Digital tools for teaching and learning

MIND THE GAP

StudES

Effective teaching for student engagement & success in digital learning environment

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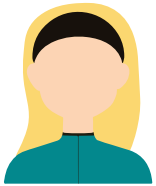
Choosing digital tools for learning activities

The choice of digital tools is important.

Online education necessarily takes place online, but you can also choose to make resources and tasks downloadable or otherwise make it possible for students to work with them offline.

Before choosing digital tools, it is important to consider didactic and technological aspects of digital tools for teaching and learning.



This material is adapted from Flexible Education Norway (2018). *A guide to quality in online teaching and learning*. Flexible Education Norway.

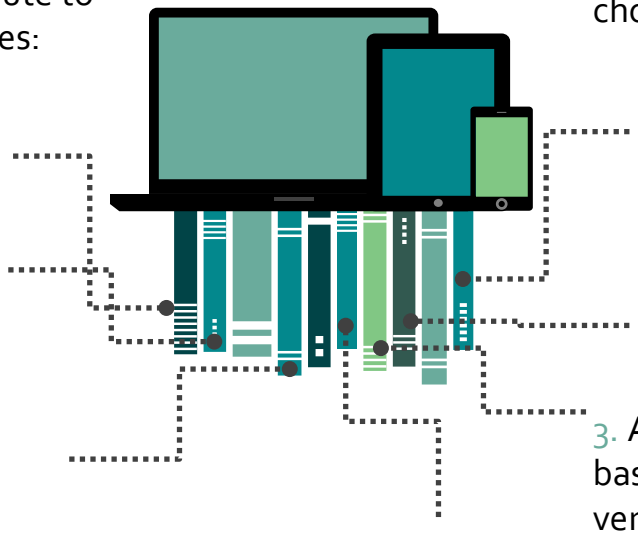
Didactic and technological considerations

The choice of digital tools should be influenced by how they can contribute to achieving defined learning outcomes:

1. They can help the student understand what they are going to learn (learning outcomes).

2. They can help to support the student achieve the learning outcomes (learning activities).

3. They indicate whether the student has achieved the expected learning outcomes, and to what extent (assessment).



The following should be considered when choosing digital tools and platforms:

1. That they are equally functional and supported on different technologies and operating systems (PC, Mac, Android, iOS).

2. It is good that they have a responsive design adapted to both computers and mobile devices.

3. A variety of possibilities both in basic licences and in paid pro-versions, number of users...

4. The existence of a template within the learning platform can contribute to a good user interface and representation of all necessary elements in the application or platform, regardless of the programming skills of the teacher.

There are important questions in the planning and the choice of digital tools that should be answered.

- ✓ What technologies (tools, services) will students have available for use? What technologies of their own could they use? What advantages do they have?
- ✓ What activities do these technologies support effectively? How do these help students to meet the outcomes?
- ✓ What support will students (and teachers/moderators) need to use these technologies effectively?
- ✓ Do students have functional access to these technologies? How will their access needs and developing skills be supported?
- ✓ How will you use students' digital access and a know-how as a collective resource, e.g. through group work, informal mentoring…?

On the next pages see our selection of digital tools used for teaching and learning.

Webinar tools

A webinar can be a lot like traditional teaching or lecturing – a real-time virtual classroom.

Webinar tools, unlike other tools mentioned here, are synchronous. They are well suited for lectures and presentations and are also used extensively for group work.

Webinar is classic session with presentation and subsequent discussion and questions and answers.

Video conferencing is a small group sessions where all users can be on video and audio at the same time.

Webinar tools

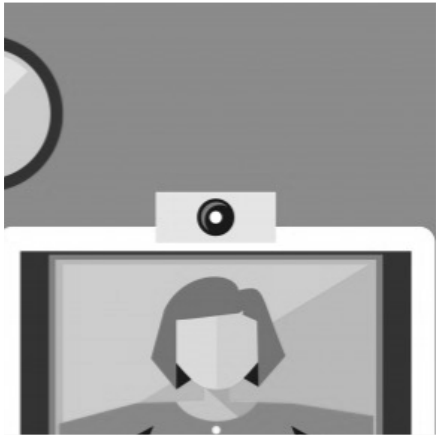
On webinars students can:

- ✓ acquire theoretical knowledge;
- ✓ interact with the teacher and each other to gain a deeper understanding of the content;
- ✓ analyse and discuss issues;
- ✓ develop new viewpoints.

Characteristics of webinar tools:

- ✓ Tools for synchronous teaching and interaction.
- ✓ Closed areas that require special access or invitation to join.
- ✓ Typical features include note board, screen sharing, chat, two-way video communications, two-way auditive communication, emojis/symbols and polls.
- ✓ The more advanced platforms usually have break out rooms for group work.
- ✓ There are often big differences between free and paid-for solutions.

Examples of webinar tools:



Many higher education institutions today use advanced webinar platforms like **Zoom, Google Meet, Microsoft Teams, Cisco Webex, Skype**.

Using integrated tools with LMS is always a good solution - e.g. Google Meet with Google Classroom, or Google Jam with Google Meet.

If the platform does not have an integrated interactive whiteboard, there are tools available that can be used for these purposes: **Google Jam, Web Whiteboard, Mural, Miro**...

Good practice for the use of webinar tools:

- ✓ **Preparation**: For a good webinar it is important to prepare thoroughly, both professionally and technically. If something fails, you don't have many tools available. On the plus side, you can use a script without anyone knowing it.
- ✓ **Early arrival**: Appear in the webinar early to test the sound and picture. That way, students can come early and do the same.
- ✓ **Ambient**: Try to find a room with even, soft lighting and good noise reduction. Headsets are recommended for all participants.
- ✓ **Topic introduction**: Send the agenda, motivation video (teaser) and information about recommended literature in advance. Students should be as well prepared for a webinar as for a similar session in a physical classroom.
- ✓ **Practice**: Good webinar performance requires practice – how to look into the camera, keep the cursor steady, keep an even volume, but varied pace, and keep an eye on participants while presenting. Much of this can be practised by using a recording feature (camera on the computer) and studying the results.
- ✓ **Hosting**: In webinars with a large number of participants, it is better to divide the hosting tasks so that one person is the presenter and the other manages the chat and support.

Good practice for the use of webinar tools:

- ✓ **Breaks**: Make room for at least as many breaks of the same length as you would in a physical lecture/meeting.
- ✓ **Microphone**: In smaller group meetings, everyone can use a microphone, but enforce a rule of turning it off when not speaking.
- ✓ **Discussion before lectures**: Give the students a lecture on video, reading material, or other resources before the webinar, and use the webinar for discussion, task solving, questions and other necessary communication.
- ✓ **Presentations**: Use webinars for presentation of group work. It is easy to share a screen, but it may be useful if files to be displayed (such as PowerPoints) are uploaded in advance.
- ✓ **Synchronous activities**: The webinar platform can be a great place to build a learning environment and sense of social affiliation, if the form of the course allows for synchronous activities. You can even do some informal communication exercises, such as letting the students present a silly riddle that the others will guess.
- ✓ **Breakout rooms**: In most platforms one can create ad hoc group rooms (breakout rooms). Let students talk to each other in three-minute sessions in small groups to make them more active and break up a longer webinar.

Forum (for asynchronous discussion)

Forum

A forum is often used when students need to:

- ✓ develop knowledge through sharing experiences and perceptions of subject material;
- ✓ increase understanding through discussing subject material;
- ✓ getting feedback on their own perceptions;
- ✓ analyse and solve complex problems in collaboration with others;
- ✓ reflect on varying matters;
- ✓ assess themselves and others.

Characteristics of forums:

- ✓ Used for asynchronous communication.
- ✓ Often found on the learning platform or course platform.
- ✓ Can consist of a main entry with multiple responses or comments or a set of comments about one topic.
- ✓ The author of a post or comment is identified in each contribution.
- ✓ There are different types: questions and answers, posts with comments, discussion, brainstorming, role play, feedback, and collaborative threads are some examples.
- ✓ Examples of such discussions taking place outside of organised education, are newspaper articles and blogs with comments, twitter messages that follow the same hashtags or threads in Facebook or one of the many different online forums.

Examples of forum channels:

- **Learning platforms** can have many forum types, and options to create forums for smaller, open or closed groups – for debate, questions and answers and brainstorming.
- **Wordpress, Blogger** or **Wix** are examples of external tools with blog form which is suitable for posts with comments.
- **Twitter** can be used for everything from debate and posts with answers (reply function) to ideas and questions and answers (hashtag function)
- **Facebook** can be used occasionally for questions and answers, usually in closed mode for each student group or course group.
- **MindMeister, Ayoa** or **Cacoo** are online tools for creating mind maps like, but they can also be used for the exchange of ideas

Good practice for the use of forum:

Give clear instructions:

- ✓ Is participation in discussions and cooperation voluntary or mandatory? It is recommended that expectations are made clear to students as early as possible, preferably in the course description.
- ✓ Link the forum to the rest of the course structure. A forum should be specifically created for its purpose and adapted to the expected number of users. It should be clear how students are expected to contribute and behave.
- ✓ If there are several types of forum, expectations must be clarified for each of them.
- ✓ In a forum, participants can link to external resources. Students should be expected to explain/annotate references to avoid a collection of resources with no or little relevance.

Motivation for participation:

- ✓ Some forums can be set so that students must write before they can see someone else's contribution, or so that contributions are hidden until a certain date. This can be used to ensure that everyone gets to voice their own opinions and does not just piggyback on others.
- ✓ Even when students are active in the discussion forums, providing sound information and informed views, it is usually an advantage if the teacher is also present with encouragement, confirmation and summaries.

Good practice for the use of forum:

Moderation and teacher's participation:

- ✓ The role of moderator can be carried by the students. The role should be described clearly to give them confidence.
- ✓ The more active students are, and the more posts in the forum, the more important it is to provide frequent summaries.
- ✓ Posts in a forum where students can ask questions when they are stuck should be answered promptly, otherwise it is better to use email. The advantage of forums is that the other students can read the same answers, and the answers can even be archived and reused. Another advantage is that sometimes students help each other out.

And…

- ✓ Discussions can be moved to open social media to draw in even more views if students are motivated to do so.
- ✓ Many forums have options for voice/video. This allows for more variety and nuances in the discussions.
- ✓ Use forum posts as the basis for formal assessment.

Collaborative writing

Collaborative writing

Collaborative tools are often used when students need to:

- ✓ build common knowledge through gathering relevant information;
- ✓ apply academic knowledge to, for example, collaborative presentations or articles;
- ✓ assess others' and their own contributions in the course context;
- ✓ develop new plans, overviews, methods or products.

Characteristics of tools for collaborate writing:

- ✓ Used in both synchronous and asynchronous communication.
- ✓ Can have one owner with options for others to comment, or collective ownership.
- ✓ Can be created by teacher, or by the students themselves.
- ✓ Can sit within or outside the learning platform.
- ✓ Storage is often cloud-based.

Collaborative writing tools are often used for group assignments and projects.

They are usually owned by a certain group of people who have equal access rights, although different levels of access can be set.

Documents are updated in real time and have different forms of version management and identity markers (colours or names).

There is often a conversation feature (chat) as well.

Examples of tools for collaborative writing:

- **Google Docs Editor** – set of collaborative tools for online content creating: Google Docs, Google Sheet, Google Slides, Google Drawings, Google Forms, Google Sites and Google Keep. It is a part of **Google Workspace** or **G Suite** collection of tools for work and collaboration in virtual environment.
- **Microsoft Office** has online access documents, and with **Office 365** the Class Notebook is used for co-writing, chatting, collecting and sharing resources.
- **Etherpad** is a free and simple co-writing tool.
- **Padlet** is an easy-to-use tool that allows learners to collaborate online by posting text, images, links, documents, videos and voice recordings.
- **Miro** is the online collaborative whiteboarding platform that enables distributed teams to work effectively together.
- Some learning platforms also have collaborative writing tools.
- Online presentation tools, such as **Prezi**, can be edited by multiple participants.
- With **MindMeister, Ayoa** or **Cacoo** students can collaboratively make mind maps.
- For wikis: **Wikimedia**, a software, and **Wikia**, a complete service, where anyone can create wikis by signing up.

Good practice for the use of collaborative writing tools:

- ✓ **Divide students into groups**: When assigning group tasks, it can be a good idea to divide the students into groups in advance, especially in pure online studies.
- ✓ **Set rules for participation**: Students need both academic and other guidance or rules for participation in group work and other activities.
- ✓ **Teacher's access**: Students can work independently with the co-writing tools to present a final result, or the teacher may have access to provide guidance and feedback.
- ✓ **Clear task descriptions**: At the earlier stages of the course, students often need very concrete and accurate task descriptions.
- ✓ **Use comments**: Many students hesitate to edit fellow students' texts, even in joint documents. The comment function or chat can be a good alternative to editing.
- ✓ **Link to the subject**: Let the wiki/group documents become part of the subject's academic content. It may be a motivating factor, and the students benefit from each other's expertise and experience.

Tools for content sharing, collaboration and projects

Tools for content sharing, collaboration and projects

Students use these tools to:

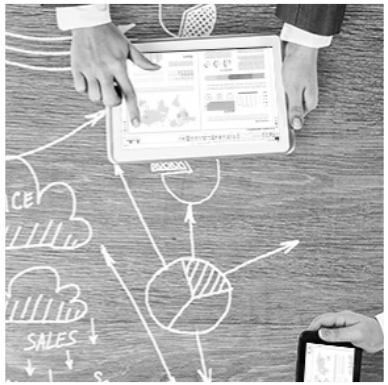
- ✓ build knowledge together;
- ✓ apply knowledge and experience to analyse and solve complex tasks;
- ✓ assess themselves and each other in the project.

In project work, students will develop their own answers to existing questions.

Characteristics of tools for content sharing, collaboration and projects:

- ✓ Used in student-driven activities in a group.
- ✓ Suitable for project-based teaching.
- ✓ Can also be used as an interactive part of teacher-led tuition.
- ✓ Content sharing tools can be simple, cloud-based folders where files are uploaded, or they can be websites where content is linked or published with annotations.
- ✓ Access to a content sharing tool may be open or private to the group.
- ✓ With project tools, you can collect resources, assign tasks, and organise timelines.

Examples of tools for content sharing, collaboration and projects



- **Google Drive** as a part of G Suite collection, enables creating sharing groups and enables users to store, access and share resources, documents or announcements.
- **Dropbox** is a cloud-based folder for sharing resources.
- **Microsoft Teams** enables space for sharing resources, calendar, assignments and communication.
- **Trello** is a simple and free project planning tool, which enables you to submit tasks with resources and descriptions, as well as the people responsible for them.
- **Scoopit** is a curator tool with annotation options and the basic features are free.
- **Social Bookmarking tools** (Diigo…) enable individual or group internet browsing and tagging, sorting, recording and storing useful web links.
- **MindMeister, Ayoa** and **Cacoo** are tools for collaboratively creating real-time mind maps or diagrams.

Good practice for the use of tools for content sharing, collaboration and projects:

- ✓ **Clarify the roles**: The students are in charge of managing their own project, but the teacher may help by assessing, guiding and giving advice. This role should be clarified and agreed upon in advance.
- ✓ **Guide your students through the process**: Be prepared for the students to have little or no experience with such forms of work. In this case they will need training, guidance and encouragement, especially if the work is mandatory.
- ✓ **Make your students think for themselves**. By challenging students to create abstracts, summaries or justifications for external resources they share with the community, we can help them think for themselves and not only become collectors of external content.
- ✓ **Encourage collaboration**: With today's web2.0 solutions, students can collaborate with people outside the class or group. Particularly in continuing education, it will be natural for students to bring in their personal and professional networks.

Video material

Video material

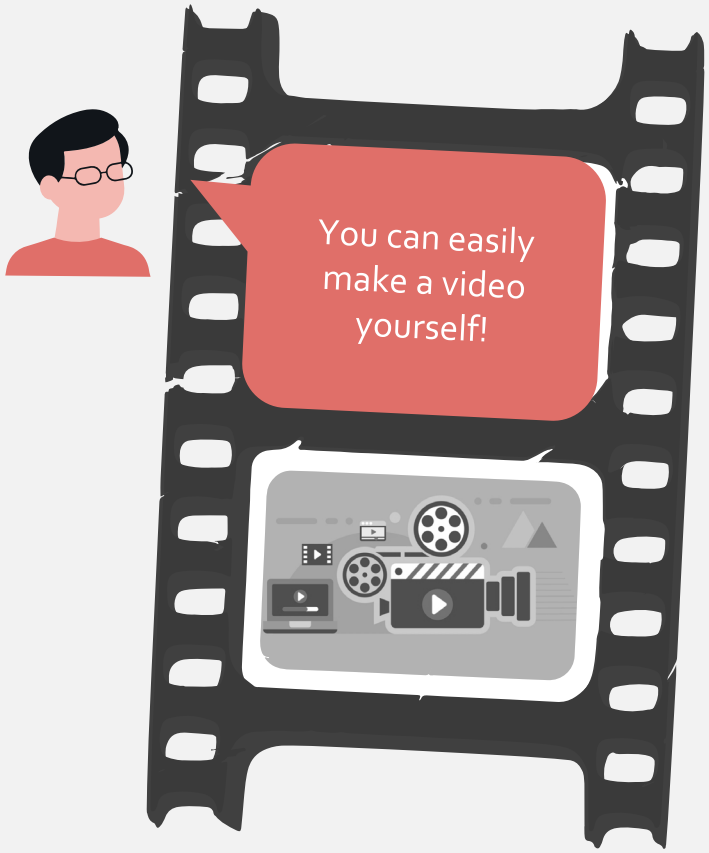
Students often watch video lectures and instructional videos to gain knowledge or as the basis for acquiring skills in the subject field.

Videos are also used to present examples, cases, and questions that students will analyse, assess and formulate answers or solutions to.

Students can themselves make videos to present how they understand and apply knowledge.

Characteristics of videos and audio files:

- ✓ Asynchronous one-way communication (monologue/lecture).
- ✓ Can be published within the learning platform or in a public platform.
- ✓ Independent learning resource: lecture, demonstration/instruction.
- ✓ Used as part of lecture: introduction/motivation video (teaser), revision of learning session, case for discussion.
- ✓ Used as part of other assignments: starting point for discussion, student evaluation/peer review feedback.
- ✓ Mobile friendly.



Downloading or creating

You can link to or download existing videos and used them in the learning context, but you can also produce a video for the course.

Videos can be easily recorded with your mobile camera, computer's integrated camera or screen capture feature.

Sending or publishing

Videos can be sent to the students' smartphones if you have access, or posted on a learning or other open platforms.

Teaching or assessing

Videos can be used for instruction, demonstration, reflection, motivation and introduction (teaser), revision and interaction.

Video can also be used to provide feedback on students' tasks and assignments. These are recorded in the same way as other videos, but are rarely published outside the learning platform.

Types of videos

Instructional video

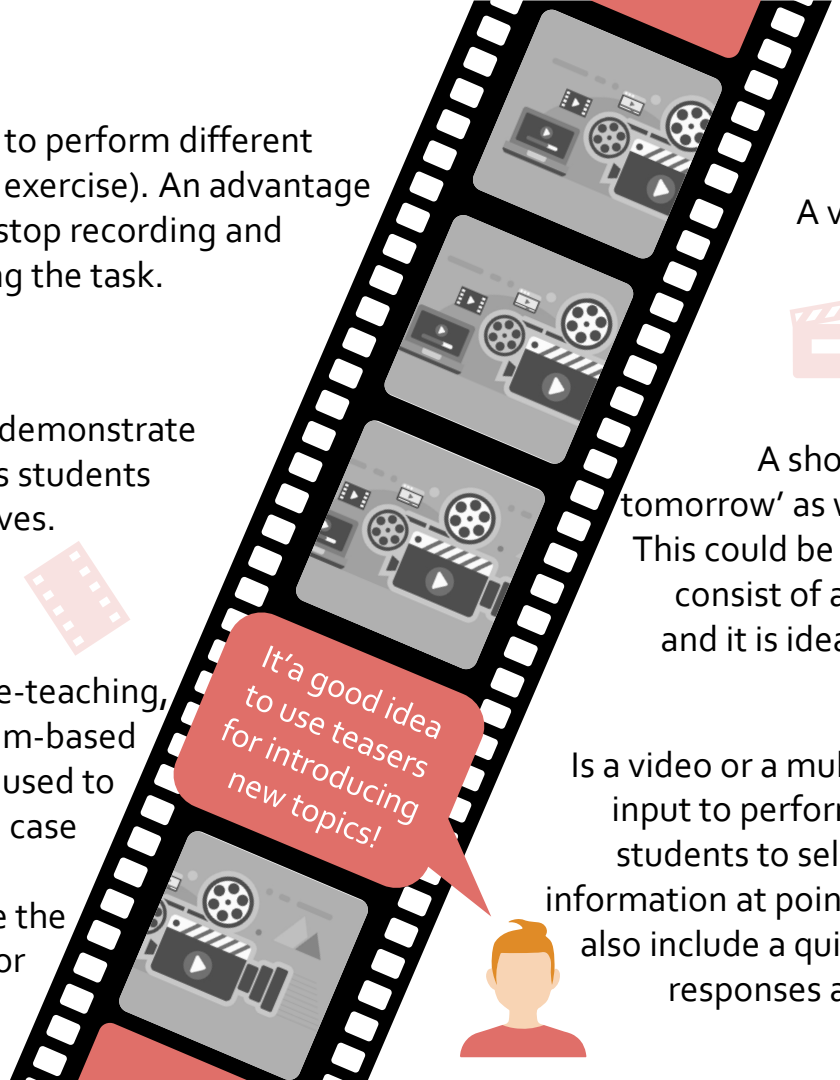
It is used to shows how to perform different tasks (e.g. a laboratory exercise). An advantage is that the student can stop recording and rewind while completing the task.

Demonstrations

A video can be used to demonstrate situations and exercises students can't easily do themselves.

Reflection videos

In methods such as case-teaching, role-playing and problem-based learning, video is often used to present an open-ended case with a question. Such reflection videos can be the basis for collaboration or individual reflection.



Talking head video

A video that only shows the teacher's face. It can be used for repeating key points, presenting concepts or topics, as a summary or explanation.

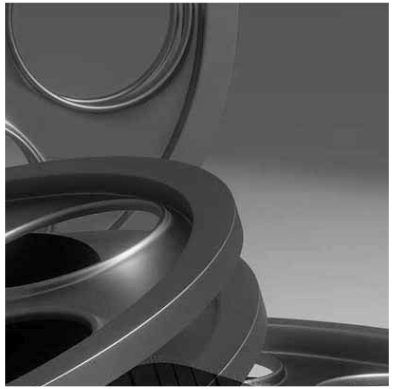
Motivation video (teaser)

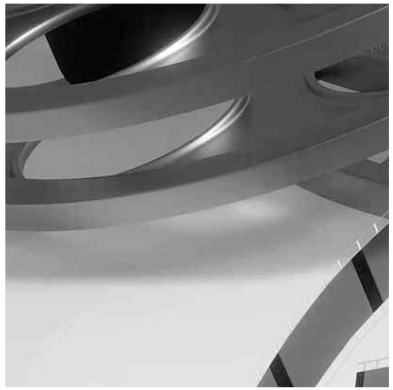
A short video like 'This happens in the lecture tomorrow' as well as a question or problem to ponder. This could be a mini version of a talking head video or consist of a few simple pages of image and/or text, and it is ideal to send to the students' smartphones.

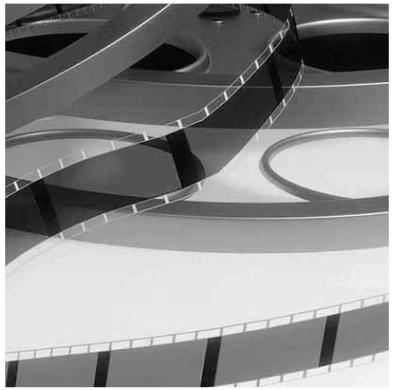
Interactive video

Is a video or a multimedia presentation that can take user input to perform some action. For example it can allow students to select among multiple channels for further information at points throughout the presentation. It could also include a quiz after a lecture segment that evaluates responses and gives students immediate feedback.

Examples of tools for capturing and editing videos:







Examples of tools for capturing and editing videos

- **Camtasia, Screencast-O-Matic, Screencastify** are tools for easy screen capture with audio and publishing.
- **Prezi** the presentation platform also offers video recording options that combine the character and voice of the teacher with other elements of the presentation.
- **H5P, Edpuzzle, Mindstamp, PlayPosit, Nearpod** are tools for creation interactive videos – videos with questions or hotspots with information or links.
- **PowerPoint** with animation can be easily saved as a video file.
- Webinars can be recorded with the platform's built-in recording feature (**Google Meet, Zoom, Cisco Webex, Micrisoft Teams**).

Examples of tools for publishing videos:

Examples of simple video publishing platforms:

- **YouTube, Vimeo** and **TeacherTube** are platforms for publishing video material.
- Social networks (**Facebook, Twitter**) can also be used for sharing videos.
- **Learning platforms**.

Good practice for the use of video material:

- ✓ **Quality of the video**. If the video or audio file is to be used outside of your context, especially if it is to be used commercially, or if it is the main learning resource in the course and/or it needs to be reusable, some effort should be made to produce a good product. But for internal use, the threshold should be as low as for writing a summary for the class.
- ✓ **Length**. Keep the videos as short as possible. Some claim that the maximum length of time to hold attention is six minutes, but this depends on a number of factors.
- ✓ **Script and plan**. Write a script in advance. Schedule the order of pictures, pages, etc. With good planning, we can often take everything in one shot.
- ✓ **Watch out for the distractors**! Onscreen recording: make sure the cursor does not wander aimlessly around the screen, or rotate. Be aware of sounds from the keyboard, and turn off notifications and text that may appear in the picture and detract from your message.
- ✓ **Connect with your students**! A simple video clip of just the teacher's head speaking can help create a personal relationship with the students. This applies to both mixed and fully online programmes.

Good practice for the use of video material:

- ✓ **Plan and point out**! An introduction, presentation or instruction should be pointed and thought through.
- ✓ **Recording a lecture**. Recording of a lecture or recording of the interactive board in the classroom can often be useful even without editing because the students have participated in the process and can forward to the points they want to repeat.
- ✓ **Be aware of copyright** when using other people's material, be it images, quotes or anything else.
- ✓ **Let the students make videos** as a learning activity. If you wish to re-use your student videos at a later time, you will need their permission.
- ✓ **Device and publishing method**. Think about what kind of device the students are likely to watch the movie. Small snippets to fit the phone's small screen should have few and clear visual points and focus on the spoken message for nuances. Calculations, algorithms and videos detailed content are best suited to large screens. The publishing method can make a difference; there is a greater chance that students will open a learning platform from their PC, while social media will more often be read on a smartphone.
- ✓ **Audio recordings**. Many learning platforms have direct audio recording. Use it to record oral feedback on student work.

Quizzes, learning games and tests

Quizzes, learning games and tests

Students use tests and quizzes to:

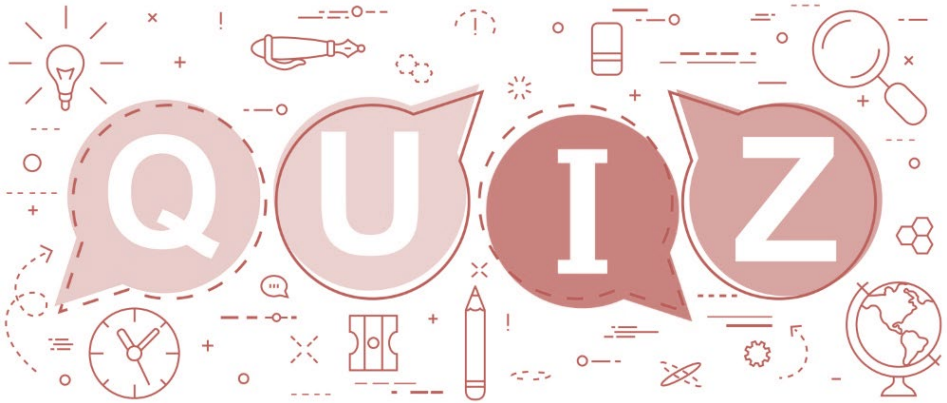
- ✓ assess their own understanding of their knowledge;
- ✓ gain new knowledge.

The assignments can vary in complexity – from simple repetitions of facts or to making students analyse more complex issues and apply knowledge in new ways to solve the tasks.

There are also games and tasks with ethical and/or professional evaluations at a high level.

Characteristics of quizzes, learning games and tests:

- ✓ Students receive immediate feedback.
- ✓ Can be based on collaboration or individual effort.
- ✓ Good achievements are often rewarded with symbolic benefits (points, badges, tokens).



Examples of tools for making tests and quizzes:

- Within learning platforms, there are often functions for creating quizzes and tests. For example, **Google Forms** is integrated within the Google Classroom platform.
- **Kahoot** is a very popular Norwegian quiz tool, suitable for synchronous activities.
- **Mentimeter** is an interactive presentation tool that can be used to gauge student comprehension, test knowledge retention or as a fun way to break up learning.
- **Socrative** is a similar service with multiple formats.
- **PollEverywhere** is a useful tool for engaging students in interactive webinars.
- **iSpring Suite** is a commercial product that can be used to create asynchronous activities and quizzes.

Good practice for the use of quizzes, learning games and tests:

- ✓ **Involve the students**. Let the students make their own questions and answers to process the subject matter.
- ✓ **Use polls in your webinars**! Keep the attention in the webinar with one-word tests or a simple polling. You can for example use the symbols in the platform.
- ✓ **Add multimedia**. One of the benefits of digital tests and questionnaires is the option to add multimedia, like small video clips.
- ✓ **Upside down testing**. Turn the testing idea upside down and give the test at the start of a new topic. Then the students themselves must seek out the knowledge they need, instead of getting it presented by the teacher. Automatic correction can give them a hint as to whether they are on the right track or not.
- ✓ **Use pop up answers**. If the test has a function where you can add a short text to pop up immediately after the student has submitted an answer, use it to add hints and let the students take the test over and over until they understand the content.