intentional thinking about how one can think and advance in a thought process, Conceptualization and Implementation, Creativity and Innovation, Evaluation and Modification, Critical Thinking and Decision-Making, and Cooperation and Collaboration (Bhattacharya and Hartnett, 2007).

These elements often form a rubric for the assessment of e-portfolio to determine the position of the owner(s) of a portfolio before deciding on their capability or outcome from assessment.

Why is important

E-portfolio assessments are important to the major actors involved in the environment in which the assessment takes place. For faculty members, in educational institutions, it enables them to use data and information gathered from assessing the portfolios to assess the efficiency of their set curriculum and appraise the effectiveness associated with learning outcomes, related to implemented courses, taught in such institutions.

For students, the importance cannot be overemphasized. Such that, besides from being used as a self-reflective tool for them to become reflective thinkers; it offers a channel for them to showcase their creativity, aptitude, aspirations, and achievements.

It can be used as a learning aid for teachers to support their students studying in an environment with diverse characteristics.

For organizations looking to hire a competent workforce, E-portfolio assessment offers them an alternative way to provide an attractive screening facility to applicants (graduate students, starters, experienced professionals) to sell themselves more and thereby, increase their chances of being selected or hired by these firms and establishment (Mahasneh, 2020).

What are the benefits and limitations:

The accessibility of an Electronic portfolio online that can be viewed and assessed by external agencies, educational bodies, and recruiters proves to be the major attractiveness and significance of this digital tool. While other benefits of the portfolio E-assessment are that it often creates a positive attitude and increases motivation and a sense of responsibility from all participants involved. This is because it encourages integrity and transparency with results generated.

The E-portfolio can also help learners to take control of their learning and their lives, by reflecting on their activities and planning future directions for improving their abilities and competencies., it also provides backup and continuity through a learner's lifelong learning as they move between learning providers.

The provision of an E-portfolio provides a one-stop shop to appropriate people, such as potential employers, and educational institutions to whom the learner is applying by presenting appropriate

views of the achievement and learners' work. Another major benefit of an EP is that it facilitates a wider variety and more authentic forms of assessment and accreditation for users of this digital tool.

In a concise summary, e-portfolios add significantly to the versatility and sustainable nature of a traditional portfolio, by adding flexibility, ease of sharing, reuse of entries in different presentations for different contexts, portability, and different views for different contexts.

A significant limitation on the use of e-portfolio assessment must be mainly due to the credibility of the design and development of the rubric being used for assessment. It might be critical and restricted to have a rubric for assessing the information and data contained in a portfolio that fits all requirements and purposes.

Generic forms of e-portfolio assessment kits or tools, may give inaccurate results, regarding the need at hand and result in complex problems and poor decision-making, on related subjects or people.

Other limitations may constitute the cost-constraints issues of program implementation, access to and reliability of the technology, and the amount of time and effort expended in putting together a credible and reliable resource material that shapes the formulation and framework of an Electronic portfolio for its expected purpose. Technical issues such as connectivity and network infrastructure, hosting, access, authentication and security, accessibility, technical standards, and interoperability can widely impact the durable development of an E-portfolio to be ready for use.

Conditions of effective implementation

It is necessary to take into consideration the most acceptable way to use a portfolio for assessment, being that it is for the required purpose it serves. That is, before the subject is assessed, persons behind such assessment should ensure that every data and information needed, to derive sufficient and appropriate decisions, must be included in an e-portfolio.

The educational facility that intends to use an E-portfolio must house it within its database, technological infrastructure, and platform that runs the overall Research and Development activities of these institutions that are regularly updated and maintained before it is utilized and accessed. This is to ensure and guarantee that an aggregate of some of the ten elements listed in the introduction paragraph is present during the assessment to have the required results at any given time are also free from bugs, viruses, and external threats (UC Berkley Center for Teaching and Learning, 2023).

Digital tools

- a. This platform provides remote support for users to highlight their academic, career, and research achievements to build an electronic portfolio.

University of Calgary, 2023. *ePortfolio Resources*. [online] Available at <https://werkland.ucalgary.ca/teaching-learning/student-resources/eportfolio-resources> [Accessed 30 April 2023].

- b. This offers various tools that allow students to host and place data that makes up their electronic portfolio and how to efficiently use these platforms, with their accompanying benefits.

Med Kharbach, 2022. *Best Tools to Create Digital Portfolios for Students*. [online] Available at <<https://www.educatorstechnology.com/2018/01/5-of-best-tools-to-create-digital.html>> [Accessed 30 April 2023]

- c. Strikingly specifically provides a channel to build a website that displays academic, career, and research achievements to build an electronic portfolio.

Strikingly, 2023. *Make a website in minutes*. [online] Available at <<https://www.strikingly.com>> [Accessed 30 April 2023]

- d. Popular and easy-to-utilize content creation software, makes it convenient to develop ideas and holistically combine them, to establish a story-telling mechanism, needed to execute an electronic portfolio.

Adobe Express, 2023. *Introducing Adobe Express*. [online] Available at <<https://www.adobe.com/express/learn/blog/introducing-creative-cloud-express>> [Accessed 30 April 2023]

- e. Mahara.org is a free and open-source e-portfolio platform that allows users to create and share their digital portfolios. It was initially developed in 2006 by a team of developers at Massey University in New Zealand and has since been adopted by educational institutions and organizations worldwide. The platform provides users with tools to create, manage, and showcase their learning and achievements in a secure and customizable online space. Some of the features of Mahara.org include the ability to upload various types of files, including documents, images, and videos, create personal learning plans, and collaborate with others on projects.

Mahara, 2023. *Portfolios for your learning community*. [online] Available at <<https://mahara.org>> [Accessed 30 April 2023]

Key points of the implementation

To fully implement the above standard, and to have a globally accepted system for e-portfolio assessment, the backend in-depth development of the assessment mechanics must be upgraded to the state that it includes functionalities that relate to the expected and specific outcomes of studying a curriculum.

This will provide criteria and benchmarks for implemented data and information from the e-portfolio that's being assessed, to influence the accuracy in advising and decision-making processes on an individual's accomplishments, suitability, and abilities (Tubaishat, Lansari, and Al-Rawi, 2009).

Further developments

Hartnett (2015) suggests that to enhance the use of E-portfolio Assessments is to incorporate assessment methodologies or mediums that consider information attainable from systems, not limited to podcasts and blogs, in computerized and web-based experiences.

To consider and guarantee the advancement of students to create profiles/accounts that establish or give an overview of similar information that may be present in their e-portfolio for assessment. This allows for diversity, inclusiveness, and further variety and alternatives, for further expression in a global setting. To allow for larger opportunities on distinctive needs and requirements.

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Section 4: Digital ethics in higher education

Author: Gabriela Grosseck

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Abstract:

*This capsule contains information on **digital ethics in higher education** together with illustrative examples. We explore some relevant issues and corresponding questions that educators “need to address to harness the benefits of digital technologies in assessment, while avoiding some of the possible downsides” (Berkman Klein Center for Internet & Society, 2021). Topics to be covered include: academic dishonesty (plagiarism, copyright, cheating), security and privacy issues (confidentiality, data protection), alternative pathways for assignments, as well as other contemporary topics dealing with digital ethics (such as artificial intelligence generative tools, big data, blockchain, micro-credentials etc.).*

Key words: digital ethics, academic dishonesty, data protection, privacy issues, generative AI

This work is based on the literature referenced in the bibliographic section. There are also used materials under a Creative Commons license. Accordingly, the present content is distributed under a Creative Commons license: CC BY NC SA 4.0 International.

Introduction

Looking at the opportunity side of technological innovations that have revolutionized society in the last decade, we are witnessing the explosion of emerging technologies such as artificial intelligence (AI), mixed reality (XR), Internet of Things (IoT), blockchain, cloud computing, big and small data etc., which generate new teaching-learning scenarios, transform educational models, significantly change today’s space and learning, and recreate (sometimes completely) the way in which the assessment is approached.

But these emerging technologies have the potential to raise significant ethical and/or social concerns. Especially during the [pandemic](#) period we have seen how disruptive technologies have raised a wide range of ethical challenges, from the increased risk of exam fraud; technical problems that occurred during the exams; the high exposure of the teacher and the evaluated students (caused by the audio-visual presence recorded, modified, manipulated or distorted); the increased risk of litigation (caused by the transparency of the assessment procedures, variously interpreted); cyber-bullying (limiting or even giving up on-line interventions by students); ethical risks regarding the use of digital materials (illegal download, copyright issues, plagiarism); the reduced management of the student group and some difficulties related to the limited control of attendance at exams; online proctoring system invading students privacy; “the growing prevalence and sheer volume of the digitalisation of data raises ethical concerns around how the data is collected, used and stored” ([Oldfield et al.](#), 2010) etc.

With all the excitement and technological anticipation about educational potential, when talking about ensuring academic integrity there are many aspects to be clarified and/or refined. It is clear that there is a need for **a review of the principles of digital assessment**, both from the perspective of students, teachers and the institutional framework, taking into account at least the following aspects:

academic dishonesty (plagiarism, copyright, cheating) and security, as well as privacy issues (confidentiality, data protection etc.).

Therefore, is a **new ethic needed** in higher education (Măță, 2022)? What are we talking about? Of a technology user ethics or an ethical use of technologies?

- **technology user ethics:** freedom and moral responsibility in the virtual environment; personal data protection, cyberbullying, creating and sharing copyrighted content, moral dilemmas, intellectual property, plagiarism, digital manners (netiquette), etc.
- **ethics of technology use (techno-ethics):** computer ethics, [Internet ethics](#), information ethics (info-ethics), robots ethics (robo-ethics), AI ethics, bio-ethics (enhancements of the human body), digital rights, cyber-attacks, online security and safety, surveillance and monitoring, deepfakes etc.

Towards a new digital ethics in higher education?

What is digital ethics

Because ethics refers to the way groups and individuals relate to, treat, and resolve issues with each other, **digital ethics** then encompasses how users and participants in online environments interact with each other and the technologies and platforms used to engage ([McIntyre, 2021](#)). Sometimes referred to as *online ethics*, *Internet ethics*, *e-ethics*, *netiquette* or *cyber-ethics*, digital ethics refers to how we use technology responsibly, to a set of ethical principles aimed at the online behavior of a responsible digital citizen (Luke, 2018; Bhattacharya, 2022). Simply defined, digital ethics is “doing the right thing at the intersection of technology innovation and accepted social values” (O’Brien, 2020). And this is something that once students learn they can transfer it to out of school behavior as well, which is what we hope they do.

Why is it important?

Digital ethics is important because “**technology evolves at greater speed and at greater scope than our ability to understand it fully**” (Wellard, 2022).

Digital ethics is important because it teaches us about what is right and what is wrong when using the computer, the Internet. It teaches people how to behave using social media, in other words, it shows people how to be mature and responsible on the internet. As technology grows, more users take advantage of its efficiency. As well as manipulating technology to their advantage.

In this capsule we approach digital ethics by raising a series of questions:

- Which approaches are most effective to foster academic integrity?
- What are the ethical and social concerns of digital assessment raised from the perspectives of faculty and students?
- Which are the ethical key opportunities and challenges of trusted digital assessment?
- “Does digital assessment lead to new social and educational divides?” And “How far should we be worried about the proliferation of digitized assessment data?” ([University of Bristol](#))
- Is it right to give support to pirating sites (eg. sci-hub)?
- What images are appropriate for re-posting in social media (Twitter, blogs etc.)?

- How are sources used, remixed, and/or altered for a given audience (CC license, OER)? How are these sources to be referenced or cited fairly? (TASL method, citation standards)
- What are the guidelines that govern a given online community (students forums on LMS)?
- How does an online discussion board community handle flaming?
- How do users portray themselves online, whether through social media, gaming, avatars, or other means (impersonation, deep fake)?
- Just how private should academic privacy policies be?

What are the benefits and limitations of digital ethics?

Starting from the questions above we will explore some of the ethical challenges raised by current and future digital technologies in digital assessment.

Online plagiarism

The lack of original content has always been a cause for concern among educational actors. Writing academic papers builds on the current state of knowledge by incorporating ideas from different authors. This is a process that is governed by custom that an author must follow, with established and shared disciplinary practices to escape accusations of plagiarism (Torrez-Diaz et al., 2018). However, in recent decades, the advent of the Internet has led to an ever-increasing wealth of sources of information and documentation that make plagiarism very easy, lead to academic cheating, and to the increasingly difficult sanctioning of intellectual theft (see the [Institute of Research and Action on Fraud and Plagiarism in Academia](#)). In most cases, students feel confused about the proper documentation of information available online, partly because it is not explained to them since elementary school, partly because of the desire to achieve academic success quickly, to succeed at any cost, without intellectual effort.

Unfortunately, in many countries a "culture of plagiarism" dominates, a copy-paste culture, maintained not only by the school itself (students are asked to reproduce information, there is a significant percentage of comfortable teachers who ask reports and projects). Therefore, pedagogies that appeal to students' critical reading practices, the introduction of ethics notions separately in academic courses, teacher training in this sense and even changing some methodologies are an important part of online plagiarism prevention. On the other hand, there are a number of easy-to-use digital tools and applications, some even without authentication, that help any educational actor to correctly relate to all the information used. We mention only a few of those that help in the [citation process](#): [Scribbr](#), [SciWheel](#), [Citation Machine](#), [ZBib](#), [EasyBib](#), [Citation Generator](#) *References menu from MS Word or Google Docs*.

We recommend that you use them responsibly and still check the citation provided to meet the citation standard. You can also use applications for writing references, such as EndNote (it also provides a plug-in, [Cite While You Work](#), directly in Microsoft Word) or bibliographic reference management tools such as [Mendeley](#) or [Zotero](#). To detect plagiarism, institutions also have technical solutions at hand, even if some are expensive, such as Turnitin or iThenticate. Not only students, but also teachers can use similar content detectors such as [Grammarly Plagiarism Checker](#). These tools allow students to not just avoid accidental or intentional plagiarising, but also check their citations and references ([Lin](#), 2018). As Philippe de Wilde (2022) points out, detecting and removing plagiarized papers that threaten to undermine the scientific process not only requires *patience and human involvement* but becomes a *shared responsibility*: teachers, students, institutions alike.

Responsible use of digital objects (images, audio, videos, texts, data, statistics)

The issue of citation (discussed earlier) is closely related to that of copyright compliance, infringement of intellectual property rights, licensing, data veracity, unethical use of computer programs or multimedia resources, and fair use of resources for educational purposes. Although copyright is a legal concept, learning about how it applies to teachers and students is important not just because of possible legal consequences, but mostly because it's about doing the right thing, establishing good habits and to ensure that students learn to respect the rights of other content creators ([Gallagher et al.](#), 2019). The difference between use in the classroom, in educational activities, and wider use, such as posting material online, and especially in social media and social networks ([Tracey](#), 2020), should also be understood ([Dawn](#), 2017; [Arulchelvan & Yunus](#), 2020) .

Another less transparent aspect for students is the **scientific misconduct** that arises from the intentional modification of the content (falsification of data or even images). As an example, final year undergraduate students are tempted to claim that they have collected more data (interviews, questionnaires, etc.) than they actually did. We will not dwell on this aspect (it goes beyond the scope of this capsule and there is a rich specialized literature on the subject), but we support the need for courses on the adoption of responsible behaviors in scientific activity (from the search and evaluation of information, to the fabrication of data, the alteration images or video sequences etc.).

Here, the use of **open educational resources** and especially teaching about them together with **Creative Commons licenses, public domain** and **open access** plays an essential role.

Further reading

Maddox, B. (2023), *The uses of process data in large-scale educational assessments*. OECD Education Working Papers. No. 286. OECD Publishing, Paris. <https://doi.org/10.1787/5d9009ff-en>.

Cheating during online exams and academic dishonesty

Especially during the pandemic, an increase in exam fraud cases could be observed, the vast majority of them being taken at home, in front of a web camera. The *ways in which students ended up engaging in dishonest behaviors* were quite diverse: access to resources from external sources for finding answers; "solving" topics together with colleagues (most often grid tests) using messaging programs or Discord chat rooms; sharing the screen with colleagues through programs like Teamviewer; the use of advanced electronic devices or smart gadgets, which may appear normal but are practically undetectable, such as micro-bluetooth headsets, augmented reality glasses or smart watches; *impersonation* (this is one of the most common types of misconduct involving students asking someone else to take an exam on their behalf) and even bribing teachers.

Although there is a technological immaturity in the field, solutions exist [to stop cheating in online exams](#), from **digital surveillance during exams** (quite difficult to achieve, especially since proctoring programs are expensive solutions, examples being [Proctorio](#), [ProctorU](#), [Assess.com](#)); **blocking browsers**; **AI flagging in remote proctoring** (such as facial recognition); **IP-based identification** or data encryption. On the other hand, as unwanted effects we can face **biometrics abuse or identity theft**.

Privacy issues

Education is one of the industries that faces many challenges when it comes to the security of candidates' information. **Confidentiality, protection and security of students' personal or sensitive data**, informed consent and data ownership, respect for privacy, etc. are generally issues that arise most often if insufficiently tested digital applications are used by the teacher. A first step in ensuring the security and confidentiality of processed data is the application of personal data protection regulations in schools (GDPR) (Crahmaliuc, 2020).

Watch QAAtube. (2021, July 6). *What is digital assessment security?* [Video]. YouTube. <https://www.youtube.com/watch?v=YfVvjhTwiAs>.

Other issues

There are numerous other causes that generate or encourage dishonest behavior or raise ethical issues in learning analysis. We briefly list some of these: *collusion* occurs when students work together to complete an assessment that should be assessed independently (Li et al., 2021); *contract-cheating*, academic misconduct that involves the indirect contracting of a person to finalize a work in his own name ([Gamage et al.](#), 2020; Parnther, 2022); *ghostwriting*, calling on another person to write a work in one's own name, followed by the transfer of copyright (Hamza et al., 2022); *paper mills*; *fake research papers* ([Else](#), 2022); *blackmail and academic sabotage*, these being a *form of cyberbullying* that affects professional behavior (Wallace et al., 2018); *using WhatsApp as a mechanism* (using the web version of the app, smart cheaters conveniently ping questions to their associates who, within minutes, reply with the answers); *encouraging cheating (external help)*, "altruistic" actions of spreading exam topics before they are completed, or discussing answers with test-takers (Noorbehbahani et al., 2021); *the teacher's prejudices / the psychological influence (bias)* on the way we appreciate our actions (we are referring here to the existence of an exaggerated self-esteem detected among many teachers and/or trainers - some even call themselves expert evaluators) (Finefter- Rosenbluh & Perrotta, 2022); *disinformation and fake news* (how to click smart) etc.

Conditions of effective implementation

When addressing the "infidelity" of digital assessments, most professionals start from the wrong assumptions: How to stop cheating, copying, cheating online? Or what digital assessment security techniques should we use? We do not believe this is an effective way to address this issue. Rather we must ask: "Why do students cheat? How can we make students confident enough to take assessments without cheating? What tools and applications address the weakest links in the digital assessment lifecycle?" ([Pope & Schrader](#), 2023).

For example, we know that the use of AI tools in education raises a number of ethical issues. But are students who use, for example, AI-based text generators to write papers really cheating? Is AI a tool that violates academic integrity? Will it encourage scientific fraud (Gu et al., 2022)? How could artificial intelligence be used to personalize and differentiate learning? Is a new definition for plagiarism needed? Will language in school policy documents, etc. be revised? Do we need AI literacy (European Commission, 2022)?

It is clear that we need a **maturity in understanding digital assessment**, not only *adapting to technology* (see the [study case](#) of [Chat-GPT](#) generating written content at the end), but also *overcoming teacher frustration* when talking about technological adoption; *participation in adequate trainings* in the field of digital assessment methods as well as *raising awareness in universities*; *increasing “students’ genuine engagement* and deepen their sense of belonging in order to change their motivations and mitigate cheating” (Pope & Schrader, 2023); *redesigning assessment tasks in multimodal formats*; abandoning grid-type tests or at least *ensuring a sufficiently generous diversity of question types* and requiring *higher level critical thinking skills* (Zhai, 2022); “successful use of computer-assisted assessment for multiple choice testing involves significant institutional commitment, technical infrastructure, and high levels of quality assurance practices” (Oldfield et al., 2010) and, why not, instituting “*academic integrity contracts*” for students to sign (in general, contracts have a psychological effect on people, and examinees are more likely to be authentic if they sign a form of contract) (Budhai, 2020; Stephens, 2021).

Andrews et al. (2022) propose a possible approach to these challenges might be to install a **Digital Ethics Officer**. Moreover, the HEIs must offer a secure environment, platforms designed to be resilient against data security breaches, ID falsification, tampering, theft, loss of student responses or human error and support those with different disabilities (such as visual impairments, hearing loss, mobility impairments etc. ([Kenworthy & Houlden](#), 2020).

#takeaways

- **Digital ethics** refers to applying ethical thinking and acting to the practical concerns of technology ([Brian Patrick Green](#), director of Technology Ethics at Santa Clara University).
- **Why cite?** Citing all sources helps to avoid plagiarism; transformation into responsible persons (ultimately we are talking about personal and institutional reputation), being a way to demonstrate the analysis and synthesis of information from original resources.
- As **digital tools** available to teachers and schools **that ensure academic integrity**, we mention: iThenticate, Turnitin, Grammarly, Scribbr, re.cite, online proctoring technologies, privacy tools, etc.
- Among the **obstacles to assessment in the digital age**, the most frequent ones should be noted as being generated by: technical equipment, the barrier of the screen, of devices, of the Internet (connection), lack of knowledge about evaluation and/or lack of technical knowledge, lack of a strategy institutional/national, time (during the pandemic we saw a fast-forward absorption of everything we didn't know), interaction and communication, effective assessment practices, student motivation, lack of clear expectations, equity in education, etc.
- **Generative AI applications** can be used in ways that **support academic learning and achievement**, rather than as a substitute for traditional forms of assessment. For example, ChatGPT could provide personalized feedback and support to students, rather than as a tool for generating entire papers or exams.

Reflection zone: Do you agree with the statement "Online assessment is possible, but it is ineffective?" ([Guthenberg](#))

Key points of implementation

Integrating digital tools in assessment is a complex task, but it is a process that can be broken down into phases to avoid being overwhelmed. The following highlights five keys to a successful digital implementation.

Accessibility and inequalities

According to Berkman Klein Center for Internet & Society (2021) disparities in access to Internet connectivity, digital devices and tools must extend beyond the rural-urban divide and intersect with age, gender, ethnicity, race, education and skills level, and/or socioeconomic status. It's important that **students are informed about the policies** their institution has in place, and how these ensure that the **tools being used work for everyone**, e.g., whether they require facial recognition or require voice recognition. We need to ensure that all students have the same rich digital experience (Wilson, 2018).

Security, safety and privacy issues

(collecting data, compliances with GDPR, security risk - [Zoom bombing](#), data protection)

Online educational platforms generally collect a great amount of student data. However, it is not clear how these data are collected, where they are being stored, and how such data might be used. Finefter-Rosenbluh et al. (2022) stressed the fact that all **educators** should ensure that **students must have the skills** to manage personal data profiles and their online social identities. Moreover, the **academic institutions must prove their role in helping to protect student privacy** (e.g., by opting for less invasive technologies, adopting policies that mitigate privacy concerns, developing programs and resources to address online privacy concerns etc.). Likewise, **policy makers** need to recognise and debate the ethical issues linked to the rapidly increasing amounts of educational data being collected and stored, and centered around issues of students' rights to access and control their own data.

Protecting safety and well being

(harmful effects of surveillance, supervision³, tracking and monitoring)

In the 2021 report about digital ethics, the Berkman Klein Center for Internet & Society one can find some crucial tips regarding the fact that we have to look at students not as a monolithic group. For example, "[surveillance technologies](#) may be useful for students who have a learning disability to help tailor content to their specific needs. At the same time, the collection, storage, and use of student data must be overseen, particularly for vulnerable groups". Moreover, students may change their behaviors as they may fear that those surveilling them with technologies⁴ like closed-circuit televisions, CCTVs, online proctoring tools, may misinterpret their actions or ideas. Such tools have come under increasing scrutiny as some do not detect students of color. For eg. students at the [University of Colorado Boulder raise concerns](#) about the accessibility of proctoring app Proctorio, saying that "the added stress of such an intrusive program may make it harder for students with

³ "Supervision suggests watching over for the purpose of guidance, which includes a component of care, while surveillance connotes continual or continuous watching, usually involving close observation and scrutinization of behavior. A primary feature of surveillance is suspicion." (Berkman Klein Center, 2021).

⁴ These technologies raise concerns around the potential of creating a school culture of mistrust and suspicion.

testing anxiety and other factors to complete the tests” or “discriminates against neurodivergent students, as it tracks a student’s gaze, and flags students who look away from the screen as ‘suspicious.’ This, too, “negatively impacts people who have ADHD-like symptoms.”

Understanding the technology

New technologies, especially those relying on artificial intelligence or data analytics, are exciting but also present ethical challenges that **deserve our attention and action**. AI technologies have the capacity to make predictions and draw inferences about individuals and groups of students by algorithmically detecting patterns in large volumes of data. **Teachers must understand the technology they want to use**, otherwise all kinds of ethical problems can arise (see Sheely’s Frankenstein book: *Just because you can do something with technology doesn’t mean you should*). We can be energized by new technologies while we stay fully aware of privacy and ethical considerations. **The key is the balance.**

Academic integrity is a pedagogical issue

Steps faculty can take to reduce / avoid academic dishonesty ([TeachOnline Canada](#)):

- **Use open-ended assessments/More open-book exams:** Rather than asking students to answer specific questions or complete predetermined tasks, faculty can design assessments that require students to engage in critical thinking and problem-solving. This can make it more difficult for students to cheat, as they will need to come up with original ideas and solutions rather than simply copying answers from a tool like Chat-GPT.
- **Use collaborative and continuous assessments:** Assessing students’ ability to work effectively with others can also help reduce the risk of cheating. This can be done through group **projects**, collaborative problem-solving tasks and other activities that require students to work together.
- **Provide adequate support and resources:** If students feel they have the support and **resources** they need to succeed in their course, they may be less likely to cheat. Faculty can help create a positive, supportive learning environment by offering additional resources and support for struggling students.
- **Use a variety of assessment methods:** Rather than relying solely on traditional exams or quizzes, faculty can use a variety of assessment methods such as **presentations**, blogs, **portfolios and scaffolded projects** (Wilson, 2018), oral exams. This can help ensure students are evaluated on a wide range of skills and abilities, rather than just their ability to memorize and regurgitate information.
- **Check ChatGPT’s (or other AI based apps) answers to assignment questions:** Faculty can do this to spot student answers that plagiarize from the tool. They might carry this exercise further and share with students ChatGPT’s answers to various course-related questions. This serves several purposes: illustrates that the instructor is aware of ChatGPT; prompts a discussion about the role ChatGPT might play in the course; creates an opportunity to compare and contrast ChatGPT’s responses to those of authorities on the topic.



David Grinspoon

28 ianuarie la 18:52 · 🌐

College essay assignment: use ChatGPT to write an essay on the following topic. Print it out and, by hand, grade and critique the essay, showing where it is wrong (based on what we've learned in class), inadequate or where the writing is clichéd or otherwise less than excellent human quality.

© [Grinspoon](#) (2023)

- **Designing assessment with students themselves.** For eg., at [University of Bristol](#) students should be involved alongside educators, researchers, practitioners and industry members in designing assessment practices that support them to **participate** in the creation of their own futures.
- **Know your students and Stop worrying about cheating.** When we design the assessment differently, cheating becomes almost impossible. We are those who create conditions that encourage and enable cheating, so we should stop doing that. Instead of investing in more and more expensive surveillance systems, change the assessment design.
- **Digital Assessment Literacy:** Educators need to be trained as online assessment literate educators ([Eyal](#), 2012; [Husain](#), 2021).

Reflection zone: What are we trying to achieve with digital ethics? What's the goal we should be aiming for? Aren't ethics ultimately subjective? We have rules and regulations to tell us what we can and can't do. How relevant is this Digital Ethics microcapsule to me, given that I don't use (or rarely use) digital assessment in my courses?

Further developments

Artificial intelligence, blockchain, digital credentials (digital and micro-credentials, digital and open badges), big data, learning analytics are just some of the **emerging technologies** that have induced significant changes in the assessment process. Each of them brings opportunities and limitations, the purpose of this section.

Artificial intelligence

„Nobody is prepared for how AI will transform academia.” ([Stephen Marche](#))

Artificial intelligence-based techniques have been developed “to fully or partially automate parts of traditional assessment practice” ([Swiecki et al.](#), 2022): grade exams, essays and other assignments (to develop and mark assignments, projects and examinations); not only save time for faculty and instructors but also provide more immediate feedback for students; finding suitable peers for peer assessment, tutoring, automatically marking student work, detection of similar content / plagiarism (Turnitin) ([Swiecki et al.](#), 2022), improvement of the assessment process by using learning analytics, predicting student achievement etc. Moreover, instead of offering the same task of assessment to all students, AI techniques have developed tasks adapted to the student's abilities, which energizes the assessment, giving them personalized and more enjoyable assessment experiences, leading to new forms of assessment. ([Zawacki-Richter](#), 2019; [Gardner et al.](#), 2021; [Gonzalez-Cataluyed et al.](#), 2021; [Fengchun et al.](#), 2021; [Holmes et al.](#), 2022)

Basically, these techniques shift assessment tasks from teachers to AI and help keep assessment practices more feasible (Swiecki et al., 2022). Although AI programs provide solutions for complex needs and problems, we do not yet have AI tools that fully understand human needs. Many educators fear that with the introduction of AI in the evaluation process, many problems related to plagiarism, copyright will appear, the need for guidance and direction from teachers will disappear (Ionescu, 2022), the lack of original content will be felt (something like the death movement of PowerPoint - [death of the academic essay](#) - and look that PowerPoint is not dead but is used more sparingly, more creatively, more in line with elements of visual rhetoric, graphic design, gestalt psychology, etc.). The reality may be just the opposite - an opportunity to truly understand what this phenomenon is all about, as well as how it will transform academia.

Watch Office of Ed Tech. (2022, August 10). *AI and the Future of Assessment* [Video]. YouTube. <https://www.youtube.com/watch?v=SwQuIB3WtEE>

We review just a few of the **negative implications** that AI can bring to assessment⁵:

- **AI facilitates (or even replaces) solving (home) assignments, writing essays.** Let's take the case of Chat-GPT, the highly publicized AI-powered conversation and fluid dialogue generator at the end of 2022. In a correct manner, it can be used as a brainstorming tool, in critical thinking exercises, storytelling activities, providing feedback, creating personalized content, as a student support (learning assistant or tutor), helping them understand and better retain information and difficult concepts, etc.

[Professors at the University of Minnesota Law](#) tested whether the artificial intelligence program could pass final exams. The result was that ChatGPT got a C+ (the numerical equivalent of 7.87). As a rule, students who take this grade also pass the bar entrance exam. The teachers have shown that in this way students do not become omniscient, but they manage to get passing grades, practically without much effort.

Nielsen (2022) suggests that the most important thing is to understand that such applications are not substitutes for human teachers, but supplements to traditional teaching methods. By understanding what the capabilities and limitations are, we can effectively integrate them into classroom activities and enhance our educational experiences.

- **AI applications do not always provide correct answers, they lack factual accuracy, some are erroneous or contradictory.** No doubt, teachers and instructors feel confident

⁵ The range of risks generated by the use of AI in assessment is much wider, but it is beyond the scope of this material. Namely: the data obtained may be wrong, the predictions may be incorrect (data biases), there is no responsibility for the error, the pedagogical value and suitability of the automatically generated questions are not guaranteed, intentional failure, misinterpretation, the elimination of professional expertise etc.

that they will be able to detect when students are using AI applications to write their papers and assignments. But recent studies show that things are not quite like that (Clark et al., 2021; Gao et al., 2022). Even with the training of educators in advance, the results are not very good.

We propose:

- A game developed by researchers at the University of Pennsylvania, [Real or Fake Text](#), to see how well you think you can tell the difference between human and machine-generated writing
 - [This Image Does Not Exist](#) - Can you tell if an image was generated by a human or a machine?⁶;
 - A [test](#) by the N.Y Times⁷.
 - A [test](#) to see how good you're spotting fake or real music (made by humans).
- **Online and AI apps facilitate impersonation.** [Online impersonation](#) and [AI-generated impersonation](#) (audio/video) can be used for a variety **discrimination based on gender, race, ethnicity**. of illicit purposes, including remote exam authentication, cheating, misattribution, and more. For eg. deepfake technologies are a threat not only to personal security but also to assessments based on online tests (by manipulating content). On the other hand, recently Microsoft announced an AI called VALLE-E, capable of mimicking anybody's voice after hearing just three seconds of speech (basically, your voice could be digitally cloned and used to impersonate you).

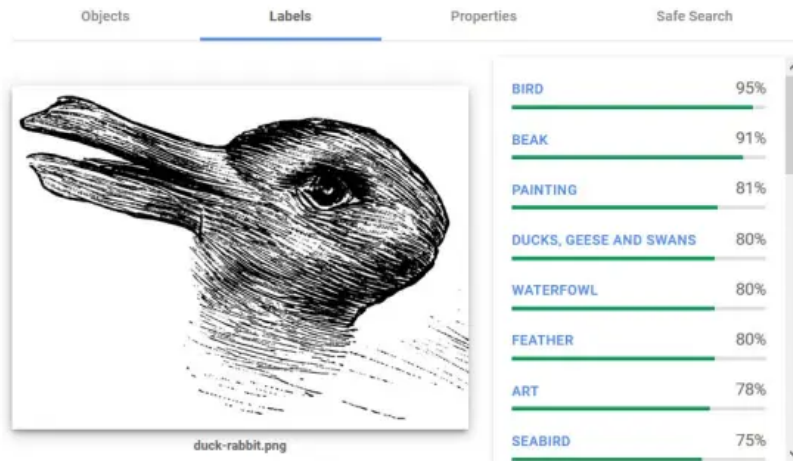


Impersonation by deep fake. Source: [Manke](#), 2019

⁶ Although it does not involve AI applications, a test based on images to locate the historical period of the illustration, [ChronoPhoto](#)

⁷ Read more <https://www.tidio.com/blog/ai-test/>

- Due to (current) technical limitations, AI-based assessments may **lead to erroneous interpretations**. Let's take the case of search engines. Because analytics engines don't actually know what they're looking at, they can see one thing and interpret it as something else. In other words, AI can misidentify what it sees and humans can relatively easily trick AI into misidentifying certain aspects.



Misinterpretation of the experiment "A duck or a rabbit?"

In a Google experiment, the use of AI led to the following results: 95% - a bird; 80% - a waterfowl and 73% - a duck. The rabbit was, however, 100% absent.

source: Gardiner (2021)

Probably the biggest shortcoming in education is that apps like Chat-GPT **could become a substitute for search engines**, already many students rely on them instead of Google. Moreover, in addition to the **lack of plausibility of the information** presented as a result, Raoul Savos (2023), researcher at the Romanian National Institute of Statistics, points out that a less visible aspect of such applications as Chat-GPT is the fact that it appears **anterograde amnesia** (the patient loses the ability to remember events that occur after the onset of the disease, caused, for example, by trauma or stress). And this happens due to the fact that exposure to the huge volume of data is not done continuously, but rarely (perhaps once a year). In other words, all the information (factual, historical) that has appeared since the last exposure and until now will not be found in the "memory" of the algorithm. The researcher also draws attention to the need for increased caution on the part of those who want to use it in the context of retrieving recent information. However, we advocate not being too harsh on the ratings, as the app like ChatGPT is still in beta. On the other hand, a breaking news story draws attention that Microsoft is working on implementing in the Bing search engine of this application, to give a more human touch to the results ([the information](#)).

- **Bad pedagogy.** "When considering the consequences of the increased use of AI-based assessments, it is important to consider how this might affect educators' ability to engage in assessment as a pedagogical act" (Swiecki et al., 2022). All the ways that AI can support pedagogy are also ways that AI can support poorly applied pedagogy. Here we can also talk

about other disruptive effects: the establishment of a pedagogy of surveillance, the erosion of trust, tests induce anxiety, etc.

- The manipulative character in the way it shapes the perception of users can lead to. For example, in the case of Chat-GPT this can lead to responses that are offensive, discriminatory or harmful to certain groups of people. Moreover, the new generations of bots, like Bing chatBot, are not only inaccurate at times, but also recalcitrant, moody, short-tempered, and sometimes have a narcissistic and passive-aggressive mood ([FastCompany](#)). It is obvious that there must be clear regulations in this regard, as the consequences of incorrect use can be devastating. In July 2020, in the UK, due to COVID-19 the dreams of many students hoping to go to the university of their choice were shattered when a computer program was used to assess their grades (traditional exams had been canceled). To find out what candidates would have achieved if they had taken the exams, the AI-based program took into account both their existing grades and their school history. This ended up penalizing bright candidates from disadvantaged areas and from low-income families (UN, 2020).

Blockchain technology

According to Prof. Dr. Carmen Holotescu, the uses of blockchain in education refer to the certification, accreditation and recognition of training, the creation of learning portfolios, the management of intellectual property, of open research projects or the creation of distributed learning and collaboration platforms with verified access/ authorized (Holotescu et al., 2022).

Keeping data reliable, secure, and tamper-resistant has become a growing problem in education due to the growth of digital learning environments that often combine learning experiences, testing procedures, and educational credential management ([Pfeiffer et al.](#), 2020). But once the information is stored on the blockchain, it cannot be changed retroactively, which makes blockchain technology an ideal candidate to ensure the achievement of learning objectives, the issue of educational credits, the certification of acquired skills or the issuance of digital diplomas in the blockchain system (Irudayam & Breiting, 2022).

Probably the biggest advantage in the evaluation process brought by blockchain technology is the **authenticity of diplomas**. How do we know if a diploma, certificate is real or fake? A simple search on the Internet for the phrase *fake diploma* gives hundreds of results to sites that sell / manufacture diplomas from any university we want for a relatively modest amount of 2-300 USD. According to George Brown, Academic Director of the Think: Education Group, worldwide around 30% of diplomas on the market are fake (London Marketing Academy, 2018). Thus, issuing diplomas and study documents through blockchain technology can provide a secure solution against fake credentials. On the other hand, the transfer of credits between institutions is favored, allowing a much more direct control over the educational process.

Regarding higher education in Romania, UEFISCDI together with the Politehnica University of Timișoara launched the project [EBSIO4RO](#): Connecting Romania through Blockchain, through which university diplomas will be issued on the blockchain.

One of the aspects for which there are still deficiencies is compatibility with GDPR regulations (see UE report on [Blockchain and GDPR](#), 2018).

Digital credentials

Known as **digital credentials**, these are the digital equivalent of paper credentials. Just as a paper credential might be a passport, a driver's license or a certificate of attendance at an event, a digital credential is a digital record (a file) that contains recognitions of a person's learning achievements and describes all activities, assessments, associated professional rights or acquired skills ([Frikken et al., 2004](#)).

For example, at [European level](#), efforts are being made to develop the infrastructure for [Europass⁸ digital credentials](#) (such as linguistic ones) in order to support an efficient and secure recognition of qualifications or other learning outcomes.

As immediate benefits we mention: reduction of administrative burdens for graduates, education providers and/or companies; reducing the risk of fraud (they are resistant to manipulation and/or digital distortion); can contribute to the creation of paperless workflows; instant automatic verification of information such as online identity, issuing body identity or qualification quality assurance (they are like a trusted universal digital passport) etc. For example, Europass digital credentials have a kind of digital stamp attached, which "means that they enjoy a legal presumption of authenticity in the EU, as well as equivalence with printed diplomas/certificates containing the same information" (Europass, f.d.).

In the academic sector, **micro-credentials or micro-certifications** are of particular importance, as they are proof of the learning results ([flexible learning pathways](#)) that a learner has acquired following a short learning experience (such as MOOC courses). The proof is contained in a certified document listing the name of the holder, the learning outcomes obtained, the assessment method, the issuing body and, where appropriate, the level of the qualifications framework and credits acquired. Micro-credentials are learner-owned, shareable, portable and can be combined into larger credentials or qualifications. These are backed by quality assurance, following agreed standards ([Trepule et al., 2021](#)).

More recently, we are also talking about **nano-credentials**, which focus only on a certain set of skills. The benefit is the ease and speed of being obtained in a very short period of time. A nano-credential should be smaller than a micro-credential. Thus, if a micro-credential is 5-25 credits, then a nano-credential should be 1-4 credits (10-40 hours).

Among digital credentials, **digital badges** are probably the most common. These are a digital visual representation (like a kind of sticker) of a skill, the result of learning, performance, competence or experiences, which can be obtained in different learning environments.

In addition to immediate benefits such as student motivation, better engagement or accountability for their own learning journey, these digital badges need to be seen and understood as more than a reference point in a learning adventure, such as building an internal network of trust between issuers and final consumers. An example: How do I, as a teacher, know if a student actually attended a webinar or went through all the modules in a course thoroughly? And doesn't he just come and provide such evidence?

⁸ The Europass is a set of online tools created by the European Commission to support European citizens to document their skills, qualifications, and careers in digital format. For more information see: <https://europa.eu/europass/en/about-europass>.



D-eVA UVT

Created on Apr 8, 2022

This badge is awarded to teachers who participated at the first session of training within the Erasmus+ project "Practical skills evaluation with digital technologies in teacher education" (d-eva.eu), organized by West University of Timisoara. The 4 hour webinar included training on the following... [\[more\]](#)



Offered by
[West University of Timisoara](#)

Badge Details

EARNING CRITERIA

Recipients must complete the earning criteria to earn this badge

Participation in the 1st Training (25 March 2022) of D-eva Erasmus+ project.

TAGS

digital assessment

e-assessment

higher education

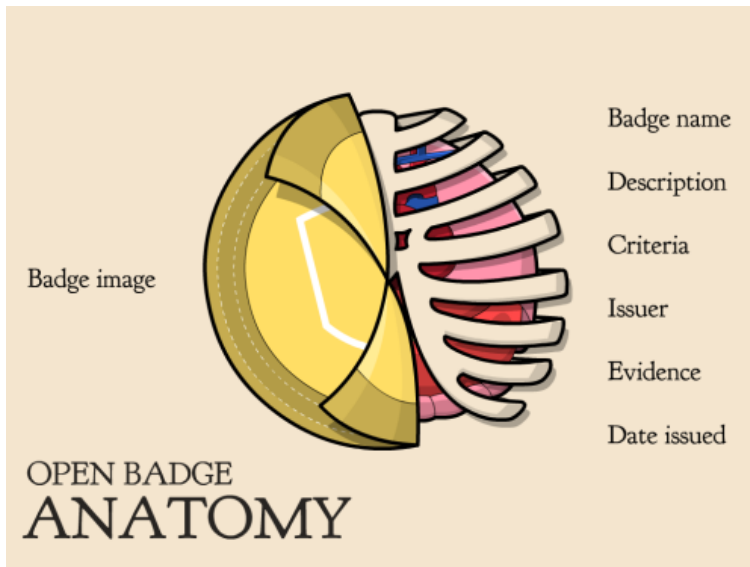
Digital badge awarded to UVT participants in Deva training,
<https://eu.badgr.com/public/badges/873SCCE3Q5mPp9ZtX0LB1g>

Unfortunately, in higher education digital badges are still an emerging concept, still little known and, above all, the impact on the potential in the recognition of skills and abilities is not fully understood.

Reflection zone: Are digital badges a disruptive concept that challenges the way we recognize learning? Would you be willing to rate students by awarding digital badges? Aren't we fooling ourselves? If we look back, digital badges are the analogues of the old and traditional badges awarded by teachers in primary schools and/or prizes, such as books given either at the end of studies or during the educational process of students.

Open badges are the most widely used open interoperable standard for digital credentials. Open badges are portable credentials validated by anyone who wants to verify a person's claim of knowledge or skills, relatively easy to create, present and verify.

Unlike digital badges, users can take their badges open and display them in any online space, blogs, websites or social networks like Facebook, Twitter or LinkedIn. The difference with digital badges is that they can be validated by external actors (such as educational organizations, potential employers or various decision makers) through the metadata included in each badge.



Kyle Bowen, *The anatomy of an Open Badge*, licensed CC BY SA 3.0, <https://classhack.com/post/39932979863/badgearatomy>.

At https://badge.wiki/wiki/Badge_platforms one can find the most used platforms, applications and tools for creating, managing, checking (<https://badgecheck.io/>) and validating digital badges. Among the most popular we mention [Badgr](#), [OpenBadgesMe](#).

Big data

Let's start with a clarification of what **big data** is. In technical terms, big data refers to data sets that are *huge in volume* (on the scale of petabytes, exabytes and zettabytes); *very diverse in type and nature*; *generated continuously at high speed* or near real time; *exhaustive* (allowing the capture of entire populations – or rather than sampled selections); *fine-grained in resolution* at the indexing level of individual units; *combinable with other networks of datasets* and *flexible and scalable* enough for new data to be added and to rapidly expand in size (Williamson, 2017, p. 32).

Since these data sets are too large to be extracted, manipulated, and treated in the usual way, both hardware equipment and special software are used to identify trends, needs and behavioral evolutions of the entities under analysis.

All educational institutions collect and store a vast amount of data about students, teachers, the educational process, exams, etc. which are analyzed and provide a lot of information both about the learning process and how it can be improved. Other concrete benefits relate to how big data is transforming the way universities analyze information and make decisions in areas such as academic performance (monitoring and predicting student, teacher, institution performance, etc.), curriculum adjustment, individualizing education, discovering dysfunctional things, organizational expansion and technology efficiency (for example it can help to create a warning system when a slower pace of learning is discovered in some students, detecting the risk of dropping out, etc.) ([UNESCO](#), 2019).

As reported by Wyatt-Smith et al. (2019) there are also unintended consequences such as: non-respect of the rights of the people involved, algorithms [are not free from bias and ethical challenges](#), with severe consequences such as discrimination of students who can be labeled as under-performing, etc.

Educational actors have at hand solutions that are easy to implement and use, such as [Socrative](#), [Nearpod](#) or [Classroom Monitor](#), applications that help them observe the performance and behavior of students in real time.

Learning analytics

Learning analytics is an interdisciplinary field of research that refers to the **analysis of learning data in education**, mainly for identifying and solving the problems of the didactic process in order to predict the evolution of phenomena and/or events for correct decisions, personalized learning, the progress of learners, measurement academic performances (including teachers), learning optimization, but, above all, for the development of educational strategies and policies ([Murcan & Sidiq](#), 2021). We mention that the focus falls on teachers and students, less on organizational contexts that also include governments, funding agencies or institution administrators (these being the subject of academic analytics).

Examples can be read on The University of British Columbia (n.d.). *Learning Analytics Examples*. <https://isit.arts.ubc.ca/learning-analytics-examples/>.

Stephen Downes in his course "[Ethics, Analytics and the Duty of Care](#)", lists six categories of learning analytics ([Downes](#), 2020): *descriptive* (generally overall learning data in visual form), *diagnostic* (useful information with a preventive purpose to intervene to support the learner), *predictive* (for example to identify students at risk of school dropout or school failure), *prescriptive* (to provide students with personalized learning paths or assessment materials), *generative* (those obtained from AI applications, such as Chat-GPT or MidJourney) and *deontic* (analyze expressions of feelings, needs, wants and other such factors to determine what kind of outcome would be best).

However, each of them represents a course topic in itself, that's why we don't delve further (those who want to deepen the topic can follow this free MOOC, which ends with the awarding of digital badges).

As pointed out by May et al. (2017), learning analytics raises a number of issues related to data ownership, privacy, the necessary role of human feedback and error correction in learning analytics systems, data sharing between systems, organizations and stakeholders, trust in collecting customers data etc.

Effective applications in learning analytics are: [MongoDB](#), [Hadoop](#), [Tableau](#), Moodle, to which are added social network analytics tools that are commonly used to map social connections and discussions.

We conclude this section with a reflection of [Andreas Schleicher](#), Director for Education and Skills, OECD: "There is a divorce between learning and assessment, and technology (learning analytics, big data, etc.) can help us bring the two sides together."

What is clear at this point is that we are only seeing the beginning of the impact of such technologies on higher education and our wider society.

#takeaways

- In times where the dominance of AI-powered content generators is certain, it is imperative to ask **how assessment will change**, and if we need [to rethink the whole process](#). Why not include these aspects in what we teach? We generate content based on AI and then teach around it, supplementing, explaining and supporting with students the idea of responsibility, what else creativity means, and the list goes on ... Some of the panic we've seen in educators reminds us of the reaction to some of our math teachers when we were young and pocket calculators were introduced. However, in the age of quantum computers, mathematics seems to have survived, doesn't it?
- The most important ways in which the school can defend itself against attempts to cheat using apps like ChatGPT are **to radically change the way in which the topics are formulated and the way in which the written products of students are assessed**. Which ultimately means a deep reform of the national education system.
- The use of **blockchain in education to validate, verify, authenticate and store learner data** is still in its infancy. Blockchain technology can be used to keep all school history from the beginning of school to the completion of studies in an unaltered form. Thus, storing diplomas and credentials on the blockchain guarantees their authenticity, preventing fraud and/or any subsequent modification. The person with official documents in this form demonstrates the studies followed, in a simple and immediately verifiable way, for admission to an educational institution or employment.
- **Digital credential is a documented statement** containing assertions about an individual, issued by an educational institution following a learning experience. They're basically ways for anyone to tell their professional story in a validated, secure, and easily verifiable way.
- **A micro-credential is like a mini-certification and digital badges are simply a visual representation of a micro-credential**. An **open digital badge** is not just a pretty image. It is supported by a skeleton of metadata - this includes information about the issuer, the person who received the badge, the criteria for obtaining it and evidence that the criteria have been met. This metadata makes digital badges easily verified as legitimate compared to a paper certificate.
- **Learning analytics is a broad term that covers a wide range of activities**: from teachers testing the effectiveness of learning approaches, to instructors and counselors determining the effectiveness of particular learning interventions, to researchers asking basic questions about learning data to obtain information about individual performance. or learning strategies, to the institutional approaches used for planning or reporting programs of study. (see more example at [British University Columbia](#))
- **Big data refers to unstructured and raw data**. The main goal is to convert raw data into datasets that can then be used to gain meaningful insights or solve complex problems. In learning analytics, the data is mostly structured data. Metaphorically, we can say that using big data to improve online learning is called learning analytics.

Digital tools

Table 1. Tools to support digital ethics

Plagiarism detectors⁹	Turnitin (Integrate AI Writing Detector into Its Products since April 2023), iThenticate , Grammarly Plagiarism Checker , AI Text Classifier , GPTZero for Educators , CrossPlag , AI Content Detector , Originality.ai , DetectGPT , Ai Writing Check , PlagiBot , Writer.com , Plag , PlagiarismCheckerAI
Citation	Scribr , SciWheel , Citation Machine , ZBib , EasyBib , Citation Generator , re.cite , EndNote
Curation / references manager	Mendeley , Zotero , EndNote
Online proctoring¹⁰	ProctorU , Assess.com , iMocha , ExamOnline , TestnTrack , Examus Proctoring , ProctorExam , Classtime
Feedback with audio-video apps; extensions and voice assistants	Gradescope , Screen-cast-o-matic , ScreenPal , Mote , Vocaroo , Nuance Dragon Speech Recognition , Floop , Amazon Alexa, Apple's Siri, Google Assistant, Microsoft's Cortana, Samsung Bixby
Digital Badges	Badgr , OpenBadgesMe , Open Badge Validator
Big Data	Tableau , Google Cloud , MS PowerBi , IBM SPSS Statistics , MondoDP , vSphere , SiSense , Minitab , Hadoop , Atlas.ti , Storm , Trevor
Learning analytics	OnTask (tracking learners' progress and providing more, better and personalized feedback; free tool, funded by the Australian Government Department of Education), Threadz (monitoring student activity in online

⁹ see [FastCompany list](#)

¹⁰ In a recent survey conducted by [Educause](#) for higher education institutes, it was seen that more than half of them (54%) were already using online or remote proctoring services and another 23% were planning or considering using them. See a list of American universities: <https://www.baneproctoring.com/>.

	discussion forums associated with the course, tool developed by Eastern Washington University - Instructional Technology and licensed under CC BY NC SA 4.0 International),
Others	GMat , GreTest (computerized adaptive tests), Gradescope (peer feedback), MiWrite (automated essay scoring), PeerEval , PeerScholar , TeamMates , PeerWise (peer assessment, peer feedback)
Online Integrity Hub (tools to help publishers combat bogus research and image manipulation)	STM Integrity Hub , Blacklight (A Real-Time Website Privacy Inspector), Ethical EdTech Wiki

Table 2. Artificial Intelligence in educational¹¹ assessment

Conversations (chatbots)	ChatGPT 3 (OpenAI), Digital Einstein Experience , Character.AI (Character Technologies), IvyChatbots , Cognii Digital Humans: IamSophie and Digital Einstein , Allelo (simulations and coaching)
Text to Text - generators for writing various online content - social media included (even in several languages, which highlight certain features, rewrite some texts and act either as a spelling or style checker, highlighting typos or marking various aspects that can be improved)	ChatGPT 3 , Grammarly (grammar correction tool as you write and plagiarism detection), Cactus (essay writer, paragraph generator, discussion questions etc.), Trinka (grammar corrector, bringing improvements to the text also in terms of vocabulary, tone or syntax), Jasper.ai , superReplay (for emails), Rewordify , Hemingway , WriteSonic , Ai-writer , Elicit , Texta , Hypotenuse , ResearchAI , Copy.ai , Compose.ai , WordTune , CopyMatic , Speedwrite , ecree , TooWrite , ParagraphAI , MiWrite (long essays), NotionAI , Writer , Story Machine (stories), TalkToTransformer (story generator), Charisma.ai (interactive stories), Canva Magic Writer , DeepL Write , ProtoBot (generates random product and service ideas)
Generators of summaries of academic sources of information and documentation (academic articles)	Jasper , Scholarcy , Paper Digest , Quillbot , Genei Elicit (Ai research assistant)
Questioning , Socratic questioning routines	Conker.ai , FineTune , QuestGen (generating quizzes from any text)

¹¹ For a continuously updating list check Christinei diMicelli [AI in education](#) (last update 12 January 2023). You can also browse directories or encyclopedias such as [Futurepedia](#), [AI Tools Directory](#), [Future Tools](#), [Wired The artificial database](#), [Aicyclopedia](#), [Theres an AI for that](#), [Domore](#).

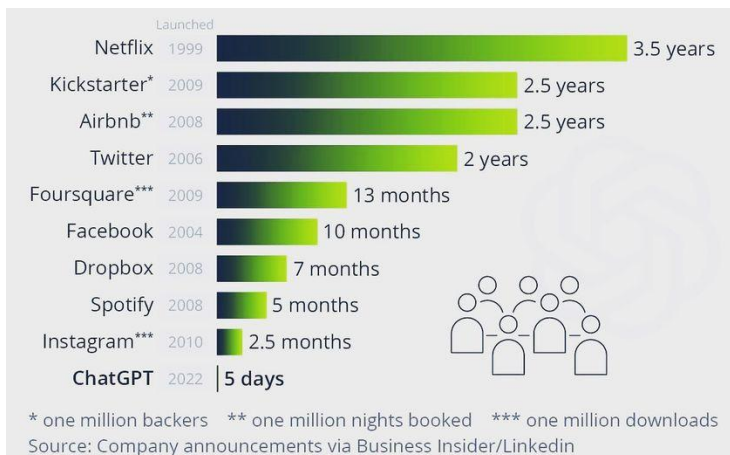


Search	Semantic Scholar , YouChat (SuSea), PimEyes (facial recognition), Talk To Books (searching over 100 thousand volumes using natural language queries), Perplexity
Paraphrasing	Ludwig , Paraphraser , Prepostseo , InstaText , Writfull
Text to Image // Art generators	DALLE-2 , Midjourney , Stable Diffusion , Crayon , Canva Text-to-image , DeepAI Image Generator , Fotor Image Generator , Forthewall.art , LensAI , InstructPix2Pix , cleanup.pictures , Img2Prompt , Xpression , Wombo , Voila
Text to Video // Text to Presentation	RunwayML , Lumen5 , Fliki , Synthesia.io , Phenaki , Beautiful.ai , Veed.io
Text to Audio // Audio to Text // Audio to Audio, Music	Descript , Dictation.io , Synthesia.io , Play.ht , Murf.ai , Resemble.ai , Valle-E , JukeBox , Soundraw
Games	Real or Fake Text , Did a Fourth Grader Write This?
Others	PhotoMath (answering math-assignments), Socratic , Symbolab , Duolingo (language learning), JukeBox , Aiva (music), Body , Movement , Language (choreography, dance and movement, film scripts), AutoDraw (drawings), MDM (text to motion), Img2Prompt (Get prompts from stable diffusion generated images-- or any image! Upload and image, and it tries to generate a prompt for it. Then try an image prompt to see if it works.), Mini Course Generator (generator IA de conținut micro-învățare), Lesson plans

Study Case: Would you use Chat-GPT in teaching activities/assessment?

In higher education, most fears are raised by AI generative applications. However, it is important to **distinguish between AI and generative AI**. Thus, artificial intelligence (AI) is a broad term that refers to any technology that is capable of intelligent behavior. According to [Forsyth \(2022\)](#) this can include a wide range of technologies, from simple algorithms that can sort data, to more advanced systems that can mimic human thought processes. On the other hand, **generative AI is a specific type of AI that focuses on generating new content** such as text, images or music, formulates arguments, makes summaries / book reviews, can even tell jokes, write code, in general, it is useful to humans. These systems are trained on large data sets and use machine learning algorithms to generate new content. Forsyth (2022) also says that this can be useful in a variety of applications, such as creating art, music, or generating text for chatbots.

At the time of writing, the most interesting and challenging application of generative AI that has raised the temperature of discussions on social media and among educators, a [virtual tsunami of stories](#), is **Chat-GPT** from Open AI (an American company with close relations with Microsoft), a revolutionary AI-enabled chatbot, which generates complex content based on a text prompt ([Pope & Schrader, 2023](#)). Launched on November 30, 2022, Chat-GPT is a specialized conversational language model that generates relevant and appropriate content in seconds, but without access to the Internet (for now, its database stops in 2021).



ChatGPT sprints to 1 million users. Time it took for online services to reach one million users.

Image by Statista, under CC BY SA license

It can write essays, poems, programming code, take on the role of a comedian, movie character, motivational trainer/coach, take part in an interview or other recruitment activities for a job, etc. Users can ask a question like: "What are the five key messages in the work of French philosophers Gilles Deleuze and Felix Guattari?" and the system will generate a written, concise and generally correct response. It can also provide its analysis in several languages ([Contact North, 2023](#)).

Similar to a modern Scheherazade, Chat-GPT is a generative AI, which can offer opinions and advice, but without having specific experience, concrete interests or own values and without assuming any responsibility for the answers provided. For example, if you ask the system to answer "What is the current weather in Timisoara?" it will trigger a response with general information because it can't surf the internet. But it learns from interactions with users.

One of its main **advantages** is that it can be easily tuned for specific tasks or domains, allowing it to generate responses relevant to a particular conversation or user need. It is also capable of handling a wide range of conversational styles and can generate appropriate responses for different types of conversations, including formal or technical ones. It's important to note, however, that Chat-GPT cannot learn in the same way a human does, but it can continue to improve its performance and generate more appropriate responses through fine-tuning and exposure to new data.

A study of reactions to Chat-GPT (Haque et al., 2022) suggests that the most significant short-term impact will be on software development, given the system's ability to generate code and explain how the code it generated works, making software documentation both simpler and faster.

BRAIN BLAST

CHATGPT TEACHING TIME-SAVERS

- PASSAGE QUESTIONS**
ChatGPT can create questions for any text and provide an answer key. It also can create homework writing prompts. (Source: Paul DelSignore)
- DISCUSSION PROMPTS**
Use ChatGPT to write engaging & open-ended prompts for whole class discussions on any topic.
- IEP GOALS**
"Input information about the student's abilities and ChatGPT will generate specific, measurable goals for the student to work towards." (Source: Erintegration)
- QUIZZES**
Align all your quiz questions on a topic or reading with the Common Core State Standards.
- TEMPLATE IT**
Use the A.I. to create templates for annual reports and for common emails.
- VOCABULARY BUILDING**
"Teachers can ask ChatGPT to generate sentences using a particular word, and then have students guess the meaning of the word based on the context of the sentence." (Source: Shana Ramin)
- ESSAY ANALYZER**
Students can submit their writing to ChatGPT and get suggestions for improvement.
- PERMISSION SHEETS**
Ask ChatGPT to create permission sheets for guardians to sign for field trips or other activities.
- ESSAY FEEDBACK**
When kids make a grammar error, teachers can direct ChatGPT to define/describe the error with examples.
- RUBRIC CREATOR**
Create rubrics aligned to specific standards.
- LESSON PLANS**
Teachers can ask ChatGPT to write the first draft of a lesson plan. It will even create a PBL lesson.
- SLIDE SHOWS**
ChatGPT can outline a slide show for a text or topic. Then you supply the visuals.
- DIFFERENTIATION**
ChatGPT can create chapter summaries for kids that need it. It can also act as a text compactor.
- PRE-READING**
ChatGPT can extract keywords from a chapter and define those words.

TODD FINLEY

Twitter, [Todd Finley](#), 31 January 2023

However, the app also has **limitations**, such as reliance on large amounts of data to learn patterns and generate responses, a lack of common sense (which may lead to some inappropriate or conversationally relevant responses), lack of empathy (Chat-GPT is not able understand or respond to emotions in the same way that humans do, therefore may not always be able to generate appropriate responses in emotionally charged situations), a reduced personalization of responses, is self-contained (in the phase of launch and research, Chat-GPT is a stand-alone AI platform that is not connected to the Internet), **some answers are incorrect** (users must develop a critical and analytical process to evaluate the results produced by Chat-GPT and verify the suggestions it makes) or **some even invented**. For example, [Center for Innovative Teaching and Learning](#) (Northern

Illinois University) launched a request for a list of 5 references in [APA](#) format about Professional Learning Networks. Chat-GPT did provide a list of APA references but the first and last references are NOT real articles (they don't exist!) and the middle two are real articles (but unrelated to PLNs). ChatGPT provided the APA reference list below for a prompt about professional learning networks (PLNs). The first and last citations are NOT real articles (they do not exist!). The middle two are real articles (but not actually related to PLNs).

References:

Boud, D., & Molloy, E. (2013). Personal learning networks: Using social media to support professional learning. In S. Merry, & M. Smith (Eds.), *Professional learning through communities of practice* (pp. 47-59). Springer.

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Veletsianos, G. (2016). Navigating and participating in online professional learning networks. In G. Veletsianos (Ed.), *Emerging technologies in distance education* (pp. 105-123). Athabasca University Press.

Screen capture Chat-GPT

When an AI system gives a response that is not coherent with what humans know to be true this is called **AI hallucination**. This warning is not new, with experts raising ethical issues, but also related to this type of hallucination, as the use of this technology can generate numerous false information and even toxic remarks, either because of the assimilated false data or because it has not reached the level of to identify the differences between the information stored and the information requested (aspect already very well documented, by [using trap questions](#)).

Examples of obvious hallucinations, published by [Sify.com](#):

- The ChatGPT was asked: "What is the world record for crossing the English Channel entirely on foot", and he replied: "The world record for crossing the English Channel entirely on foot is held by Christof Wandratsch of Germany, who completed the crossing in 14 . hours and 51 minutes on August 14, 2020."
- When asked: "When was the Golden Gate Bridge transported for the second time across Egypt?", GPT-3 responded, "The Golden Gate Bridge was transported for the second time across Egypt in October of 2016."

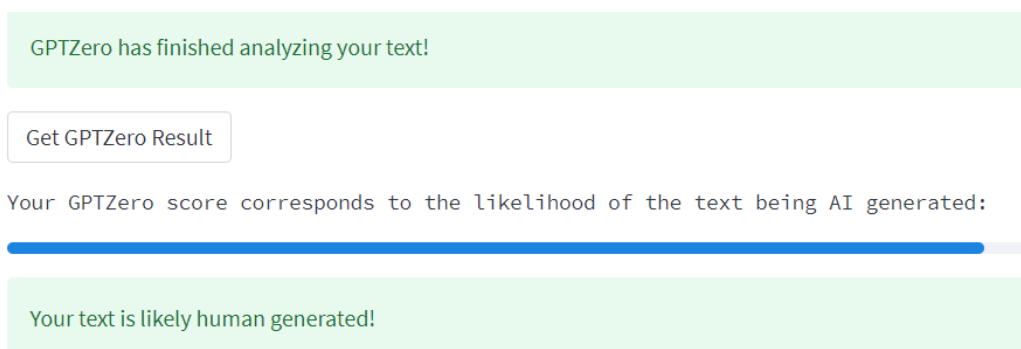
Reflection zone:

- Go and play with ChatGPT. It is pretty interesting. And then go into a discussion about the copyright of the text it generates. Do you think this will become an issue in the future? ([Richard Byrne](#))
- [Why should we trust anything that it outputs?](#) Can we [list ChatGPT as co-author on papers?](#)

How it will be used in the assessment process remains to be seen ([ChatGPT Grades Paper](#) (tweet); [e-assessment Association](#); [JISC](#), 2023; [theconversation](#), 2023; [Lindsay](#), 2023; [Wired](#), 2023). At the beginning of 2023, Chat-GPT successfully passed a MBA exam given by a [Wharton Professor](#) Ethan Mollick ([Commonwealth Centre for Connected Learning](#), 2023). According to [professor Mollick](#), large language models such as ChatGPT are predicted to disrupt many education systems as we know them.

See the clip, https://www.youtube.com/watch?v=JzNWUu_Nue0&ab_channel=ABCNewsIn-depth

Even if educators fear that the app will be increasingly used by students [for cheating](#), they have tools at hand to detect content written by a generative AI. So are [GPT-2 Output Detector Demo](#), [AI TEXT Classifier](#), [GPTZero for Educators](#) (<https://app.gptzero.me/login>) for detecting material written by Chat-GPT (Kim, 2022) or [CrossPlag](#) (using a vast dataset of AI-created content and human-written content, the tool is trained to learn patterns and the characteristics of each form of writing and can easily detect them).



GPTZero screenshot for checking the first paragraph in this chapter

For now, Chat-GPT is free, but like other applications, it will most likely migrate to a commercial model after it is out of testing. That's what happened with DALL-E 2, OpenAi's image generator.

On the other hand, we are not convinced that blocking it on educational institutions' Internet platforms and/or networks is a solution, as decided by the authorities in New York ([Hăngănuț](#), 2023) or France, Sciences Po is the first French higher education institution to ban ChatGPT, citing risks of fraud and plagiarism ([HuffPost](#), 2023).

See the clip https://www.youtube.com/watch?v=30TpiDwnMYU&ab_channel=BBCNews

How can we fight something we don't understand?

„I just want to end by saying that **we need some guidance**, some consensus, some ... things here. I'm **not convinced that all uses of ChatGPT are “cheating”** and I'm not sure someone should fail an entire course for using it. I mean sure you pop in a prompt and get a 3 second response that you copy and paste – I can't call that learning and maybe you should fail that assignment. But you use it as a high end thesaurus or know your subject and use ChatGPT to bounce ideas off of it and you are able to call out when it is clearly wrong... Personally I'd even go so far as getting a first draft from it as long as you expand on and **cite what parts come from the tool**. I'm not sure these uses are the same thing as “cheating” and if it is I've likely “cheated” in writing this post. I've attempted a citation below. “ ([Autumn Caines](#))

A project to follow, by researchers from Spain (Universidad Internacional de la Rioja and Hospital Universitario Virgen de las Nieves -Granada), which aims to monitor the impact of ChatGPT, <https://www.chatgptimpact.com/>.

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