



Erasmus+ project: Continuing professional development in digital education for VET

**Digital Training Delivery in Vocational Education and Training**

# **Instructional Set of Sample Online Lessons**

2023



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## Introduction

COVID-19 has created many challenges beyond the health sector. Our society needs to develop strategies and tools to respond at all levels. One of the most affected sectors is education, as it must not only effectively deliver content, but also ensure the safety of teachers and students. From schools to companies, including vocational training and universities, everyone is looking for tools that can help them achieve their educational goals without compromising the quality of education.

The education sector has found a clear answer to the current situation: the transition to digitalisation. It is important to clarify that digitisation and the use of information and communication technologies do not mean distance learning. Digitisation involves the application of new technologies to the educational process, which had already begun before the pandemic. The use of new technologies such as virtual classrooms, the internet in the classroom, virtual visits and gamification (using elements and principles of games to increase student engagement) does not mean that teachers and students have to be in different places.

Until recently, the presence of digital technology in the classroom was relatively minimal, as it was seen as a means of enhancing learning, but the current situation is rapidly accelerating this process, and not without considerable effort. It was introduced and used out of necessity during lockdown last semester and at this time seems to be the only viable solution to the current constraints.

The use of ICT in education not only facilitates the work of teachers but also helps students to develop their skills. Interaction with digital systems facilitates learning to use them and makes it easier to move in an increasingly technological world. The current crisis is not a challenge but an opportunity. The collapse of traditional education means that we finally have the opportunity to embrace ICT and make the most of it.

The technologies that can be applied are not limited to those we already know and use. Most of us are familiar with virtual classrooms and videoconferencing, but there are many others. You can create tools such as quizzes where students compete to answer questions and see each other's results, interactive presentations or virtual visits. The tools and their uses are endless.

This Instructional Set of Sample Online Lessons is one of several outcomes of the Erasmus+ project **named "Continuing professional development in VET"** and it was created to help teachers across Europe to address this challenging situation in VET.

All project outputs have been produced by seven partners from seven European countries working together:

ProEduca z.s., Czech Republic

Archivio della Memoria, Italy

Asociatia Pentru Sprijinirea Initiativelor Educationale, Romania

Solution Based Training & Consultancy (SBTC), Turkey

CEBEM FORMACIÓN PROFESIONAL SL (Daniel Castelao), Spain

TUS Midwest, Ireland

Northern Regional College, United Kingdom



In the COVET project, we have collected many great examples of teaching that have been transformed from the classic off-line version into a modern online learning method.

These sample lessons have been created by VET teachers from different EU countries. We present them to you as inspiration for your work.

The lessons are particularly suitable for vocational teachers, but can also serve as a training tool for teachers, trainers and lecturers in other educational settings.

All training materials, individual sample lessons as well as all information about the project are available at:

<https://www.covet-project.eu/>

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# Handcrafts



# Handcrafts (Rainbowloom)

Information and communication technology plays a significant role in accessibility of many courses, including craft lessons. Social media platforms are creating huge communities of crafters who are inspiring people to try out a craft for themselves. Online craft classes offer an innovative and enriching way to learn a new hobby or skill. They also represent an alternative when live craft courses cannot be held live.

This was the case of the past two years when many teachers and trainers were forced to turn their live lessons into virtual ones, using computers, various electronic devices and other means of communication.

This process is not always easy and smooth and many teachers struggle to prepare an engaging online craft lesson without any previous experience. This lesson example will provide an overview of things necessary to be considered by a craft tutor when preparing the online lesson.

## Goal

Students will be able to design, make (produce) and display the handicraft product. They will need to follow the instructions, practice the crafting procedure, and perform the procedure. The process demonstration is usually live by the course tutor.

## Teaching method

Live session in the workshop, theoretical explanation of the process, focus on difficult points, demonstration by the tutor, step-by-step guidance, practicing by learners, crafting, final exhibition/display.

## Aids

All crafting tools for the respective crafting class, pc with the internet connection for reference tutorials.

## Introduction to the Online Crafting

It would be lovely for students and tutors to meet face-to-face but sometimes it is not possible. On the other hand, there are some great benefits to providing, and undertaking, craft workshops and courses online and via distance learning.

There are basically two ways to provide distance learning with ICT/digital features as good alternatives to traditional workshops:

- live tuition
- online workshops

Although it is great to socialize and have interpersonal contact, sometimes that is just not practical and at this present time with many people self-isolating and reducing social contact these **remote learning options really do provide an important lifeline.**

Plus there are all these other benefits to consider for the longer-term too:

**More accessible** - for those who live far away or have restrictions associated with traveling

**Lower impact** - remote courses could reduce the environmental impact and be more cost effective (no travel)

**Comfort of home** - allows students to learn and practice at their own pace, in a space that they feel comfortable and in which they can continue to practice beyond the initial class.

Some simple options (when the instructions would be delivered to the learners in a form of a written text or simple graphics) where just a basic computer skills would be enough are as follows:

- A downloadable written guide or modules of instructions via pdf (e.g. converted from Office Word or Google docs)
- A downloadable presentation via pdf (e.g. converted from Office Powerpoint or Google docs)
- Visual guides - you could demonstrate certain instructions using illustrations, create infographics to make your guide more easily digestible or more visual workbooks. A free tool such as Canva could be helpful in this.

However, for more professional and engaging lesson delivery there are some more complex options for which you will require to know about:

- Video instructions - you could create videos of certain processes or demonstrations to show close up detail and provide valuable real life detail, plus you could provide some of the information directly to the camera.

Although the well prepared video tutorial has just very small requirements on the learner (in terms of their ICT literacy or digital media usage skills), the requirements on the tutor (trainer, teacher) are rather high and broad.

The tutor needs to know how to deal with the following:

- Taking photos and recording videos:
  - For this it is necessary to know how to choose and use:
    - Camera
    - Lighting
    - Background
- Editing and processing photos:
  - For this it is necessary to know how to choose and use:
    - Photo editor
    - Image bank
- Editing and processing videos:

- For this it is necessary to know how to choose and use:
  - Videomaker
  - Image bank
  - Music/sound bank
  - Voiceover
- Sharing the results (images, tutorial video or video exhibition) with his/her learners on social media:
  - For this it is necessary to know:
    - How to choose the proper social media
    - How to create and manage an account
    - How to post, including timing, copywriting and targeting
    - How to communicate/moderate the discussion
- Sharing the results in a form of virtual exhibition with his/her learners:
  - For this it is necessary to know:
    - choose the proper platform
    - shoot the photo sequence
    - process images in the application.

If the course is well prepared, the learner doesn't have to perform any bigger skills than the common digital media users skills they use in a daily life – mostly by watching the video and/or the presentation of the products on social media.

However, in case the learners intend to present the course outcomes too, they might require the same set of skills as the tutor.

## Preparation of the course

Expect to spend an intensive amount of time developing your course even if you already teach it live on a regular basis. There will inevitably be differences between what you do in front of the camera and what you can do with your students gathered around. In the online course, you will probably want to provide far more instruction material than in the live classes. Making short video lessons (tutorials) for demonstrations is probably the best way to teach handicraft.

## Live tutorials

This will be the easiest method to convert to for many course organizers.

In the simplest of cases you could post your students a kit with everything they will need, or provide them with a shopping list to order the tools and materials themselves (they may already have some items). If you are asking them to get the items themselves we would recommend providing them with online shopping links so they get the right things, and can have them delivered if they are not able to go to the shops.

You can arrange to provide live workshop tutorials at a time and date convenient to both parties. You could facilitate this using for example the Google Meet or set up a webinar, which allows students to type in questions - handy if there are any issues during the presentation. As an alternative you can use live streaming.



You don't have to limit these workshops to one-to-one sessions - you can arrange group tutorials. Some tutors are finding they can accommodate many more students online than they could ever manage in an in-person class.

To ensure that you deliver a high quality class you should follow this checklist:

- **Quiet surroundings** - you want the students to be able to hear you as this is much trickier via video than in person. Ideally an external mic should be used for the best sound.
- **Great internet connection** - there is nothing worse than frozen screens and missing important information (this works both ways as the student will also need a good connection to go with this option)
- **Quality video** - it is getting much easier to create video content these days. We recommend using a webcam on a tripod as the ideal but most new mobile phones have great cameras these days too so you could test this out as an option. The tripod should have a tilt function to allow smooth transition between the angles needed for showing different aspects of the tutorial including close ups.

## Online workshops

Online workshops can be delivered via one consistent channel or a combination depending on what suits the course content. You will need to decide how to provide students with these materials - will they have a unique login to an area on your site to access and view course content or will you send them direct links to download all the material after purchase, or you could even email it to them, but this will depend on how protected you want the course materials to be.

## How to become an online craftsman?

In the following lesson we will show the entire process of developing all necessary ICT features to become a member of the online crafting community. Each section of the study provides a description of the minimum requirements and skillset to teach the craft and share the final artwork within the crafting community.

## Rainbow Loom

Rainbow Loom is a plastic tool used to weave colorful [rubber and plastic bands](#) (called loom bands) into decorative items such as bracelets and charms. It was invented in 2010 by Cheong Choon Ng.





The Rainbow Loom is a plastic pegboard measuring 51 mm by 200 mm. It has [push pin](#)-type pegs over which small, colored rubber bands are looped and pulled by a rainbow loom crochet hook. The resulting looped knots, known as [Brunnian links](#), can be assembled on the loom into bracelets and other shapes.

While crafting on the loom is popular mostly among the children, adult “loomers” invented special technique using only the crochet hook that is more demanding on fine motor skills and advanced designing.

This is how the final bracelets created entirely by the crochet hook look like:



The looming community developed certain strict designing rules among themselves, including very precise crediting of the ownership of the design. Each original design has its own name and designer.

## The tutorials

The instruction for this kind of crafting cannot be efficiently delivered by description, the visual part of the lesson is important and cannot be replaced. Therefore the only option – apart from showing the technique live – is a video tutorial.

The list of competencies a tutor needs to possess in order to deliver a good video tutorial seems to be rather extensive, but the truth is that the competencies themselves and not overly hard to acquire and the tools are quite intuitive.

The following step-by-step process will lead you through all aspects of the video tutorial preparation and sharing.

## Competencies of the teacher

To take a photo or a video the teacher needs to know how to choose and use the camera.



**Get a camera.** Depending on your reasons for wanting to shoot video, you may want to invest in a high-quality camera to create a professional-level project, or use any available camera for a cheaper option. Either way, the first step should be to get a camera to shoot video.

Cell phone video cameras are very cheap and very easy to use. However, they can be a bit twitchy and the sound is usually not very good, but if you want to record video quickly and easily, a cell phone camera is a good option.

Digital cameras are often equipped with video recording, and some of them are fairly cheap and of fairly high quality. Cameras with SD cards are readily available and easy to use.

**Stay as steady as possible.** If you're using the camera on your cell phone, or any camera that isn't steadied with a tripod, try to hold it as steady as possible. Shakiness and blurriness from an unsteady hand can make important video footage frustrating and unwatchable. Sit down while shooting and steady your arms on your knees, if necessary, or invest in a tripod that'll keep the camera steady on the ground.

To take a photo or a video the teacher needs to know how to choose and use lighting



***Use lots of light.***

Lighting is critical to the quality of the finished professional video, so it should be one of your top priorities when shooting. If you don't use enough properly placed light, your video will look amateurish, even if it's good in every other respect.

If you're shooting indoors, choose your lighting type and placement more carefully. You should avoid overhead lighting - it can cast unflattering shadows on the filmed objects. Windows are a good source of natural light. You can also use one or two large lamps to create the type of lighting you want.

To take a photo or a video the teacher needs to know how to choose and use the background.



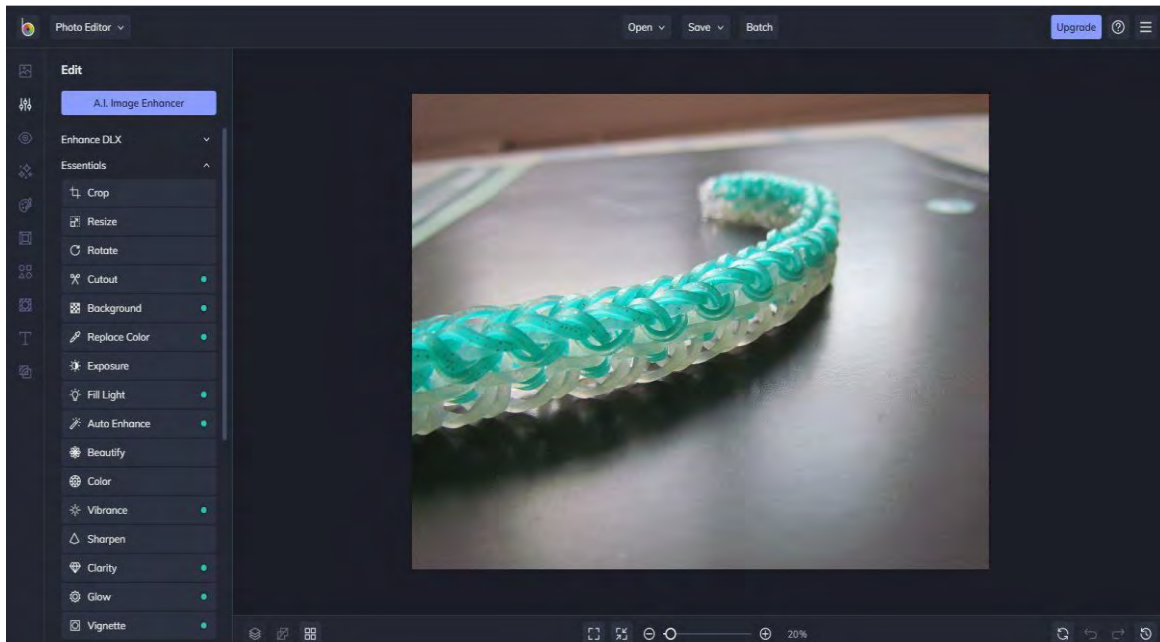
**Use a clean background.**

Think carefully about the background you are going to use for the image. Nothing looks as unprofessional as a messy or distracting background.

An easy way to get a professional look for your video is to use a monochromatic background. A wall, a sheet of fabric, or a large sheet of paper makes a good background.

Be careful not to film with a window or another reflective surface in the background of your shot. You could inadvertently catch the camera in the reflection.

To process and edit a photo the teacher needs to know where to find and how to use a photo editor.



Whether you are taking photos professionally or just for fun, the software you use to retouch, edit, and enhance your photos can affect the look of your photos more than your camera. While some software may provide users with a number of high-quality editing tools, the product may not have enough organizing features. On the other hand, a free application may have a clean and simplified interface, but this may limit access to advanced features such as object removal, background AI replacement, and other professional-level tools without the need for an expensive subscription.

When looking for the best free photo editing software, Windows users can't forget **BeFunky**. The free version of the photo editor offers many of the tools, features and functions that novice users need to enhance photos, adjust colors and lighting, and create customizable collages or graphics.

To process and edit a video the teacher needs to know where to find and how to use a video maker



**Upload your footage onto your computer.** Once you've taken the raw images and footages, download them to your computer and edit them. Most cameras can be connected using a USB cable or an SD card, which you can remove and place in a USB converter (usually). Follow the instructions for the camera you are using.

Save the raw footage in a separate document so you can edit and modify it freely. You can always go back to the original footage if you want, and you can be sure that nothing is lost. You can always start over.

**Download the editing software.** If you didn't capture everything perfectly and don't want to keep the video as is, it's best to use user-friendly editing software to trim, adjust, add music and clean up the raw video you captured. If you want to add subtitles or enhance the sound, open the footage with an editing application.

Popular free versions of editing software include:

- iMovie
- Avidemux

Professional editing software includes:

- Apple Final Cut Pro
- Corel VideoStudio Pro
- Adobe Premiere Elements
- Adobe Premiere Pro
- DaVinci 16 Resolve
- Adobe After Effects

**Remove unnecessary or cluttered parts.** Once the recording is loaded into the software, start cutting out anything you don't want in the final product. Cut out repetitive scenes or reduce things to



essentials and start organizing the best footage. Depending on the type of video you want to make, you may need more shaky and informal footage or clean and professional footage. Depending on the project, it's up to you.

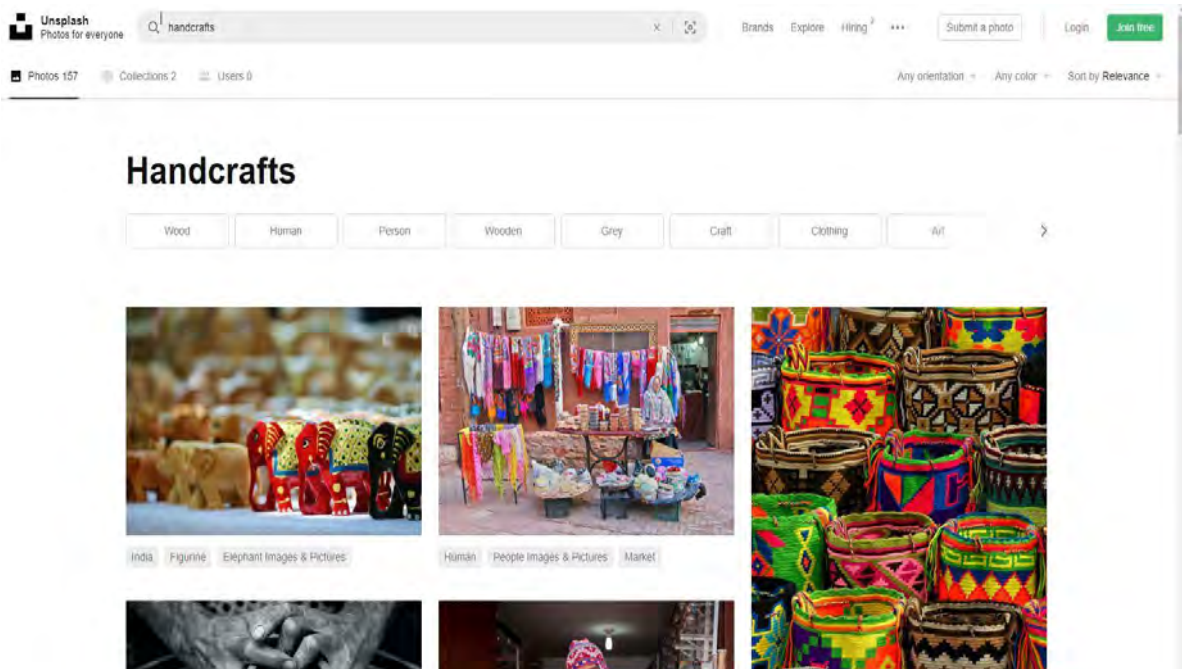
**Don't be afraid of rearranging.** Move scenes around and rearrange them if it improves the video, create the best possible version of the video. You can also mix video footages with images. If you do not have your own images, you can use some of the free options (see further).

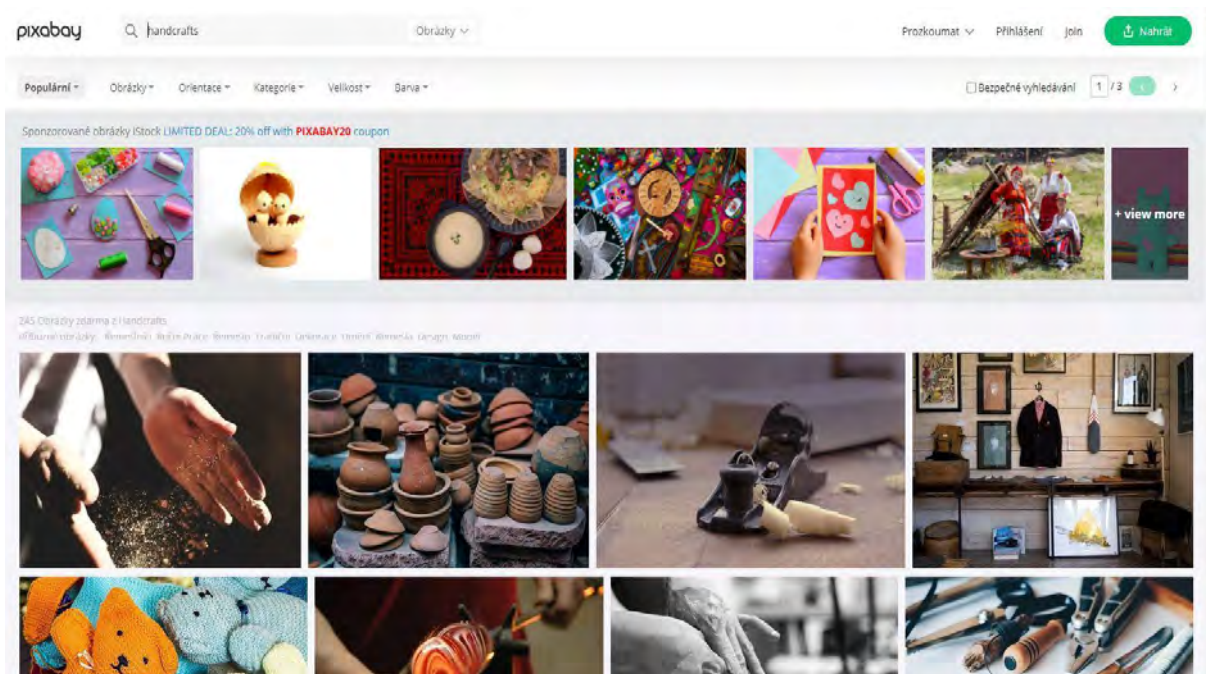
**Add transitions to smooth out the final video.** Most editing software has several options for smooth transitions between scenes, making it easy to move things around and change things. Avoid sudden or choppy transitions unless you want to include an effect in the video for some reason.

**Add music and sound** (see in the following chapters).

**Finalize the project.** When you're finished, finalize the project by exporting the finished video into a video file, like a .avi or a .mov. Open in a playback software like Windows Media Player or Quicktime and check out your work.

To process and edit a video the teacher needs to know where to find and how to use free images.





***Where can you find free, high-quality, licensed images to use for blog posts or social media content?***

Almost all images created in the last 30 years are still protected by copyright, which gives almost all authors the exclusive right to use or reproduce their work. Read the terms and conditions of any site you are trying to work on to find out exactly when and what kind of link is necessary.

***What is Creative Commons?***

Creative Commons is a nonprofit organization that enables the sharing and use of creativity and knowledge through free legal tools. There are various types of Creative Commons licenses that range from allowing any type of use with no attribution to allowing only certain uses and no changes.

***What is public domain?***

Works in the public domain are those whose copyrights have expired, have been forfeited, or are inapplicable. Finding something on the internet does not mean it is in the public domain.

***What is royalty free?***

Royalty-free images aren't necessarily free. In most cases, you'll have to pay a one-time fee to obtain the rights to use the image. Then you can use it as many times as you like. The "free" in "royalty-free" only means that you do not have to pay royalties to the owner of the image every time you use it.

***Websites to find free images for your tutorials***

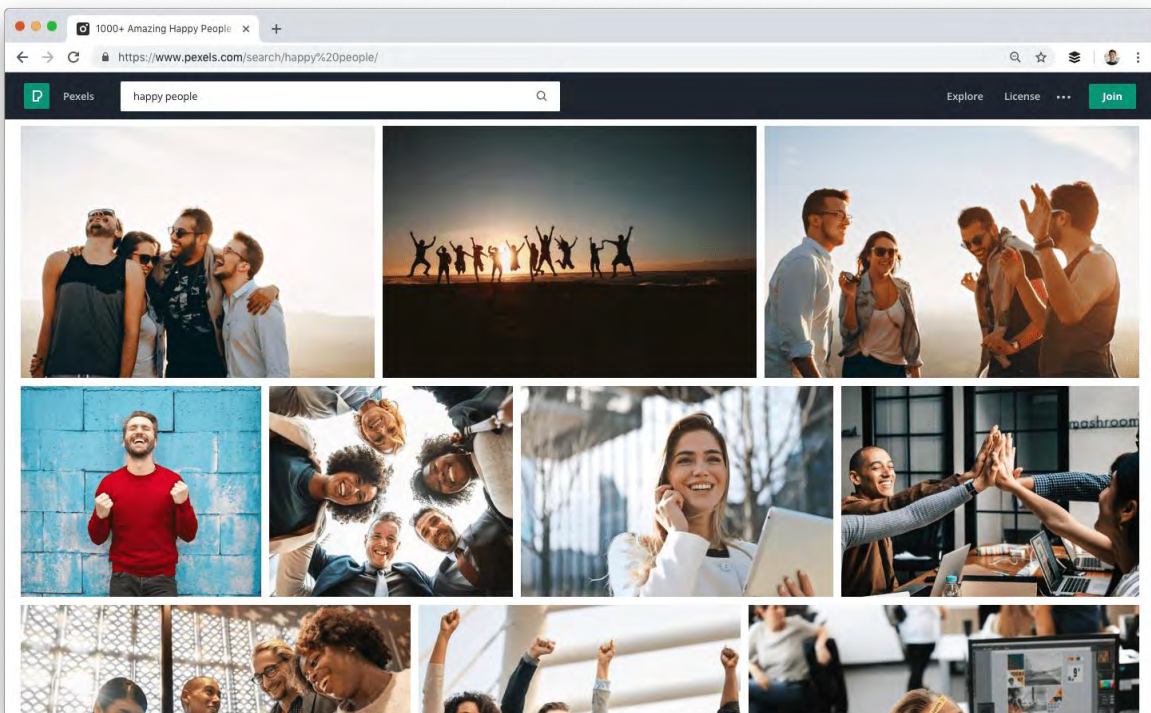
Unsplash has its own license, which essentially lets you use the images for free, in any way you like, except for using them to create a competing website

Burst is a free stock photo platform for entrepreneurs by Shopify. The images are both free and royalty-free.

Pexels also has its own license, which states what you can and cannot do with the images. You can use and modify the images for free for both commercial and personal use without attribution.

Images on Pixabay are licensed under Creative Commons Zero (CC0), which means you can use the images without asking for permission or giving credit to the artist (though it's always appreciated). Pixabay provides a gentle reminder to check that the content depicted in the images doesn't infringe any rights.

Free Images provides over 300,000 free stock images under its own license. The license allows a very broad range of uses, though it does list several restricted use cases.



To process and edit a video the teacher needs to know where to find and how to use free sounds and music.

The screenshot shows the free-stock-music.com website interface. At the top, there are search filters: 'All Categories', 'All Licenses', 'Less than 2 minutes', 'Gentle', 'Medium (90-140 BPM)', and 'Keywords (up to 3)'. A 'Search' button is located to the right of these filters. Below the filters, it indicates 'Tracks: 1 - 7 of 7'. Four music tracks are displayed in a grid:

- Melodic Interlude Two** by Alexander Nakarada (piano / romantic) - FREE DOWNLOAD MP3
- My Luck** by Forrest Keller (pop / romantic / acoustic / indie pop) - FREE DOWNLOAD MP3 & WAV
- a Little Fantasy** by Keys of Moon (cinematic / fantasy / romantic / piano) - FREE DOWNLOAD MP3
- Brighten Your Day** by Mixaund (\$9.00) - Licensed Music - PREVIEW / BUY (\$9.00)

The screenshot shows a Google search for 'free sounds for videos'. The search bar contains the text 'free sounds for videos'. Below the search bar, there are navigation links: 'Vše', 'Videa', 'Nákupy', 'Obrázky', 'Zprávy', 'Více', 'Nastavení', and 'Nástroje'. The search results show:

- Reklama** - <https://www.epidemicsound.com/>  
**Free Video Sounds - 90,000+ Sounds, 35,000+ Tracks**  
Choose from 35,000+ tracks & 90,000+ **sound** effects in 170+ genres in our audio library. Discover world class composers, artists and bands. Find the perfect track in our library.  
**Mood-based Tracks**  
Chose Between Different Moods.  
Perfect Music for Your Videos.  
**Music for Freelancers**  
One Plan for All Your Clients.  
High Quality Music and SFXs  
**Monetize From Day One**  
Monetize on Your Content.  
Try 30 Days for Free.  
**Tracks for Your Channels**  
Find the Perfect Soundtrack for  
YouTube, Facebook, Twitch, & more.
- <https://mixkit.co> > free-sound-effects > Přeložit tuto stránku  
**Download Free Sound Effects for Videos | Mixkit**  
Download from our library of incredible free sound effects. Use these royalty **free sound effects** for video editing and audio projects.  
Transition · Technology · Nature · Instrument

**Add sound effects or music.** If it fits the video you want to make, upload music that's on your computer and use it in the background as a soundtrack to montage moments in your video, or take

the sound out entirely if it's not important, and use music in its place. This can be a good way to liven up camera phone videos that might not have audio as good as the quality of its video.

The options nowadays are vast as the market with these products is developing enormously quickly. Simply, search for the most recent options and choose one that suits you. You will certainly find some free sites with a sufficient supply of sound.

The world of music licensing is complex and difficult to navigate. However, it's important to understand your rights when downloading a piece of music to avoid legal trouble.

In general, it's best to proceed with caution. If you're not entirely sure if you can use a piece of music for your video, contact the artist and let them know what you're going to do. They will tell you if it's okay or if you need written permission.

Most of the music you'll find in the following list is licensed under a Creative Commons license, which means you can download and share it freely.

### ***Free Music Archive***

The FMA with artists, curators, radio stations, and Creative Commons enthusiasts to offer a huge selection of free stock music. It was founded by the non-commercial radio station WFMU, and is one of the driving forces behind free music on the internet.

### ***dig.ccMixer***

If you're interested in trying your hand at creating your own mixes, ccMixer is a great place to start. Musicians upload tracks, and vocalists upload acapellas. You're free to mix them how you choose (or use them individually).

### ***FreeSound***

While the interface isn't as modern or intuitive as other options, you can find a lot of music on Free Sound. But you can find other things too, like sound effects, noise, people talking, and natural sounds.

No matter what kind of sound you need, there's a good chance you can find it here.

### ***SoundCloud***

SoundCloud has one of the largest music libraries available online. Launched in 2008, SoundCloud was built to bring musicians together and connect them with listeners and creators around the world.

And many of the music tracks available on SoundCloud can be cleared and used for commercial purposes.

To process and edit a video the teacher needs to know how to record the voiceover and/or where to find and how to use voiceover software.

Voice-over (also known as off-camera or off-stage commentary) is a production technique where a voice—that is not part of the narrative is used in a radio, television production, filmmaking, theater, or other presentations. The voice-over is read from a script and may be spoken by someone who appears elsewhere in the production or by a specialist voice actor.

Some may think that the audio part of a video is less important than the visual part, but this is not true. Most video viewers say they are more likely to stop watching a video with weak audio than a video with poorer quality. While the on-screen elements of a video make it a video, in many cases it is the voice behind the frame that helps people understand what is actually being shown. Audio that is blurred, muted or otherwise altered or unintelligible is frustrating for viewers.

An excellent voice-over video consists of several elements:

- Clarity and volume
- Pacing
- Voice intonation and pitch
- Accent

You can use an app for human-like voiceovers for your videos. There are plenty of free as well as paid options on the market. Some voices sound pretty real.

### ***Find a quiet place to work***

The most important thing is to find a place free from distracting noise, where no one will disturb you. Most good microphones also pick up faint ambient noise and this noise will eventually be incorporated into your recording.

### ***Choose a good microphone***

If possible, do not record your voice with the microphone on your laptop, you'll get much better results with a cheap external microphone or even with a smartphone headset.

### ***Choose your audio software***

TechSmith Audiate takes voice recording and editing to a whole new level by transcribing your voice in real time as you record. There are no unnecessary settings to understand, no confusing and complicated user interfaces. Click the record button and start speaking. It really is that simple. You can then edit the audio just like text in a document.

### ***Write a script***

Scripting is probably the most important thing you can do to ensure your speech sounds professional. The best scripts contain everything you intend to say. If you take the time to write a script before the recording, you can make sure that you cover everything you want to say without risking getting into unrelated topics.

### ***Run a test***

You don't need to record the whole script for a screen test, but a few paragraphs are enough to make sure that the audio is clear, at a reasonable level and free from noise or ambient sounds. When listening to the test recording, use headphones to check the sound quality. Your computer speakers are not good enough for this.

### ***Voice recording***

When recording a script, please follow these important tips for good synchronization:

- Speak slowly and clearly. Pronounce each word clearly, but don't concentrate so hard that you sound like a robot.
- Pay attention to the tone of your voice. You should sound pleasant, but not excited or overly enthusiastic. You can smile while reading the script to look more cheerful and natural.
- Don't stop if you make a mistake or express yourself badly. You don't have to start again! You can always correct a mistake while you are revising. In the script, go back one or two sentences and start again.
- If the script doesn't work or you find it too difficult to continue, stop recording and take a break. Rewrite the parts of the script that you find too difficult and try again.

### ***Voice editing***

When you've finished recording, it's time to edit. Even if you haven't made any mistakes, you'll probably need to fix some things. At the very least, the beginning and end of the track will need to be cut to remove dead space. Listen to the entire recording from start to finish before making any changes. Focus on the tempo and overall tone of the recording.

Go back to the beginning and start correcting your mistakes. Remove unusually long pauses between sentences or phrases and strange sounds that are out of place.

### **Importing sound into the video editor**

Importing and editing audio is easy with just a few clicks.

### ***Text-to-speech engines***

Not all craftsmen have a comfortable radio voice, and others may complain about lack of a good microphone and other recording equipment, language barriers, and insecurity in their own voice. You can try to remedy this with voice-over software, such as Speechelo, which reproduces the human voice in three simple steps:

### ***Paste text into an online editor***

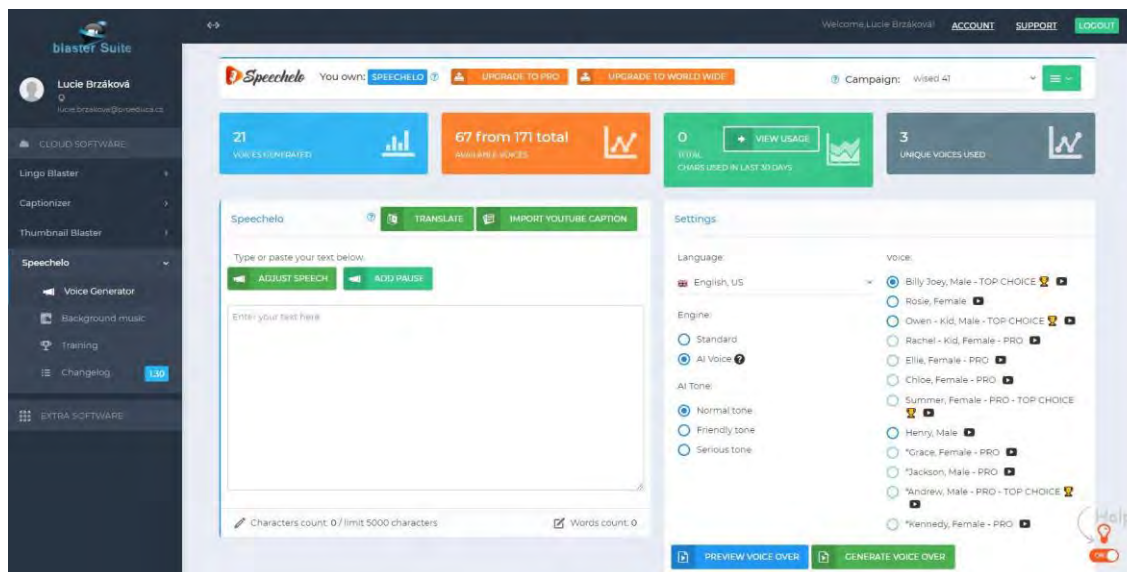
Once you have the text you want to convert to speech, paste it into a text editor. Once you have the text ready to be translated into speech, the editor will insert all punctuation and check the text to make it sound natural.

***Select the language you want the text and voice to be translated into.***

The artificial intelligence generator offers more than 30 voices to choose from. You can choose the default voice even if you need to make many adjustments. Use the buttons on the editing panel to add tags, pauses, and breath sounds to your text, or choose the voice you want your speech to read.

### *Generate and download your voiceover*

Once you've finished converting your text and setting up your voiceover, it's time to download. However, you'll need to preview the voice-over to make sure it's the best choice. Once you are completely satisfied, you can download it and use it in your projects.



*To share the results on social media the teacher needs to know how to choose the proper one.*

First, determine what you want to achieve by creating a social presence for your craft business. This way, you can choose the strategy that best suits your goals.

Some ways in which social media can benefit your courses

- Selling your classes/courses directly as a result of social activity
- Raise awareness of your trade or business
- Establish long-term relationships and deepen relationships with your trainees
- Establish contacts with potential new apprentices and customers
- Establish relationships with potential business partners
- Attract visitors to your website
- Become an expert or personality in your crafting area

The following simple image explains the difference among several kinds of social media. You can choose the proper one according to the intended purpose of the content you are going to share.



# SOCIAL MEDIA EXPLAINED

---

Facebook and Google+	= I like donuts.
Twitter	= I'm eating a #donut.
LinkedIn	= My skills include donut eating.
YouTube	= Watch me eating a donut.
Instagram	= Here's a vintage photo of my donut
Pinterest	= Here's a donut recipe
FourSquare	= This is where I eat donuts

## *Social media for handcrafts:*

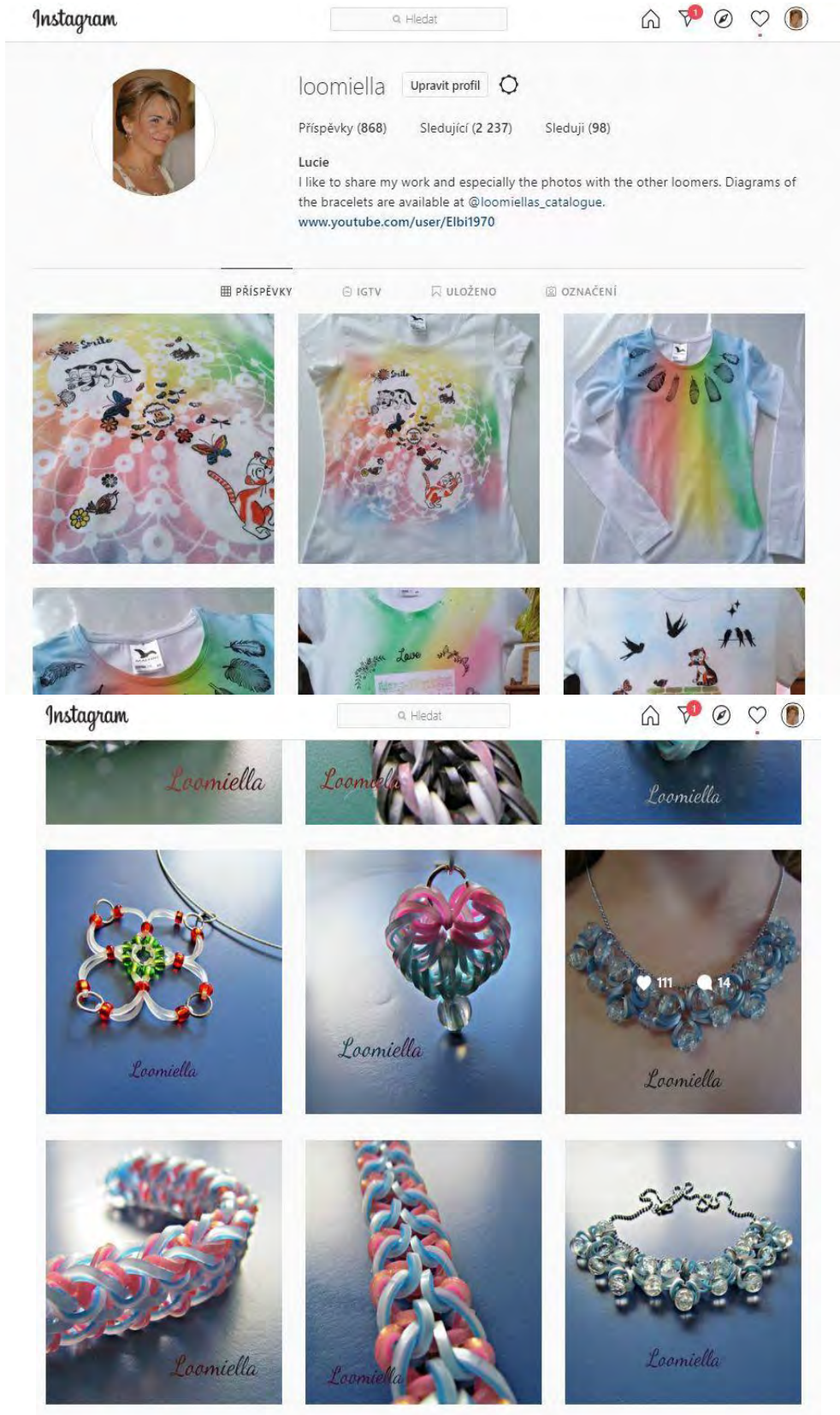
The most convenient social media for sharing handcrafts are:

Instagram – mainly for sharing images of your products

YouTube – for sharing video content, tutorial, exhibitions

Facebook – for sharing more content, events and interlinking communities

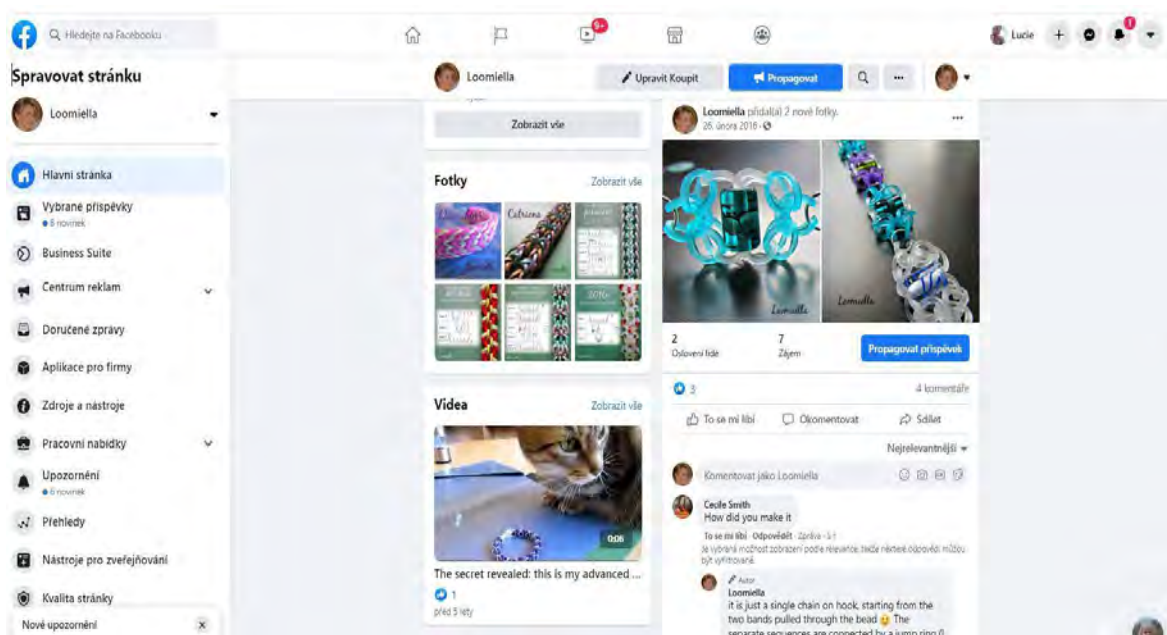
**Instagram** is almost entirely visual, so it can be useful for crafters. You can share pictures of your work, work in progress, your studio, or addresses for sale.



Instagram is primarily a mobile version, and it's not designed to bring readers from Instagram to your own site. You can't include active links in Instagram descriptions, but there's room for a link in the bio.

But even if Instagram doesn't have as many people going directly to your site or your online store, it's a great place to connect with potential customers and future participants to your lessons. Followers can repeatedly interact with your work, which can lead to more sales. Most marketing experts will tell you that a customer has to see your product several times before they buy it. Instagram can help you create that familiarity with potential customers.

**Facebook** can be a surprisingly good and easy way to share your craft business, especially if you already use the site personally and focus on local sales. Invite your friends to follow your Facebook business page and grow by making your posts so good that they want to share and like them. If your students are constantly amazed by your talent when they see pictures of your latest creations, they will want to share them and help you grow your business on Facebook.



It is possible to develop a good following community also on **YouTube**, which can be useful for the right kind of craft.

The screenshot shows the YouTube Studio interface for the channel 'Loomiella'. The page displays a list of video uploads with the following details:

Video	Viditelnost	Omezení	Datum	Zhlédnutí	Komentáře	Líbí se (vs. Nelíbí se)
Join my presentation of the best pictures of the RL bracelets I made in 2015. Hope you like it! :	Veřejně	Zádné	1. 11. 2015	13	0	100.0 % 13 lajků
GLADIATRIX Rainbow Loom hook only bracelet tutorial Gladiatrix is an original design by qweh_5898 on Instagram. Hope the video will help you to make one! Enjoy! :	Veřejně	Zádné	2. 9. 2015	895	6	100.0 % 11 lajků
JAVREZ Rainbow Loom hook only bracelet tutorial Javrez is an original design by qweh_5898 on Instagram and it was dedicated to our great friend Javz Alvarez who we all...	Veřejně	Zádné	2. 9. 2015	1 164	1	100.0 % 23 lajků
QALEEL Rainbow Loom hook only bracelet tutorial Qaleel is an original design by qweh_5898 on Instagram. Hope the tutorial will help you to make one! Enjoy! :	Veřejně	Zádné	1. 9. 2015	9 225	10	79.8 % 91 lajků
BEAUTÉ Rainbow Loom hook only bracelet tutorial Beauté is an original design by loomana0304 on Instagram. Hope the tutorial will help you to make one! Enjoy! :	Veřejně	Zádné	1. 9. 2015	1 106	1	100.0 % 16 lajků
FAPOO Rainbow Loom hook only bracelet tutorial Fapoo is an original design by qweh_5898 on Instagram. Hope the tutorial will help you make one! Enjoy! :	Veřejně	Zádné	1. 9. 2015	1 343	1	100.0 % 21 lajků

The screenshot shows a YouTube video player with a close-up of hands working on a rainbow loom bracelet. The video title is "Hooks and Anchors" and the design is credited to "design by levinloomis". The video player shows a progress bar at 9:55 / 12:55.

[Watch the video of our rainbowloom tutorial lesson](#)

The screenshot shows a YouTube video player with a title card that reads "The best shots of the Rainbow Loom bracelets 2015". The video title is "The Best Shots of my Rainbow Loom Bracelets in 2015" and it has 964 views. The channel name is "Loomiella" and the video was uploaded on 1. 1. 2016. The video player shows a progress bar at 0:10 / 5:27.

[Watch our video exhibition of our best designs](#)

There are other social sites that you can consider, but these are the main ones that most people start on. You also need to take into account your personal preferences.

You really need to understand a social platform as a regular, personal user before you plunge into using it for business purposes. The more personal your connection to a social site is and the better you understand users' preferences, the more likely you are to use it to promote your business.

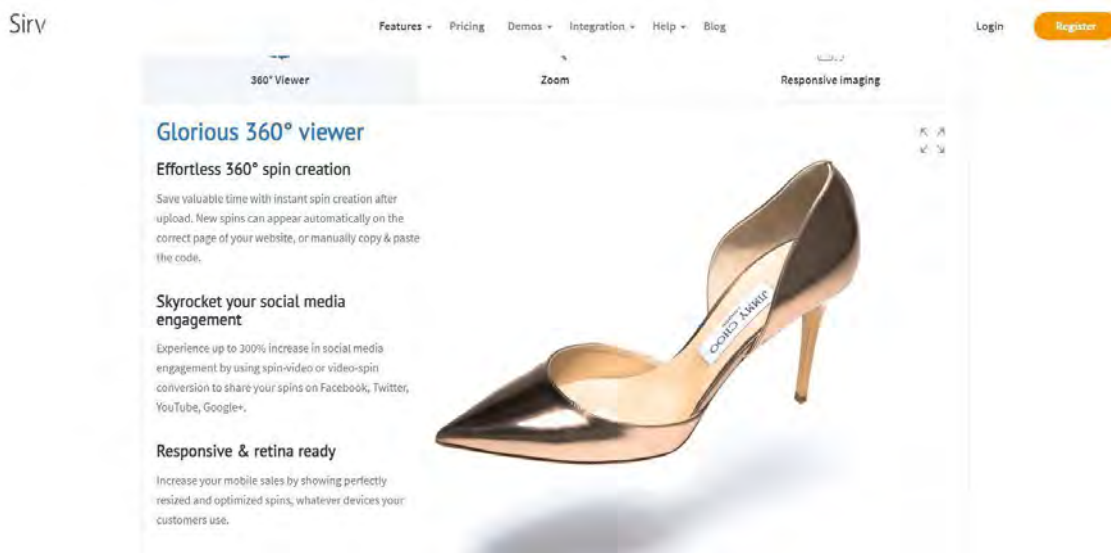
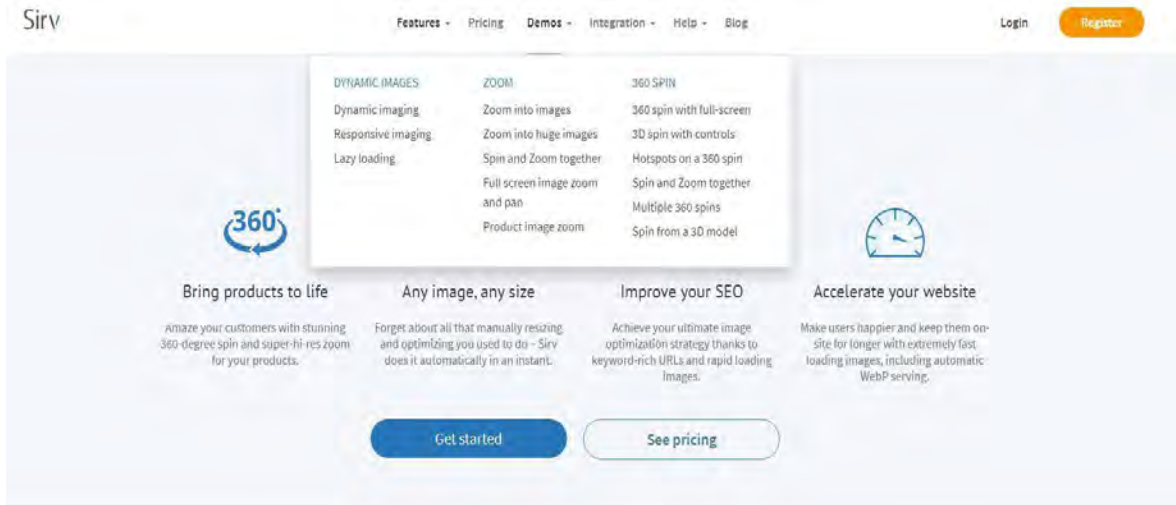
### DO IT WELL OR NOT AT ALL

If you're going to use social media for your crafting lessons, do it well or don't do it.

A poorly done social media presence can lower your people's view of your company, and, if you have a website, it's possible that a spammy social media campaign could hurt your site's search engine rankings.

To share the results using the virtual exhibition application the teacher needs to know how to choose the proper one.

Apart from sharing your art on social media you can add some fancy features to the presentation of your work. One of the tools is a 360-degree viewer Sirv that provides also some free options.



[Visit Sirv to see how it works on the webpage in real time](#)

[Watch this short video showing all possibilities of Sirv.](#)

You can find a number of video tutorials showing how this kind of product presentation can be embedded in the web pages or shared on social media.

## Ultimate advice

### Never Stop Learning: Why True Masters Are Lifelong Students

Successful professionals are always committed to learning their craft. Lifelong learning is what separates those who continue to rise in their field from those who are content to float.

Whatever stage you are at in your career, it is crucial to your success that you have a thirst to keep learning - seeking more inspiration, more knowledge, more mastery. Here are three suggestions.

- PRACTICE MAKES PERFECT
- RESEARCH WITH TEACHERS
- BROADEN YOUR PERSPECTIVE

In Zen Buddhism, there is a concept called shoshin, or "beginner's mind", which means openness to learning more no matter what level of success you have achieved. It allows you to approach your work with renewed enthusiasm and energy, knowing that there is always something new to learn.

Sometimes, when we are immersed in the daily grind of our busy working lives, it can be daunting to think about adding 'education' to the list. But when you are passionate about what you do, learning new techniques and applying new strategies starts to feel more like play than work.



**Engineering**



# Sand Casting

## Off-line version of the preparation:

**Goal:** Students will be reminded of the concepts of standardized and non-standardized semi-finished products. They will learn new terms related to sand mould casting. They will be able to describe in their own words the process of making castings in sand moulds. They will be able to sequence this process into a simplified flow chart.

## Teaching methods:

Problem-based interview, demonstration of teaching aids, and other methods depending on how the lesson is going

## Teaching Aids:

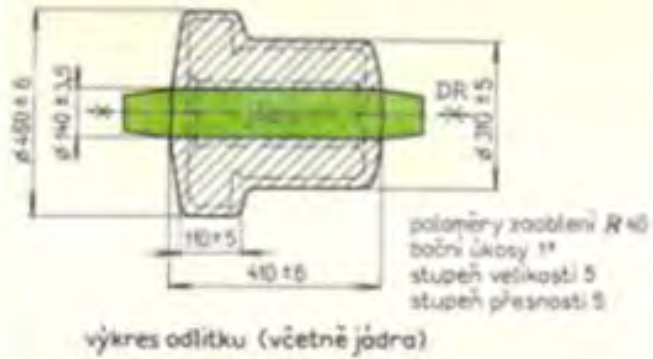
- **Presentation of the sand casting process** in form of a PPT presentation. Prepared practicing slides with definitions and processes.
- A wooden model, ceramic cores, a ceramic inlet system and ceramic filters, a cast.
- *Learning sheets* summarizing the presented topic. They will only be given these after the lesson is over.

## The course of activities during the lesson:

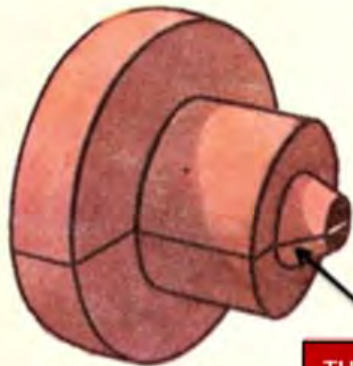
- Repeating terms of standardized and non-standardized semi-finished products and what fits into these above-mentioned categories. **This will be done by asking the students seated at their desks – each will get one of the semi-finished products from the given group etc. – all this depending on the immediate situation.**
- Analysis of a drawing of a part and discussing how to make a **casting drawing** based on that: The terms **machining allowance, metal shrinking allowance, chamfers, radii, core - illustrations provided in a PPT presentation**
- Using the PPT presentation we discuss the process of production of castings in sand moulds. If available, we introduce the relevant terms using 3D aids.  
**Concepts: Core box, model, core lock, inlet system, exhaustion system, sprue, steel frame, loading weight.**
- Each of the seated students repeat the process of production of casts in sand moulds. Then all the students draw a flow chart into their notebooks according to the pictures of the process in the PPT presentation. We correct the mistakes together.
- We hand out learning sheets for the entire foundry topic.
- We discuss how the lesson went.
- This technical topic is introducing the students to the very essential part of metal-working and although they may not do any sand-casting in practice, it is essential for understanding of basic principles of the process. Understanding and following set processes is very important in any technical profession.

A sample of several slides from the PPT presentation:

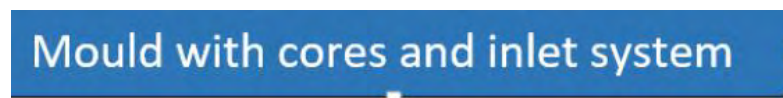
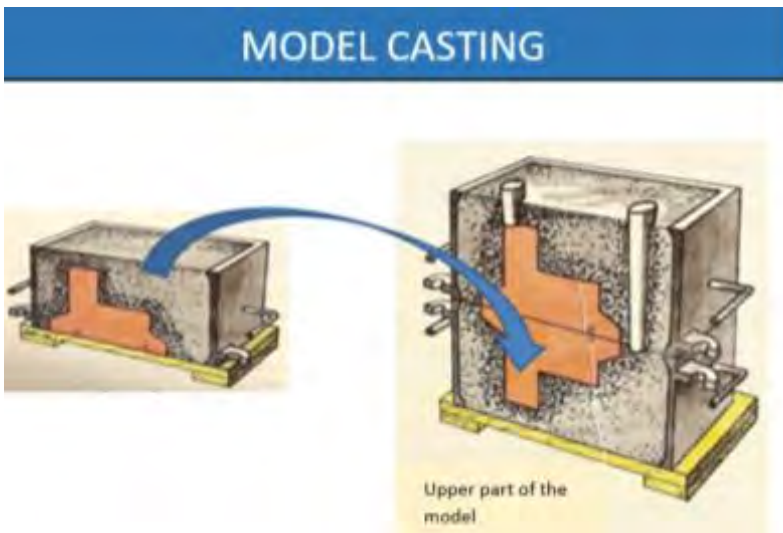
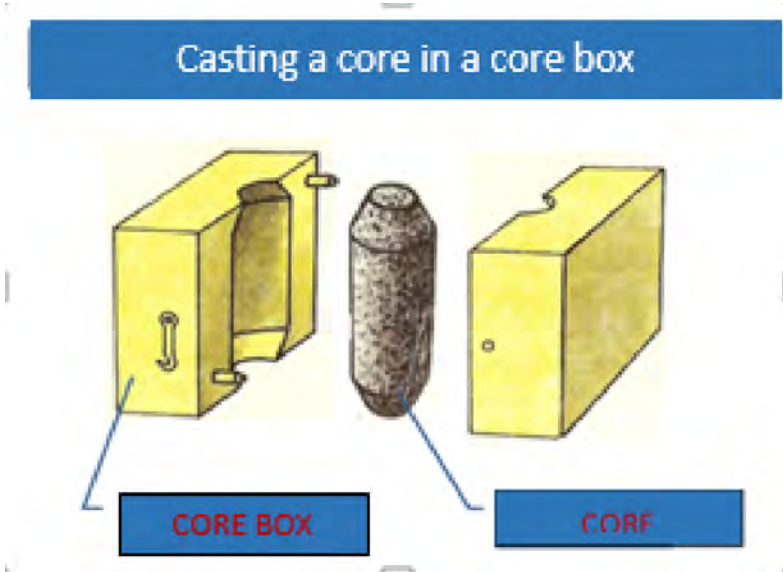
## CASTING DRAWING



## MODEL



THE CORE PRINT  
FORMS A MOULD  
CAVITY FOR THE CORE



## Online version of the preparation

**At the very beginning of the COVID-forced online learning, we only had available school emails of the students and the only possibility was to send them assignments via the Bachelor school administration programme.** I managed to set up a **Messenger group** with all my classes. (Thanks to that, we were connected even during internet outages, which was a common failure for home connections during the school closures.)

**Within a very short period of time, the opportunity to activate and explain the topic to the students in a targeted and individual way by demonstration on the aids was not available anymore... the PPT presentation was almost useless without teacher's explanation.**

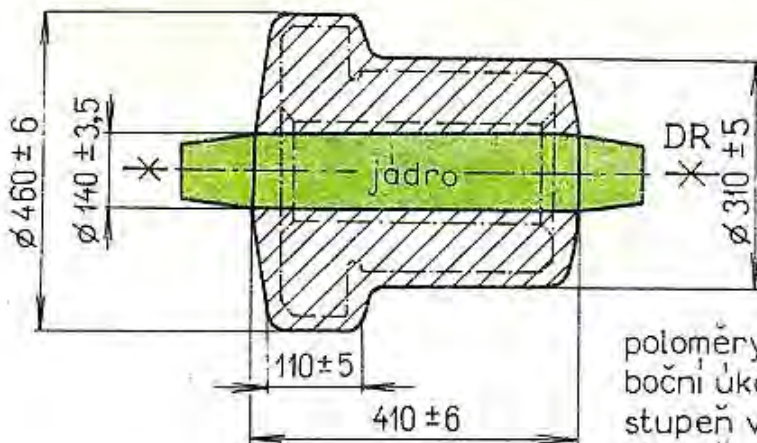
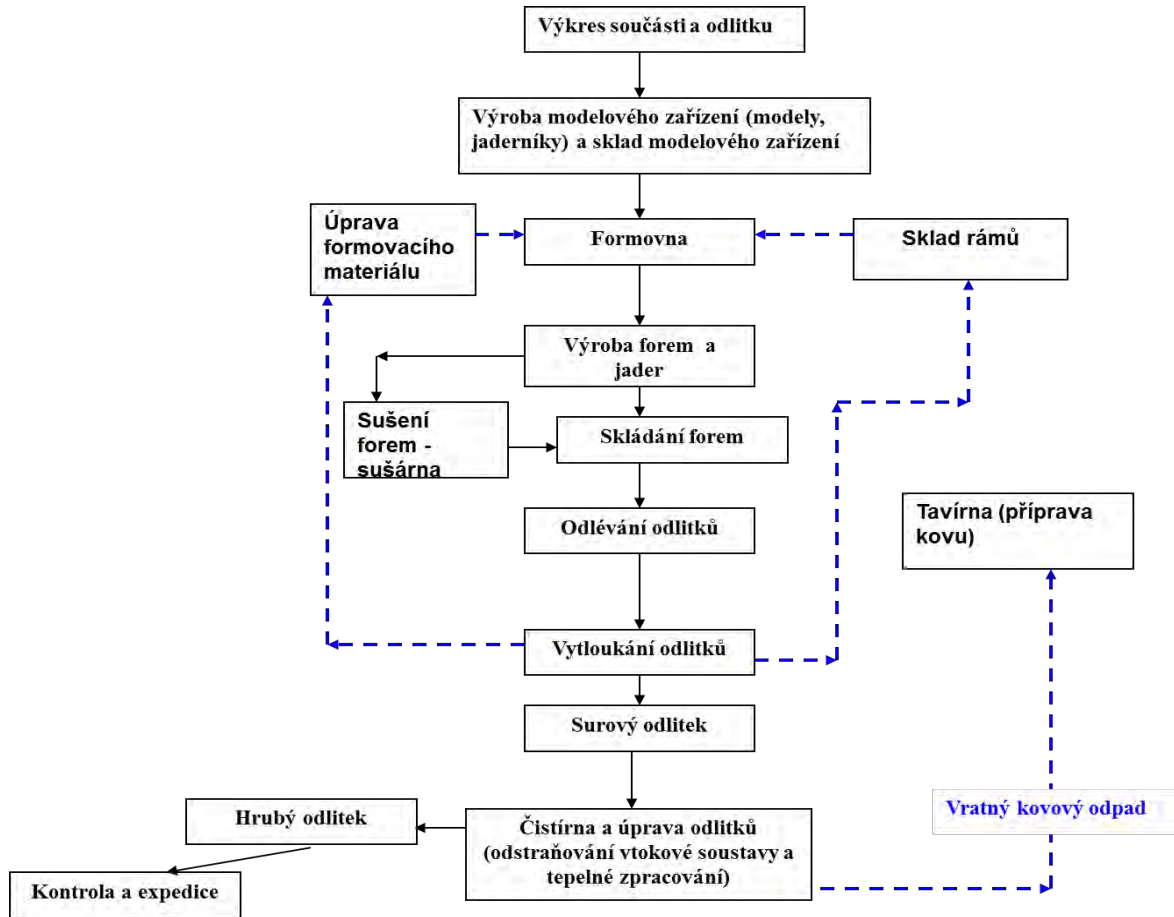
The pupils were sent a modified learning sheet, with **added links to videos** that partly replaced my explanation.

In order to make them read and study the classroom material, I also sent them a **worksheet where they had to fill in answers. They were required to make a photo or a scan of the completed worksheet and send it to me in order to check it.**

For the students it was very difficult to read and fill in worksheets they only had available on their smartphones. For me it was very difficult to work with smartphone scanned images, so I found three apps for scanning mobile phone images into PDF format. **Both I and the students had to learn how to use them.**

Example of a classroom material with links to videos, the notes are written down by students:

### CASTING

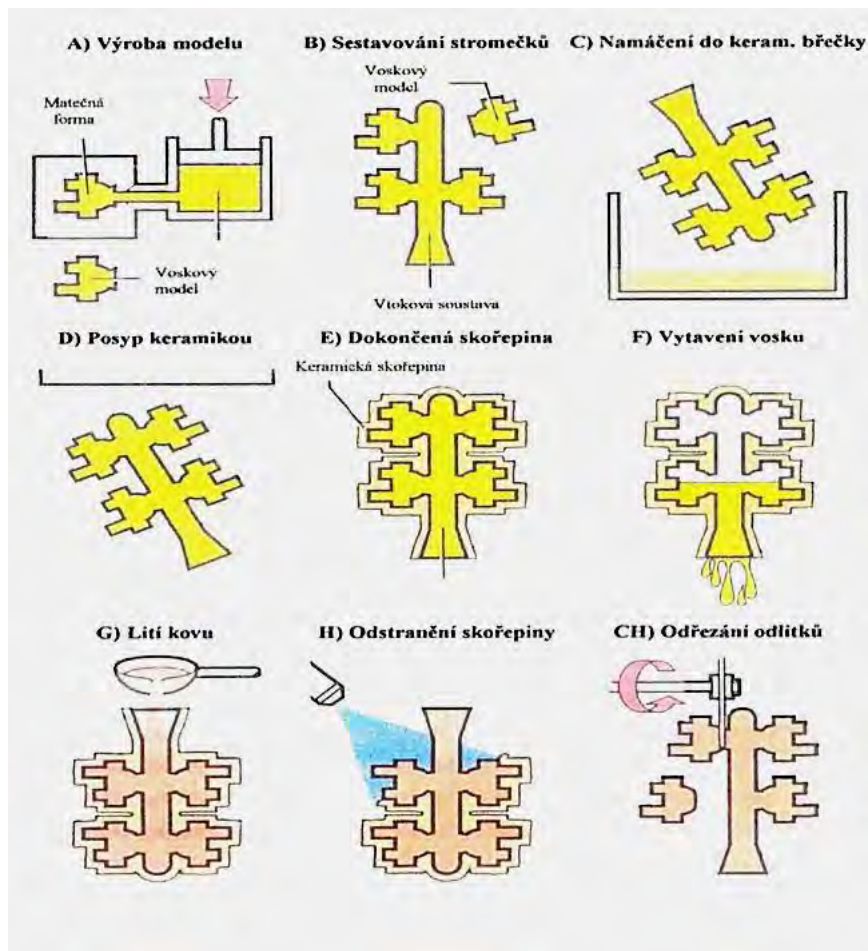


poloměry zaoblení  $R 40$   
boční úkosy  $1^\circ$   
stupeň velikosti 5  
stupeň přesnosti 5

výkres odlitku (včetně jádra)

## LOST WAX CASTING

The entire process of production of precise castings may be divided into following operations:



1. Production of wax model molds
2. Production of wax models
3. Completion of wax models
4. Building of wax trees
5. Production of ceramic molds
6. Preparation of molds for casting
7. Casting
8. Finishing operationa

Excerpt from the worksheet based on the above written material:

### SAND CASTING

1) Write down all allowances and adjustments that have to be taken into account when making a casting drawing:



2) What is the sequence of operations in production of castings in sand molds?

.....  
.....  
.....  
.....

3) What is the core box for?

.....

4) What do we use to make an intended cavity in the casting?

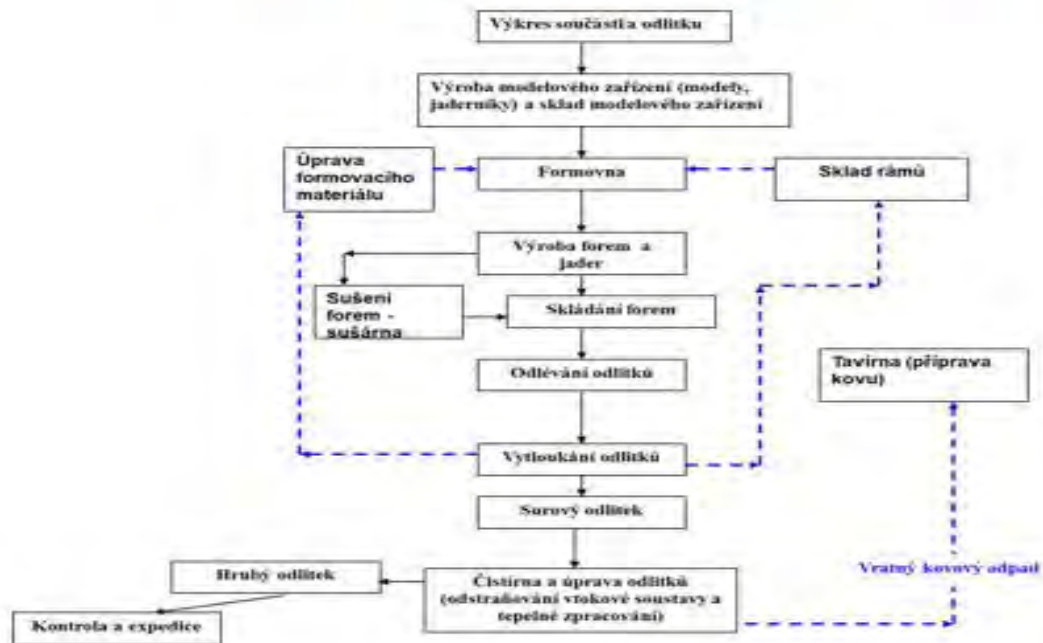
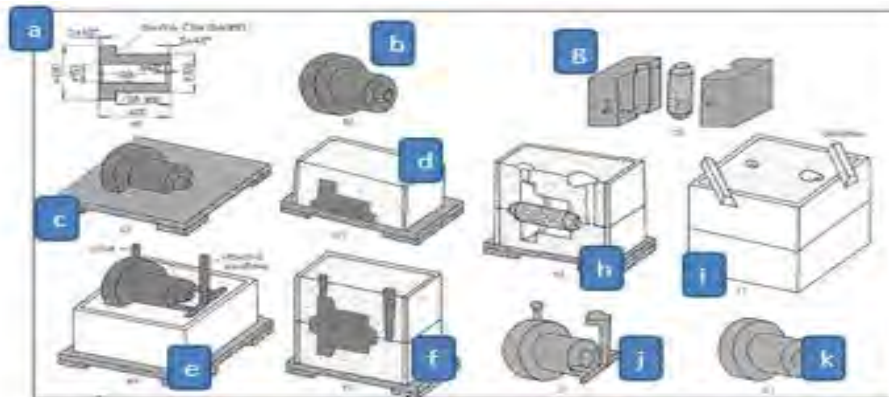
.....

5) Why do we load weight on the top of the form?

.....  
.....

6) What are feeding heads for?

.....



The course of teaching has therefore changed as follows:

- Sending learning sheets **with links to videos**.
- Sending worksheets to the pupils and having the pupils complete the worksheets. Most of them **could not print these out** so they had to work with the electronic version.
- Scanning the completed worksheet. We had to use **special scanning applications** for that. I found several applications, and chose those suitable for me and my students.
- Checking the worksheet by the teacher and **sending feedback to each of the pupils individually**.

A great relief came with the next phase, which came quite quickly in our school, namely the **launch and access to the Teams app** for all teachers and students.



I also managed to get myself a free two-month loan of the **iTrivio e-learning application** within three days.

I have written about the experience of using this application, and LMS systems in general, in another sample lesson plan. It basically enabled me to present the students with chunked learning content, provide them with quizzes for each topic section and most of all provide them with an immediate feedback on their knowledge. I created a system of mock and real quizzes enabling the students to monitor their progress. It gave them a sense of being part of a meaningful activity.

### Feedback on the lesson

Even though we had a rough start, we managed to find our way. The problem was quality of internet connection as well as quality and software in smartphones used by the students. Fortunately they could watch the attached videos at time that suited them and the same applied to completion of their worksheets.

# Unconventional Machining Methods

*(Fully online lesson for long-time closure of schools)*

1<sup>st</sup> year of a two-year post-apprenticeship Operational Technology course

Off-line version of the preparation:

**Goal:** Students will understand the reason for the development of unconventional machining methods. They will understand and be able to explain their division, advantages and disadvantages. They will be able to explain the principle of each of the unconventional methods discussed. They will be aware of their possible applications.

*Note: This subject is taught in two-year follow-up courses. The students have already been introduced to this topic during their three-year apprenticeship programme. Therefore only six lessons are dedicated to this difficult topic.*

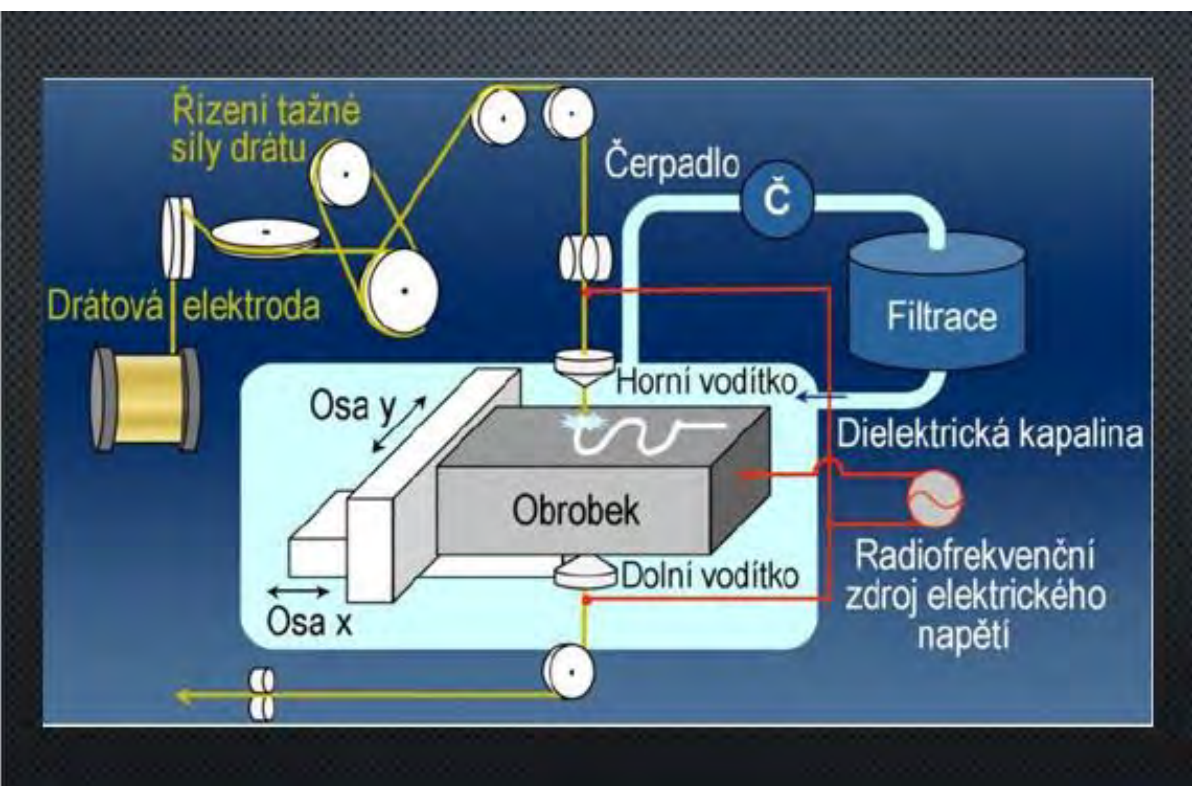
**Teaching methods:** explanation, demonstration of tools, watching and analysing videos

**Aids:** *Presentation with slides of principles, photos of machines for unconventional machining, photos of the layout and functions of parts inside the machine, machines at work*

The course of activities in the lesson:

- Problem-based interview and gradual discovery of the reason for the development of non-conventional machining methods (NMO)
- Problem-based discussion and explanation of the individual principles of UMM, **Concepts:** dielectric, current pulse, electrodes, electrolyte, ultrasound, laser, pressure units MPa, bar, energy absorption, plasma
- Writing down and drawing the principles in their notebooks
- Comparison of the advantages of individual UMMs for specific machining of a specific material
- During the 6 lessons, review of knowledge from previous lessons with assessment of students' performance with grades
- This is a very difficult topic, however highly important as the students will need such information in their everyday working life. There is no way to avoid it. They have to learn it. The answer is in setting reachable gradual goals and provide the students with sufficient feedback.

A sample of a few slides from the 41 slides of the PPT presentation:



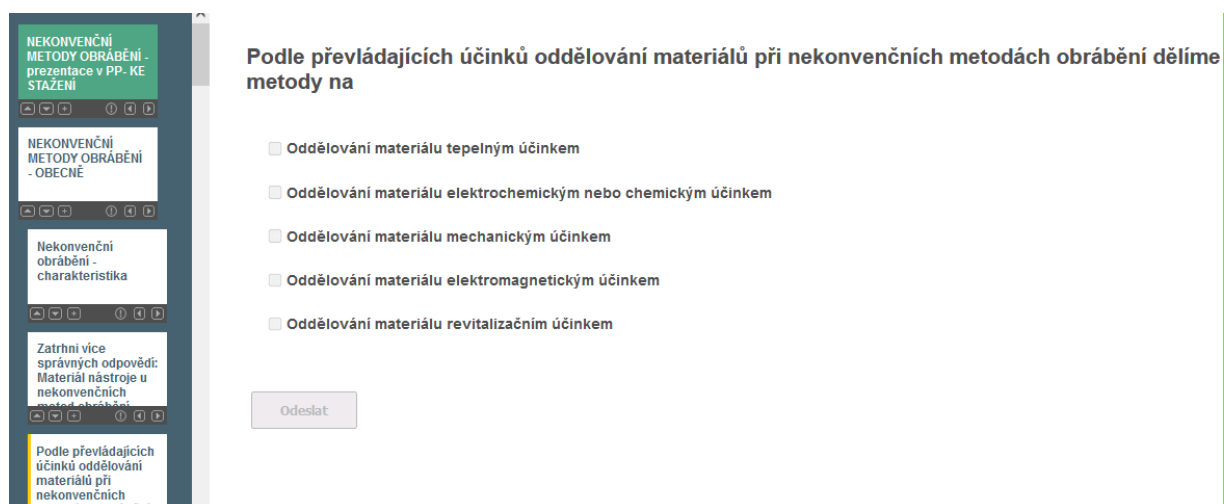


## Online version of the preparation

As it is a demanding subject, it was not possible to explain the subject only through Teams using presentations. Therefore, I decided to create an e-learning tutorial. The tutorial is divided into small individual parts - chapters. The topic of each chapter is explained and immediately after the explanation there is a series of simple questions on the explained material, which the student answers. The correct answer is immediately displayed and the student has the opportunity to change the answer. He can go back to the explanation page... **Immediate feedback** is very important for students, so they liked this way of teaching.

During the course of explanation of the topic, for example in this case the Unconventional Machining Methods, they could use the course as many times as they wanted and the time limit was pretty generous. After they had covered all the material, the course was open for them for one or two more days and the following day they wrote a graded test with the same questions they answered in the course. Because they also had a long time to write the test and could use all the information available to them, including the teaching texts I had put in Teams, the grading was pretty strict. Sufficient – passed grade started at 75% of the possible points met. The grading did not, of course, reflect their knowledge, but primarily whether they had studied everything they were presented with. Almost all of them wrote the tests and I did not have to remind them. Sometimes they forgot, and then immediately wrote to me to ask if I would make the test available again. The goal was to get them to learn because the oral explanation through Teams, even if it was clear, they forgot any information very quickly. Distance frontal teaching without contact with the students loses its effectiveness almost completely, which was unfortunately fully demonstrated this school year in the follow-up to the material they were supposed to know from other subjects.

## Course demo in iTrivia (editing mode):



The screenshot shows the iTrivia editing interface. On the left, a vertical list of course sections is visible, including:

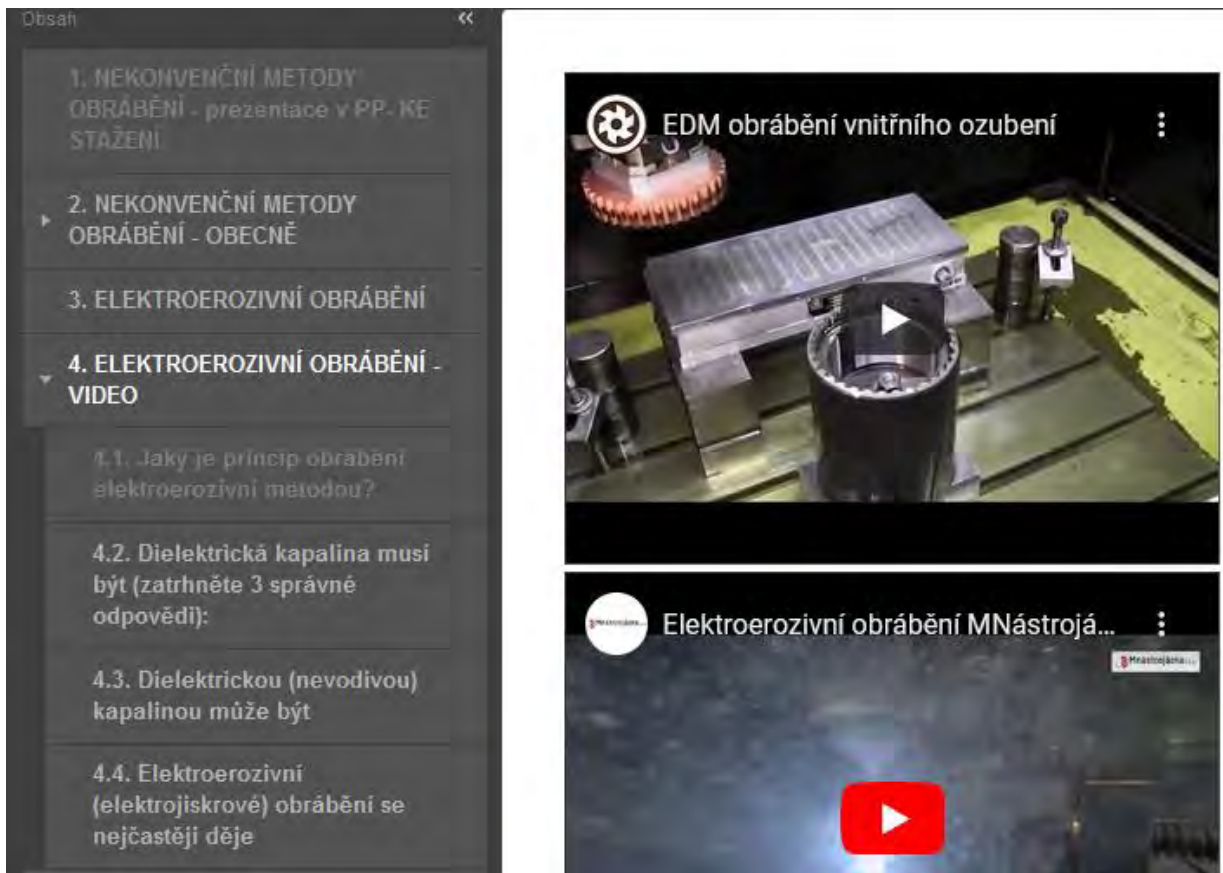
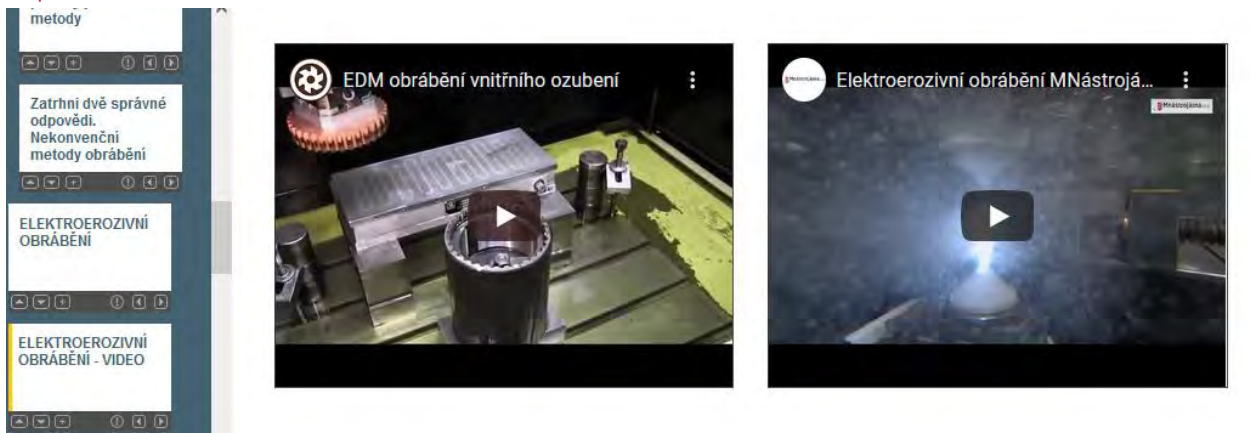
- NEKONVENČNÍ METODY OBRÁBĚNÍ - prezentace v PP- KE STAŽENÍ
- NEKONVENČNÍ METODY OBRÁBĚNÍ - OBECNĚ
- Nekonvenční obrábění - charakteristika
- Zatrhni více správných odpovědí: Materiál nástroje u nekonvenčních metod obrábění
- Podle převládajících účinků oddělování materiálu při nekonvenčních metodách obrábění

The main content area displays a question titled "Podle převládajících účinků oddělování materiálu při nekonvenčních metodách obrábění dělíme metody na" (According to the prevailing effects of material separation in unconventional machining methods, we divide methods into). Below the question, there are five radio button options:

- Oddělování materiálu tepelným účinkem
- Oddělování materiálu elektrochemickým nebo chemickým účinkem
- Oddělování materiálu mechanickým účinkem
- Oddělování materiálu elektromagnetickým účinkem
- Oddělování materiálu revitalizačním účinkem

An "Odeslat" (Send) button is located at the bottom of the question area.

## Option to embed videos into iTrivia:



**PT1 - 9 - NEKONVENČNÍ METODY OBRÁBĚNÍ - VZDĚLÁVACÍ A CVIČNÝ KURZ** Přidat do záložek Hledat

Obsah

- být (zatrhněte 3 správné odpovědi):
- 4.3. Dielektrickou (nevodivou) kapalinou může být
- 4.4. Elektroerozivní (elektrojiskrové) obrábění se nejčastěji děje
- 5. NEKONVENČNÍ METODY OBRÁBĚNÍ - prezentace v PP
- ▼ 6. OBRÁBĚNÍ PAPSREM PLAZMY
  - 6.1. Plasma je
  - 6.2. Plasma dosahuje vysokých teplot a to
  - 6.3. Zatrhněte více správných odpovědí ohledně PLAZMOVÝCH PLYNŮ
- 7. OBRÁBĚNÍ LASEREM
- 8. OBRÁBĚNÍ VODNÍM PAPSREM

Přidavné médium: plyn

Přidavné médium: voda

**Andy Clark** *Obsluha stroje*

Sample of the test homepage and other pages of the graded test:

## PT1 - 9 - NEKONVENČNÍ METODY OBRÁBĚNÍ - na známky

Není nastaven žádný detailní popisek.

Absolvovaných pokusu:	<b>0 z 7 možných</b>
Bodový limit:	<b>75%</b>
Časový limit:	<b>120 minut</b>
Počet stránek:	<b>28</b>
Zobrazit správnou odpověď:	<b>povoleno</b>
Umožnit změnu odpovědi:	<b>zakázáno</b>
Přeskakovat stránky:	<b>povoleno</b>
Zobrazit výsledek při odevzdání:	<b>ano</b>
Zobrazit report:	<b>ano</b>

Zavřít
Spustit

1. Zatrhní více správných odpovědí: Materiál nástroje u nekonvenčních metod obrábění	<b>Zatrhní více správných odpovědí: Materiál nástroje u nekonvenčních metod obrábění</b>  <input type="checkbox"/> musí být pevnější než obráběný materiál  <input type="checkbox"/> musí být tvrdší než obráběný materiál  <input type="checkbox"/> nemusí být tvrdší než obráběný materiál  <input type="checkbox"/> nemusí být pevnější než obráběný materiál  <input type="button" value="Odeslat"/>
2. Podle převládajících účinků oddělování materiálů při nekonvenčních metodách obrábění dělíme metody na	
3. Oddělování materiálu tepelným účinkem může být	
4. Oddělování materiálu elektrochemickým nebo chemickým účinkem může být	
5. Oddělování materiálu mechanickým účinkem může být	
6. Elektroerozivní metody obrábění patří mezi metody	

Sample pages from the mock test:



## PT1 - 2 - TEORIE OBRÁBĚNÍ 1 - CVIČNÝ

Není nastaven žádný detailní popisek.

Absolvovaných pokusu:	2
Bodový limit:	75%
Časový limit:	100 minut
Počet stránek:	41
Zobrazit správnou odpověď:	povoleno
Umožnit změnu odpovědi:	povoleno
Přeskakovat stránky:	povoleno
Zobrazit výsledek při odevzdání:	ano
Zobrazit report:	ne



**1. KTERÉ TVRZENÍ JE SPRÁVNÉ?**

2. Označ kliknutím na číslo příslušné části, kde je na soustružnickém noži ŠPIČKA , na které bývá rádius označovaný r epsilon.

3. Označ kliknutím na číslo příslušné části, kde je na soustružnickém noži HLAVNÍ OSTRÍ.

4. Označ kliknutím na číslo příslušné části, kde je na soustružnickém noži VEDLEJŠÍ OSTRÍ.

5. Označ kliknutím na číslo příslušné části, kde je na soustružnickém noži čelo.

**KTERÉ TVRZENÍ JE SPRÁVNÉ?**

-  Obrábění je technologický proces, při kterém je přebytečná část materiálu oddělována z obrobku kuželem řezného nástroje ve formě třísky.
-  Obrábění je technologický proces, při kterém je přebytečná část materiálu oddělována z obrobku klínem řezného nástroje beztřískově.
-  Obrábění je technologický proces, při kterém je přebytečná část materiálu oddělována z obrobku klínem řezného nástroje ve formě třísky.

The course of teaching has therefore changed as follows:

- Explanation of the topic by means of a presentation (it was not possible to use the videos, most of the pupils had a slow video via Teams)
- Activation of pupils through chat responses (the oral response usually took a very long time before the pupil turned on the microphone...)
- I made the Unconventional machining methods course available for them
- Assignment of the graded test, evaluation of the test and recording of grades

Preparing a longer course in an e-learning presentation is very time-consuming (4 to 6 hours), because explaining, inserting pictures, links, etc. is much more difficult to make than in a PPT presentation. A simpler way has also worked well for me, where students were forced to follow the explanation and study from the teaching texts to complete a test I prepared for the explained material. The questions and answers in the test exactly matched the teaching texts and the explanation using the PP presentation.

In the first phase, the course was just a trial one for EXERCISING their knowledge. See pictures above. Students could run the test as many times as they wanted and for a very long time. The test was set up in such a way so that they were shown the correct answers and had the option to change the answer. The position of the correct answers changed with each trial. The PRACTISE EXERCISING test was open for one or sometimes two days. So they had the freedom to choose when to study. The following day, the same graded KNOWLEDGE TESTING test was open for 24 hours, only the **first full attempt** was valid (there were internet outages, I can see in iTrivia when the student started the test and how many sites they visited) and sufficient - passed grade started at 75% pass rate on the test.

## Feedback on the lesson

After the school opened, I discussed effectiveness of this teaching with the students. In one class of the apprenticeship course with a high school diploma, every pupil in the class expressed his or her opinion. All of them agreed that without the iTrivia tests they would not have known anything at all, only the tests forced them to learn. Some of the pupils in the class who could follow the

explanation said that they did the tests according to what they remembered from my explanation. Some didn't manage to follow the explanation all the way through and they praised the teaching texts I wrote and put into Teams. **Thus, the combination of mock tests, graded tests, visual remote explanation, and teaching texts ensured at least some effectiveness of the distance learning.** Obviously, just a pure presentation with very limited possibility of activation of the class would not have provided any effectiveness.

# Reading and Assigning of Manufacturing Drawings

## Off-line version of the preparation:

**Goal:** Students will be able to read a manufacturing drawing to produce the part shown, identify all important elements on the drawing - neck, center mark, thread, etc. They will be able to read the necessary information in the information block of the drawing. At the end of the lesson, they will understand the requirements of entering a manufacturing drawing of a specified part in a 3D view.

**Teaching methods:** motivational interview: why do I need to be able to read manufacturing drawings; independent work of pupils not assessed by a mark; consultation on the results of their work and communication of the correct solution; problem-based interview on how to project a given component in 3D view; and further according to the situation in the classroom

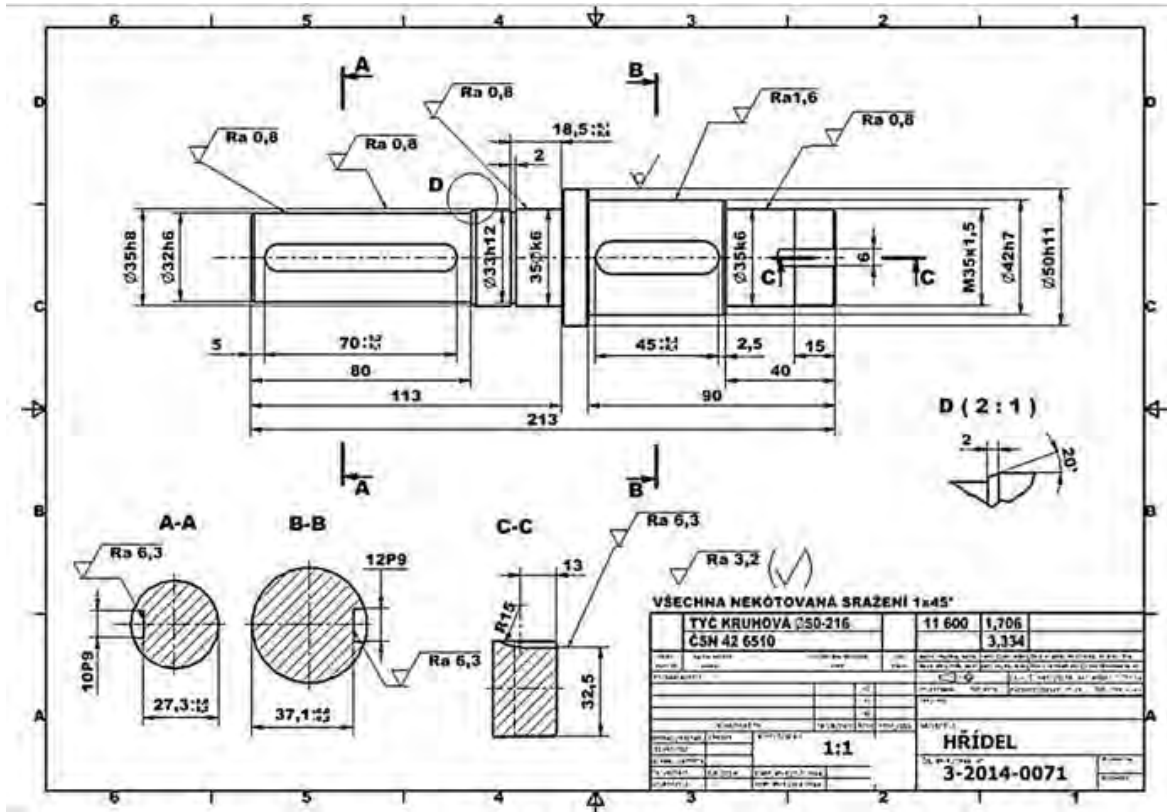
## Aids:

- **Presentation with the manufacturing drawing of the SHAFT** and other slides with prepared principles of drawing of some elements on the parts
- A pump with visible shaft, journal
- Worksheet for independent work
- Wooden large projection corner - an aid for entering 3D parts
- Cut 3D shaft assignments for each student to paste into their workbooks

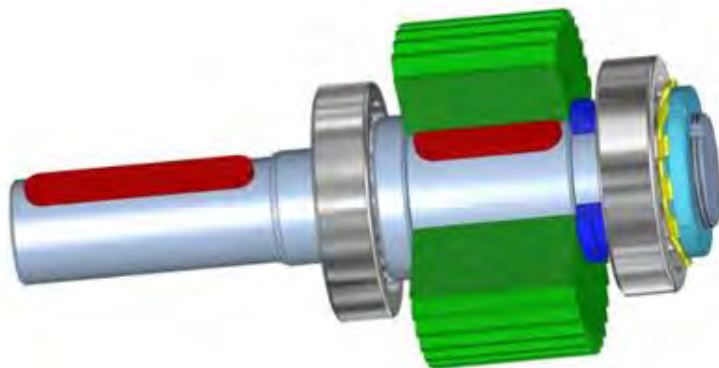
## The course of activities in the lesson:

- Quick repetition of possible elements of the drawing
- Independent work - answers questions in the worksheet
- Continuous checking of individual pupils' work.
- Consultation on the correct solutions with the whole class
- 3D shaft specification
- Consultation on the correct choice of views for the shaft view and on the elements of the shaft
- We discuss how the lesson went
- This topic is very difficult to teach even face-to-face. The pupils need to combine knowledge from various subjects and they do not find it easy. But I am aware that the topic is essential for their further studies and everyday work practice. Therefore I have included or developed various „motivating techniques“. One cannot expect the students to be enthusiastic about this topic, the aim is to help the students to pay attention, learn and remember most of the information. It was very crucial in a situation when no practical classes were available and the pupils had no opportunity to learn by doing.

A sample of several slides from the PPT presentation showing what a complex task for the students it is:

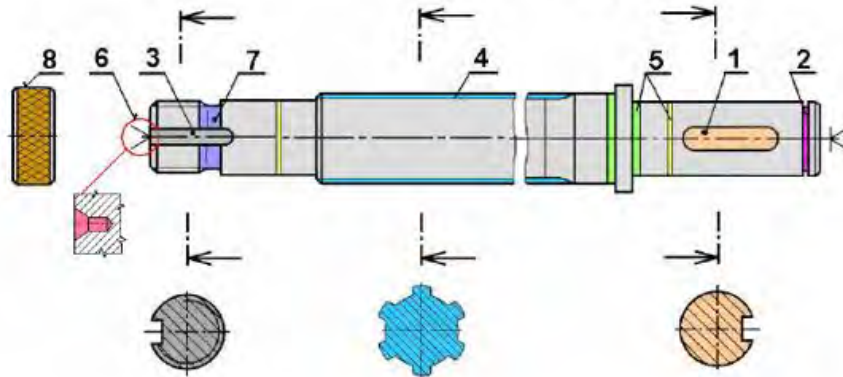


Hřídel je součástí této pod sestavy převodovky.




## Co rozumíme tvarovými prvky hřídelů?

- |                                |                           |
|--------------------------------|---------------------------|
| 1. Drážky pro pera a klíny     | 5. Zápichy                |
| 2. Drážky pro pojistné kroužky | 6. Středící důlky         |
| 3. Drážky pro poj.podložky MB  | 7. Drážky za závitem      |
| 4. Drážkování                  | 8. Rýhování a vroubkování |



Sample worksheet helping the students to divide the task into individual steps

### Čtení výkresu HŘÍDELE 2



1. Napište **velikost polotovaru**, který zvolíte pro obrábění součásti NA VÝKRESE.  
.....
2. Jaký je **materiál**, ze kterého je hřídel vyroben? .....
3. Vypište všechny rozměry, které mají na výkrese **předepsané tolerance**.  
.....
4. Vypište všechny rozměry, na které se vztahují **všeobecné tolerance**. Napište číslo normy všeobecných tolerancí.  
.....
5. Napište všechny rozměry, které potřebujete znát pro **výrobu drážky pro pojistný kroužek**.  
.....
6. Které všechny údaje musíte znát pro **výrobu závitu** na hřídeli? K čemu **závit** na hřídeli bude **sloužit**?  
.....
7. Co všechno vyčteme z **označení závitu** na konci hřídele?  
.....

## Online version of the preparation

We had the opportunity to work with students in school using Teams. Here we could do direct explanations through presentations shared with everyone on the screen, assign tasks and have an accurate overview of who submitted the task and when.

I had to learn how to work with Teams. Initially Teams was mainly focused on functions needed in companies, but gradually the programmers added functions needed for school teaching. So there was a constant need to learn new features and how to use them for teaching.

Unfortunately, during the second school COVID closure, instructions were issued that we actually have to imitate the frontal teaching in the school and for example check pupils' absence. It is, of course, foolish to think that this can substitute face-to-face frontal instruction. There is no direct contact and the feedback for teachers is almost non-existent. It is impossible to keep the attention of pupils who have difficulty concentrating.... When a pupil is not paying attention you repeat what is said again, when teaching online you can't tell when someone does not or cannot pay attention.... You will not even know if someone is sleeping. 😊 There were many failures of microphones, connections etc.

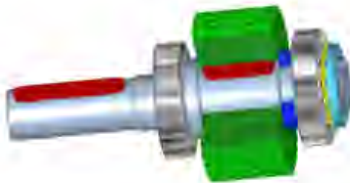
When schools closed for the first time I used my knowledge of distance learning procedures and principles and it worked much better.

For this particular lesson I redesigned the shaft drawing assignment, instead of 6 components drawn on A4, just one part and I converted it to a PDF format that everyone could open on their mobile phones or PC.

I combined the worksheet and the shaft drawing that the students "read" into one file and converted it to a PDF. I assigned them to read the drawing in the assignment in the appropriate Team. Students then wrote their answers on paper and then scanned and uploaded them into Teams. This was followed by a discussion on the correct answers, where I could view their answers from Teams and we could discuss their correctness.

As far as their drawing was concerned, in the next lesson after the deadline, we also discussed the correct drawing. It was possible to display the drawings and I **draw onto them on a graphics tablet**, which I **had to learn to use**, draw, and write with - at least a little legibly. The graphics tablet was bought for me after some minor disputes at school, because otherwise it would be very difficult to explain anything in technical subjects, especially in technical documentation. My tablet was already obsolete and had a worn tip.

Sample of one page from the drawing reading assignment going from simple to more complex tasks:



Hřídel je součástí této podstavy převodovky.

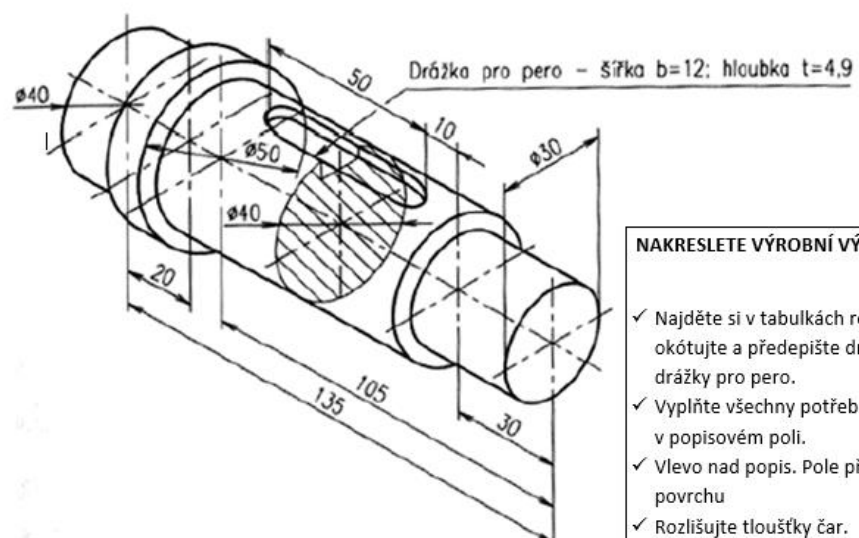
Odpovězte na otázky: **odpovídejte celou větou, odpovědi napište RUCNĚ čitelným, nejlépe technickým písmem na A4 s rámečkem a oskenujte jako PDF (ODKAZ NA APLIKACE DO MOBILU: <https://lightpdf.com/cz/skenuji-pdf-na-telefonch.html>), a odevzdejte.**

Na písmo si uvnitř tabulky dělejte horní i dolní linku. Písmo má mít normalizovanou velikost: 10 mm nebo 7 mm. Doporučuji 7 mm, ať to není tak veliké a dlouhé.

1. Napište **velikost polotovaru**, který zvolíte pro obrábění této součásti.
2. Jaký je **materiál**, ze kterého je hřídel vyroben?
3. Vypište všechny rozměry, které mají na výkrese **předepsané tolerance**.
4. Vypište všechny rozměry, na které se vztahují **všeobecné tolerance**. Napište číslo normy Všeobecných tolerancí.
5. Napište všechny rozměry, které potřebujete znát pro **výrobu drážky pro pojistný kroužek**.
6. Které všechny údaje musíte znát pro **výrobu závitu** na hřídeli? K čemu **závit** na hřídeli bude **sloužit**?
7. Co všechno vyčteme z **označení závitu** na konci hřídele?
8. Které všechny průměry budou muset **být broušeny**, pokud hřídel vyrábíme na **konvenčních strojích** (ne na CNC)?
9. Jakou **drsnost** povrchu budou mít **boky všech frézovaných drážek**?
10. Jakou drsnost **dna drážky** bude mít drážka **pro MB podložku**?
11. Jaké všechny rozměry musíte mít na zřeteli, abyste správně **vyrábili obě drážky pro pero**?

Shift is an element of this part of gearbox

Example of assessing of a shaft drawing with detailed instructions helping the students:

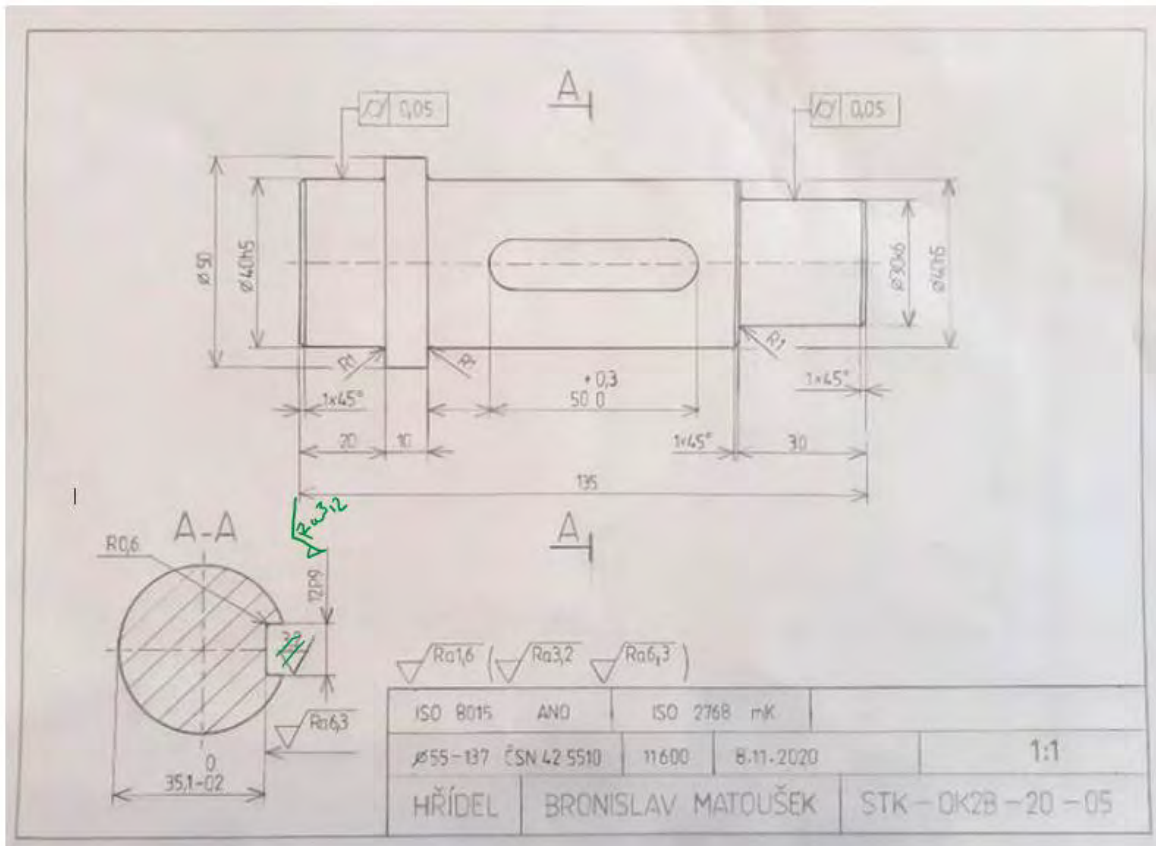


Drážka pro pero - šířka  $b=12$ ; hloubka  $t=4,9$

NAKRESLETE VÝROBNÍ VÝKRES HŘÍDELE.

- ✓ Najděte si v tabulkách rozměry a správně okótuje a předepište drsnost povrchu drážky pro pero.
- ✓ Vyplňte všechny potřebné údaje v popisovém poli.
- ✓ Vlevo nad popis. Pole předepište drsnost povrchu
- ✓ Rozlišujte tloušťky čar.
- ✓ Nezapomeňte na osy.
- ✓ Nežadané náležitosti zvolte

## Discussion on the drawings with marked notes:



## The course of teaching has therefore changed as follows:

- Independent work assignment in Teams - sending the assignment and questions to be answered, (however, instead of 45 minutes I taught this for 90 minutes due to delays caused by sending the work back by the students)
- After the answers were elaborated and sent to Teams, we discussed them via a shared screen. Plotting and highlighting the necessary elements in the read drawing using the graphic tablet.
- Sending an assignment of a 3D display of a students' manufacturing drawings of the shaft.
- Consultation on the correct choice of the number of images and sections of the shaft drawing, again using a graphic tablet.
- We discussed how did the lesson go
- (After the deadline for submission - discussion on the drawings)

The most difficult, and not entirely possible, was the individual correction of each drawing, as is the case when I receive a drawing on paper and quickly correct errors in it, which the student then, for example photographs on his mobile phone and redraws the drawing correctly. With the remote access, I initially listed the errors in a comment on the assignment submission, but quite a few students were not able to correct the error as described by me. Cutting out all the drawings, typing in the errors, and sending them back was so time consuming that when teaching several classes on technical documentation, I found it impossible to do. In addition, I was creating tutorials and tests for other classes to teach in the iTrivio e-learning application. The consultation I described above had to do.



## Feedback on the lesson

As mentioned above, there were several setbacks we had to cope with. I had to think of new ways of communication of the content of the lesson to the students – as far as methods and technological issues were concerned. And the students suddenly found themselves in a very unfamiliar situation. At the beginning of the COVID closure they were skipping classes or pretending being online without actually participating in the classes. Therefore I had to find ways how to assign doable work for them and provide them with feedback. After the initial struggles we managed to find ways how to work together. As the students drew the drawings manually and only sent me photos of their pictures, we avoided any difficulties caused by use of special and potentially expensive programmes, as that would be virtually impossible due to lack of software and hardware for that.

# General Tolerances

## Off-line version of the preparation

**Goal:** Students will learn and be able to locate dimensions in drawings used for part manufacturing for which tolerances are not defined in any way. They will realise that for many of the shaped elements of a part, there are actually no shape and position tolerances given in the drawing.

They will learn to find a **standard** on the accuracy of these dimensions and shaped elements **in the description field**. They will identify the number of a standard for these GENERAL TOLERANCES, which specifies the size of tolerances for each accuracy class. Students will be able to find the specific tolerances in the standard, which is part of the Engineering Tables. They will learn that the lowercase letter identifies the general tolerances for length and angle dimensions and the uppercase letter identifies the accuracy class for the shape and position of the individual non-toleranced elements of a manufacturing part.

## Teaching methods

problem-based interview, explanation, hands-on search for non-toleranced dimensions and for a standard on general tolerances in the drawing and subsequently search for specific tolerances in the tables; further steps to be taken according to the classroom situation

## Aids

**Presentation:** repetition of the concept of tolerances and the ways of defining them, details in the drawing such as the description field, different types of drawings presented to locate non-toleranced dimensions and shapes;

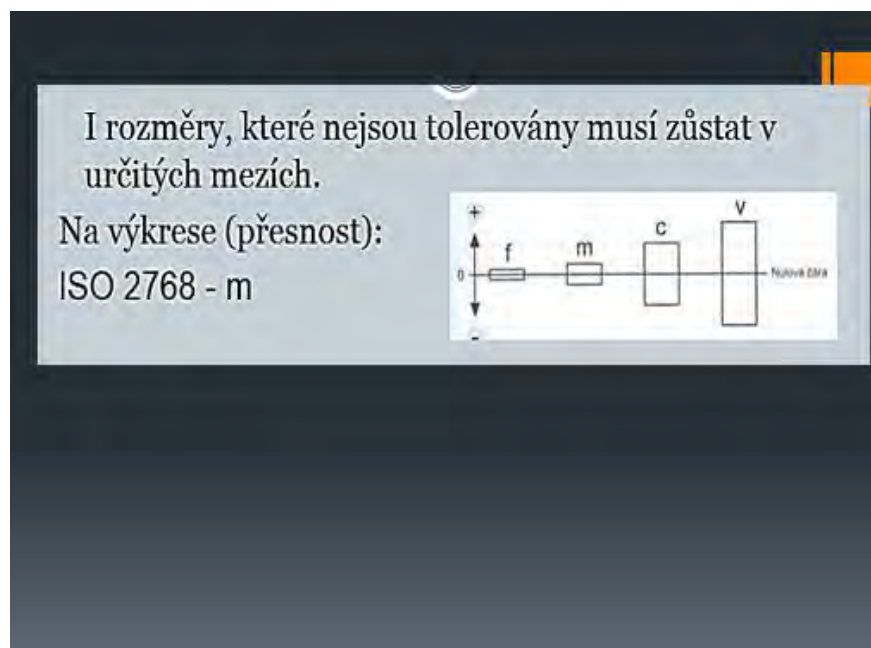
*Teaching (study) texts that summarize the content presented. To be handed out to the students once the lesson is over.*

## The course of activities in the lesson

- Repeat the concept of tolerances and terms used, repeat the ways of giving tolerances in the drawing, for length, shape and position
- Explain what the term **general tolerances** means and where it can be found in the drawing
- In the drawings shown on screen, first read the standard for general tolerances and search for non-toleranced dimensions together, then the students will try to find them on their own and the correct solution will be checked collectively
- Look for tolerance sizes in the standard provided in the Engineering Tables. Then everyone will try separately. Check the results collectively. For the specified dimensions and tolerances, calculate the upper and lower limit dimensions.
- Ask the students to write a general tolerances standard in a manufacturing drawing for a simple part assigned to them earlier

- Hand out learning sheets
- Discuss how the class went
- This task requires quite a complex thinking from VET students - apprentices. They have to be able to search, analyse and calculate. That is why I usually start with working as a whole class or in groups, after the students become more confident, they start working individually. Regarding their field of study, they have to be able to find solutions and solve technical tasks. And they should be able to do it independently. You always have to divide this kind of teaching into individual and achievable steps.

An example of several slides from the *PPT* presentation showing how complex working with drawings can be



**TOLEROVÁNÍ ISO 8015**

Tento předpis musí být doplněn o zápis nepředepsaných tolerancí rozměrů a nepředepsaných geometrických tolerancí:

**ISO 2768 - mK**

**m** – třída přesnosti tolerancí délkových a úhlových rozměrů

**K** – třída přesnosti geometrických tolerancí

Zápis pravidla nezávislosti posuzování rozměrů a úhlů a geometrických tolerancí

Zápis nepředepsaných tolerancí rozměrů a geometrických tolerancí

Popisové pole na výkrese

Z výkresu součásti vypište DÉLKOVÉ netolerované rozměry a v tabulkách k nim vyhledejte všeobecné tolerance. Spočítejte pro každý rozměr HMR (horní mezní rozměr) a DMR (dolní mezní rozměr).

Předpis v popisovém poli: ISO 2768 - m

## ŘEŠENÍ

rozměr [mm]	tolerance [mm]	HMR [mm]	DMR [mm]
průměr 6,5	$\pm 0,2$	6,7	6,3
průměr 95	$\pm 0,3$	95,3	94,7
průměr 37	$\pm 0,3$	37,3	36,7
průměr 62	$\pm 0,3$	62,3	61,7
10	$\pm 0,2$	10,2	9,8
5	$\pm 0,1$	5,1	4,9

## Online version of the preparation

In the first couple of days following the closure of schools, I set up Messenger groups with all of my classes. It was the only way to communicate with them in a reasonable manner via chat. Unlike email

and 'Bakalar' school programme communication, everyone participated in the discussion at the same time and could actively post their opinions and comments. They could also easily vote on a proposal in this way. At the time, Facebook did not yet allow to set up a group of more than six people that could share a phone call. So it was not possible to communicate with all of the class members. It was difficult to provide an oral explanation, especially without being able to show a PPT presentation.

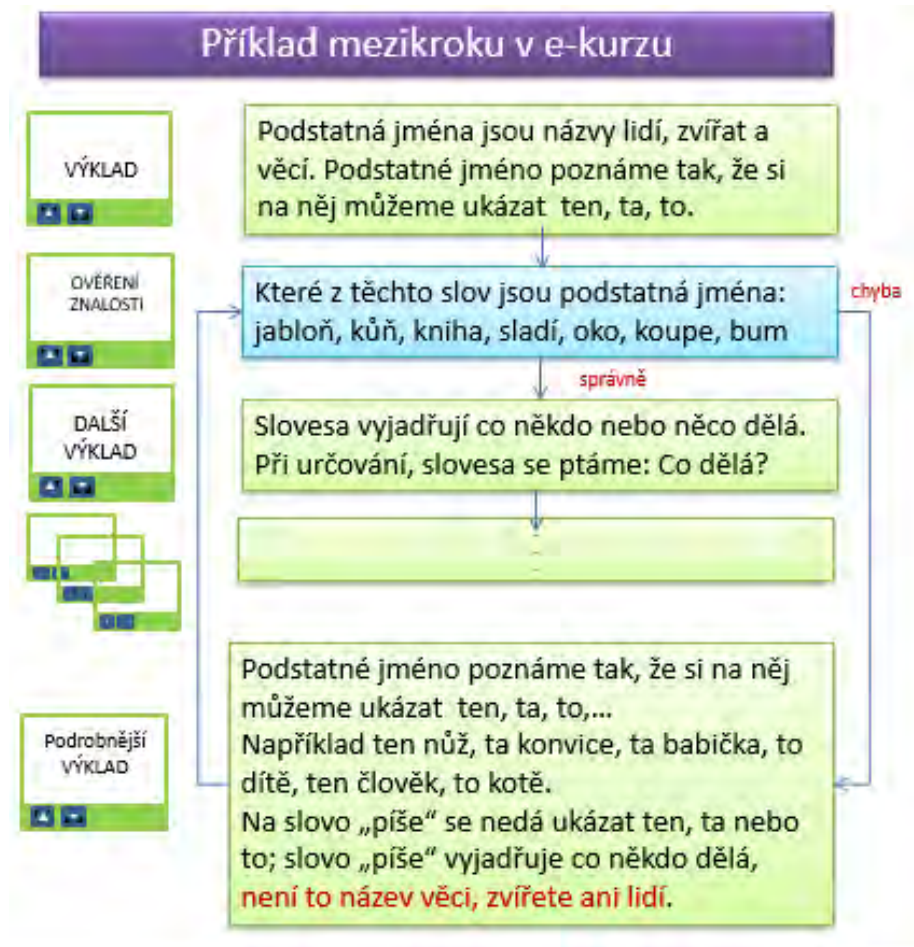
Within three days, I managed to secure a free two-month rental of the iTrivio e-learning application. It is an **LMS** that is above-average user friendly. Based on my long-term experience with teachers I have trained and students who have developed their own tests in iTrivio, I can say that they can learn the basics of operating iTrivio within twenty minutes. However, writing a proper distance-learning course in it requires strong teaching skills for distance learning.

These days, the term of "distance" learning incorporates online education, which emulates face-to-face teaching but without the benefits of direct contact with students. Such teaching has very limited effectiveness, especially if teaching units run in quick succession, each of them involving a different subject. **Teaching in blocks would perhaps increase effectiveness of the process.**

Another way to increase the effectiveness of distance learning is to apply the distant learning teaching techniques designed especially for distance learning.

### A few important takeaways from developing e-courses for distance learning:

- The content must be presented in such a way that **the students understand it without the need for further explanation**. Unless intended by the course designer, the students should not need to seek further explanatory information to study the content of the course.
- In distance learning, a **feedback system** must be properly designed for students. In e-courses, **immediate feedback** is available thanks to the LMS, which contains predefined types of questions. You can activate an option that after answering a question, the learner will immediately be informed whether they have answered correctly and the correct answer will be displayed.
- For strong and effective learning, it is necessary to **develop steps of an appropriate size for students to follow and understand the content being presented and explained**. The course designer must correctly **size the steps** for a student's progression through the content. The most difficult part of the job is to identify how big a **step is appropriate for the level achieved by the student(s)**.
- If the **step is too big, the learner is forced to seek information from other sources** and will be dissatisfied with the level of the course. At our school, there is a risk that students **will simply not engage in the learning that they do not understand**.
- After each comprehensive step, the learners should be required to complete tasks to verify whether they have understood the step or not – in this way, they will get an **immediate feedback!** Feedback is very important for students and is a key element affecting popularity of this learning method.
- An example of how an educational step can be 'softened': **Provide a link on the assignment page that redirects the learner who has answered incorrectly to a page with a more detailed explanation.**



- A learning step in the LMS can also be reduced by providing an additional message when notifying the learner of a correct or wrong answer:

### Co je tolerovaný rozměr?

- Má předepsanu toleranci přímo u kóty.
- Má předepsanou toleranci hromadně pro všechny rozměry v popisovém poli
- Má předepsanou toleranci v technické zprávě.

Pokračovat

Změnit odpověď

✓ Správná odpověď 1 bod Výborně, tolerance tolerovaného rozměru se předepisuje přímo ke kótě. Kóta je číselný údaj na kótovací čáře. Příklad tolerovaných rozměrů: průměr 40H7, 52±0,05

In the circumstances we suddenly faced, it **was impossible to maintain the high quality of the distance course as described above**. However, according to the learners, it was the best of the ways in which they were being educated.

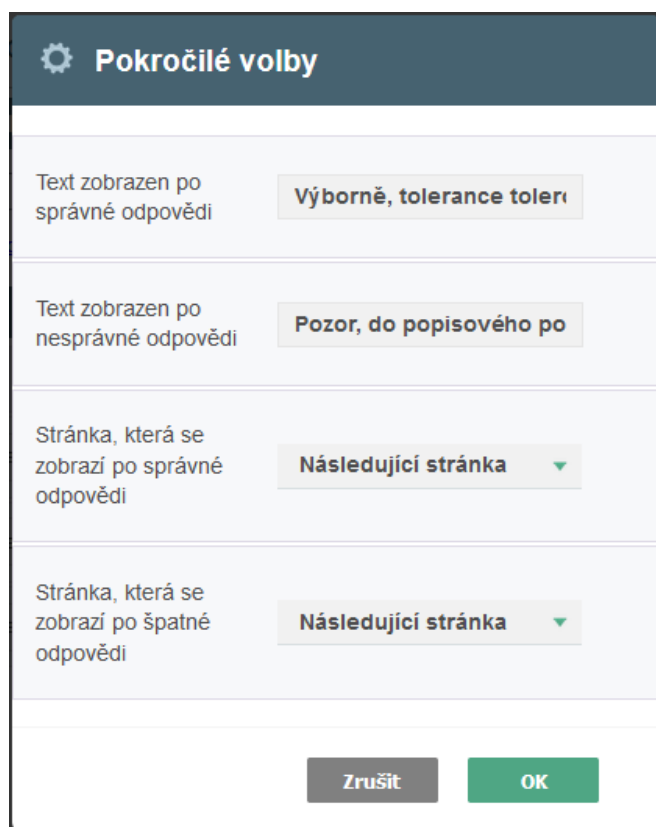
The course was sent to them and made available for 24 or 48 hours. They were therefore free to choose the time at which they take it, which they saw as very important. *(One mother scolded me at my meeting with parents via Teams that I had assigned, due to time constraints, one of the courses for an afternoon study, saying that her son had to work at home in the afternoon and not have a lesson when there is work to be done in the garden 😊)*

Students could ask questions via Messenger and could also see others' questions and my answers to them. **This was intended to replace, to certain extent, the role of a tutor in distance learning.**

### Sample pages from the tutorial



The LMS option to insert an additional message when a correct or wrong answer is displayed



**Pokročilé volby**

Text zobrazen po správné odpovědi	Výborně, tolerance tolerance
Text zobrazen po nesprávné odpovědi	Pozor, do popisového po
Stránka, která se zobrazí po správné odpovědi	Následující stránka ▼
Stránka, která se zobrazí po špatné odpovědi	Následující stránka ▼

[Zrušit](#) [OK](#)

### Co je tolerovaný rozměr?

Má předepsanu toleranci přímo u kóty.

→   Má předepsanou toleranci hromadně pro všechny rozměry v popisovém poli

Má předepsanou toleranci v technické zprávě.

Špatná odpověď **0 bodů** Pozor, do popisového pole se píšjí jen všeobecné tolerance, hromadně pro všechny netolerované rozměr. Velikost tolerance pro rozmezí rozměrů a zvolenou třídu přesnosti je určena v normě. My tuto normu najdeme ve strojnických tabulkách.

### Kurz: 1 KNS3 - VŠEOBECNÉ TOLERANCE - VZDĚLÁVACÍ KURZ Ukončit e

NORMA ČSN ISO 2768 - 1. DÍL - DÉLKOVÉ A ÚHLOVÉ ROZMĚRY

TŘÍDY PŘESNOSTI DÉLKOVÝCH ROZMĚRŮ - TABULKA **VÝKLAD**

Kde se předepisují všeobecné tolerance na výkrese? **ZPĚTNÁ VAŽBA**

Zaškrtněte všechny správné odpovědi. Na které rozměry na výkrese se všeobecné

Které třídy přesnosti mají všeobecné tolerance délkových a

#### Otázka - Jedna správná odpověď

Kde se předepisují všeobecné tolerance na výkrese?

[Příklad vyplnění](#) [Vymazat pole](#) [Nastavení](#) [N](#)

#### Odpovědi

Body

Odpověď

Odpověď

Odpověď

[+ Přidat odpověď](#)

This image is from the iTrivia editing mode in which the teacher - course designer works.



## The course of teaching therefore changed as follows:

- The course was made available to all students for a minimum of 24 hours
- PDF study/worksheets were sent to students
- Questions were answered via Messenger, within groups set up for individual classes
- Checks were performed in iTrivia reports to make sure that all students completed the course and to see which questions they found difficult
- A test was assigned to the students, containing questions previously used for feedback in the tutorial. They received a grade for the test.

Next year, teaching via Teams was mandated, with lessons quickly following one another and e-courses only used as supplementary source of study. I taught for five hours a day non-stop, therefore with limited time left for designing distance-learning courses. However, that form of e-learning had very limited effectiveness. When, as a minimum, I supplemented this with iTrivia tests for my students, the learning process became more effective.

## Feedback on the lesson

The students seemed to be highly satisfied with the LMS system. It offered them possibilities they had in no other class.

# Density and Melting Points of Metals and Their Alloys

Partly online, can also be done fully online

1<sup>st</sup> year apprenticeship metalworker programme

Off-line version of the preparation

## Goal

Students understand the concept of density and can explain its importance in calculating the mass of components. They remember the division of light and heavy metals. They know the basic unit of density, and can convert density units from one to another, especially  $\text{kg/m}^3$  to  $\text{kg/dm}^3$ . They know the density of steel, titanium, aluminium, magnesium and copper by heart. They know how they can look up the density of pure metals and their base alloys.

Students can define the melting point of metals and can explain what Kelvin and Celsius mean. They can compare the melting points of some metals and explain that the technology of casting components from a metal with a high melting point is much more energetically demanding.

## Teaching methods

interpretation, problem-based interview, simple animations, samples of several types of metals, searching densities and melting points in the table in PPT presentation and other activities according to the current situation

## Aids

Samples of several types of metals

Presentation: animation of different sized cubes of different materials, names of metals and their density and melting point

Teaching texts summarising the material taught. They will be given out after the lesson.

## The course of activities in the lesson


- Interpretation of density using problem-based interview
- Finding the densities of the metals from the table in the PPT presentation and classifying them into light and heavy metals, and especially comparing them
- Names of basic alloys of copper, aluminium and magnesium, estimation of their density and comparison with the density of steel
- Interpretation of the definition of melting point. The importance of this knowledge for various metal processing technologies - casting, welding...

- Finding the melting points of several metals from the table in the PP presentation and comparing them
- Distribution of teaching texts
- Evaluation of each individual lesson
- Following the closure of schools I was encouraged to introduce more online-teaching elements into everyday practice. It enabled me to utilise my growing set of online materials produced by me and I could also use my knowledge of various tools. When you start creating such a set of materials, it certainly enables you to use them more times and improve them on the basis of the feedback received from students.


### Several slides from the PPT presentation

## HUSTOTA


Lze porovnat hmotnost těchto 3 krychlí?



OCEL

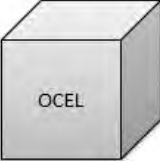


HLINÍK




PLAST

Lze porovnat hmotnost těchto 3 krychlí?




OCEL

7,8  
kg/dm<sup>3</sup>



HLINÍK

2,7 kg/dm<sup>3</sup>



PLAST

Například  
1,3 kg/cm<sup>3</sup>

## Hustota materiálů - příklady

<b>Hustota</b>	
vody	1 kg/dm <sup>3</sup> ,
oceli	7,8kg/dm <sup>3</sup> ,
hliníku	2,7 kg/dm <sup>3</sup> ,
mědi	8,9 kg/dm <sup>3</sup> ,
zlata	19,3kg/dm <sup>3</sup> ,
hořčíku	1,7 kg/dm <sup>3</sup> ,
wolframu	19,3 kg/dm <sup>3</sup> ,
titanu	4,5 kg/dm <sup>3</sup> ,
<b>šedé litiny</b>	<b>7,2 kg/dm<sup>3</sup>,</b>
PC	~1,5 kg/dm <sup>3</sup> ,
duralu	2,8 kg/dm <sup>3</sup> ,
mosazi	8,4 – 8,7 kg/dm <sup>3</sup> ,
platiny	21,4 kg/dm <sup>3</sup> ,
olovo	11,34 kg/dm <sup>3</sup>

- 1) Který z uvedených kovů má nejnižší hustotu?
- 2) Jakou hmotnost by měla krychle o délce strany 10cm vyrobená z hliníku a kolik stejná krychle vyrobená z oceli?
- 3) Bude mít díl vyrobený z hořčíku větší hmotnost než stejný díl o stejném objemu materiálu vyrobený z mosazi?
- 4) Porovnejte hmotnost dvou součástí o stejném objemu, kdy jedna je vyrobena z mosazi, druhá je vyrobena z oceli.

Mosaz je slitina mědi a zinku.  
 Duraly jsou slitiny hliníku s dalšími kovy.  
 Ocel je slitina železa a uhlíku, popřípadě dalších kovů.  
 Litina je slitina železa a uhlíku.  
 PC (polykarbonát) je plast.

# TEPLOTA TAVENÍ

PROČ POTŘEBUJEME ZNÁT TEPLOTU TAVENÍ MATERIÁLU:

Výroba součástí z materiálů s vysokou teplotou tavení by byla velmi drahá – např. WOLFRAM, karbidy wolframu... (spékání)



Můžeme využívat materiály podle teploty tavení:

KOMPOZICE DO KLUZNÝCH LOŽISEK – nezadře se – v ložisku se roztaví kompozitní kov, nezničí se ostatní součásti.



PÁJKY – u měkkého pájení používáme pájky s teplotou tavení do 500°C ...



U OBRÁBĚNÍ nesmí v místě řezu vzniknout teplota, která by natavovala obráběcí materiál... (diamant se taví při 3 816°C, železo při 1 536°C, hliník při 658°C...)



Kov	Teplota tání $t_f$ [°C]	Teplota varu $t_v$ [°C]	Hustota $\rho$ [kg.dm <sup>-3</sup> ]	Pevnost v čistém stavu $R_m$ [MPa]
<b>Kovy s nízkou teplotou tání</b>				
Ofovo	327	1740	11,340	15
Cín	232	2270	7,280	30
Zinek	419	907	7,130	120
<b>Lehké kovy</b>				
Hliník	660	2467	2,700	70
Hořčík	649	1090	1,740	180
Titan	1660	3287	4,530	400
<b>Kovy se střední teplotou tání</b>				
Měď	1083	2567	8,930	180
Nikl	1453	2732	8,900	350
Mangan	1244	1962	7,300	
<b>Ušlechtilé kovy</b>				
Zlato	1064	3080	19,290	120
Stříbro	962	2212	10,500	150
Platina	1772	3827	21,450	200
<b>Kovy s vysokou teplotou tání</b>				
Chrom	1850	2672	7,100	
Molybden	2617	4612	10,200	
Wolfram	3410	5660	19,300	



- 1) Které z uvedených kovů by se hodily na výrobu měkké pájky – teplota tavení do 500°C?
- 2) Který z uvedených kovů má nejvyšší teplotu tavení?

## Online version of the preparation

This is an important topic which is part of the final exams. I needed the students to be able to search for information, interpret it, and to analyse sources. Such abilities are essential for learning however sometimes difficult to achieve with apprentices. And I needed my students to become confident in doing so. That is why I decided to involve online elements.

Although students like searching the Internet for fun, in case of more specialised information they do not know what phrase (keyword) to enter into the search engine in order to be led to information they are looking for as quickly as possible. They make mistakes in spelling and in the correct technical terms, and they are frequently not capable of refining the keyword so that they would not search for information from a completely different field. Working online on a PC or mobile is different when searching for professional information and different when searching for entertainment. For professional information, it is important to compare sources to see if they are not just copies of a single source. In such a case it is important to find the original source and search for another source as well. You can never trust just one source. **In order to work online and learn to enter correct search terms and be aware of the quality of the information source, students work with their mobile phones and search independently for the information needed for the assignment.** Drawing their own conclusions from the information is very difficult for first year students, some fear their own opinion would be wrong or mocked, others refuse to think etc. Therefore, to start with, I have looked for a simple task where **they could draw the required conclusions themselves and could be very confident that they were correct.**

At school students are connected to the internet using the school Wi-Fi network.

**I created a worksheet for them to write down the values of density and melting points of metals and their alloys that they found online. The students were tasked to draw their own conclusions from the information they have found.**

## Worksheet

### DENSITY AND MELTING POINT OF METALS AND THEIR ALLOYS

worksheet

1) Use the internet to find the values of **density and melting points** of the metals and alloys in the table below. Classify the pure metals as either heavy or light, if you know that heavy metals have lower density than  $5\text{kg/dm}^3$ .

Metal/Alloy	Density	Unit of density	Heavy/Light metal	Melting point
Steel		$\text{kg/dm}^3$		
Aluminium				
Magnesium				
Titanium				
Copper				
Lead				
Zinc				
Tin				
Wolfram				
Cobalt				
Platinum				
Gold				
PC (plastic)				
Duralium				
Elektron				
Bronze				
Brass				

1) Který z kovů z uvedených v tabulce má nejnižší hustotu?

.....

2) Jakou hmotnost by měla krychle o délce strany 10cm vyrobená z hliníku a kolik stejná krychle vyrobená z oceli?

.....

3) Bude mít díl vyrobený z hořčíku větší hmotnost než stejný díl o stejném objemu materiálu vyrobený z mosazi?

.....

4) Porovnejte hmotnost dvou součástí o stejném objemu, kdy jedna je vyrobena z mosazi, druhá je vyrobena z oceli.

.....

.....

5) Které z kovů v tabulce výše by se hodily na výrobu měkké pájky, jestliže její teplota tavení musí být do  $500^\circ\text{C}$ ?

.....

6) Který z kovů v tabulce výše má nejvyšší teplotu tavení?

.....

## The course of teaching has therefore changed as follows:

- Interpretation of density using problem-based interview
- Names of basic alloys of copper, aluminium and magnesium, estimation of their density and comparison with the density of steel.
- **Students independently search for the densities of metals and their alloys using internet sources. Classify them as light and heavy metals, complete tasks and draw their own conclusions by comparing densities.**
- **Discussion of the developed solutions.**
- Interpretation of the definition of the melting point. The importance of this knowledge for various metal processing technologies - casting, welding...
- **Finding the melting points of selected metals and some of their alloys using internet sources. Completing assignments and making their conclusions based on the value of melting points of the selected metals.**
- **Discussion of the developed solutions.**
- Distribution of worksheets
- Evaluation of each individual lesson

## Feedback on the lesson

The current problem in schools and everyday life, in times of access to loads of information in an instant, primarily seems to be the lack of education focused on critical thinking, media literacy, and the handling of resources and information. We have been reforming education for 20 years, or talking about it, but nothing fundamental has actually happened or is happening. And I feel that it is something I need to do with my students, in a field of science which should provide clear and unbiased results.

Searching online was rather difficult at first due to the setbacks I mentioned earlier on. It also took longer as the students were not provided with a single source of information. This was our very first lesson in which I asked them to search online themselves. As we have started using it during other lessons too, they became more confident in using their own skills. Of course the students are not always ready to become involved, you have to be careful not to let them become distracted while online. However the online element proved to be useful for them as well as for me, as I learned more about their ways of thinking and their knowledge of the online environment. It helped me to adjust and modify our other online activities.

# Connecting Direct-Current Sources

2<sup>nd</sup> year students of mechanic-tool setter apprenticeship programme

## Off-line version of the preparation:

**Goal:** Students will learn how voltage and current change when connecting the sources of DC voltage in a circuit. This information will be presented to them using circuit diagrams and then they will be given exercises to practise their knowledge. The result of connecting sources with different voltages, typically the burning up of the sources, will be shown in a diagram and students will be made aware of the consequences of such connection.

**Teaching methods:** explanation, drawing up diagrams, calculating exercises, and other activities according to the classroom situation

## Aids:

**Presentation:** diagrams and highlighted passages to remember, exercises with subsequent display of the correct solution

*Learning sheets* that summarize the content presented. To be handed out to the students once the lesson is over.

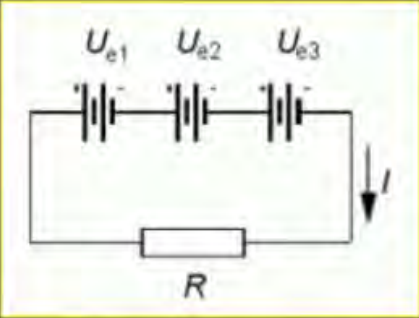
## The course of activities in the lesson:

- Repeat the concept of DC voltage
- Repeat the concept of series and parallel circuits
- Repeat and draw the symbol for DC source, as part of the connection in an electrical circuit with bulb and switch
- Ask the students to connect another source in the diagram, first in parallel and then in series. They will write down the voltage value next to the each of sources – both sources will have the same voltage. Explain how the resulting current and voltage values in the circuit will change when another source of the same voltage is connected.
- Draw two sources in a circuit - but this time, of different voltages -> animation of the sources burning up
- Assign a task for the next lesson: a simple calculation for sources connected in parallel and in series
- Hand out learning sheets
- Discuss how the lesson went



A few slides from the PPT presentation:

Místo rezistoru si nakreslí do obvodu žárovku



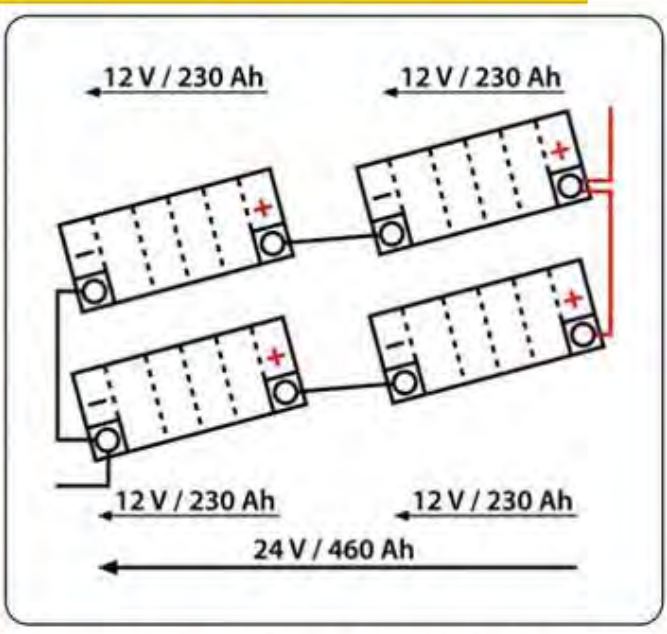
Při spojení za sebou (sériově) spojujeme vždy kladný pól jednoho zdroje se záporným pólem zdroje následujícího. Výsledné napětí celé baterie se pak rovná součtu napětí jednotlivých zdrojů, tedy

$$U_e = U_{e1} + U_{e2} + U_{e3}$$

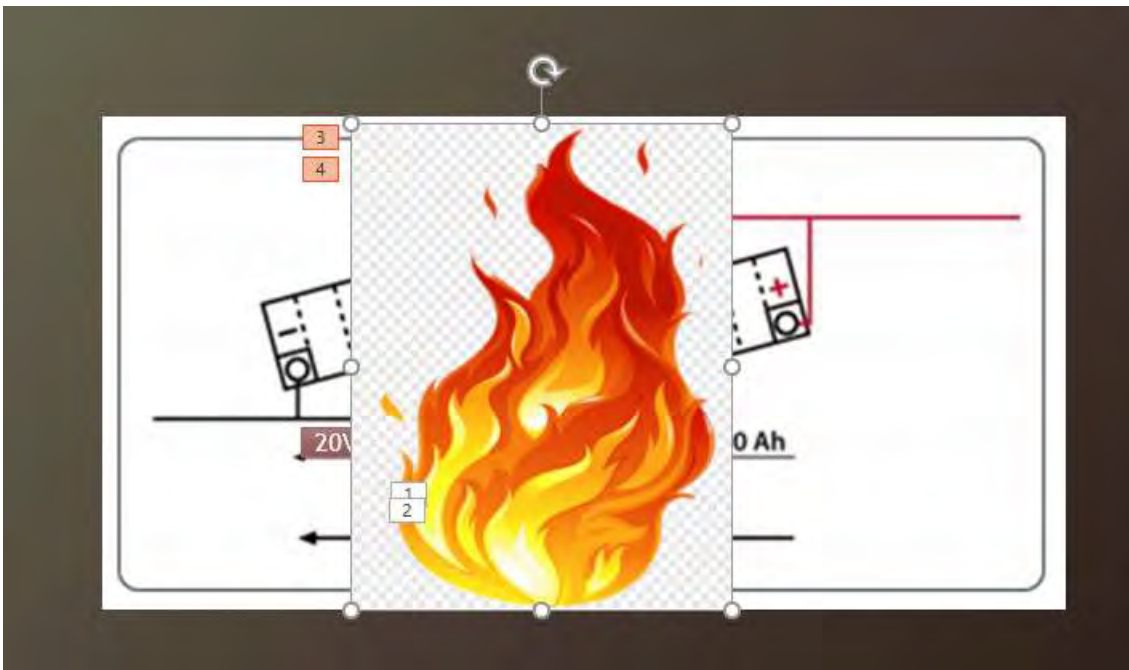
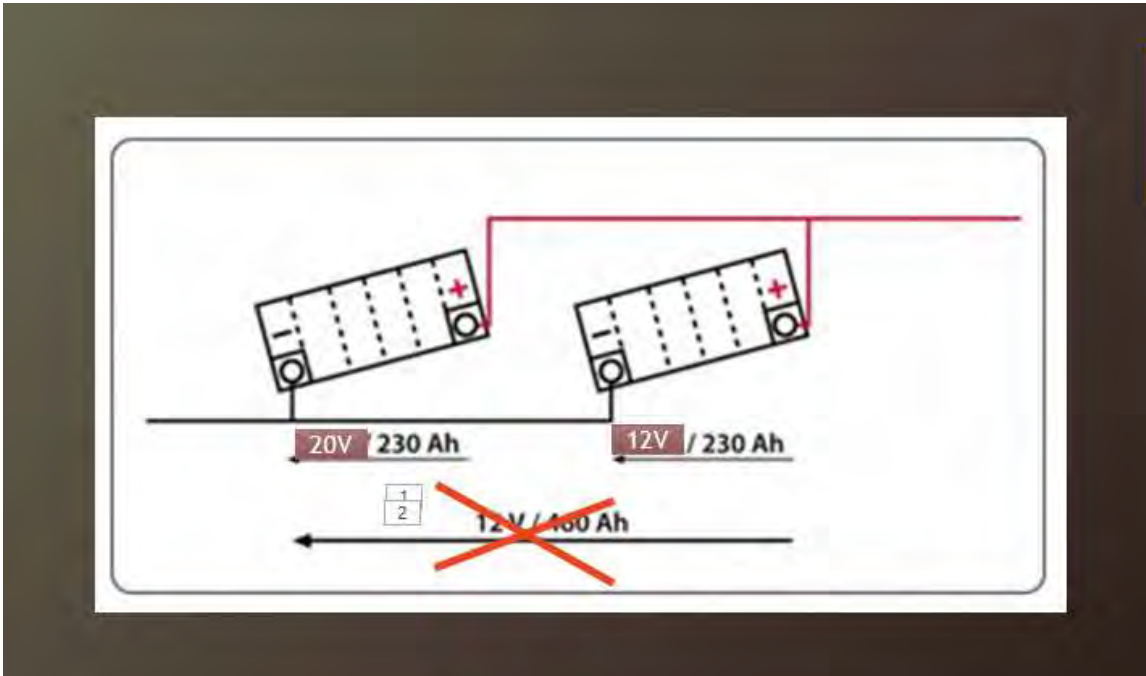
Při tomto spojení prochází všemi zdroji stejný proud.

## AUTOBATERIE - AKUMULÁTORY V AUTĚ

CHARAKTERIZUJTE TOTO ZAPOJENÍ:



Kombinace sériového a paralelního zapojení



### Online version of the preparation

When at school, I did not have the tools to teach electricity in physics in such a way so that each student could independently work on their tasks of wiring basic components in electronics and draw their own conclusions.

Therefore, I was looking for a way to let the students at **least simulate** electronics research, so that they could **draw their own conclusions/findings** from the behaviour of electrical circuits and components. It is also important to try to get students to discuss their own conclusions with other classmates. Their findings derived from the simulated measurements of electric circuits are not

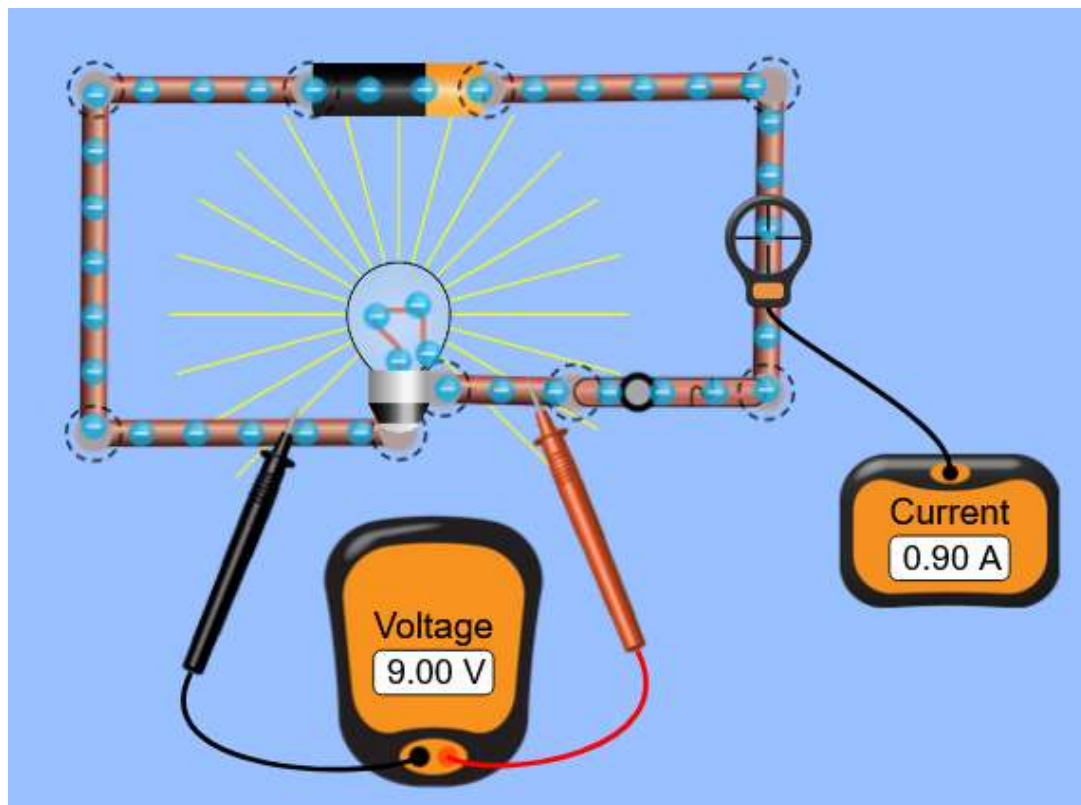
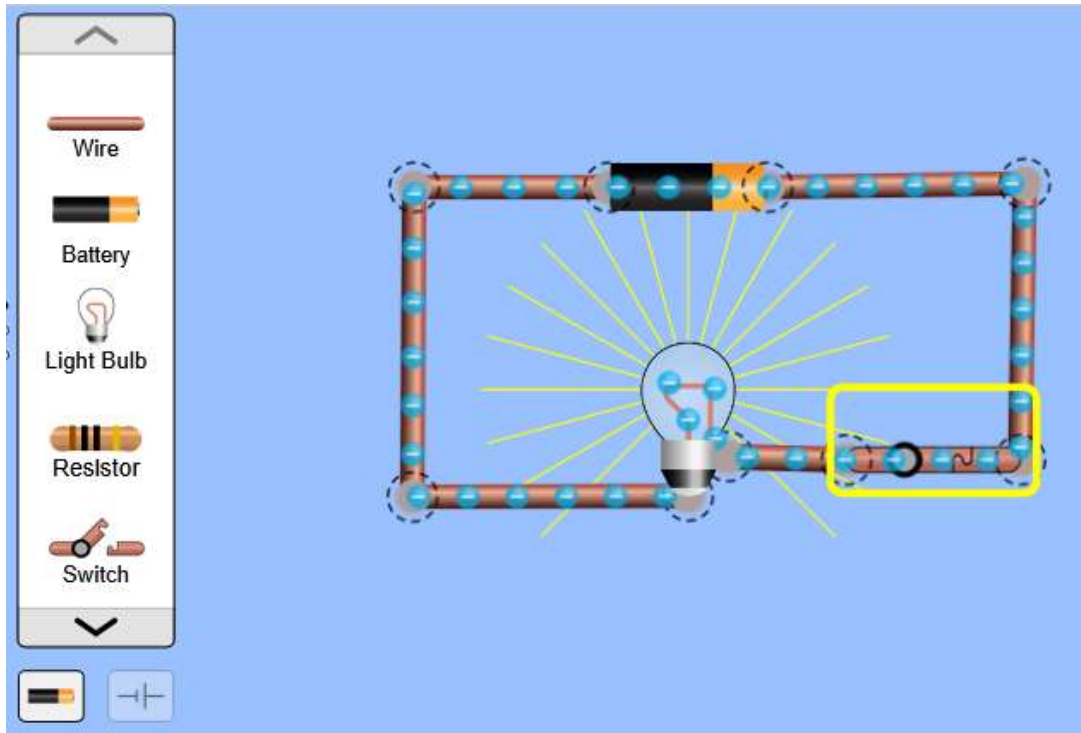
frequently correct and such discussions can lead to disputes or even rude accusations with my groups of students. It is therefore necessary to **set rules** and to monitor the discussion and compliance with such set rules. It is also difficult for the teacher to **guide the students' discussion using questions in such a way so that the students reach the correct conclusions in a given time slot of the lesson.**

For the online version of this lesson, and nowadays when schools are not closed anymore, also for use in face-to-face teaching combined with online access to learning materials, the **simulation program** for simple electrical wiring is suitable for the above mentioned learning objectives. [circuit-construction-kit-dc](#).

Students were assigned a research task to explore the topic by simulating the connection of sources in different variations. In doing so, they all had to **go through the previously learned** and correctly, one can even say **practically**, construct the circuit and connect the measuring instruments - voltmeter and ammeter. They processed the measured data into a table, which they each **designed themselves**, and then **drew conclusions** from them. Everyone **did** this part **at home at their own pace**, which was important in case of the very first task of working with a simulation program they were unfamiliar with. If everyone had done this in class at school, some would not have completed the task and their motivation and interest in the subject would have been significantly reduced. They all managed to set the connection in this way, thus learning how to use the simulation program. They also all managed to write down the measured quantities. **However, as far as the conclusions are concerned, each of them did that at a different level. It was the classroom discussion that helped** to either reinforce or correct their way of thinking about the problem. The students turned in the research paper via Teams and I was then able to make excerpts from their work and their conclusions and submit them anonymously for discussion.

- I drew up a research sheet
- In the sheet, I formulated tasks for the students and sent it out
- I sent the students a link to the above-mentioned simulation program
- I explained how to use the simulation program. I was available for consultations if necessary
- After they submitted their research sheets in the Teams program, I went through them and made preparations to discuss the conclusions

Example of a simple circuit:



It will only take the students a couple of minutes to learn how to use the programme.

The course of activities therefore changed as follows:

- Through the Teams, the students received a link to the simulation program;

- Also through Teams, they received a research task - sheet: CONNECTING DIRECT-CURRENT SOURCES;
- In the lesson preceding the discussion lesson I introduced them to the simulation programme. It is very user-friendly, therefore the students managed to work with it in quite a short time and they were not afraid of failing when working on their own at home
- **Individual homework** – on their PCs, they constructed the circuits, made connections and measured current and voltage;
- **Individual homework** - they also did a simulation using sources of different voltages, to find out that the sources burned up;
- **Individual homework** - they wrote down their findings in the research sheets;
- We discussed the findings in the following meeting and some students managed to correct their wrong conclusions
- At the very end several students briefly summed up, in their own words, the key learnings gained while doing the simulations. Such summing up is very important for further work in the given field based on the previously learned.

**A few examples of the students' research sheets** - some wrong conclusions are shown as well (which were then corrected in the discussion):

**SIGMUNDOVA STŘEDNÍ ŠKOLA STROJÍRENSKÁ, LUTÍN**  
Iana Sigmunda 242, 783 48 Lutín

**VÝZKUMNÝ LIST**

Předmět zkoumání:	Počet listů:	
ZAPOJOVÁNÍ ZDROJŮ STEJNOSMĚRNÉHO PROUDU		
Jméno výzkumníka	Datum zkoumání	Třída
		MS2

**Zadání výzkumu:**

A. Zapojte pomocí simulačního programu obvod se žárovkou, vypínačem a **jedním zdrojem**. Změřte voltmetrem napětí na zdroji a napětí na žárovce. Změřte proud protékající obvodem.

B. Zapojte pomocí simulačního programu obvod se žárovkou, vypínačem a **dvěma zdroji (mohou mít stejné nebo různé napětí)**, které budou **zapojeny paralelně**. Změřte voltmetrem napětí na žárovce. Změřte proud protékající obvodem.

C. Zapojte pomocí simulačního programu obvod se žárovkou, vypínačem a **dvěma zdroji (mohou mít stejné nebo různé napětí, ale stejně jako u paralelního zapojení)**, které budou **zapojeny sériově**. Změřte voltmetrem napětí na žárovce. Změřte proud protékající obvodem.

**D. Údaje, které jste naměřili, zapište do tabulky, kterou sami navrhnete, a vyvodte obecné závěry.**

Do popisu zkoumání **vložte z každého zapojení výstřížek nebo sken obrázků** s danými zapojeními. Obrázky popište.

## Description of the Research

### Table of Measurements:

#### Popis zkoumání

##### Tabulka naměřených hodnot:

Způsob zapojení	Napětí U (V)	Proud I (A)
Jeden zdroj	9V	0.9A
2 zdroje paralelní zapojení U1 je 9V U2 je 9V	9V	0.9A
2 zdroje paralelní zapojení U1 je 9V U2 je 3V	6V	0,6A
2 zdroje sériově zapojení U1 je 9V U2 je 9V	18V	1.8A
2 zdroje sériově zapojené U1 je 9V U2 je 3V	12V	1.2A



Zapojení paralelní s rozdílným napětím ve zdrojích U1 je 9V a U2 je 3V při tomto zapojení dochází ke zkratu.

### Feedback on the lesson

Whether done fully online or with the introduction and further discussion face-to-face, the simulation programme proved to be a great improvement. As the students were actually able to try and fail on their own, it stimulated their interest and confidence. I have seen a major improvement of results and involvement. It also contributed to greater success in the following lessons in the given field. Prior to the closure of schools we could not really make students work with a simulating programme from home, as some would not have the necessary PC equipment, however everyone managed to get the necessary equipment during the online learning.

# Unconventional Machining

## Methods 2

(9 lessons) – combining online and face-to-face teaching

3rd year of a four-year course with a secondary school leaving exam

Off-line version of the preparation

### Goal

Students will be able to list all methods of unconventional machining. They can outline and explain the principle of each of these methods of machining of materials. They can compare the advantages and disadvantages of unconventional machining methods with conventional machining methods. Recognise and explain the advantages and disadvantages of each of the unconventional machining methods.

### Teaching methods

explanation, problem-based interview, animation, use of three-dimensional aids, drawing diagrams and other activities depending on how the lesson goes

### Aids

Products machined by individual unconventional machining methods, tools for EDM, nozzle for laser machining

Presentation: diagrams of unconventional machining principles, links to animations or videos, photos of the working area of machines and tools, photos of products for each individual unconventional machining methods

Teaching notes summarising the learned material. These will be handed out after the lesson is over.

### The course of activities in the lesson

- Explaining the advantages and disadvantages of conventional and unconventional machining methods - problem-based interview
- In each of the total of nine lessons the teacher provides an explanation and a problem-based interview for each single method of unconventional machining
- Drawing of relevant simplified diagrams is required from the students
- Distribution of printed teaching material summarizing content of each individual lesson. The students can also make notes but as this is a rather difficult topic it is good to have materials from the teacher available.
- How did each individual lesson go? The students will be asked to provide feedback on what and whether they managed to learn.

A sample of several slides from the PPT presentation. Videos and animations are absolutely necessary in order to understand the principles and differences of these methods.

**Charakteristické rysy :**

- ❖ lze obrábět **nejpevnější a nejtvrdší materiály**
- ❖ působí **nepatrné (nebo žádné) řezné síly**
- ❖ na obrobek působí **nepatrné (nebo žádné) teplo**
- ❖ lze obrábět **nepatrné rozměry i velké plochy**
- ❖ vysoká **energetická náročnost**
- ❖ **objemový výkon** procesu obrábění je zpravidla **velmi malý**

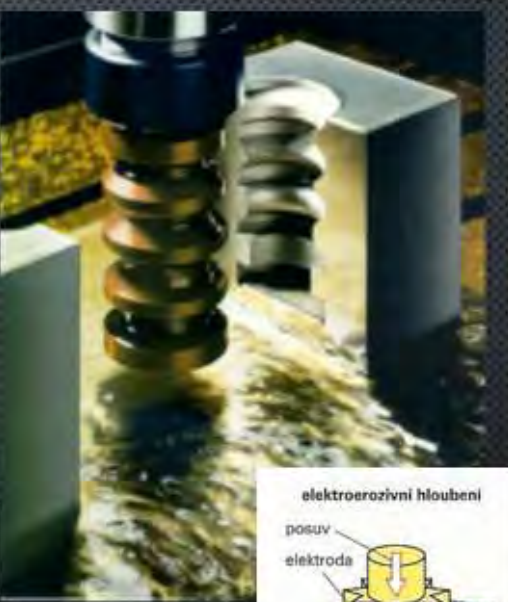



**ROZDĚLENÍ:**

- **obrábění elektrickým výbojem:** elektroerozivní obrábění elektrickou jiskrou a elektrickým obloukem;
- **obrábění chemické:** elektrochemické a chemické obrábění;
- **obrábění paprskem koncentrované energie:** obrábění laserem, plazmou, elektronovým a iontovým paprskem;
- **mechanické procesy obrábění:** obrábění ultrazvukem, kapalinovým paprskem a proudem brusiva



**Elektrojiskrové negativní kopírování tvaru nástroje**





## Online version of the preparation

The absence of students speaks for the use of online distance learning (whether just placed somewhere online by a teacher or using LMS systems) even in times when there is no threat of long-term school closure. During viral epidemics, sometimes only 5 out of 25 students are in class. Some students also have longer-term or long-term illnesses. Being able to use a distance learning course where everything is explained and the knowledge gained can be immediately tested and stored in long-term memory is very important for the students. As this is a topic included in the final exams I decided to prepare the course and make it available for students throughout the entire school year. Anyone can use it and have an advantage of storing information in their long-term memory using the **method 1-2-7-12** (A method based on short-term and long-term memory studies. You should store an information in your long-term memory if you study on the 1st, 2nd, 7th and 12th day from learning about it. Not every student is willing to do so, however I introduce it to my students and they have an option to use it.) Another advantage of distance courses is that students with a slower pace can use them and if they do not manage to catch something in school they can learn and practice using such online materials.

Further great advantage of such an online course is that the student can start the course when he/she has the best time and condition to learn. It also provides the students with an immediate feedback. There are also videos available in this course where you can see from inside of the machine how the tools work (one cannot see this process in practice, as the machines have protective covers), etc. It is not possible to watch all the videos in class due to time constraints.

The disadvantage of such a course is the absence of a teacher who could respond immediately to any ambiguities. This can be remedied to some extent by students asking questions via Teams (and any other sent channel of communication) or in the face-to-face class.

**I have created an educational course Unconventional methods of machining in the iTrivio LMS system.** It is divided into individual subsections containing an explanation of a certain part of the taught material (a single unconventional machining method) and an immediate practice (self-assessment test, quiz). If students are still **uncertain about anything they can write questions to my chat in Teams**. When I'm not teaching, I can answer them or join them in a video call and share the screen.

## Excerpts from the distance course



### MS3A 22/23 9 NEKONVENČNÍ METODY OBRÁBĚNÍ - vzdělávací a cvičný kurz

Je to kurz pro pochopení principů jiných metod obrábění než je klasické třískové obrábění.

Není nastaven žádný detailní popisek.

Počet stránek: **41** ( z toho navštíveno 0 )

Počet povinných stránek: **0** ( z toho navštíveno 0 )

Čas strávený studiem: **0 min 0 s**

Zavřít

Spustit

The screenshot shows a mobile application interface with a dark sidebar on the left and a main content area on the right. The sidebar contains a list of menu items, with the current item highlighted. The main content area displays a quiz question in Czech: "Dielektrickou (nevodivou) kapalinou může být" (A dielectric (non-conductive) liquid can be). Below the question is a list of options, each with a green checkmark or a red X. The options are: deionizovaná voda (checked), petrolej (checked), vodní sklo (checked), solné roztoky (checked), rtuť (not checked), jakákoli voda (not checked), and destilovaná voda protože je nevodivá (checked). At the bottom of the main content area, there are two buttons: "Pokračovat" and "Změnit odpověď". At the bottom of the entire screen, there is an orange bar with a white X icon, the text "Ajaj, to mně bolí" (Ajaj, that hurts me), and "0 bodů" (0 points).

Obsah <<

4.1. Jaký je princip obrábění elektroerozivní metodou?

4.2. Dielektrická kapalina musí být (zatrhněte 3 správné odpovědi):

4.3. Dielektrickou (nevodivou) kapalinou může být

4.4. Elektroerozivní (elektrojiskrové) obrábění se nejčastěji děje

5. NEKONVENČNÍ METODY OBRÁBĚNÍ - prezentace v PP

▶ 6. OBRÁBĚNÍ PAPSKEM PLAZMY

▶ 7. OBRÁBĚNÍ LASEREM

8. OBRÁBĚNÍ VODNÍM PAPSKEM

▶ 9. ŘEZÁNÍ VODNÍM PAPSKEM

### Dielektrickou (nevodivou) kapalinou může být

- deionizovaná voda,
- petrolej,
- vodní sklo,
- solné roztoky
- rtuť
- jakákoli voda
- destilovaná voda protože je nevodivá

Pokračovat Změnit odpověď

✗ Ajaj, to mně bolí 0 bodů



<https://youtu.be/ZdCww4WTyBw>

The course of teaching has therefore changed as follows:

- Explaining the advantages and disadvantages of conventional and unconventional machining methods - problem-based interview. This can be done in class or online using the tutorial.
- In each of the total of nine lessons the teacher provides an explanation and a problem-based interview for each single method of unconventional machining
- Drawing of relevant simplified diagrams
- **Making the tutorial available to all students, using it is especially recommended to those who are absent or for some reason failed to understand everything.**
- Distribution of teaching material – can be done in class or sent to students
- You discuss how each individual lesson went.
- **Later, answer questions in the Teams chat.**

### Feedback on the lesson

As the course was available to the students over the entire school-year it improved the chance of them actually succeeding in their finals. As I explained the 1-2-7-12 method to my students they were sceptical at first however, later on some of them reported to me that they had started using it even in other subjects. The great advantage of such an online course is that it can be done anytime and anywhere. If an Internet connection fails, you can still take it later on.

# Basic Angles on Machine Tools

1st year of a four-year course with a secondary school leaving exam

## Off-line version of the preparation

### Goal

Students understand the reasons for making the three basic angles on machine tools. They can describe how these three angles interact, as well as draw a schematic of a cutting blade and correctly name, draw, and label the angles with Greek letters.

### Teaching methods

interpretation, problem-based interview, use of three-dimensional aids, drawing schematics, calculation of the basic angles and other activities according to the current situation

### Aids

Large turning knife, drill bit- diameter 50mm

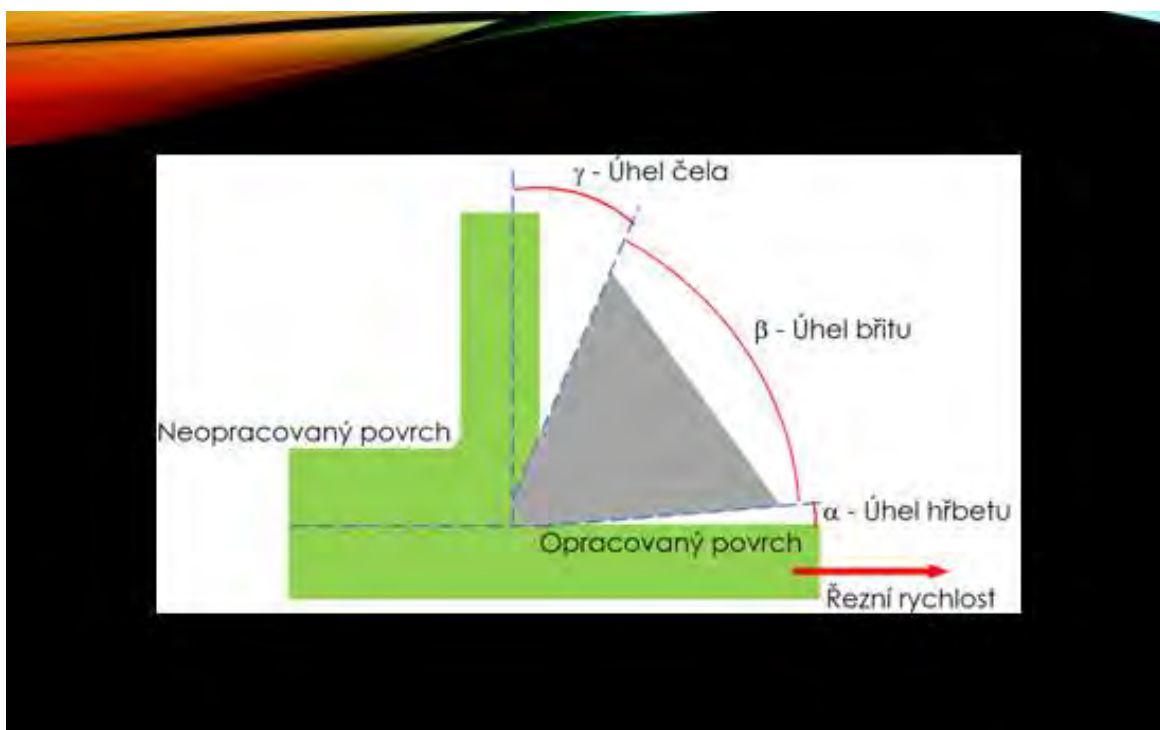
Presentation: terminology, writing and reading necessary Greek letters, angles presented on a saw blade and a turning knife (explanation that we can find angles on all tools)

Worksheets summarizing the topic. They will be given out during the lesson.

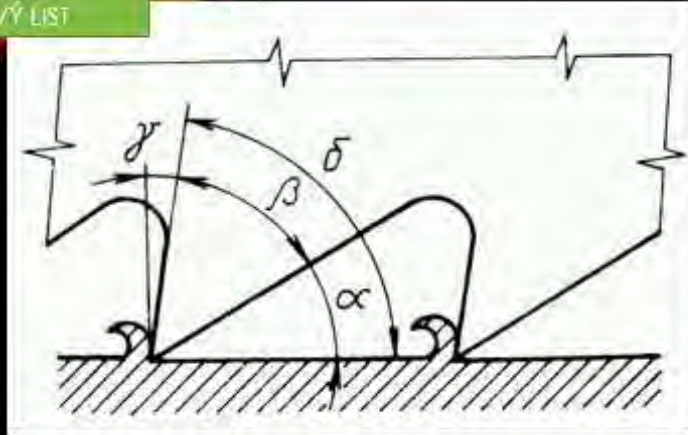
### The course of activities during the lesson:

- Revision of terminology - chip, machined surface...
- Reading and writing Greek letters - alpha, beta, gamma, ...
- Revision of angles on the saw blade
- Demonstration of the basic angles on a turning knife inserted into the finder tool
- Demonstration of the angles on a drill
- Interpretation of the negative gamma angle
- Drawing schematics and independently creating a diagram with a negative rake angle
- Distribution of worksheets
- Evaluation of the lesson

Several slides from the PPT presentation



NÁSTROJ –  
PILOVÝ LIST

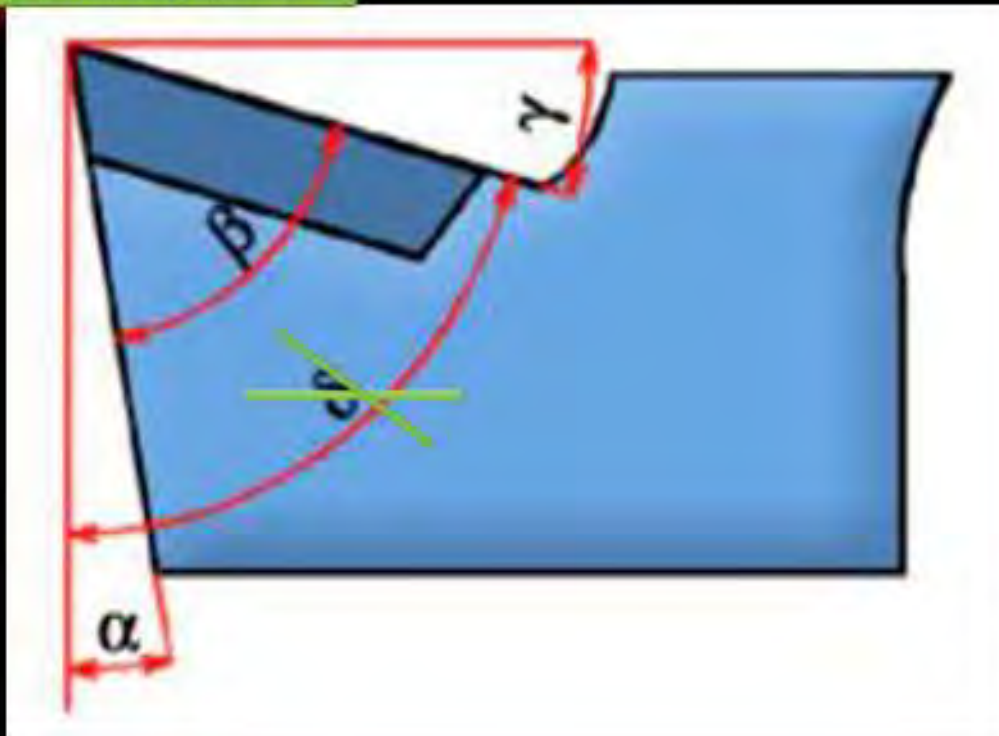


Nástrojové úhly nástroje se volí podle druhu řezaného materiálu a jeho pevnosti –

Úhel  $\alpha$  = úhel hřbetu, úhel  $\beta$  = úhel bříty, úhel  $\gamma$  = úhel čela.

Úhel delta je již z normy vypuštěn.

NÁSTROJ –  
soustružnický nůž



## Online version of the preparation

This unit uses a combination of face-to-face and online teaching.

**When teaching, it is very important to get feedback as quickly as possible.** It is important for both the students and the teachers.

The teacher needs feedback as quickly as possible so that he or she knows how his or her **chosen method of teaching is working for each type of learner** and can **adapt** the explanation and problem-based conversation **on the spot**, if possible. At the very least, **the teacher needs to understand where the confusion arises in a particular lesson** and possibly improve the situation, either in the teaching texts he gives to the pupils or in the next lesson, when repeating the previous material, in order to clarify as much of the confusion as possible.

It is important for learners **to receive prompt feedback** to make sure that their follow-up builds on the correct understanding of the section of the material. This increases their confidence as they progress through the learning process, and **it is also part of the intrinsic motivation** to maintain attention and keep learning. It is **important not to make a false "footprint" in the brain. Removing it later is difficult; it must be displaced and replaced with the correct knowledge or skills. So the quicker the feedback, the better.**

Feedback can be elicited by the teacher in problem-based interviewing by asking questions that first draw on experiences the teacher assumes the students have.... For example, he/she learns that although passing nine years of elementary school pupils do not know how to label metals in chemistry, and sometimes even oxygen. He must then take this fact into account and first explain where they can obtain such information, and while explaining to pupils he/she should **always say the name of the metal and its chemical mark** and assign the learning for the next lesson, etc.

After this part the questions are based on new information and, for example, on empirical knowledge and logical deductions from their combinations. **However this way the teacher cannot ascertain the level of understanding of the material by the majority of the students even if he tries his best.** Therefore, **it is advisable to ask everyone questions after a certain coherent section and see all the answers.** (This is also a principle of self-paced online courses – dividing the topic into smaller chunks followed by self-assessment tools.) And **this is possible today by preparing a simple feedback test in electronic form to which all students have access. The application in which the test is created must allow the teacher to see the answers of all students immediately.**

After my various experience with online teaching I tend to incorporate online elements even into my ordinary classes. Therefore I decided to **create two quizzes** to test students' understanding of the topic **during the lesson.** As a teacher, I can see my students' answers in the app where I created the quiz. This immediate feedback gives me the opportunity to quickly correct any mistakes or misconceptions that the students may have. The above mentioned topic is very difficult for students.

The quizzes immediately show the students if they answered correctly or not and provide them with instant feedback.

The quizzes were made available to the given class during the given lesson. It is important to have everything well prepared so that you do not face any technical problems.

The course of teaching has therefore changed as follows:

- Revision of terminology - chip, machined surface...
- Reading and writing Greek letters - alpha, beta, gamma...
- Revision of angles on the saw blade
- Demonstration of the basic angles on a turning knife inserted into the finder tool
- Demonstration of the angles on a drill
- **Students take the "Rake, tool and clearance angle - Nomenclature" quiz on their mobile phones and based on their results we discuss the problematic questions and topics**
- Interpretation of the relationship between the size of the basic angles and the negative gamma angle
- **Students take the "Rake, tool and clearance angle – Mutual influence" quiz on their mobile phones and based on their results we discuss the problematic questions and topics**
- Drawing into their notebooks and independently creating a diagram with a negative rake angle
- Distribution of worksheets
- Evaluation of the lesson

Some excerpts from the quiz:

 **1 ZÁKLADNÍ ÚHLY NA NÁSTROJÍCH**

---

 **1 ÚHEL HŘBETU, ČELA A BŘITU - NÁZVOSLOVÍ**  
PROCVIČOVÁNÍ VE VÝUCE

---

 **2 ÚHEL HŘBETU, BŘITU A ČELA - JAK SE OVLIVŇUJÍ**  
procvičování ve výuce



<input type="checkbox"/> Povolit veřejný přístup	<input type="checkbox"/> Ne
<input type="checkbox"/> Spuštění vyžaduje heslo	<input type="checkbox"/>
<input type="checkbox"/> Vzhled přehrávače	<input type="checkbox"/> basic_grey
<input type="checkbox"/> Fórum	<input type="checkbox"/> skryt
<input type="checkbox"/> Zobrazit správnou odpověď	<input checked="" type="checkbox"/> Ano <input type="checkbox"/> Ne
<input type="checkbox"/> Pokračovat po zodpovězení otázky	<input type="checkbox"/> Ano <input checked="" type="checkbox"/> Ne
<input type="checkbox"/> Umožnit změnu odpovědi	<input checked="" type="checkbox"/> Ano <input type="checkbox"/> Ne

<input type="checkbox"/> Složka	<input type="checkbox"/> ---- 1 ZÁKLADNÍ ÚHL
<input type="checkbox"/> Časový limit testu (v minutách)	<input type="checkbox"/>
<input type="checkbox"/> Bodový limit (body / procenta)	<input type="checkbox"/> 0b
<input type="checkbox"/> Počet pokusů	<input type="checkbox"/>
<input type="checkbox"/> Zakázat přehrávání ostatních materiálů	<input checked="" type="checkbox"/> Ano <input type="checkbox"/> Ne
<input type="checkbox"/> Náhodné pořadí otázek	<input type="checkbox"/> Ano <input checked="" type="checkbox"/> Ne
<input type="checkbox"/> Náhodné pořadí odpovědí	<input checked="" type="checkbox"/> Ano <input type="checkbox"/> Ne
<input type="checkbox"/> Automatické číslování stránek	<input checked="" type="checkbox"/> Ano <input type="checkbox"/> Ne
<input type="checkbox"/> Zobrazit žákovi report	<input type="checkbox"/> Ano, celkový
<input type="checkbox"/> Zobrazit žákovi výsledek při odevzdání	<input checked="" type="checkbox"/> Ano <input type="checkbox"/> Ne
<input type="checkbox"/> Informační stránka	<input checked="" type="checkbox"/> Ano <input type="checkbox"/> Ne

# 1 ÚHEL HŘBETU, ČELA A BŘITU - NÁZVOSLOVÍ

## Uživatelské skupiny

### Možnosti přístupu

 < 1 / 1 >

### Vyberte skupiny pro odebrání přístupu

  
 MS1A (05.12.2022, 08:00 - 05.12.2022, 12:00)

Otázky <<

1. Proč na obráběcím nástroji vybrušujeme ÚHEL HŘBETU?

2. Jak ovlivňuje velikost úhlu bříty možnost obrábět různě tvrdé materiály?

3. ÚHEL ČELA může být

4. Kladný úhel ČELA umožňuje

5. ZÁPORNÝ úhel ČELA

6. Záporný úhel čela gama musíme na nástroji vytvořit,

Konec testu

**Záporný úhel čela gama musíme na nástroji vytvořit,**

- pokud potřebujeme velký úhel bříty pro obrábění tvrdých materiálů
- pokud potřebujeme malý úhel bříty pro obrábění měkkých materiálů.
- pokud potřebujeme malý úhel bříty pro obrábění tvrdých materiálů.

Otázky <<

1. Kliknutím na příslušné PÍSMENO označte HŘBET NÁSTROJE

2. Kliknutím na příslušné PÍSMENO označte ČELA NÁSTROJE (bodová část nástroje)

3. Kliknutím na příslušné PÍSMENO označte BŘITU NÁSTROJE

4. Kliknutím na příslušné PÍSMENO označte ÚHEL NÁSTROJE

5. Jakým způsobem postupujeme při označování obráběcího nástroje?

**Kliknutím na příslušné PÍSMENO označte HŘBET NÁSTROJE**





## Feedback on the lesson

The teacher can see percentual success or failure of the entire class as well as answers of specific students. These types of online tests prove to be a very powerful help for the teacher as it provides immediate feedback and offers extra features, such as counting of success percentage etc. Seeing all different types of information enables the teacher to improve his work with the entire class as well as individually.

Also the students seem to be happy about this chunking of the lesson and obtaining immediate feedback on their understanding of the given topic.

# Tool Materials

1<sup>st</sup> year of a two-year post-apprenticeship Operational Technology course

## Off-line version of the preparation

### Goal

Students can use the correct names of basic tool materials and can name these materials. They will review the names and properties of machined materials. They will be able to explain the relationship between the properties of machined and machining materials.

They can compare individual machining materials with each other using their basic properties: chemical stability at high temperatures, bending strength and hardness.

They can explain which cutting materials are most commonly used for a particular material to be machined. Can explain which materials are most commonly used, e.g. to maintain high quality finishing operations, etc.

### Teaching methods

explanation, problem-based interview, examples of corresponding photographs in PPT presentation, other methods according to the classroom situation

### Aids

Samples of several types of cutting inserts

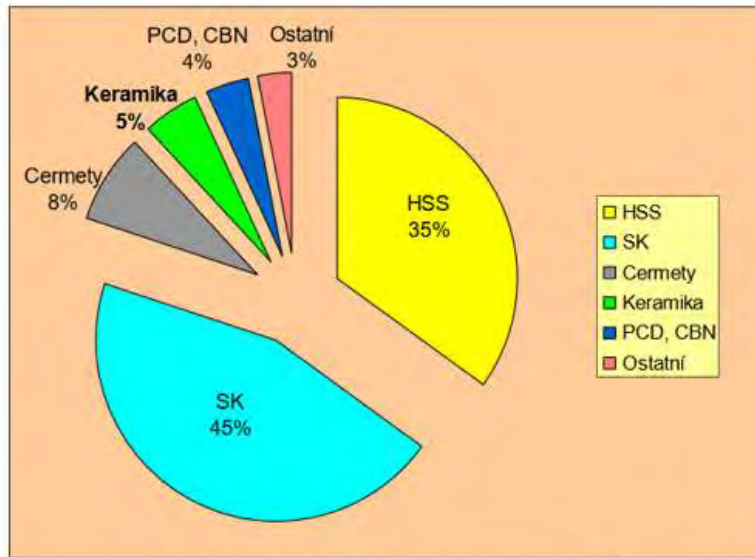
Presentation: charts on properties and frequency of use of cutting materials; photos of cutting inserts made of different materials; division of basic cutting material into further subgroups; detailed composition and production of some tool materials; marking of materials according to ISO...

Teaching texts summarising the material taught. They will be given out after the lesson.

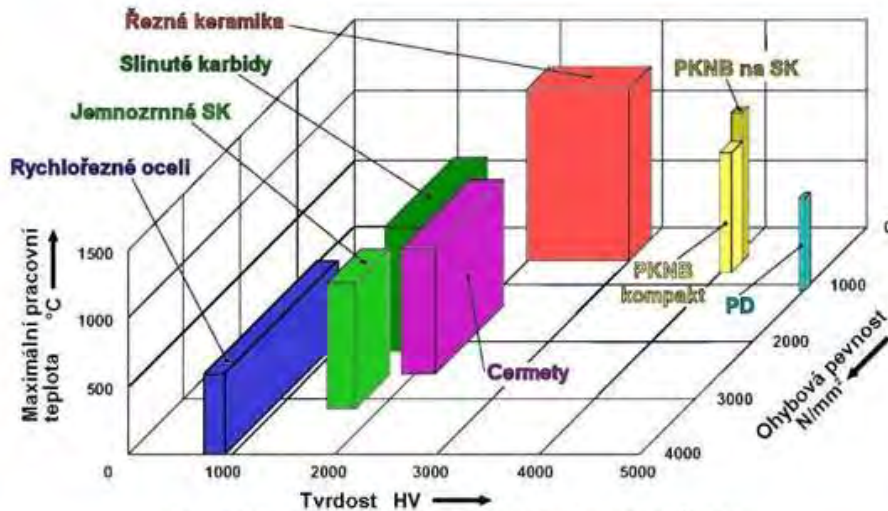
### The course of activities in the lesson

- Repetition of cutability
- Repetition of names and basic properties of machined materials
- By discussion we will find out what properties the cutting - tool material must have in comparison to the machined material
- Using graphs to compare the properties of tool materials
- Deduction of which tool material is suitable for which machined material
- Comparison of sintered carbides and cermets; the features they have in common; how they differ; their production and use
- Distribution of worksheets
- Evaluation of the lesson

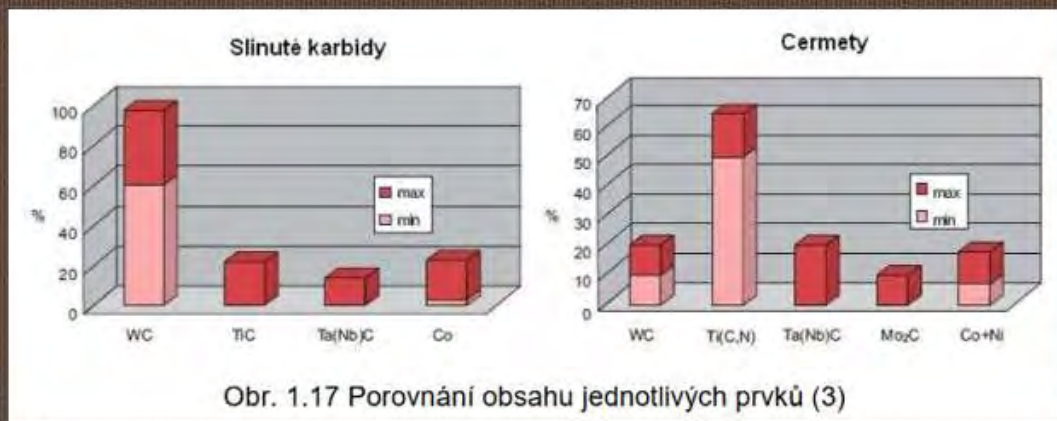
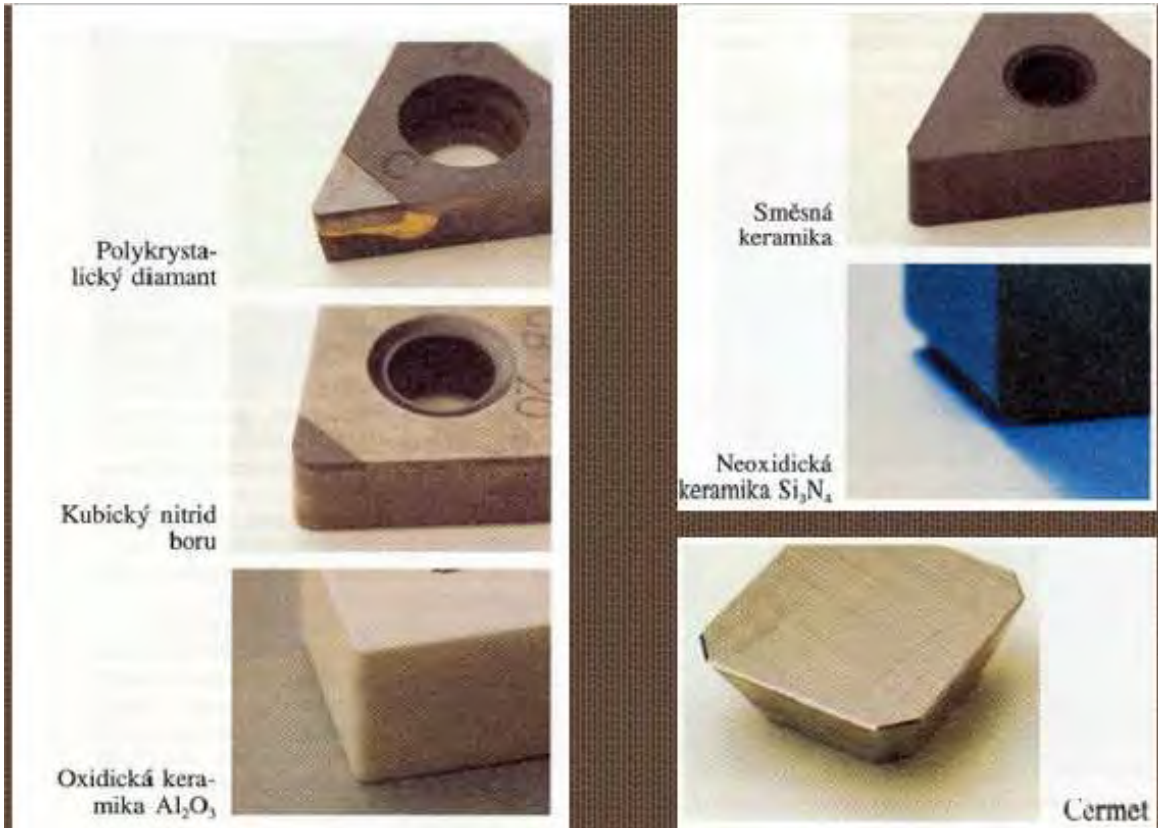
A sample of several slides from the PPT presentation:



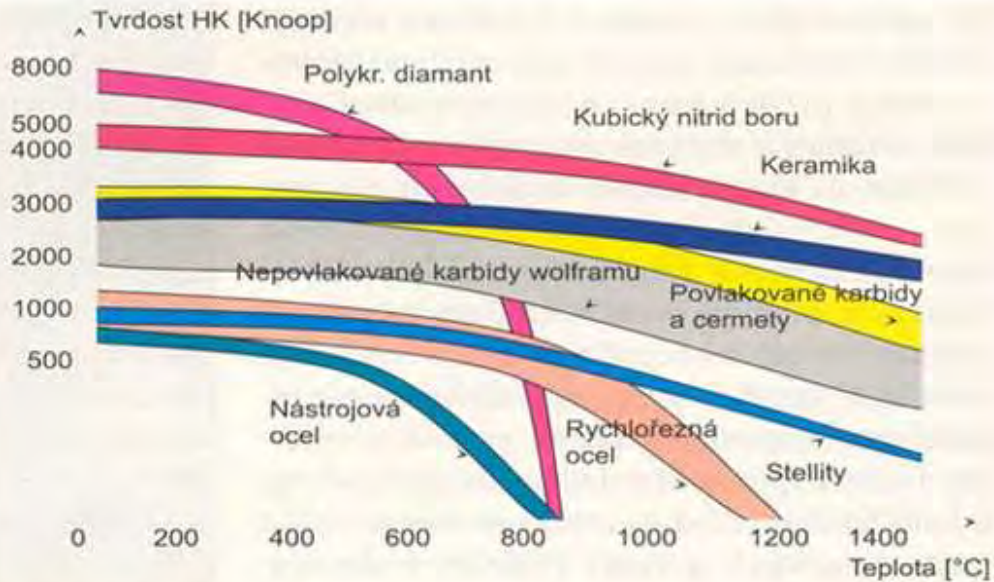
Obr. 1.9 Světové využití nástrojových materiálů <sup>26</sup>



Obr. 1.18 Vlastnosti jednotlivých řezných materiálů (28)



## Pokles tvrdosti řezných materiálů s teplotou



## SLINUTÉ KARBIDY

Skupina	Podskupina	Základní chemické složení	Efektivní aplikace pro obráběný materiál
P	P01, P05, P10, P15, P20, P25, P30, P35, P40, P45, P50	WC (30÷82)% + TiC (8÷64)% + Co (5÷17)% + (TaC.NbC)	Slinuté karbidy pro obrábění materiálů, dávající dlouhou, plynolou třísku: nelegovaná, nízkolegovaná a vysoce legovaná ocel, litá ocel, automatová ocel, nástrojová ocel, feritická a martenzitická korozivzdorná ocel.
M	M01, M05, M10, M15, M20, M25, M30, M35	WC (79÷84)% + TiC (5÷10)% + TaC.NbC (4÷7)% + Co (6÷15)%	Slinuté karbidy pro obrábění materiálů, dávající dlouhou a střední třísku: austenitická a feriticko austenitická ocel, korozivzdorná, žáruvzdorná, žárovevná, nemagnetická a otěruvzdorná ocel.
K	K01, K05, K10, K15, K20, K25, K30, K35, K40	WC (87÷92)% + Co (4÷12)% + (TaC.NbC)	Slinuté karbidy pro obrábění materiálů, dávající krátkou, drobnou třísku: nelegovaná i legovaná šedá litina, tvárná litina, temperovaná litina
N	N01, N05, N10, N15, N20, N25, N30		Slinuté karbidy pro obrábění neželezných materiálů: slitiny mědi a hliníku, duroplasty, fibry, plasty s vlákninou, tvrdá guma.
S	S01, S05, S10, S15, S20, S25, S30		Slinuté karbidy pro obrábění: žáruvzdorné slitiny na bázi Fe, superslitiny na bázi Ni nebo Co, Titanu, Ti slitiny
H	H01, H05, H10, H15, H20, H25, H30		Slinuté karbidy pro obrábění: zušlechťené oceli s pevností nad 1500 Mpa, kalené oceli HRC 48÷60, tvrzené kokilové litiny HSh 55÷58

## Online version of the preparation

In the first year, students in the post-secondary study following the three-year apprenticeship course usually have the idea that they don't have to learn much and graduation "comes" like the apprenticeship certificate "came" before. Up to now, they have mostly learned everything by heart or have memorised technical things in repetitive manual vocational work in practical classes. The more theoretical questions in the final exams were a stumbling block. Now they do not have practical classes and have to add theoretical analysis of the knowledge to their previous knowledge. They are usually not able to make connections between the individual pieces of knowledge and derive solutions from the information given or found. They learn in such a way, in their words, that they look at the text summarising the material over and over again for an hour and learn it by memorising. Very often they do not know how to ask questions and look for connections in order to understand and anchor the material. But what they always have to **start with is to label or list the CONCEPTS** they don't understand exactly or whose names they can't use. Learn these concepts - **understand them and, by repeating them in different connections, learn them. Then they must understand the matter taught, and finally learn to explain it in the spoken word – explaining it with their own phrasing, but expressing correctly the meaning of the matter taught.** I require and repeat these activities for them during their school lessons. However, the motivation to work in class is often lacking for many.

**Learning the correct concepts makes it very difficult for the students** and thus they fail to learn the technical material right from the beginning and have no choice but to learn the material without any sense by heart. It is not **the intellect that makes it difficult for them**, but more likely they refuse to study and learn due to their previous learning experience at school. Very often they were not made to understand at school, but more likely just learn by heart. But this post-secondary studying requires different skills and understanding.

In order to make them realise that it is not only me as a teacher who wants them to understand **concepts and precise language**, but that this is **common in professional companies**, I included in the lesson a search for information in companies that produce tooling materials. This way of gaining knowledge is also **more motivating** for many students (**independence, activity**).

**In this lesson**, they search for basic information about materials in a company's online catalogue. At the end, students write out any new or unclear technical terms. **The concepts are then clarified.**

**In the following two sessions**, they look for more detailed information to solve a specific machining problem with specific requirements for the machined area. They seek this information from two manufacturers of similar tool materials. They then **work in teams to produce an advertisement for one type of tipped cutting tool produced by the respective company.**

## What I had to prepare for class

- Create a worksheet based on a study of the Sandvik website
- Send students a link to the website in Teams
- Prepare a brief explanation in PPT on how to search for **credible expert information**
- **This entire activity can also be done fully online by sending the worksheet in pdf.**



PPT slide with a link to list of materials





## NÁSTROJOVÉ MATERIÁLY

vyhledávání na internetu

pracovní list – založte mezi výukové listy

Odovědi neopisujte v celé délce firemního textu, text zestručněte na základní pojmy a základní vlastnosti.

1) Na internetových stránkách firmy Sandvik Coromant <https://www.sandvik.coromant.com/cs/cs/knowledge/materials/cutting-tool-materials?fbclid=IwAR1LbZSNyT1LB386O2y-047W1jW63Zcu68DqRTNptAwEE5Somp6v16LXoFv6>



1) Ověřte, zda vyrábí základní ferové materiály, které znáte. Všechny názvy materiálů, ze kterých Sandvik vyrábí svoje nástroje (VBD) vyplňte zde:

2) Najděte, jaké vlastnosti musí mít nástrojový materiál obecně?

- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_
- ✓ \_\_\_\_\_

3) Jaké mají výhody povlakované VBD z SK?

\_\_\_\_\_

4) Z čeho se skládá slitutý karbid?

\_\_\_\_\_

5) Jaký vliv má na vlastnosti VBD velikost zrna WC a kterou vlastnost určuje především obsah Co jako pojiva?

\_\_\_\_\_

6) Co je to gradientní SK, jaké má vlastnosti?

\_\_\_\_\_

7) Jaké je složení cermetů? K jakým obráběcím operacím cermety firma Sandvik doporučuje?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8) Jaké druhy ferové keramiky v Sandvik Coromant používají? K jakým obráběcím operacím BK firma Sandvik doporučuje?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9) Jaké vlastnosti má polykrystalický diamant? K jakým obráběcím operacím PD firma Sandvik doporučuje?

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10) Pro jaké operace obrábění nabízí Sandvik svoje nástrojové třídy a břitové destičky?

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11) O jaký materiál, jehož struktura je zvětšena na následující fotografii, se jedná?



12) Z jakého materiálu je rouček upevněný na VBD z SK? K jakým obráběcím operacím jej Sandvik doporučuje používat?



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**ZDE VYPIŠTE VŠECHNY PRO VÁS NOVÉ NEBO NEÚPLNĚ JASNÉ ODBORNÉ POJMY:**

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## The course of teaching has therefore changed as follows

- Repetition of cutability and machinability
- Search for information **using mobile phones online on the Sandvik website**, on the **link they received from the teacher through Teams**, they can also work in pairs
- **Checking the accuracy** of the information found - discussion
- Discussion and explanation of technical terms related to tooling materials and their applications that have been used on the Sandvik website, students talk about the subject in their own words while consistently using technical terms
- Distribution of teaching sheets
- Evaluation of the lesson

## Feedback on the lesson

Although this is not a typical online lesson, this was an important step to get my students online for professional reasons. This attempts to make them use critical thinking and analyse obtained information. Moving most of the studying and research online made it more practical for the students. It moved the lesson closer to a real-life experience. They are very likely to utilise this skill in their working life.

It is quite difficult to prepare and check everything in advance for the teacher, but it provides a great teaching online “library” for any future use. This proved to me that one does not have to use online elements “just for the sake of it”, but involving an online element can completely change the atmosphere.

# Revision for Final Exams

## Off-line version of the preparation

### Goal

Students of the three-year apprenticeship programme in Metalworking will prepare for two parts of the final examinations in their field, written and oral.

They will prepare for the written part of the exam, which has seven parts, primarily focusing on two parts in the long term. The more difficult and essential parts for their future practice are: drawing of simple and reading of more complex engineering production drawings and proposal of a production process according to a production drawing.

They also prepare for the oral part of the exam throughout the school year. They will prepare for a 15 minute individual oral presentation for each of the 25 questions. They prepare in stages, first focusing primarily on understanding and knowledge of each question, and then over the next few months for the oral presentation of their knowledge of each question.

### Teaching methods

problem-based interview; demonstration of aids; preparation of individual questions for the FE divided and written by the teacher into 10 to 20 sub-questions; numbers of questions to be randomly drawn by students

### Materials

PPT presentation of all three years, printed sub-questions

### Course of action

- Reading drawings in class, the drawing is projected by a data projector.
- Proposal of the production process as a homework - production drawing in printed form. There is always a discussion before and after the production process is drawn up. Ongoing consultation outside the classroom.
- Review of one question in class using PPT presentations and other aids
- Next, the students are given multiplied forms where one question for the FE is always divided into 10 to 20 sub-questions, constructed in such a way that when answered in a complete sentence they all form a text that takes up no more than 1 to 2 A4 pages.
- From the second half of the year onwards, every lesson, 2-3 pupils rehearse a written preparation for a drawn question during the class and then an oral presentation in which they communicate their knowledge of the question. They must use sketches in their written preparation.
- Ongoing consultations in the classroom outside the actual lesson

## Online version of the preparation + face-to-face teaching

This experience describes the case of face-to-face teaching in a school **combined with the** use of online teaching software.

Combining these methods and means, **we can increase the effectiveness of traditional teaching and meet the individual needs of students in a much better way.**

### Teaching methods

problem-based interview; demonstration of aids; preparation of individual questions for the FE divided and written by the teacher into 10 to 20 sub-questions; numbers of questions to be randomly drawn by students + preparation of one FE question by each pupil as a test in iTrivio, learning through tests (quizzes) of iTrivio questions. During the last month, 2 times a week two hours of afternoon tutoring via Teams according to the needs and demands of the students (the recorded lesson can be downloaded and played to by non-participants)

### Materials

PPT presentations of all three school years, sub-questions in electronic form, LMS iTrivio application, MS Teams

### Course of action

- Reading drawings in class, the drawing is projected by a data projector + input of drawing and drawing queries using Team. These are further processed by the student individually and at a time that suits his/her needs as a homework.
- Proposal of production procedures as a homework - entering a production drawing in electronic form using Teams. There is always a discussion before and after the development of the production process in school. Ongoing consultation outside the classroom and via chat in Teams.
- Review of one question in class using PP presentations and aids
- Presentation of individual questions for the FE using Teams, one question on the FE is always divided into 10 to 20 sub-questions, constructed in such a way that when answered by one complete sentence they form a text that takes up no more than 1 to 2 A4 pages. Based on the teaching material from the previous years (written or electronic in Teams) pupils prepare their answers to the sub-questions.  
They upload it to Teams and receive comments on their work individually also in Teams.  
All of the completed questions are made available to everyone in an electronic form in Teams.
- Each student will prepare one question for the oral FE as a quiz in the iTrivio LMS system. He/she uses the type of questions about selecting a drawing, marking the place in the drawing, proposal of the production process in the correct order, etc. Teacher corrects, completes and makes it available to all pupils. The quiz is set up to instantly show the wrong and the right answer, while allowing for each quiz question to change the answer. Answers are mixed up and the correct answer is always in a different place.
- From the second half of the year onwards, every lesson, 2-3 pupils rehearse a written preparation for a drawn question during the class and then an oral presentation in which they communicate their knowledge of the question. They must use sketches in their written preparation.
- Ongoing consultations in the classroom outside the actual lesson + during the last month, 2 times a week two hours of afternoon or evening tutoring via Teams. The pupils choose the

topics to be discussed and their questions are answered. The lesson is being recorded and can be downloaded and listened to by the non-participants.

- Sometimes the pupils record their verbal speech on their mobile phones, listen to it and evaluate it after some time (they are usually shocked).


### A look at the quizzes in iTrivium

Domovský adresář Marie Dostálová OK3B OPAKOVÁNÍ K ZZ ZZ - vypracování otázek

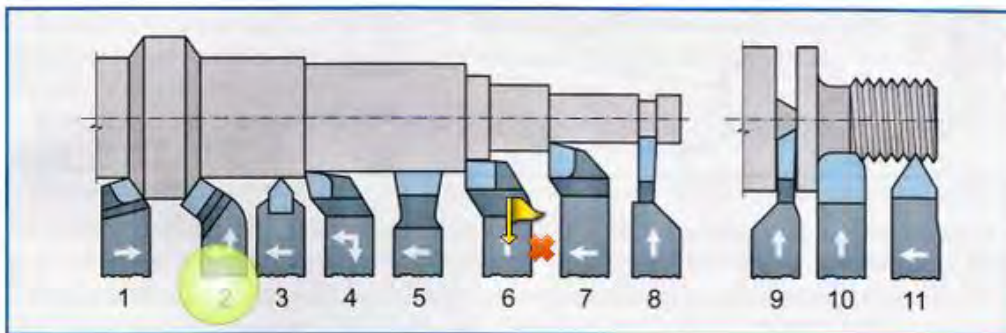
 **ZZ OK3B - 01**  
Nástrojové materiály; Martin *červený*

 **ZZ OK3B - 02**  
Technické kovové materiály; *Perla*

 **ZZ OK3B - 03**  
Tolerance a lícování; P *Prácha*

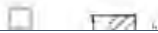
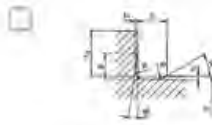
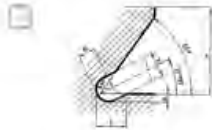
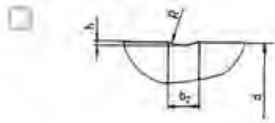
 **ZZ OK3B - 04**  
Měření; Vojta *Prácha*

Na obrázku označte číslo, které označuje vnější uběrací nůž pravý



Pokračovat Změnit odpověď

### Které z těchto normalizovaných zápichů můžeme udělat na klasickém soustruhu na rotační části?



### Seřadte úkony, které děláme při správné kontrole válečkovým kalibrem

1. do kontrolované díry vložíme kalibr dobrou stranou
2. když zmetková strana neprojde, jedná se o dobrý kus a expedujeme ho třeba na montáž
3. když dobrá strana kalibru neprojde, jedná se o opravitelný zmetkový kus a pošleme ho na opravu
4. když projde dobrá strana, kalibr vložíme do díry zmetkovou stranou
5. když projde zmetková strana, jedná se o zmetkový kus neopravitelný a vyřadíme ho

Odeslat



Sample questions within one FE question for students to prepare

## 10) VÝROBA ZÁVITŮ NA SOUSTRUHU

1. Co značí kóta na výkrese M20 x 0,75?
2. Co značí kóta na výkrese Tr40 x 8?
3. Co značí kóta na výkrese Tr40 x 8 (4)?
4. Vyjmenujte nástroje, kterými e mohou na soustruhu vyrábět závity.
5. Jaký je postup výroby vnějšího závitu na soustruhu pomocí závitové kruhové čelisti?
6. Jaké znáte závitové soustružnické nože?
7. Jaké tři druhy VBD pro výrobu závitů znáte?
8. Jaký je postup soustružení závitu závitovými noži na hrotovém soustruhu?
9. K čemu používáme závitové šablony při soustružení závitů závitovými noži?
10. Vyjmenujte způsoby prohlubování závitové drážky.
11. Který z těchto způsobů prohlubování závitové drážky se dá použít jen na CNC stroji?
12. Načrtněte prohlubování drážky bočním přísuvem.
13. Porovnejte prohlubování drážky závitu bočním přísuvem a radiálním přísuvem.
- 14.



Popište způsob výroby pravého závitu, kdy je nůž za osou.

15. Kdy se používají drážky se sníženou hlavou a proč?
16. Vyjmenujte způsoby kontroly závitů.

And what do the correct answers look like, here on two A4 pages

## 10) VÝROBA ZÁVITŮ NA SOUSTRUHU

1. Co značí kóta na výkrese M20 x 0,75?  
Metrický závit o velkém průměru 20mm s jemným stoupáním o velikosti 0,75mm
2. Co značí kóta na výkrese Tr40 x 8?  
Trapézový závit (lichoběžníkový rovnoramenný) o velkém průměru 40 se stoupáním 8mm
3. Co značí kóta na výkrese Tr40 x 8 (4)?  
Trapézový závit (lichoběžníkový rovnoramenný) o velkém průměru 40 se stoupáním 8mm s roztečí 4 mm. Je dvouchodý: 8:4=2
4. Vyjmenujte nástroje, kterými e mohou na soustruhu vyrábět závity.  
Nůž závitového nože musí mít profil negativu profilu závitu, který vyrábíme.  
Pro výrobu závitu na konvenčních soustruzích používáme závitové nože vnější a vnitřní, kotoučové nože, hřebínkové kotoučové nože a můžeme použít i závitníky a závitové čelisti.  
Na CNC strojích používáme VBD s plným profilem, VBD s Vé profilem a VBD hřebínkové. Pro výrobu závitu nožem upnutým VBD dolů používáme nože se sníženou hlavou.
5. Jaký je postup výroby vnějšího závitu na soustruhu pomocí závitové kruhové čelisti?  
Obrobek je upnut ve sklíčidle, závitové čelisti jsou upnuty ve vratidle. Vratidlo drží pracovník v ruce nebo je opřeno o nožovou hlavu nebo nožové saně suportu, aby se neotáčelo. Při řezání se závitová čelist mírně přitlačuje čelem hrotové objímky konika na obrobek. Obdobné je to se závitníky.
6. Jaké znáte závitové soustružnické nože?  
Pro výrobu závitu na konvenčních soustruzích používáme závitové nože vnější a vnitřní, kotoučové nože, hřebínkové kotoučové nože a můžeme použít i závitníky a závitové čelisti.
7. Jaké tři druhy VBD pro výrobu závitů znáte?  
Na CNC strojích používáme VBD s plným profilem, VBD s Vé profilem a VBD hřebínkové. Pro výrobu závitu nožem upnutým VBD dolů používáme nože se sníženou hlavou.
8. Jaký je postup soustružení závitu závitovými noži na hrotovém soustruhu?  
Nastavíme posuv podle tabulky (stoupání). Upneme obrobek, který podepřeme koníkem. Upneme závitový nůž přesně do osy, zkontrolujeme jeho kolmost k ose obrábění.  
Páčku pod nožovou hlavou dáme vlevo, zapneme vodící matici  
Nastavíme otáčky, spustíme stroj, zabereme kontrolní třísku

## The course of teaching has therefore changed as follows:

The following activities were added to the face-to-face teaching activities:

- Assigning and commenting on work done at home in Teams
- Assigning the reading of drawings also as a homework in electronic form
- Assigning preparation of questions processed into sub-questions in an electronic form, correcting them, making the correct answers available in Teams (some pupils are likely to lose the printed copy)
- Turning the questions into the iTrivio quizzes - correcting additions, making it available to everyone until the end of the school year
- Consultations via chat in Teams throughout the entire school year
- Consultations in Teams a month before the FE every week 2x two hours, recording the consultations so that the absent students can listen to them

### One more note:

Assigning via Teams allows students to always have the assignment at hand, printed assignments get lost. It also allows you to send individual notes to the pupil on their work.

## Feedback

The iTrivio enables learning through quizzes, which is much appreciated by the pupils and this year, when the school could not afford to buy it, the pupils bought it themselves.



# English Language

# Other Countries of the Commonwealth

(English – Conversation, level B2)

Off-line version of the preparation:

In total there were 3 lessons:

## Lesson 1:

Lead-in (joint brainstorming on the board) - reviewing information about the Commonwealth and the countries we have already discussed (Canada, Australia)

Guided discussion - colonialism, the British Empire (what they already know from history lessons), the topic The White Man's Burden - discussion of Rudyard Kipling's poem in the original

Map work - which other countries are/were part of the British Empire / today's Commonwealth - students are given a black and white copy of a world map and plot the Commonwealth countries in colour

Video - a short clip from The Crown - an episode that begins with a speech by the young Elizabeth during her tour of the Commonwealth. Students have 2 tasks - first watch just the video (pictures) and take notes on what they see (there are shots from each Commonwealth country); when they watch the video a second time, they focus on the speech itself.

Discussion (feedback) - which countries were shown and why did they think that; opinion on Elizabeth's speech - well structured, what was the objective, did it meet it? Pair work first, then joint feedback.

## Lesson 2:

Lead-in (follow-up to last lesson) - gap-fill exercise (pair work) - selected quotes from Prince Phillip, husband of Queen Elizabeth, who was famous for his incorrectness and "socially unacceptable" public comments about Commonwealth nations; the names of the countries to which the quotes refer are omitted; students are asked to guess which countries they refer to and justify their opinion in the subsequent group discussion.

Group work - preparation of short presentations of selected Commonwealth countries; the task is to prepare 4 group presentations, each should be about 7 minutes long, each member of the group

must present his/her part. Students should also prepare pictures to illustrate their presentations; however, there is no need to prepare slides with text.

### Lesson 3:

Student presentations - students take notes, in the remaining time (about 15 minutes) there is a summary of the whole topic - students use their notes.

### Online version of the preparation

Time allocation for this topic - students always had half of the lessons online, the other half as independent work.

It was very difficult to work in groups or pairs - for a long time we did not have a functional simple online tool that would allow us to quickly divide students into individual online rooms. The paid service, which the school did not purchase for us, was quite difficult to "work around" by creating simultaneous meetings, which did not always work reliably and took a while to set up. Therefore, I always strongly considered whether it was worth it to undergo all of this for the sake of, for example, about three minutes of work in pairs, whether to replace these short discussions in pairs with another tool.

Overall, online learning is also much slower, especially interaction, which is the basis of language classes, is sometimes slowed down by poor connections or even just delays in turning the microphone on and off. For this reason, it was necessary to reduce the number of activities and the volume of information.

### The course of teaching therefore changed as follows:

The reasons for the changes are usually given above.

In total, there were 2 online lessons and about 1 hour of independent work of students.

#### *Lesson 1*

I cut the lead-in (brainstorming) short - we just reviewed the basic information about the Commonwealth and I just reminded them that we had already talked about Canada and Australia and that they could possibly review them on their own.

I also changed the guided discussion a bit and combined it with the work with the "map" - I replaced the map with a picture of the extent of the British Empire, including the slogan "The Empire on which the sun never sets". The image was in the form of an online puzzle that students had to complete, and then discussion took place over the images and the characters of each country and the slogan.

Video - I played a short clip from The Crown only once and the task was less strict - they had to take notes only about what they see. While watching the video, students posted notes (ideas) in the chat room. I then uploaded the speech itself to Google Classroom for those interested, including the original BBC transcript.

The discussion - the feedback - (which countries were shown and why do they think so) was shorter and concerned only the individual countries and the reasons why they were shown that way. For reasons of time and practicality, I have done away with pair work altogether.

## **Lesson 2**

As this is an offline lesson of independent work by students, I have of course omitted the lead-in.

I set the group work as a collaborative task via Google Classroom. I gave them the following task:

*You will work in groups on one common presentation, shared in Google Slides. Each of you will prepare one slide to present in the next class. As this is a collaborative assignment, you will work as follows:*

- you will communicate and agree ONLY through the comments function in Google Slides;*
- each of you will think about the content of your slide (e.g. New Zealand - sports) and share your idea with the others in the comments;*
- you will work on your presentations in a shared space; you will consult together not only on the content of your slide, but also on the order of the slides and the overall structure and feel of the presentation. Any agreements, haggling and corrections or suggestions for changes or misunderstandings will be addressed only in the comments.*

*I have already prepped the first slide with the title of the presentation. The topics are as follows: India (4 slides), New Zealand (3 slides), South Africa (3 slides), Lands of the Caribbean (3 slides). I will keep monitoring the whole process of working together and participate in the chat as well, so that I can possibly coordinate the whole process to get everything done within the given deadline.*

## **Lesson 3**

This lesson remained more or less unchanged, except that the students presented online.

Student presentations - students take notes, in the remaining time (about 15 minutes) there is a summary of the whole topic - students use their notes.

## Online teaching applications and tools

- Online group video calling tool - Google Meet. This tool was assigned to us by the school; as I have already written, unlike some other tools we use (e.g. MS Teams, Zoom) we lacked an add-on for group Meets and it made teaching very difficult. However, I did not consider another tool as the school management did not allow us to do so.
- Other tools in the Google suite suited me well, e.g. Google Jamboard was great for brainstorming, Google Slides with its shared space for chat and comments was great for replacing group work in class with a similar activity in an online space.
- Among other tools, I decided to use the paid tool for creating educational content, *BookWidgets*, <https://www.bookwidgets.com/>, as I found the breadth of its educational tools admirable and perfectly usable for my purposes. I explored its possibilities and started to use a few so-called widgets, such as an online puzzle, which was a great substitute for working with a map. I chose this tool, despite the fact that it is a paid license that is not reimbursed by the school, because I needed to find a substitute for the various interactive activities that I normally use in my "offline" classes. Its other advantage is that it is absolutely easy to connect it to Google Classroom, which our school used, and to assign other tasks (e.

g. worksheets, interactive tests, etc.) in this way. By linking to Google Classroom, it was possible to correct the assignments and the assessment automatically appeared on this platform.

## Online result

In total, there were 2 online lessons and about 1 hour of independent work of students.

### *Lesson 1*

Lead-in (brainstorming) - a pre-made Jamboard called The Commonwealth is/means ... Students complete according to their knowledge and ideas and always explain everything afterwards. This replaces the discussion. I would omit the online puzzle work altogether, assigning it as a class assignment beforehand. The students can then also draw on this picture when brainstorming. We would very likely get to individual Commonwealth member countries at this stage.

Video - I would play a short excerpt from The Crown to the students once in order to focus instead on Queen Elizabeth's speech itself and whether and how it corresponds to the idea of the Commonwealth as we outlined it in the brainstorming session. What linguistic devices does she use in her speech? What is the aim of the speech? Is it a good speech from this perspective?

Summary - we would review the countries we have mentioned during the lesson and select four to work on the presentation together. We would try to deduce why these four (India, New Zealand, South Africa, Caribbean countries) are the ones we are looking for.

### *Lesson 2*

I would assign the group work again via Google Classroom as a collaborative task in basically the same wording, with a few additions:

*I will follow and monitor your work, as the goal is to interact as much as possible in a shared chat environment and to test your ability to effectively discuss and find common solutions using the collaborative tools Google offers.*

*The entire interaction process should not exceed 24 hours, I will send you the link to the shared Google Slide on (date) at (time).*

### *Lesson 3*

This hour would remain unchanged.

## Feedback on the lesson

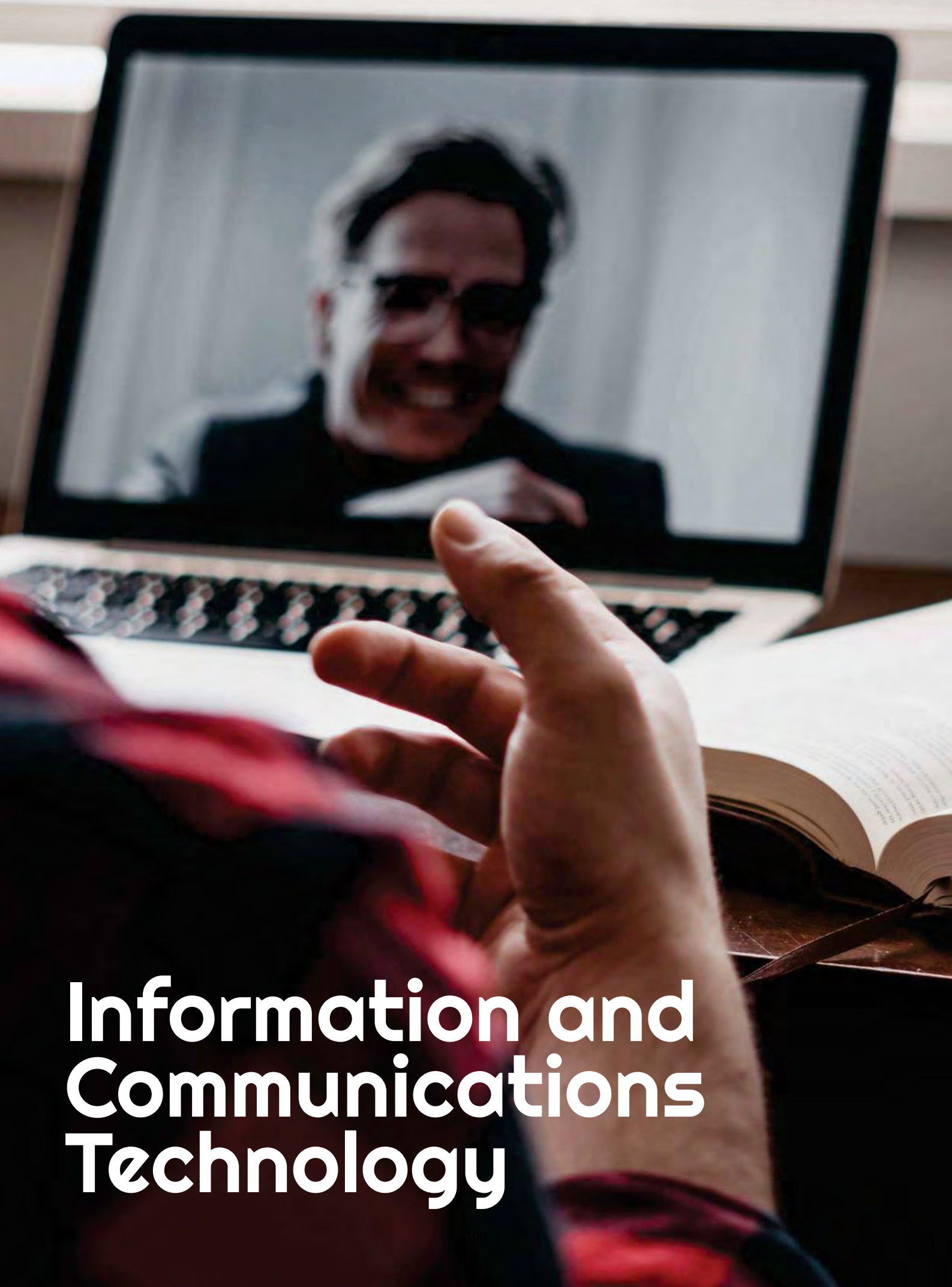
Maintaining as much interaction as possible using online chat and comment tools. This was not a problem for the students; on the contrary, given that this generation routinely prefers these tools to "live" communication even in their daily lives, collaborative presentations were perhaps more effective than in a regular classroom. In addition, it was a benefit for me that I could actually follow all the communication going on, as opposed to group work in a classroom where I move from one group to another and thus hear only part of their interaction.

Weaknesses of the chosen solution: Time consuming and too many activities. In the online classes, it was again evident how much slower the online interaction is. I felt that I had reduced the amount of activities enough and adjusted them so that they didn't take up as much space, but even that wasn't enough. I found that there was no point in substituting a few shorter activities in an online lesson, as

there is often no time for the others and often no time for feedback or follow-up. It is better to concentrate on for example two activities and give enough time to do them and then link and evaluate them. Since I normally rotate the activities a lot in my classes, I found this difficult to fulfil.

In order for the students to truly meet the goal of collaborative discussion over the presentations, I had to moderate their discussion and make them aware that the extent of their chat discussion would also be subject to assessment. Thus, I had to again use the tool of extrinsic motivation for learning, even though I felt that the activity could be interesting on its own.





# Information and Communications Technology

# How to Use Charts in LibreOffice Writer Application

## Offline version of the lesson

- The aim of this lesson is to learn how to use the Charts tool in LibreOffice Writer and to identify the uses to which it can be put.
- The teacher will give an example of how to use the Charts tool in the LibreOffice Writer application.
- First, the tool has to be selected and then the user has to choose the type of chart (pie, columns, rows, etc.) Finally, it is necessary to write the data in the table that will be used to display the values in the graph.
- Each pupil will work on the example on his/her computer while following the explanation on the projector in the classroom.
- The teacher checks at each step that the students can follow the instructions and are able to solve the example.
- After the explanation, the students will do an exercise to use the tool and also the rest of the tools that have been taught previously.
- The students will ask the teacher about any difficulties they have while solving the exercise and these will be immediately solved.

## Online version of the lesson

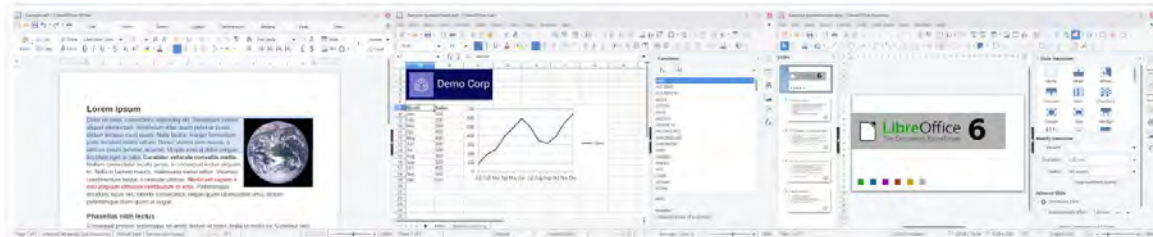
I followed the below-mentioned steps to turn my lesson online.

- Ask students about their computer equipment at home to complete the tasks and, if necessary, try to provide some hardware and help to download some software.
- Try to **encourage the pupils** to take this online lesson as a personal challenge to prove their ability to work independently.
- Set a very clear objective for the lesson. Provide **clear instructions** that are easy to follow.
- It can be difficult for students to adapt to online learning, especially if they are attending from home. Therefore, consider **keeping online lessons shorter** than offline lessons to avoid disengagement.
- Remember that the students are alone at home and for the first time they would be asked to complete the task without help from the teacher.
- It would be better to choose video tutorials instead of written instructions to simplify difficult areas. Usually it is easier for students to understand oral instructions than written ones.



Discover / What is LibreOffice?

## What is LibreOffice?



Do more – easily, quickly

### Final result

The finalised lesson was done in the following steps:

- I shared a written tutorial file with screenshots showing the steps to follow and the parameters to cover in each window of the tool to achieve the solution of the proposed task. These instructions prevent students from getting lost.
- I simplified the exercises that the students had to solve by making them shorter, as this would help to avoid disappointment and frustration.
- I sent the pupils a link to a video tutorial on how to use the tool (video tutorials education on YouTube) to help students support their learning at home.
- I had video chats with the students twice a week using Google Meet to solve group and individual questions.

I have utilised the following tools:

- Google Drive. To share explanations, tutorials and exercises with the students.
- Google G-mail. To have an easy and clear communication channel between teacher and students.
- Moodle. To share explanations, tutorials and exercises with the students and assign tasks to the students.
- Google Meet. To join regular virtual meetings in order to clear up any doubts that might come up. I certainly had to learn how to use Google Meet; start a meeting from Google calendar; join students to a meeting; how to use basic tools to attend a meeting; share the screen with the interlocutor; record a lesson.

Fortunately it was not necessary to purchase and download any other application because all of them are free licence and available on the internet.

## Final feedback

- The final analysis showed that most of the students were successful in learning the topic.
- The majority of students were able to develop their autonomy in following instructions at work and organising their time to complete work tasks.
- Only a few students with some reading comprehension difficulties needed additional private Google Meet sessions to solve questions about the use of the tool.

# How to Create a Selection in GIMP Image Editor Application

## Offline version of the lesson

The goal of this lesson is to learn how to create a selection in GIMP. First of all, the teacher will provide an example of how to use the different tools to create a selection in GIMP; the rectangle selection, the ellipse selection, the free selection, the selection by colour and the intelligent scissors. Following this explanation, each pupil does the example on his/her computer while following the explanation on the projector in the classroom. While doing so, the teacher makes sure that the students can follow the instructions and are able to solve the example.

After this, the students practise using the newly learned tool and also the rest of the tools that have been taught previously. The students can approach the teacher with any difficulties they have in solving the exercise and get immediate feedback.



## Online version of the lesson

First of all, I had to ask the students what kind of computer equipment they had at home and, if necessary, try to provide some hardware and help them download some software. The students needed to be encouraged and motivated to see this online lesson as a personal challenge and a

demonstration of their ability to work independently. I had very clear objectives for the lesson, giving clear instructions that are easy to follow is a must.

It can be difficult for students to adapt to online learning, especially if they are participating from home. Therefore, an online lesson should be shorter than an offline lesson to avoid loss of interest.

A teacher should also bear in mind that the students are alone at home and it may be the first time they have had to complete such a task without help from the teacher.

In terms of explanation, video tutorials may be a better option than written instructions to provide information on difficult topics.

I decided to provide the students with a shared written tutorial file with screenshots showing the steps to be taken and the parameters to be set in each window of the tool to solve the assignment. Such clear instructions help prevent students from getting lost. I also simplified the exercises that the students had to solve by making them shorter, in order to try to avoid disappointment and frustration.

I shared a link to a video tutorial on how to use the tool (video tutorials on YouTube) to help support the students learning from home. I also shared a link <https://docs.gimp.org/> where they could find the full GIMP manual.

I ensured that I had video links with my students twice a week using Google Meet to resolve any queries.



## Final result

The online lesson had the following scenario. The teacher gave the students a written tutorial file with screenshots showing the steps to be followed and the parameters to be set in each window of the tool to solve the proposed task.

The students were assigned an exercise to be done following the instructions in the written tutorial file.

The teacher also shared a link to a video tutorial on how to use the tool (Video tutorials on YouTube) to give the students the opportunity to see and hear an explanation on how to use the tool.

We would then try to resolve any questions in the next Google Meet video call. I would also have an individual Google Meet video call with a particular student if the collective video call was not successful enough to solve the problem.

I used these free tools. We were lucky we did not have to buy anything special for this particular lesson.

- [Google Drive](#). To share explanations, tutorials and exercises with the students.
- [Google G-mail](#). To have an easy and clear communication channel between teacher and students.
- [Moodle](#). To share explanations, tutorials and exercises with the students and get the students tasks.
- [Google Meet](#). To join regular virtual meetings in order to clear up all doubts that might come up.

I also had to learn how to organise online sessions or record the meetings and tutorials.

## Final feedback

The final feedback confirmed that most students had learned the topic successfully. The vast majority of students had been able to develop their autonomy in following instructions at work and even organising their time to complete the given tasks.

Only a very few students with some reading difficulties needed additional private Google Meet chats to answer some extra questions.

# Remote Development

## Offline version of the lesson

The aim of this lesson is to develop a computer programme that can be used to remotely program a device.

In a face-to-face context, the practical part of the lesson would take place in a workshop.

In order to carry out the practical exercises, the students would need two things:

- A computer with programming software
- A workbench, a model connected to the computer.

The student would create his/her programme on the computer and load the different versions of his/her programme onto the controller of the workbench. This model has a number of devices that react to the programming. For example a traffic light with three LEDs simulates its operation; a motor that moves a conveyor belt forward and backwards; or a light sensor and depending on whether a light bulb is on or off, a motor is activated.

Each model is a different exercise, with its own guideline, its own challenges, its own clues, its own solution. It is an autonomous work in which the teacher acts as a guide when the student gets stuck or has a problem with the model or the computer.

The students do all the practical work, going through each model, testing their programmes and checking the results. Each exercise can take one or two lessons, depending on its complexity.

## Online version of the lesson

To put it online, the practice guidelines did not change, so there was no need to change the directions.

The model is the same and the software is the same.

The main change was the development of a platform that allows the programme to be loaded remotely (from home) onto the model that is in the classroom and the functioning of the model to be visualised (by means of a camera).

Therefore we needed

- A platform for loading programmes onto the model
- One camera per model

I decided to do this because although the students could program at home, they would not be able to test the programming on the model. Another option would have been to take the model home, which would have been almost impossible given the number of students and models.



## Final result

The system thus created has a very important additional benefit: anyone with an Internet connection can access the practice and operate the model. In other words, a student from a high school in Berlin could work on a workbench in Vigo.

To do this, I have developed a web platform that allows each student to enter it with their email address and access various exercises. It also enables the students to do programming on the web with the software remotely connected to the model and visualise the operation of the programme created by the student on the model via webcam.

The platform was also prepared so that if an institute in Milan has a model with similar characteristics, a student in Miami could use it. This way, access to different practices would be very wide.

The development of the platform required me to go deep into the following web technologies and remote connection:

- Node.js
- Angular
- Python
- MQTT

I had to purchase the following:

- A Raspberry Pi to host the platform (90€)
- A camera for each model (esp32-cam 10€ per workbench)
- Power supplies, USB cables (depends on each workbench)

## Final feedback

The platform has been tested in face-to-face teaching. In fact, the system is identical to the one used in face-to-face lessons, because even if we have the workbench directly available, the access is the same, only the connection to the camera is missing.

# User's Accounts

## Offline version of the lesson:

(A brief introduction to the subject, general situation, type of lesson. What the aim of the lesson would be and how the lesson would be used.)

The main objective of this lesson is to teach the students to connect to the Oracle server with administrator rights and create a user account with password and space allocation.

In the offline version, the lesson had the following content:

We briefly reviewed the previous lecture to provide some feedback and necessary information. It was followed by explanation and discussion. After that the students were assigned practical exercises and we discussed possible solutions, the entire class controlled the development.

## Online version of the lesson

(What had to be taken into account, the reasons for the changes that were made, the new applications and tools that had to be incorporated into the lesson.)

In order to turn this lesson into the online environment, I had to consider and change the following things:

- Changing the method of explanation of the topic
- Writing explanations on the blackboard.
- Tone of voice.
- Working out exercises and correcting them.
- Working out diagrams
- Changing didactic tools.

Following these considerations, I had decided that the following would have to be done.

- Convert the lecture into shorter and very practical lessons so that they can be video recorded and sent to the students (information chunks) and repeatedly used through streaming.
- Describe in detail all the steps to be followed for each exercise, so that the students can develop them themselves.
- Provide more detailed and more frequent exercises than usual, in order to check them more closely and to locate errors more accurately, and ask the students to upload them to an online platform.
- When necessary, produce more detailed and accurate diagrams than those presented in the offline version, because it is more complicated to correct them online than when they are done in person.
- Reduce the volume of the voice, as there is a tendency to use a higher volume when teaching distantly.

In order to achieve that I had to search for various tools and applications enabling me to turn this lesson into a fully online lesson. I realised that I would need an advanced **word processing software** to use highlighting and graphic functions when preparing exercises and notes, multimedia equipment (**camera, microphone**) to transmit live explanations of the topic; **graphic design tools** to create diagrams (not used in this sample lesson because they are not necessary for the exercise); virtual machines so that students can develop the practical exercises at home; and an online platform to control the exercises.

After this thinking process I realised that I would need the following in order to make the class as comfortable for the students and myself as possible. My primary demand was to find ones that would have sufficient capacity and features, and would be free.

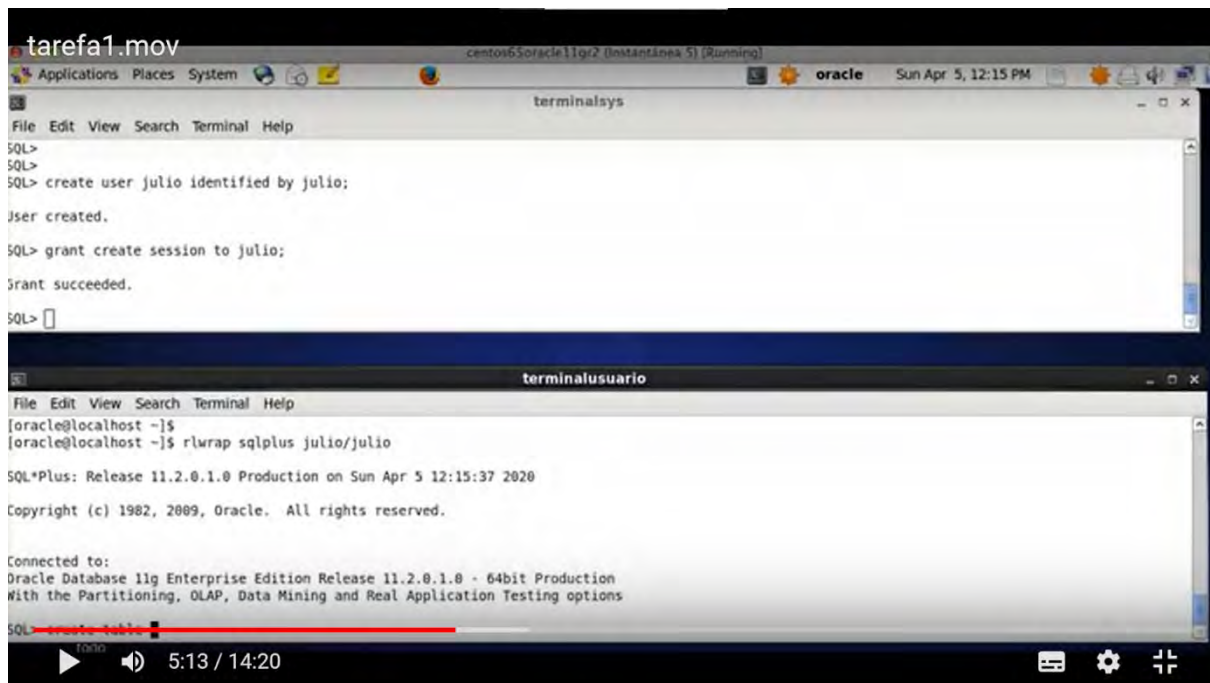
- Word processor - with advanced features to develop a set of notes. I chose **LibreOffice**
- Graphic design software - to develop the diagrams to be given to the students. I chose **Yed Graph Editor**
- Computer whiteboard - to develop online exercises - **Openboard**
- Operating system - for installing applications - **Linux (Ubuntu)**
- Virtual machine software - to install the virtual machine provided by the teacher with the computer software to be used. - **VirtualBox**
- Module software - **Oracle 11gR2**.
- Multimedia devices: microphone, camera.
- Computer platform – to check exercises independently done and sent to me by students, and to send and receive notifications. - **Moodle**
- Computer - for installation of all necessary software. Its configuration would have to meet the minimum requirements for installation of all the required software. It is always necessary to make sure that all the computers meet these requirements.

## Final result

[Video](#) (in Spanish). A tutorial guiding the students. It guides them through the following tasks:

- connect as an administrator:
- launch the oracle server
- create user with password
- assign rights to this user to be able to connect to the server.
- assign rights to this user in order to be able to create tables
- assign rights to this user to be able to have a workspace
- log in as the created user
- create a table and insert a row

An example from the video-tutorial with instructions on how to proceed in Oracle



The students work on their own following the video and the worksheet. They learn by trying themselves and making their own mistakes.

**Activity.** This is the list with the above-mentioned tasks for the students. It is in Spanish but the sequence of tasks is obvious.

A sample of the translated worksheet with detailed instructions

### **Task 1 : theory : user accounts**

In order to create a user account (for example the account of the hr user that you use daily to work with oracle) we can do it progressively or do it all at once.

We are interested in doing it progressively to see all the individual possibilities that Oracle gives us.

The first thing to know is that we must connect with a user who is authorised to perform database administrator operations. The user hr does not have this authorisation. A user that does have authorisation is sys, so before executing this command we must connect as this user.

As we are going to be creating things all the time and we need to check if they work, it is essential that we have two terminals open at the same time, one as a sys and the other available to connect with any other user.

To connect to oracle we have two situations:

#### **1) que a maquina este parada co cal temos que iniciala deste xeito :**

open a new terminal and write only what is in bold (the rest will be shown in the terminal as a response to our commands).

```
[oracle@localhost ~]$. oraenv (IMPORTANT: note that there is a white space between the dot and the word oraenv.  
ORACLE_SID = [orcl] ? orcl  
The Oracle base for ORACLE_HOME=/home/oracle/app/oracle/product/11.2.0/dbhome_1 is /home/oracle/app  
[oracle@localhost ~]$. r/wrap sqlplus sys/oracle as sysdba
```

## A sample from the very end of the translated worksheet

Commit complete.

Well, everything that we have done regarding user creation, session permission and tab creation and space allocation could be done with just two sentences that simplify the whole process and that would be these:

-dende **terminalsys** :

```
create user julia identified by casa quota 20m on users;  
grant create session, create table to julia;
```

## Final feedback

The transfer of the lesson online has obvious drawbacks. It requires a great deal of preparation on the part of the teacher. The teacher has to be updated in the use of didactic tools. As there is no direct feedback from the students, mistakes can be made in the preparation of the lessons, because many things are often taken for granted by the teacher even though it is not the case for the students (expressions used, some concepts and terms, etc.). Online environment does not enable the teacher to react and respond immediately. Not all students respond well to this type of teaching, because they need to be present 'in person' and in contact with their classmates in order to feel accompanied in their learning process. The interaction between students is lost in the sense of solving problems directly between them. The direct relationship between the student and the teacher is also gone because the attention of the teacher is focused on observing the class. Good equipment and more interactive and free didactic tools are needed so that all students can use them from home and make the whole process more participative.

There are certain advantages to moving this lesson online. Students can review the theoretical explanations and exercises (video and text) as often as they like. Once the lesson is online, the teacher can focus more on resolving doubts than on repeating the lesson, since it is already available on video and in writing and the student can reliably check it himself/herself.

# Home Automation

## Offline version of the lesson

The aim of the lesson is to set up an air conditioning system that can maintain the temperature of a room of the house between 19°C and 22°C.

Materials to be used:

- A heating system
- A cooling system
- An automated Wi-Fi relay (Sonoff Basic R2).
- An automated temperature sensor (Sonoff TH16).

Computer applications:

- Android Operating System
- eWeLink

This circuit will maintain the temperature in the room in such a way that when it exceeds 22°C the fan system will be activated and if the temperature drops below 19°C the heating system will be in charge of raising the room temperature.

We will focus on the dynamics of the cycle (the way in which we are able to raise, lower the temperature and detect it to activate each of the heating/cooling systems. Therefore, it is very likely that in a real situation we will have to add variables so that the systems do not have to be running continuously, for example by increasing the temperature range. This would be a second part of this practice).

In the original lesson, the students first have to design the circuit. After describing the necessary components, the students design the circuit and start to assemble it. Once the assembly has been validated by the teacher, the software part begins: using the eWeLink application to connect the programmable relay to the sensors. In this case, the device is connected to the classroom's Wi-Fi network and can be accessed from computers on the classroom's local area network. Students check the results of their work directly on the circuit and in the classroom temperature system.

## Online version of the lesson

In order to move this lesson into the online environment, I first had to consider something very obvious: the students were not going to be in class with the components of the circuit in front of them to modify it and create a new design. So the first thing I had to do was change the way I explained the design.

In addition, the students would be at home, so they would not have access to the local network to load the software onto their hardware.

In order to continue with the course, I had to change the direction of the classes, the way the information was presented to them and the way they had to interact with the tools.

Initially, I had to use online classes through Meet to continue with the explanations. In this way, I could maintain direct contact with them, give the appropriate explanations and continue to interact with the students.

The design of the circuit, instead of being done by them after the explanations, we did it together, trying to get the students to contribute as much as possible and for the teacher, showing the elements with the webcam, to assemble the circuit according to the students' instructions, discussing and correcting during the assembly.

I changed the nature of the work: from individual to group work, in order to try to overcome the isolation that the confinement situation caused. To facilitate this, once I explained the theory and how it worked, I divided the students into groups and opened as many meeting rooms as there were groups of students. Only the members of each group and I had access to these rooms. This way they had their own digital space to develop the work, exchange ideas, etc.

We had to modify the security conditions of the school network to allow access to the programming of the programmable relay in safe mode, and to allow students to access it from home. To do this, we used a VPN and gave them usernames and passwords. Using their mobile phones or any other device, they could access the network to carry out the work.

Using Node.js and a webcam, we created a website where students could see what was happening in the circuit as they uploaded their programmes to the relay.

The applications used for the work were the same ones they would use for normal classroom development, only they had to be disguised to save the physical distance between the students and the school. Thus, we used Meet to replace face-to-face classes. And instead of giving the students access through the centre's local network, we gave them remote access. To compensate for not being able to physically work with the circuit, they had a website from which they could view it.

More than managing the Meet itself, the most important thing for me was learning how to interact appropriately with students through this tool, trying to keep their attention and interest.

Learning how to use Node.js to create a web page to display a webcam was very easy and fast. There are many very simple and well explained manuals.

I think that the most difficult thing is the digital interaction with the students, because although we think that we all know a lot about using mobile phones and computers, we are not used to transferring the work in the classroom to a digital space where everything has to be done in a very different way.

One of the decisions I made was to reduce the actual working time on the subject and spend the beginning of the class talking about the state of mind we were all in and then trying to create a relaxed atmosphere. That was done in order to improve the mood, which was rather low, to be able to face the work and to have a little moment of concentration.

All the digital tools I used in these classes are free and have a very steep learning curve: you learn a lot in a short time. They made the work much easier and allowed me to concentrate on the academic part of dealing with the students instead of spending time on the more technical part.

## Final result



The lesson plan consisted of:

- Meetings with the students with the following format: a few minutes in which they did not talk about the subject, but about themselves, about how they were. This time was variable, depending on the students' desire to interact. And then an explanation of the hardware and software used.
- Meetings where all the students in the class discussed the assembly of the hardware and the teacher assembled it according to the instructions. The students were able to follow the assembly on the web that was made available to them. In the last part of the meetings, the teacher commented on the errors they made and corrected them.
- Meetings where only the students of each group were present to discuss and decide which software to load. The teacher went from one to the other, clarifying doubts and monitoring progress.
- The last sessions where each group of pupils took turns to load their software, the functioning of the circuit was checked and the teacher corrected it.



## Final feedback

I think that the overall experience was not bad. Initially I had to spend a lot of time deciding how to explain the subject and how to interact with the students.

Once the decisions were made about how to carry out the technical work, the most difficult part was how to establish the digital relationship with the students to involve them in the work. The personal and emotional situation of many students was complicated, so I think the idea of moving from a classroom to working groups where we could all discuss how to do the work helped a lot.

Nevertheless, many students did not turn on the cameras or were withdrawn for many days. But that was understandable at such times.

# Flipped Classroom Explained

## Using Nearpod

### Offline version of the lesson

#### Goal

In this lesson, trainees (who were in this case teachers and educators) learnt about the flipped classroom method in education, in an online environment, using Nearpod software resources.

In face-to-face training, the Flipped Classroom method was presented by using a PowerPoint presentation, followed by extended discussions about the ways in which teachers could approach each part of the flipped methodology.

Another important part of the training was focusing on the tools and instruments teachers and trainers could use (and eventually already know how to use) in order to flip the class.

Debate with participants was focused on the concrete examples of various tools and instruments used, together with practical illustration, if available online. Participants could use the classical multimedia means in the classroom to illustrate (video projector, etc.).

The closing of the training included evaluation and feed-back from participants.

### Online version of the lessons

Teachers and trainers had to work completely remote and urgently update their digital skills, in order to provide education during lockdown. Biggest issue for me as a trainer was how to succeed in keeping people actively involved in learning and how to provide good resources and instruments/tools, in order to facilitate their transfer from face-to-face education to online education.

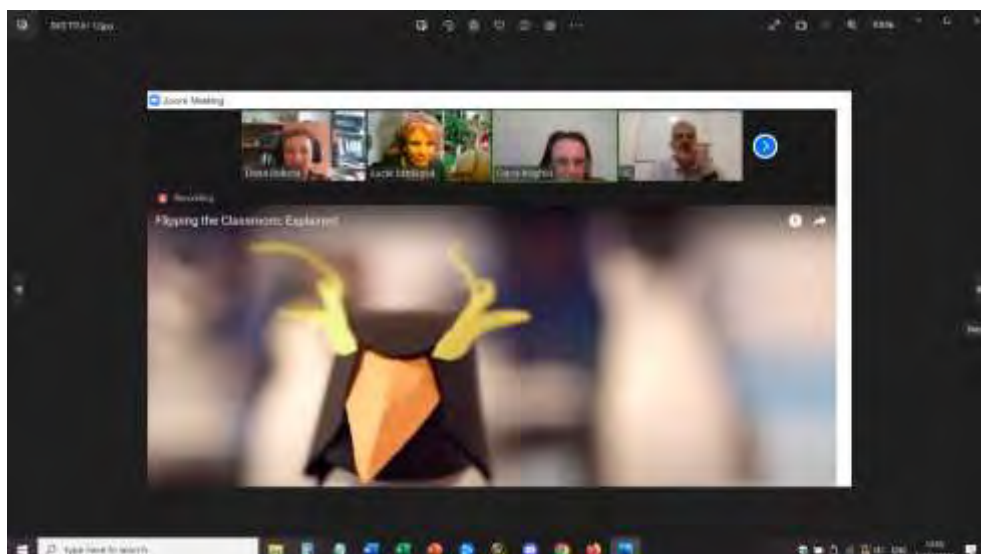
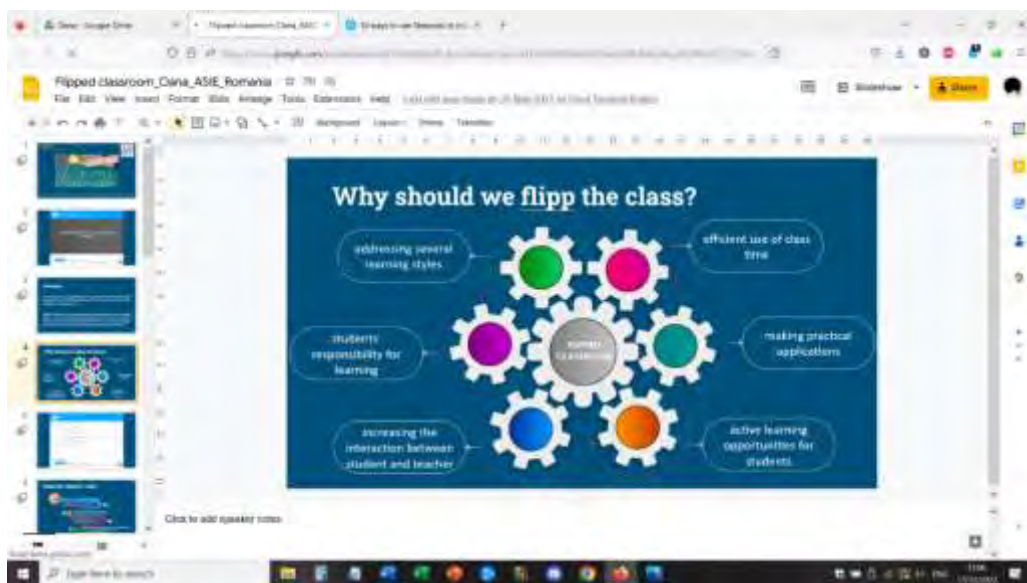
I chose Nearpod as the main engine in which each teacher could develop completely independent lessons that could be implemented both, synchronously and asynchronously. Moreover, the topic for my Nearpod lesson was Flipped classroom methodology – another educational resource that could be developed by teachers in their online teaching. So, my online training provided a double goal:

- Teaching and illustrating the use of Nearpod in creating online lessons
- Teaching and illustrating the flipped classroom methodology

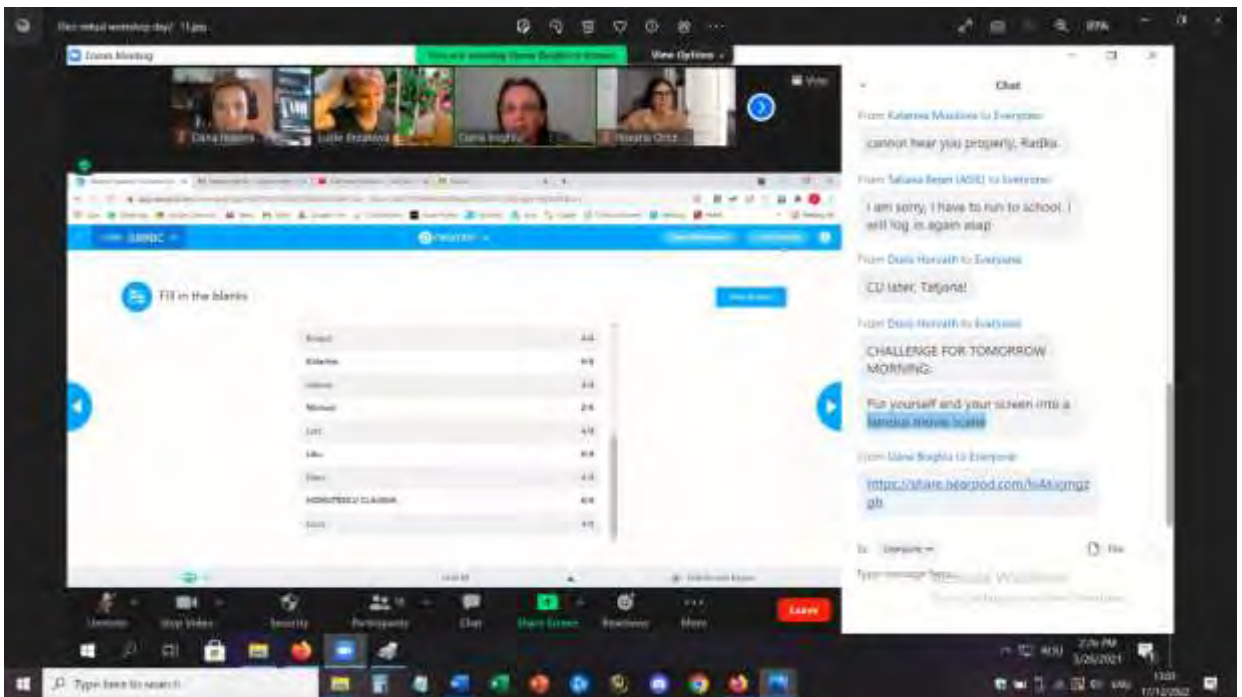
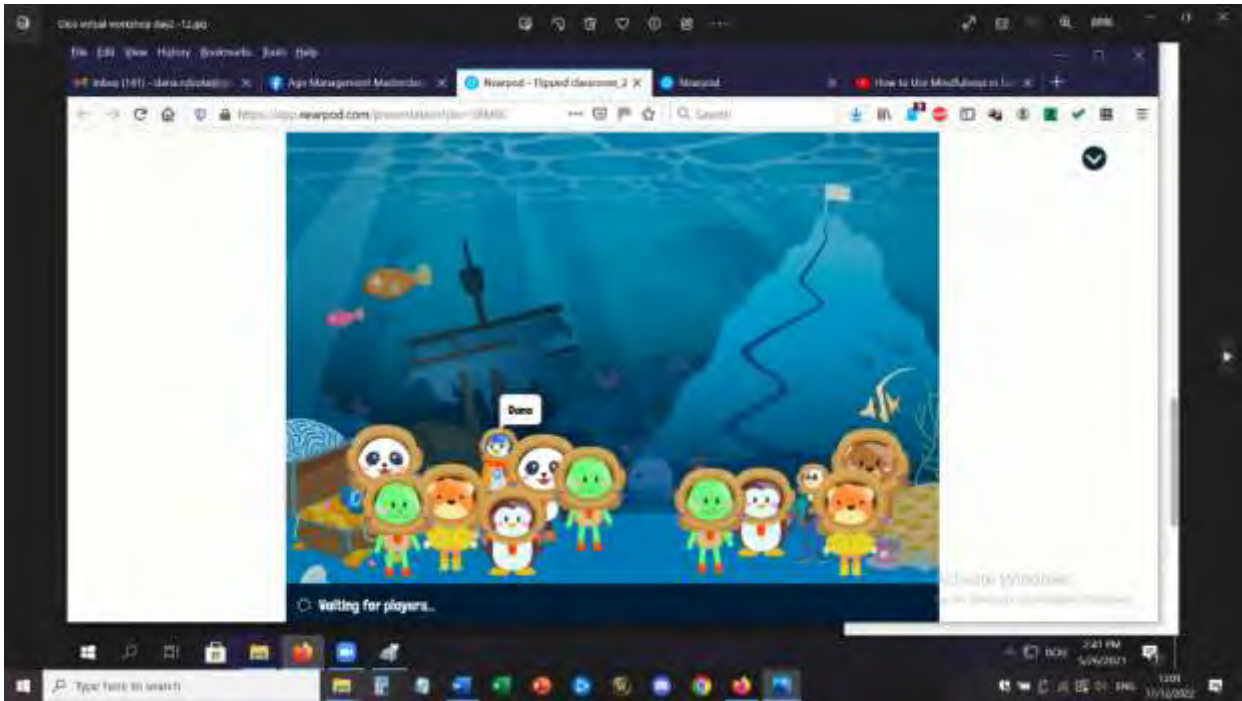
Nearpod helps educators make any lesson interactive whether in the classroom or virtual. The concept is simple. A teacher can create interactive presentations that can contain Quizzes, Polls, Videos, Collaborate Boards, and more.

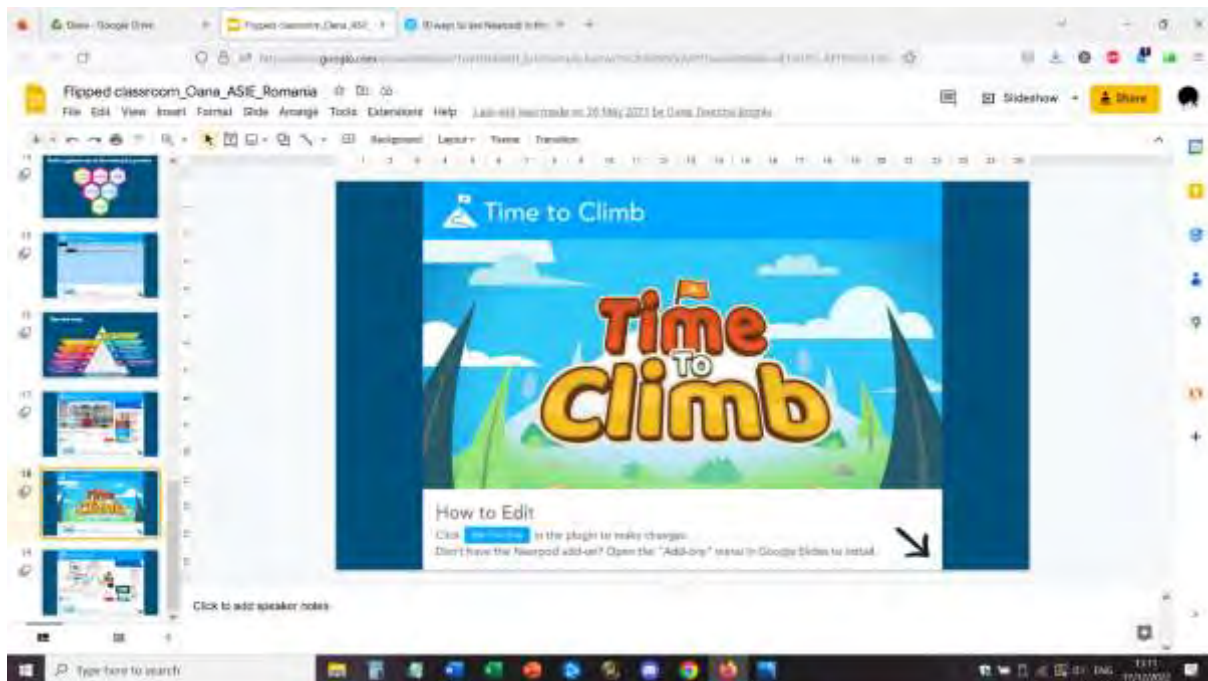
The students can access a teacher's Live Participation presentation through a code and the teacher then moves the class through the lesson and lets students interact with the media as they go. Teachers can also opt for Student-Paced mode, where the student controls the flow of the lesson. This mode is perfect for remote learning, hybrid learning, sub days, homework assignments, or independent work. The app is web-based and works on any device with an internet connection.

I created my lesson in Nearpod in advance and in this training, I chose to have a synchronous participation by me moving the class through the lesson, in each sequence. Participants were connected already by Zoom so we could communicate in real time video and audio with all students, especially I could guide the students through each sequence of the lesson.



For the formative evaluation part, I illustrated all the interesting resources offered by Nearpod: Polls, Multiple-Choice Quiz, Matching Pairs, Open-Ended Questions, Fill the blanks. The summative evaluation was even more fun with the gamification resources of the software: I involved participants in interactive activities such as game Time to Climb. To review the contents, participants had a multiple-choice quiz.





## Feedback from the lesson

Teachers and trainers got involved in the lesson and were interested in this way of implementing the learning contents. Both the Nearpod and the Flipped classroom topics were considered interesting and having potential to be further explored by the participants.

They considered that the lesson presented in this way can easily be followed by students using phones, tables, laptops, PC, with the best results when using laptop or PC.

The Nearpod lessons can be also followed asynchronously which is a good point in approaching online resources and education and does offer an assurance for the learner to access first the best conditions for taking the class (having proper learning conditions and the optimum equipment). This is the best match for the flipped part of the classroom, in the flipped classroom methodology.

To sum up, the customizable nature of the Nearpod app means that it can be applied to any age range and teaching context. It saves you time with real-time formative assessment and session reports and helps build a connected culture in and outside of the classroom.

# Media



# Creating Web Pages Using MS Word

## Offline version of the lesson

### Goal

In this lesson, students will learn how to create a web page using a word processor

In face-to-face training, this lesson would take place in the informatic lab, where students have assigned a PC and they would learn by doing how to use Microsoft Office in order to create a webpage.

Teacher would explain each step of the process and then students would start a project – creating a webpage using Office on a topic of their choice. The work would then continue in the following class.

## Online version of the lesson

Working completely online was a challenge for both teachers and students, therefore in the first months of the lockdown, I had to find ways in which to ensure that the educational material is delivered and accessible to the students. There were various logistic problems related with the synchronous connection, therefore I chose for this topic to create a flipped classroom approach, give students the learning material and homework and then try to connect online in order for the students to present their works.

Not all students had access to the internet and good learning conditions, school didn't have a secure, official learning environment in which the learning could be organised. So I used the resources I created before within an European project entitled E-Classes in which I could experiment with the flipped classroom method.

With the pandemic, the results and OERs created in that project could properly be implemented and tested with students.

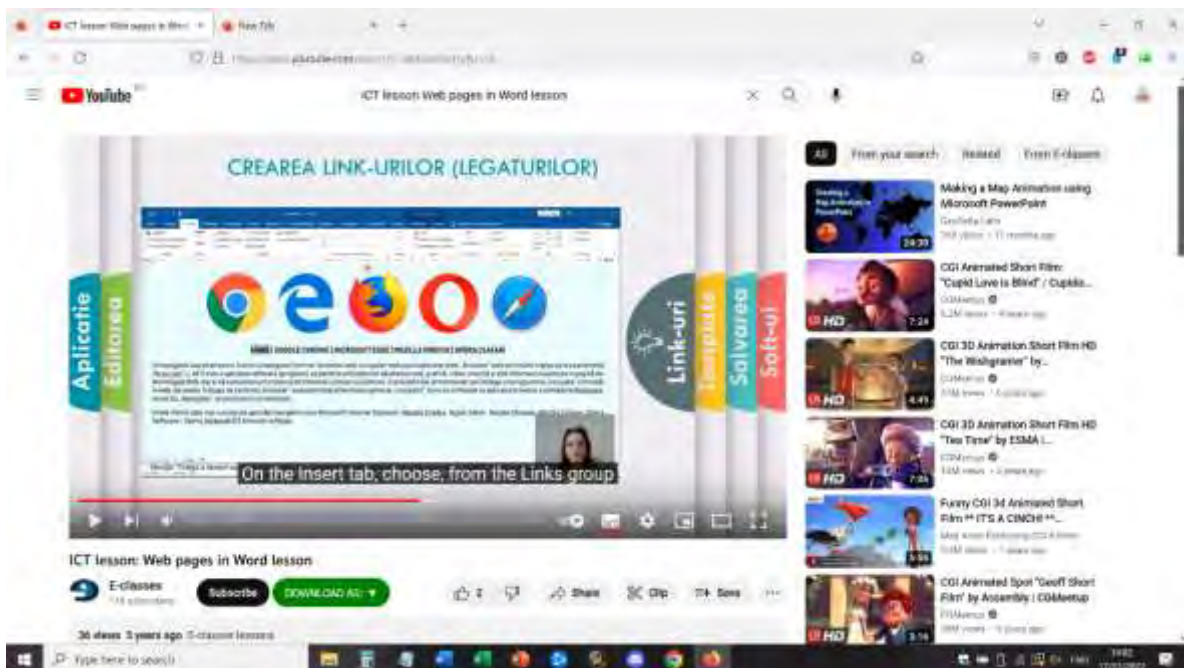
My approach was simple. I created a video learning material in which I explained the theoretical concepts and the main steps to be followed in order to achieve a web page by using Microsoft Word.

The support that I used for the video was a tailored designed .ppt template which included all relevant information in an attractive visual format. Then I registered myself explaining the contents and converted everything in a short video that was uploaded on YouTube

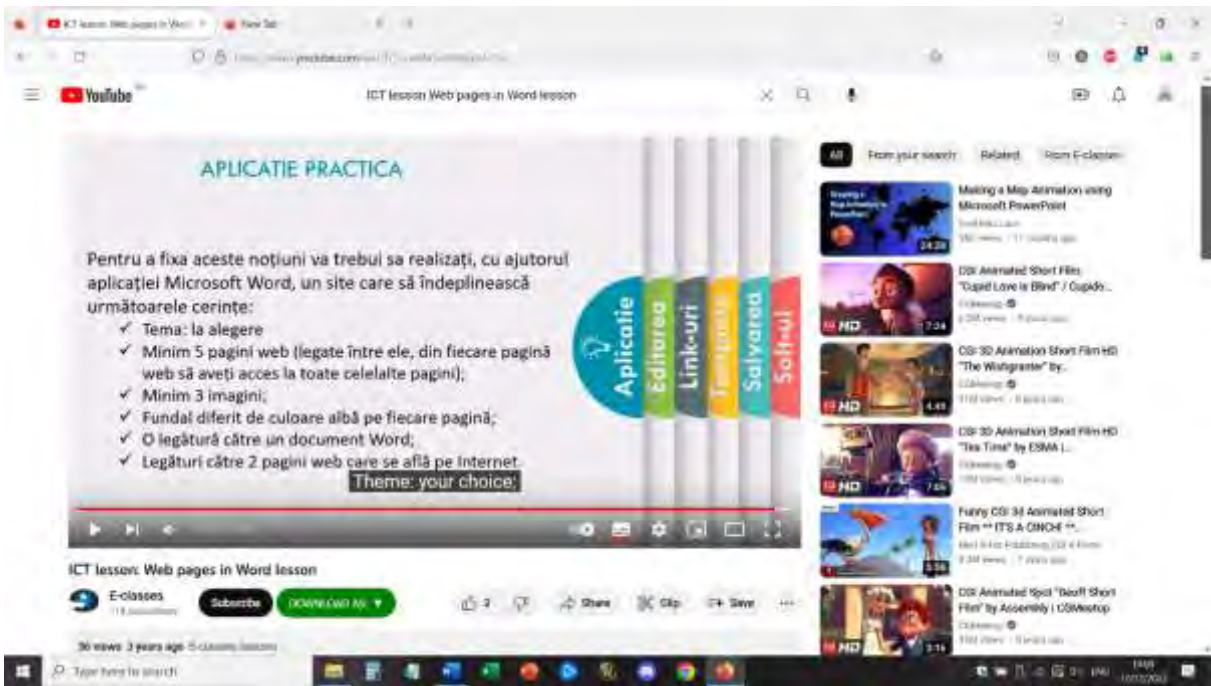
Link to the lesson is here: <https://www.youtube.com/watch?v=wMaTxo8nrtg&t=9s> .

Students received the link for the video and had to watch it and learn from it at their own pace, using any device they could have. Then they had 2 weeks to prepare the homework – their own web page, on a topic of their choice. For this presentation, they had to deliver me the link for their webpage and we succeeded in having a Zoom online meeting in which students could present their creations by sharing their screen.

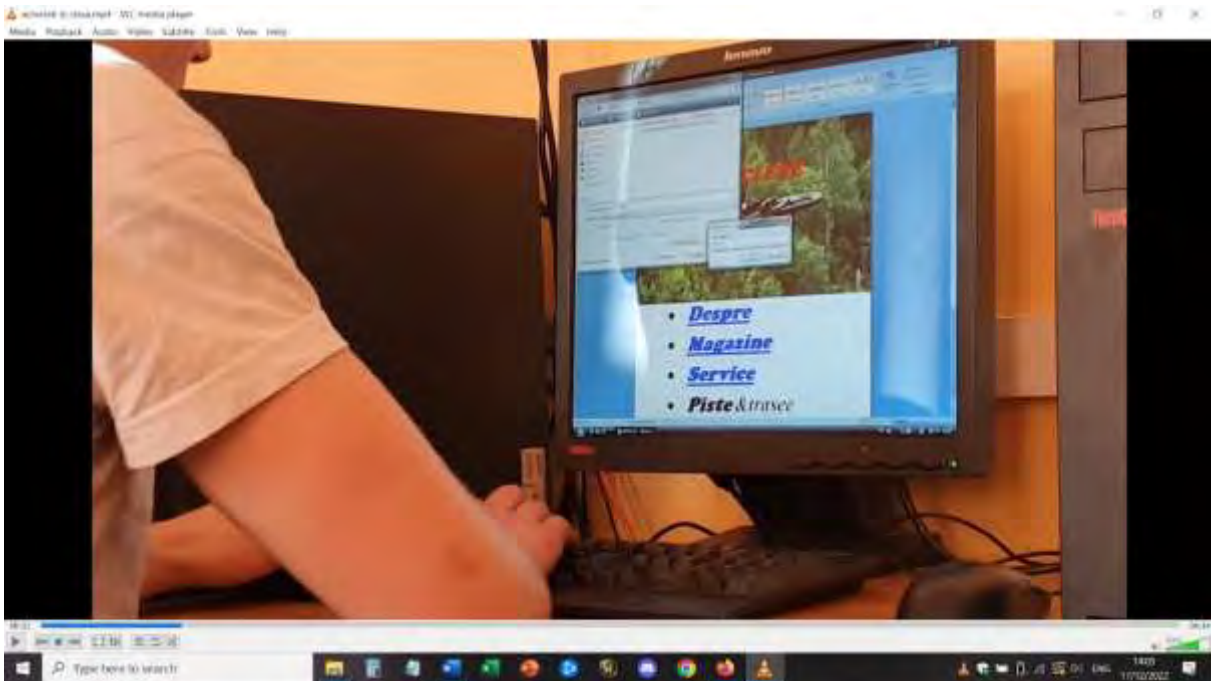
Teacher had already visualised and evaluated each webpage but in the Zoom meeting could interact directly and offer feed-back to the students.

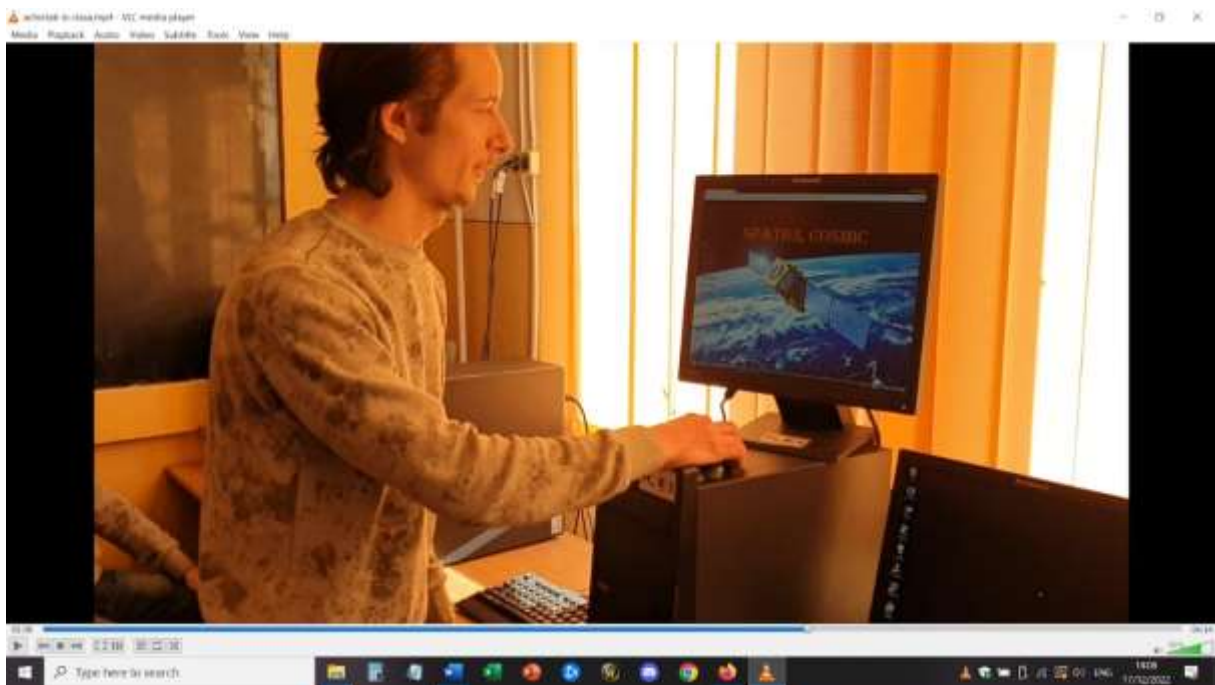
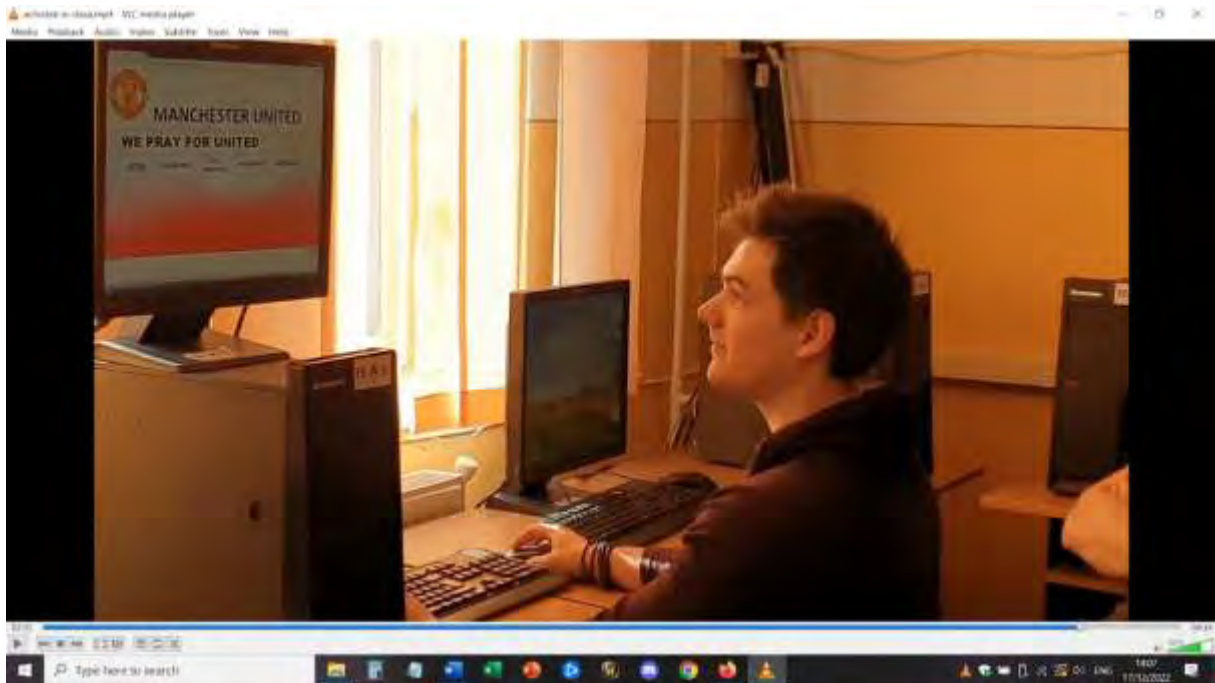






Sample of sites realised by students:





## Feedback from the lesson

The positive aspect was that a good majority of students could follow the video lesson and then do the homework without direct assistance from the teacher. But there were also students who did not have access to a PC or a laptop in order to use the word processor. The homework could not be done by using the phone or the tablet (or, with much more difficulties and different instructions and applications used).

There were also some students who didn't succeed to do their task because they were not able to understand everything from the video lesson. The difficulties could be managed only by direct meeting in Zoom, in a question-answer session, where students and teacher could share the screen and solve the issues.

# Multimedia - What Does a Photo Editor Do?

## Offline version of the lesson

### Goal

In this lesson, students will play the role of photo editor (as a job)

Any newspaper or magazine, published in print or online, needs to be visual. Nearly every article includes at least one photograph, and in many cases the photos are the story itself.

Who is responsible for coordinating, producing and choosing those photos you see? That person would be the photo editor. Photo editors are embedded with each section of publishing material and are central to the reporting process. They work with reporters to strategize what and whom to photograph for a given article. They seek the right photographer for each assignment, and they discuss with photographers how to approach the assignment and which types of photos would work for the tone and subject of the article. Finally, photo editors carefully choose photos and sequence them to help tell the story.

In this lesson, you will get the chance to play the role of a photo editor. After learning about how photo editors make decisions, as well as the ethics of photojournalism, you'll put together your own photo-based piece.

### Warming up

Discussion-provoking question:

It is often said, "A picture is worth a thousand words." Do you agree?

What is the power of a single photograph?

What are the unique powers of an individual photograph? Are there things it can reveal and evoke that words cannot? If so, what makes a picture particularly memorable, powerful or affecting?

### Contents of the lesson

#### *Part one*

Teacher uses a PowerPoint presentation with significant pictures taken from famous papers and online publications, even those awarded during the last years.

Questions for debate:

Why does this photo resonate with you?

What story does it tell?

What do you think the picture communicates that words alone couldn't?

### *Part two*

Class will be divided in teams (small, 3-4 members) and they will study the answers to an interview with various Romanian photo-editors, about the way they select the photos and the editing team.

<https://blog.fotografi-cameramani.ro/selectia-editorilor-interviu-cu-membrii-echipei-foto/>

The interview parts are printed and handed out to all teams.

Teams will analyze and summarize the main aspects mentioned in the interviews.

Conclusions will be communicated by the leader of each team.

### *Part three*

Play the role of the best photo-editor of your school newspaper.

Use your own database collection of pictures from the school (made in prior lessons) and choose a maximum of 5 pictures in which you will illustrate an incentive article about the school – targeted at young future students. The article will speak about the value of this school, how good it is to be a student and how you can build a career after graduating from this school.

Propose your selection of photos in teams.

After each team proposes their own 5 pictures, the whole class will choose the best 5 pictures to be used in a future promotional material for the school.

## Shift to online version of the lesson

### Things to be considered

Students don't have access to computers/laptops and tablets. they generally enter online using their phone so my online lesson had to be based on what can be done by using the phone alone.

### Reasons for the decision

First part of the lesson remained unchanged (Part one and Part two)

Teacher used a share screen to present the PowerPoint and initiated an online debate with the students.

For Part three, the students received the following task:

You are the best photo-editor of the New York Times.

It's the final days before the primary voting day for New York City's mayoral race. Front-runners Eric Adams, Kathryn Garcia and Maya Wiley were all out campaigning around the city and the

photographers on assignment for The New York Times have filed their images. Your assignment is to stitch together a visual narrative of these days, with a maximum of five images.

The file with the images is here:

<https://int.nyt.com/data/documenttools/photo-editing/ad246a6d49321293/full.pdf>

Try your hand at the task. From among the 25 photos in this PDF, choose five photos to tell your story. Remember to take into account newsworthiness, composition, style and ethics.

Compile your five photos into a slide show (using Google applications) in the order you would want them to appear in an article, and write a short statement explaining your choices.

### Tools and apps used

I used Google Classroom Platform for schools.

Under the Multimedia class – students will submit their presentations of slideshows as a lesson handout work.

Students have institutional accounts to login.

We spent about 30 minutes online, using Google Meet, for the Introductory part of the lesson and the Part one.

Part two of the lesson was indicated as a supplemental resource for students to read when they have time.

Part three was assigned and explained in the online meeting and then every student worked individually, asynchronously and uploaded the results of their individual work within the Google Classroom platform.

### Feedback from the lesson

Not all the students worked out their assignment but those who did, could benefit from a good individual feed-back from the teacher.

Students agreed with this kind of working and many of the lessons in Multimedia had an online part and an offline part.

Students didn't have the means to properly work for the lessons – at school they could use the informatic labs (where they have computers and access to proper specific software) but online, the majority of them only could use their mobile phone.

This was the major minus of these classes, for some softwares, it was almost impossible to adapt the class to the online environment.

# Visual Communication and Semiotics: Album Covers

Offline version of the lesson

## *A lesson plan*

Art and Design Foundation Diploma

### *Topic: Visual Communication:*

- ILO: create album covers using the principles of Semiotics to understand signs and signifiers as presented in different genres.
- Theoretical learning: semiotics – Roland Barthes: *The signifier is the image used to stand for something else, while the signified is what it stands for (a real thing or, in a stricter reading, a sense-impression).*
- Examples:



Duration (minutes)	Activity
<b>Preparation</b> <ul style="list-style-type: none"> <li>• Bring records/CDs as examples</li> <li>• Genres written on slips of paper to hand out</li> <li>• Assessment forms</li> <li>• Pens</li> <li>• Computers – log ins for Canva</li> </ul>	
9.25 (5 mins before we start)	<ul style="list-style-type: none"> <li>• Computers – students to sign up and log in to Canva.</li> <li>• Hand out assessment forms (face down)</li> <li>• Pens</li> </ul>
9.30 (3 mins)	<b>Introduction</b> What we will do today: There will be two SMART ILOs for today's session: ( <i>Specific, Measurable, Achievable, Realistic and Time-appropriate</i> ) <ul style="list-style-type: none"> <li>• Today we will use digital design technology (Canva) to create our own album covers.</li> </ul>





	<ul style="list-style-type: none"> <li>Bring up Canva as it's v simple and easy (you may also choose to use Photoshop or Illustrator)</li> </ul> <p><b>Demonstration:</b></p> <ul style="list-style-type: none"> <li>3 elements you must include: Background colour, at least one image (elements), text – how to do this</li> <li>Include band name, album title and an image.</li> <li>Your artwork must visually communicate your assigned musical genre</li> </ul>	
9.42 (2 mins)	<p><b>Assessment – peer assessment</b></p> <ul style="list-style-type: none"> <li>Swap seats with person beside you</li> <li>Turn over assessment forms and complete</li> </ul>	
9.44 (1 min)	<p><b>Finish up – plenary</b></p> <p>Link back to intro and ILOs. Constructive alignment.</p> <ul style="list-style-type: none"> <li><b>Ask the class:</b></li> <li>What does the term semiotics refer to?</li> <li>What is an example of a sign/signifier in an album cover? (colour, imagery, type)</li> <li>What is an example of a signified? (musical genres - punk music, rock music etc.)</li> <li><b>What we learned today:</b></li> <li>Learned how <i>semiotics</i> are employed in visual communication using the example of album covers</li> <li>You are now able to understand and use visual clues (signs - colours, fonts and images) to signify musical genre</li> <li>You are all able to use digital graphic design technology (Canva or Photoshop) to create an album cover.</li> </ul>	

## Shift to online version of the lesson

### Things to be considered

Description of the things that needed modification for the online delivery.

- Students will be remote, so my presentation needs to be viewable online.
- Students will not have access to specialised design software, e.g. Photoshop.
- Students will not be able to 'swap' work physically in order to complete a peer assessment.
- I as teacher will not be able to view students' outcomes physically; these must instead be digital and shareable.

### Reasons for the decision

- Introductory presentation and introduction to topic: I created a presentation using Microsoft Powerpoint that I was able to share via Microsoft Teams
- Example album covers: digital images shown to students instead of physical objects.
- Brainstorm: use online technology (Miro app, designed for brainstorming and real time online collaboration) instead of pen and paper.
- Digital design software: use Canva as it is free and online. Also designs are shareable – teacher can create a class 'team' to view work. Don't mention Photoshop as students won't have remote access.
- Teacher demonstration: use Canva and 'share screen' option on Teams.

- Peer Assessment: split students off into breakout rooms on Teams to chat in twos. Peer Assessment to be an online form in Teams which they can submit and teacher can view.
- Plenary: Use Quizlet (online quiz website) to create a quiz to test student understanding and knowledge. Whole class can play from home like a game with the website collating who answered fastest, background music to make it more entertaining, etc.

## Tools and apps used

**Microsoft Teams:** online meeting software, College standard, students already organised into classes or 'Teams' and the app has lots of options for sharing work online. Useful screenshare option. Breakout rooms option and Forms section for peer assessment are very useful.

- **Miro:** Editable mind map templates, students can collaborate in real time. User friendly, well designed interface, boards are saveable and shareable so we can return to them in subsequent lessons if needed.
- **Canva:** Free, easy to use online design software. Designs are shareable – teacher can create a class 'team' to view work, it is downloadable and there are useful templates for printing.
- **Quizlet:** Online quiz creation software. Creates a light hearted atmosphere whilst consolidating learning, students can play from home either alone or in teams, quizzes can be written by me and then saved for future use.

## Competencies needed to be newly acquired

Apps:

- **Microsoft Teams:** I had to learn and become familiar with all useful and useable aspects of the software.
- **Miro:** I had to learn and become familiar with all useful and useable aspects of the software.
- **Canva:** I had to learn and become familiar with all useful and useable aspects of the software.
- **Quizlet:** I had to learn and become familiar with all useful and useable aspects of the software.

Competencies:

- Problem solving
- Adaptability
- Digital literacy
- Clear communication
- Digital lesson design
- Use of specialised software

## To do it I needed to obtain/purchase THIS (apps, tools).

List of options, each choice explained

- A fast, reliable computer, donated to me by the College.
- **Microsoft Teams:** Free software in use college wide, linked to student profiles, Canvas and Intranet.

- **Miro:** Free online software, students needed to create log ins and I created a class 'team' to enable the class to view each others' work.
- **Canva:** Free online software, students needed to create log ins and I created a class 'team' to enable the class to view each others' work.
- **Quizlet:** Free online software, students needed to create log ins and I created a class 'team' to enable the class to play together and collaborate.

Feedback on the lesson

**Strengths:**

- Introductory Powerpoint presentation was dynamic and full of brightly coloured images. Students were engaged throughout. 'Raise hand' tool enabled them to interject, comment and chat in a managed fashion.
- Topic: students were engaged and passionate about sharing their own musical tastes.
- Digital design is popular in the Art department at the minute so students loved designing something that matters to them.
- Microsoft Teams: easy for students to use as this is the system employed college-wide. Students are already used to it and already organised into class teams.
- Canva: free and easy to learn basics.
- Miro: easy to use, good to collaborate and allowed chatting as the students had the freedom to create their own boards.
- Quizlet: good fun at the end of the lesson, exuberant atmosphere and interaction between students encouraged.
- Breakout rooms: allowed students to chat one on one and share ideas in a more intimate, quitter online setting. I was able to drop in to each breakout room to chat.

**Weaknesses:**

- Online format meant that free and easy conversation was more limited, students less willing to speak out individually than in physical classroom.
- It would have been fun to have shown actual album covers and allow students to handle or even listen to them, rather than showing pictures.
- Canva, whilst a good Photoshop/InDesign substitute, is limited in its design options and is not industry standard.
- Miro: also a good substitute but lacks the spontaneity of pen and paper.
- Some issues with logging in to various online websites, apps and software within a single lesson.

**Lessons Learned:**

- It might be best in future to limit number of softwares like Canva etc. used in one lesson due to time consuming logging in issues.
- I would have included an ice breaker at the beginning of the lesson e.g. Quizlet or similar to encourage informal chatting between students right from the beginning.
- I will look for a more sophisticated design software than Canva to use next time.
- Due to digital issues it is advisable to leave extra time for each activity/task

## Final result – a lesson plan

Duration (minutes)	Activity
	<p>Preparation</p> <ul style="list-style-type: none"> <li>• Powerpoint presentation ready to share</li> <li>• All apps open and logged in on desktop ready to enter</li> <li>• Microsoft Form ready for Peer Review</li> <li>• Quizlet prepared</li> <li>• Example Miro board ready to use.</li> </ul>
9.25 (5 mins before we start)	<ul style="list-style-type: none"> <li>• Computers – students to sign up and log in to Canva and other websites in preparation to use them</li> <li>• Test microphones and cameras</li> <li>• Refresh basics of using Teams for online classes including online etiquette – raising hand etc.</li> </ul>
9.30 (3 mins)	<p><b>Introduction</b></p> <ul style="list-style-type: none"> <li>• Open Powerpoint Presentation and share screen.</li> <li>• Students asked to mute and raise hand if they want to comment.</li> </ul> <p>What we will do today: There will be two SMART ILOs for today's session: (<i>Specific, Measurable, Achievable, Realistic and Time-appropriate</i>)</p> <ul style="list-style-type: none"> <li>• Today we will use digital design technology (Canva) to create our own album covers.</li> <li>• By the end of this session you will be able to describe how <i>semiotics</i> are employed in visual communication using the example of album covers.</li> <li>• Be able to understand and use visual clues (signs - colours, fonts and images) to signify musical genre.</li> <li>• You will be able to use digital graphic design technology (Canva or Photoshop) to create an album cover which conveys a specific genre of music.</li> <li>• This exercise will enable you to understand links between theory (semiotics) and product (album cover).</li> </ul> <p><b>Theoretical background:</b></p> <ul style="list-style-type: none"> <li>• Genre is employed in films, tv, music and more.</li> <li>• Music and visual communication – musical subcultures (goth, punk, new romantics etc.) all had a visual branding, communicated via fashion, posters, merchandise, artwork etc. This was even more important in the pre-internet era.</li> <li>• Musicians give us information about their identity via visual clues or <i>signs</i> – logos, album art, posters, clothes, typography, colours.</li> <li>• Look at album covers – What sort of music (genre) in each album? Guess and explain why you thought that.</li> <li>• This system of signs/signifiers (e.g. Doc Marten's boots) and signified (e.g. Punk) is called semiotics.</li> <li>• Semiotics is the study of communication via signs to signify implied meanings.</li> <li>• It is widely applicable, but today we will take album artworks as an example which will enable us to understand. E.g. skulls on a black background on an album cover are a sign which implicitly communicates a specific genre to us. We know in an unconscious way. Which genre?</li> </ul>

	<ul style="list-style-type: none"> <li>• The signifier is the image used to stand for something else, while the signified is what it stands for (a real thing or, in a stricter reading, a sense-impression).</li> <li>• French Critical Theorist Roland Barthes wrote about signs as a cultural system.</li> <li>• Font/typeset as signs – use record covers as examples.</li> <li>• Colours and imagery as signs - use record covers as examples.</li> <li>• Semiotics are widely apparent in culture; in fashion, art, media, design – loads of things!</li> </ul>	
9.33 (2 min)	<p><b>Ideas – Miro Brainstorm</b></p> <p><b>Open Miro and go to today’s board</b></p> <ul style="list-style-type: none"> <li>• Who likes music? Which sorts?</li> <li>• Assign a genre to each student verbally.</li> <li>• Which design elements might you expect to see in a (your chosen genre) album cover? Think about typography, colour, imagery. We are looking for <i>signifiers</i> (in semiotic terminology) the musical genre is the <i>signified</i> (meaning).</li> <li>• Brainstorm ideas on Miro board– What do you associate with this sort of music? Choose a band name, album title, which colours and sort of font you will use to convey musical genre – 1 min on Miro board.</li> </ul>	
(1 min)		
9.35 (7 mins)	<p><b>Practical Activity</b> – on computers</p> <ul style="list-style-type: none"> <li>• Bring up Canva as it’s v simple and easy</li> <li>• You should already be logged in and connected to our class team</li> </ul> <p><b>Demonstration (teacher share screen):</b></p> <ul style="list-style-type: none"> <li>• 3 elements you must include: Background colour, at least one image (elements), text – how to do this</li> <li>• Include band name, album title and an image.</li> <li>• Your artwork must visually communicate your assigned musical genre</li> <li>• Save when finished so I can view</li> </ul>	
9.42 (2 mins)	<p><b>Assessment – peer assessment</b></p> <ul style="list-style-type: none"> <li>• Teacher assign breakout rooms – in pairs</li> <li>• Enter breakout rooms</li> <li>• Teacher to check in</li> <li>• Complete peer review questionnaire in Forms section of Teams.</li> <li>• Submit forms so I can view.</li> </ul>	
9.44 (1 min)	<p><b>Finish up – plenary</b></p> <p><b>Link back to intro and ILOs. Constructive alignment.</b></p> <ul style="list-style-type: none"> <li>• <b>Back to online classroom. Cameras on and mute whilst I’m speaking</b></li> <li>• Open Quizlet, You should already be logged in.</li> <li>• Start Quiz:</li> <li>• What does the term semiotics refer to?</li> <li>• What is an example of a sign/signifier in an album cover? (colour, imagery, type)</li> <li>• What is an example of a signified? (musical genres - punk music, rock music etc.)</li> <li>• Who’s the winner?</li> <li>• <b>Plenary: back to online classroom. What we learned today:</b></li> <li>• Learned how <i>semiotics</i> are employed in visual communication using the example of album covers</li> <li>• You are now able to understand and use visual clues (signs - colours, fonts and images) to signify musical genre</li> </ul>	

	<ul style="list-style-type: none"><li>• You are all able to use digital graphic design technology (Canva or Photoshop) to create an album cover.</li></ul> <p>Make sure all work is saved/dopwnloaded Thanks and end call.</p>	
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# Digital Cultural Mapping

In this lesson, students will assimilate the concepts of cultural heritage and learn how to create their own cultural map.

## Offline version of the lesson

- Brief brainstorming on what cultural heritage is. The teacher asks the students what cultural heritage is to them and why it is important to value/save it.
- The teacher gives an introduction of the concept of cultural mapping through a Powerpoint presentation projected in class.
- The teacher provides some examples of cultural mapping and good practice on the topic.
- The teacher then explain to the class the process that will guide them in creating the map
- The class be divided into groups (5-6 persons each group)
- Depending on the age of the students and what the school can provide, the teacher distributes paper, pen, colors to draw a map or a ready-made map (e.g. of the area where the school is located) and post-it notes to put the content on the map. Students will work in groups so the sheets where they draw the map or the ready-made map must be large enough for everyone (about 1 m x1.5m).
- At this point, the teacher should leave the groups of students free to choose the topic of their map. He/she can offer suggestions for example
  - urban art, street art
  - hidden cultural treasures
  - food and memory
  - historical stories and myths
  - and so on...
- Give the students enough time to write down stories, facts, memories, jokes on post-its and pin them to the most suitable place on the map. The right amount of time depends on the class, about 1 hour can be sufficient (if you chose to let students draw the map, consider extra time). During this activity the teacher should go around the tables to help and answer questions.
- Once the time for completing the maps is over, each group must show and explain their map to the rest of the class, explaining the process that led them to choose the topic and content of the map.
- When the maps have all been presented, it is good idea to photograph or scan the maps to have a backup of the work done

## Shift to online version of the lesson

It is important to maintain the idea of group work also online, because it is true that everyone can create his or her own cultural map, but the outpouring of ideas, memories, stories is an integral part of the process of creating a map that has as its central point the preservation of a territory's cultural heritage.

All class participants must have adequate technology and internet connection to support group work.

## Reasons for the decision

- Allows several classes to be mixed
- Students do not have to be all together at the same time
- Teachers can conduct classes the way they did in a real classroom, but they can also share the contents of their screen, draw over a whiteboard to explain things better, mute participants for a seamless teaching session

## Tools and apps used

- Google Calendar and Google Meet: for Brief brainstorming
- PowerPoint gives an introduction of the concept of cultural mapping and provides some examples and good practice on the topic.
- Google Meet Attendees & Breakout Rooms plugin to divide the class into groups during the video lesson
- Miro to create a virtual blank sheet on which to draw your own map and insert post-it notes with content
- Google MY Maps to create your own cultural map

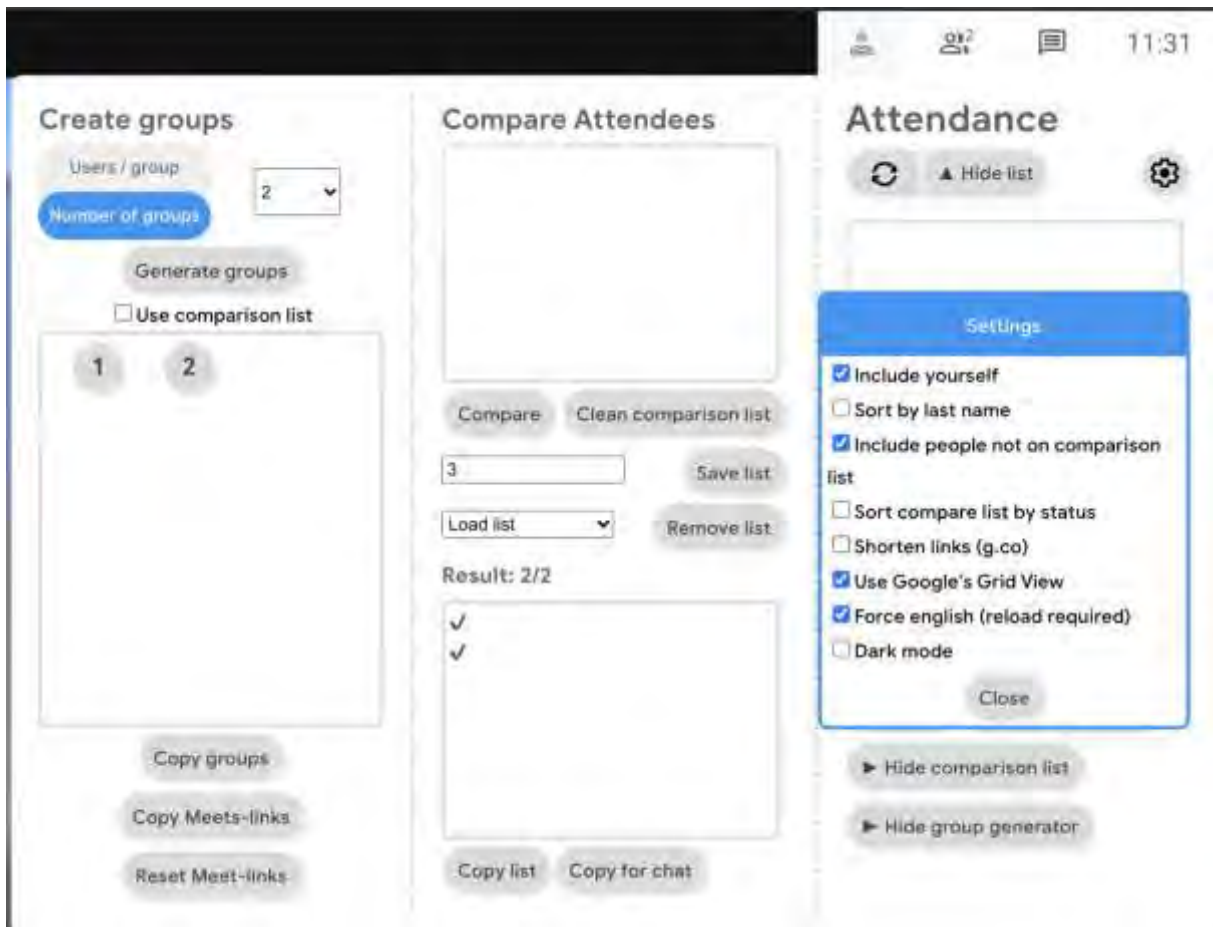
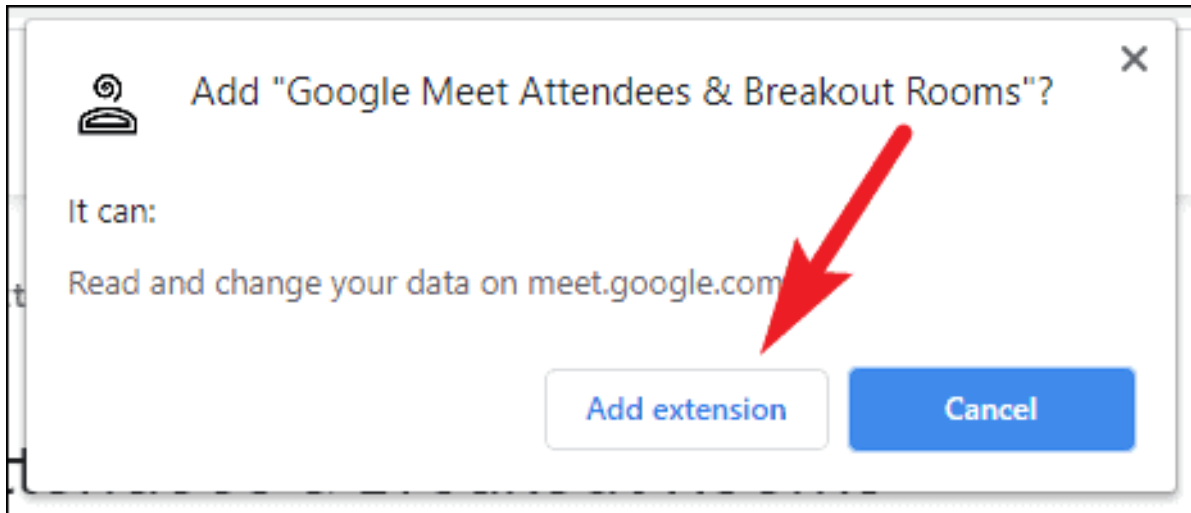
## Competencies needed to be newly acquired

- Create a lesson on **Google Calendar** and **Google Meet**
- Create a simple but engaging presentation with **PowerPoint**.

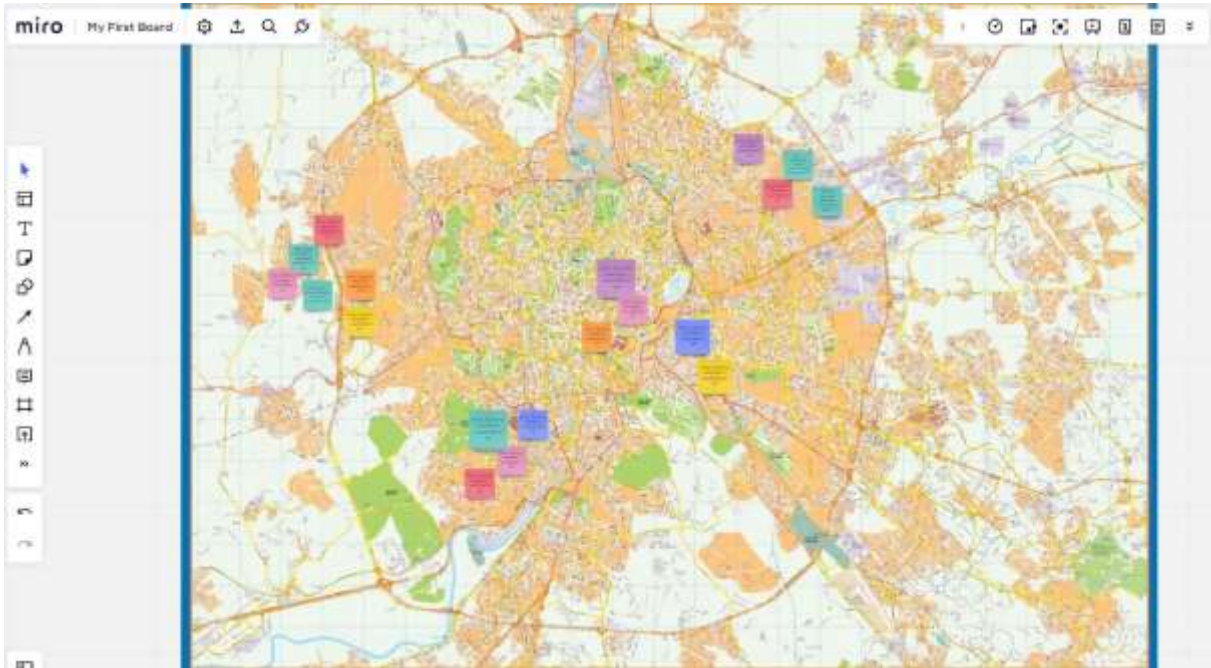
Some examples:

- One idea, one slide. Don't fill slides with text
  - Two colors, two fonts. maximum
  - Keep rhythm and movement by inserting videos.
  - Use icons or pictograms
  - Let quotes do the talking
  - Use images to emphasize important concepts
  - Simplify through visual associations
  - Offer simple content
- **Google Meet Attendees & Breakout Rooms** provides the possibility of dividing the class online for group work and managing groups intelligently. Specifically, the plugin once installed takes effect when a video conference is started





- **Miro** to create a virtual blank sheet on which to draw your own map and insert post-it notes with content

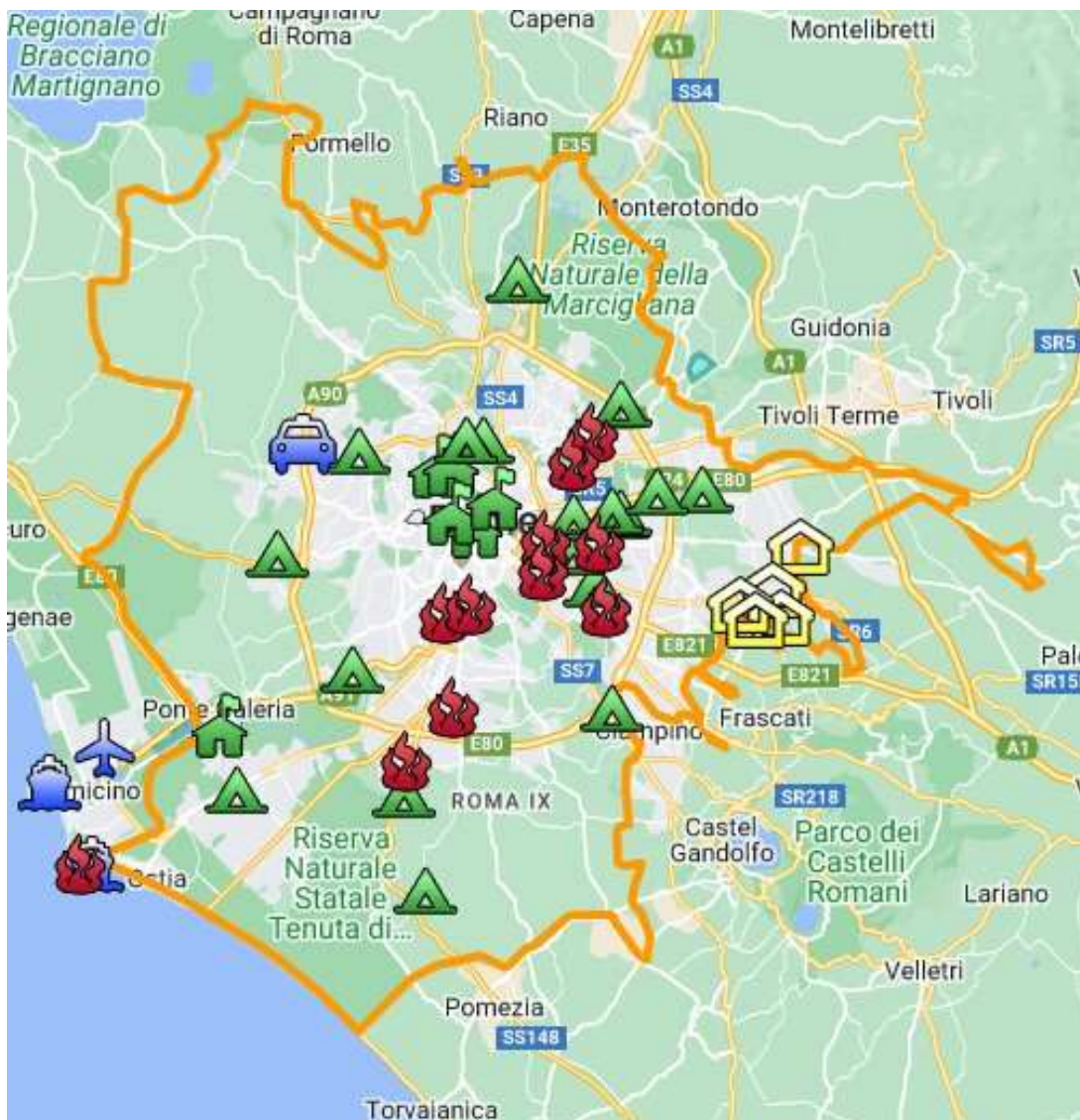


- **Google MY Maps** to create and share customized maps



- Log in to My Maps with your Google account;
- Click on 'Create a new map';
- Select 'Untitled map' to assign a title and description to the map
- Click on 'Save' to save your changes;
- Type a place of interest you want to add to the map in the search bar and click on the magnifying glass to start the search;
- Select "Add to map" to complete the entry;
- Repeat the same operation for the other attractions you wish to add.
- The map is automatically saved on Google Drive.

- To share it with other people, simply click on 'Share' and select your preferred sharing method.



## Feedback from the lesson

### **Strengths:**

- Students can also access their work later or another day according to their needs. A time of 2-3 days could be given to add something that one did not have in mind at that time.
- At home, on their own computer rather than in the classroom, students have access to more material such as photos, music, personal videos to insert in the map

### **Weaknesses:**

- Not all students respond well to this type of lesson because they need to be present to feel accompanied in their learning process.
- It is more difficult to moderate online groups.

## Online version of the lesson

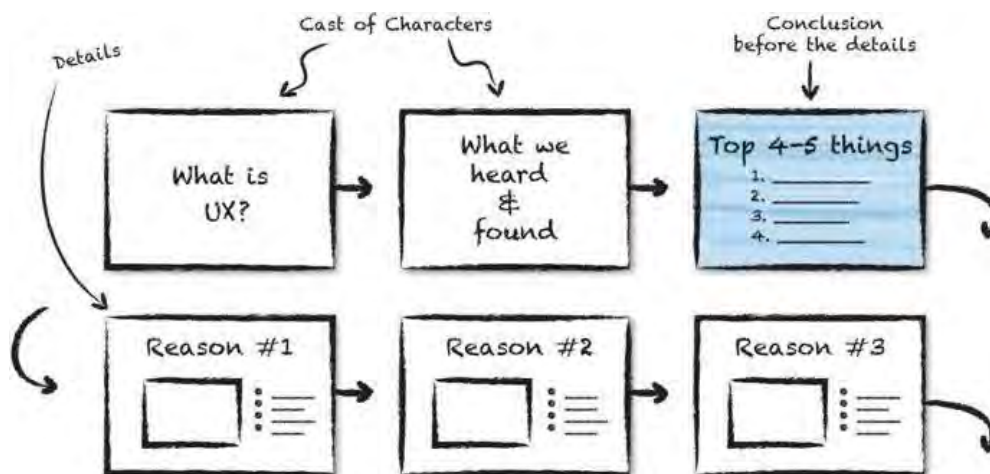
- The teacher plans the lesson and shares the link with the class via **Google Classroom**
- Brief brainstorming on what cultural heritage is. The teacher asks the students what cultural heritage is to them and why it is important to value/save it.
- The teacher gives an introduction of the concept of cultural mapping through a **Powerpoint** presentation projected in class.
- The teacher provides some examples of cultural mapping and good practice on the topic.
- The teacher then explain to the class the process that will guide them in creating the map
- The class will then be divided into groups (5-6 persons each group) with **Google Meet Attendees & Breakout Rooms**.
- Depending on the age of the students, the topics of the maps teacher can choose between
  - **Miro** with the same board for all groups (assigning a portion of the notice board to each group) or with a different board for each group.
  - **Google my map**.
- The choice of programme depends on the age of the students and how efficiently they are able to work independently.
- At this point, the teacher should leave the groups of students free to choose the topic of their map. He/she can offer suggestions for example
  - urban art, street art
  - hidden cultural treasures
  - food and memory
  - historical stories and myths
  - and so on
- Give the students enough time to write down stories, facts, memories, jokes and pin them to the most suitable place on the map. The right amount of time depends on the class, about 1 hour can be sufficient (if you chose to let students draw the map, consider extra time).
- Once the time for completing the maps is over, each group must show and explain their map to the rest of the class, explaining the process that led them to choose the topic and content of the map.
- When the maps have all been presented, it is a good idea to allot extra time (a few days) to add something and eventually save all the material to the cloud.

# How to Create a Storyboard

In this lesson, the student learns what a storyboard is, when it is useful and how it is realized. The storyboard is an outline of a process, illustrating its beginning, development and end. It can be used in different contexts, for example the storyboard is the drawn version of the slides of a presentation or the scenes of a video.

## Offline version of the lesson

- The teacher gives a general introduction on what a storyboard is through a Powerpoint presentation projected in class.
- The teacher provides some examples of different types of storyboards



After several years of study, graduation ceremony.



After graduation, the graduate starts working at a job.



The graduate starts a business and the graduate's business is successful.



The graduate starts to work as a teacher, receives a salary and goes shopping at the local market. The word 'rain' is particularly stuck out.



The graduate uses the app to communicate with English in Arabic.



The graduate starts a business.

- The learners receive a blank copy of the storyboard printed on A3.



- After the templates have been distributed, the learners can move anywhere in the room to work on their storyboards.
- The teacher asks the students to identify the story they would like to illustrate in the storyboard. To do this, the students must
  - Analysing their context (who they are, what they do)
  - Choose an objective (what do they want to say? what is the aim of their story?)
  - List important plot points (where they want to start from and why, where they want to go and how the story develops)
- The teacher can also offer suggestions, e.g.
  - What I learnt this summer
  - my first day at school
  - how I met my best friend.
- Students should focus on an event that does not last too long, otherwise the storyboard would be too long.
- With the help of the spaces and lines of the model, students can structure their stories and explain them with key words. It is also possible to work only with pictures. There is no demand on the quality of the pictures (stick figures).
- Start from the top left-hand box and proceed in sequence illustrating in sketch form what is to take place in the various scenes.
- At this point, students have to write a description for each illustration, giving details of the setting, any background music, dialogue between the characters and their moods.
- Depending on the class level and size, this step takes 60 minutes or more.

- During this activity the teacher should go around the tables to help and answer questions.
- Once the time available to complete the storyboards is over, those who have finished can present their work to the class.
- It is recommended to allow extra time (a few days) to add something and finally save all the material

## Shift to online version of the lesson

### Things to be considered

- All class participants must have adequate technology and internet connection.
- It is more complicated to follow the students in their personal projects, especially to keep them focused on the objective and not produce a too long and unusable storyboard.

### Reasons for the decision

- Online approach allows several classes to be mixed
- Students do not have to be all together at the same time
- Teachers can conduct classes the way they did in a real classroom, but they can also share the contents of their screen, draw over a whiteboard to explain things better, mute participants for a seamless teaching session

### Tools and apps used

- Google Calendar and Google Meet for the virtual lesson
- PowerPoint gives an introduction of the concept and provides some examples and good practice on the topic.
- Storyboarder ([wonderunit.com/storyboarder](http://wonderunit.com/storyboarder)) or Canva to create a virtual storyboard
- Photoshop to add colours or edit backgrounds

### Competencies needed to be newly acquired

- Create a lesson on **Google Calendar** and **Google Meet**
- Create a simple but engaging presentation with **PowerPoint**

#### Some examples

- One idea, one slide. Don't fill slides with text
  - Two colours, two fonts. maximum
  - Keep rhythm and movement by inserting videos.
  - Use icons or pictograms
  - Let quotes do the talking
  - Use images to emphasise important concepts
  - Simplify through visual associations
  - Offer simple content
- 
- With **Storyboarder**, students can digitally draw their storyboard scenes.

Within the programme there is the Shot Generator function that opens a kind of 3D environment in which characters, elements, environment, etc. can be inserted. Several preset action templates can be selected or modified. Once the image has been created in the frame and placed in the timeline, the software allows it to be opened for editing in Photoshop, where it is more convenient to add

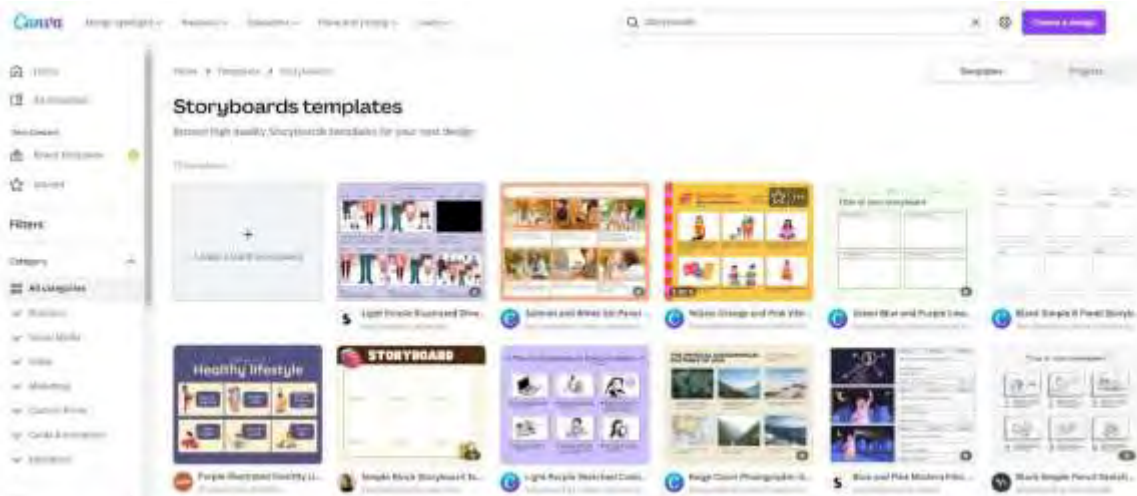
colours or modify backgrounds to achieve a more personal style. A set of tools facilitates the compilation of the textual parts and the layout of the storyboard, or the import of an audio and subsequent export of a video animation of the storyboard just created (the processing is called *Animatic*).







- A much simpler tool for preparing digital storyboards is **Canva**. Canva offers dozens of preset templates but also the possibility of creating your own template from a blank project.



## Feedback from the lesson

### *Strengths:*

- Students can also access the work later or another day according to their needs. A time of 2-3 days could be given to add something that one did not have in mind at that time.
- At home, on their own computer rather than in the classroom, students have access to more material such as photos, music, personal videos to insert in the map

### *Weaknesses:*

- Not all students respond well to this type of lesson because they need to be present to feel accompanied in their learning process.
- It is more difficult to moderate online groups.

## Online version of the lesson

- The teacher plans the lesson and shares the link with the class via **Google Classroom**
- The teacher gives a general introduction on what a storyboard is and provides some examples of different types of storyboards through a Powerpoint presentation projected in class.
- The teacher asks the students to identify the story they would like to illustrate in the storyboard. To do this, the students must
  - Analysing their context (who they are, what they do)
  - Choose an objective (what do they want to say? what is the aim of their story?)
  - List important plot points (where they want to start from and why, where they want to go and how the story develops)
- The teacher can also offer suggestions, e.g.
  - What I learnt this summer
  - my first day at school
  - how I met my best friend.
- Students should focus on an event that does not last too long, otherwise the storyboard would be too long.
- Depending on the age and their technical skills of the students, the teacher shows **Storyboarder or Canva** and explains how login and start the work on the storyboard
- With the help of the spaces and lines of the model, students can structure their stories and explain them with key words. It is also possible to work only with pictures. There is no demand on the quality of the pictures (stick figures).
- Start from the top left-hand box and proceed in sequence illustrating in sketch form what is to take place in the various scenes.
- At this point, students have to write a description for each illustration, giving details of the setting, any background music, dialogue between the characters and their moods.
- Depending on the class level and size, this step takes 60 minutes or more.
- Once the time available to complete the storyboards is over, those who have finished can present their work to the class.
- It is recommended to allow extra time (a few days) to add something and finally save all the material

# Video Editing

In this lesson, students will delve into video post-production from already created footage. In particular they will learn:

- how to edit a video
- create the sound design necessary for their communication project
- manage the main editing software
- finalize a project in various formats and for various outputs

## Offline version of the lesson

- The lesson takes place in a computer room. Before the start of the lesson, it must be ensured that the necessary technical equipment is available. See a checklist here:
  - Are the individual pupils or each working group equipped with suitable and functional hardware (Smartphone/Tablet/Laptop/PC)?
  - Are there enough electrical outlets in the room?
  - Is the selected software available for video production? - So is it either pre-installed or do the licenses for online programs exist?
  - If necessary: Is Internet access guaranteed?
- For this lesson we use the **Adobe Premiere**, as all editing software are structured in the same way, the instructions remain valid for any other editing software. The following editing programs are available for video production:
  - **Inshot**: app available for iOS and Android. Practical for those who prefer to work from mobile, ideal for students.
  - **Screencast-o-matic**: there is both a web version and an app for iOS and Android.
  - **Animaker**: This app can be useful as it provides the possibility to create free animated educational videos. To do so, simply register.
  - **Clipchamp**: Web version only. Allows quick and easy video editing.
  - **iMovie (Apple) - MOVIE MAKER** (only available on some Windows versions)
  - **SHOTCUT** - available in many languages
- Before the lesson, each student should be asked to bring to school on a USB stick or have available on the cloud a raw video to edit of their choice. The content of the video is not important but we recommend not choosing videos that are too long to make the project easier to manage and to stay within the lesson time
- The teacher gives a general introduction on editing, what it is and gives some examples of editing using **PowerPoint** and **YouTube**
- At this point everyone opens the editing software and the teacher, by projecting his/her computer screen, shows how it is structured. Topics:
  - The concepts of Timeline e Sequence
  - Footage categorisation
  - Linear and non-linear story approach
  - Editor's workflow

- The teacher illustrates the first stage of editing is rough editing. It is here that the skeleton of the film comes to life, through a series of 'obligatory' steps. The teacher shows how to cut the clip and insert it into the timeline. In this step the student is called upon with an interesting exercise in objectivising the choice of clips, beyond their own tastes and styles.
- Before starting the editing, the teacher gives a brief introduction to the sound design
  - Topics:
    - Reality vs. emotionality of a sound
    - recreating the real or creating drama.
    - Mixing and sound levels of a video
- After the theory comes the time for editing practice. The teacher asks the students to test themselves with a small edit of the video they have selected for the task. The students also choose the music that best accompanies their editing. They can choose famous music or music made available free of charge by various platforms such as **Youtube audio Library**
- The time required here is very different from individual to individual. Let's say that to create a very simple video and test the newly acquired skills takes about 1 hour - 1.5 hours
- In video production, it can be useful for students to work in small groups in order to better share their experiences with the software.
- During this activity the teacher should go around the tables to help and answer questions.
- Once the time available to complete the videos is over, the teacher then explains the basic parameters for a successful export.
- Exporting videos usually takes a few minutes.
- It is recommended to allow extra time (few days) to add something and finally save all the material

## Shift to online version of the lesson

### Things to be considered

- All class participants must have adequate technology and internet connection.
- Not having access to the students' computers, they must be able to solve hardware problems on their own.
- It is more complicated to follow the students in their personal projects, especially to keep them focused on the objective and not produce a video too long or too elaborate for the purposes of the lesson.

### Reasons for the decision

- Allows several classes to be mixed
- Students do not have to be all together at the same time
- Teachers can conduct classes the way they did in a real classroom, but they can also share the contents of their screen, draw over a whiteboard to explain things better, mute participants for a seamless teaching session
- The teacher has direct access to the children's projects and can check the status of the work at any time, from anywhere

### Tools and apps used

- Google Calendar and Google Meet: for the virtual lesson

- PowerPoint and YouTube give an introduction of the concept and provide some examples and good practice on the topic.
- Wevideo for video editing

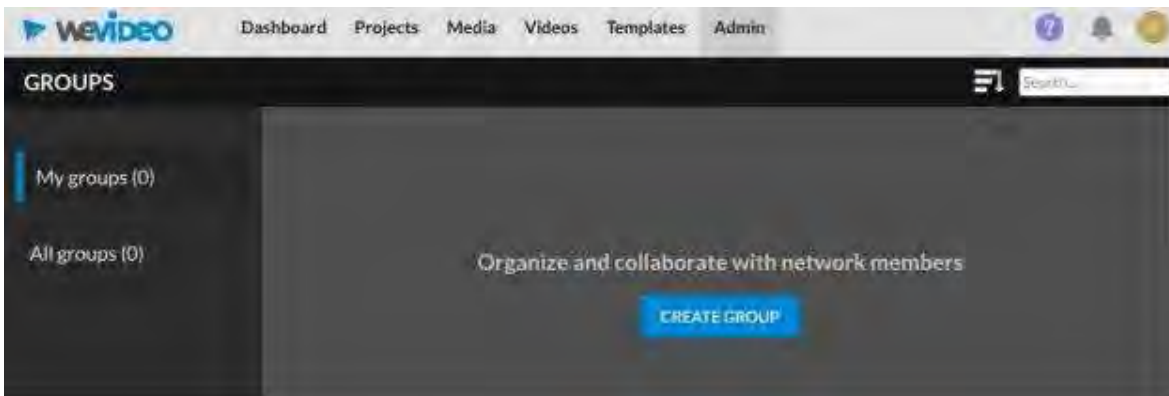
### Competencies needed to be newly acquired

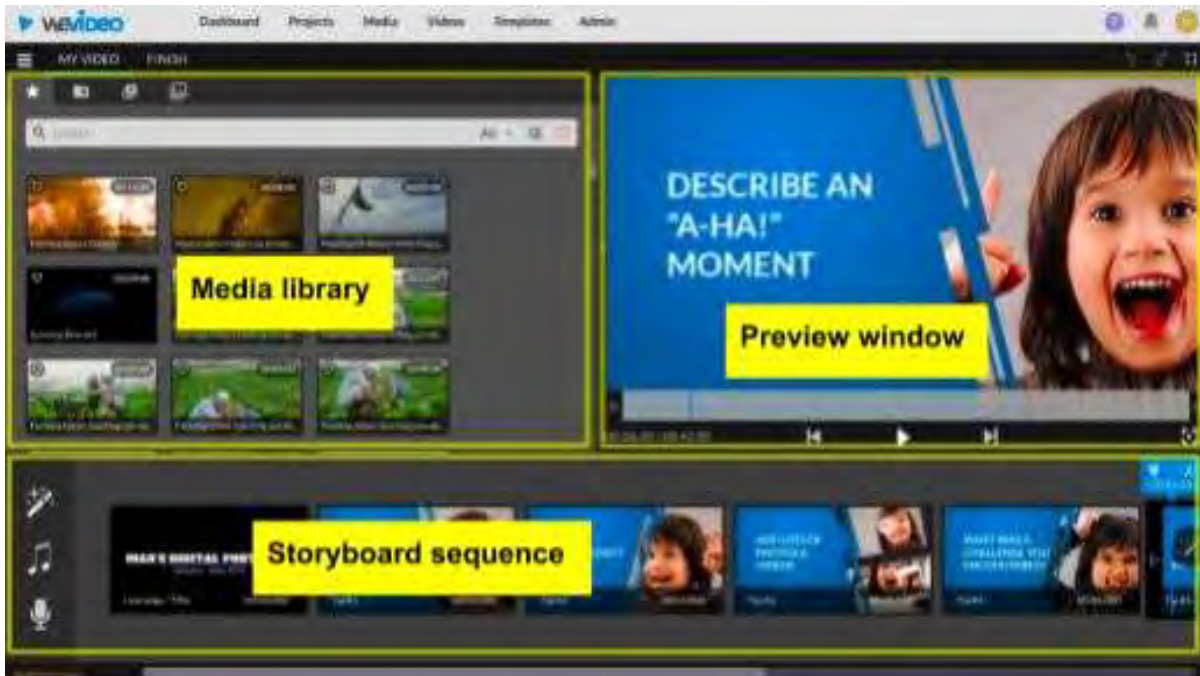
- Create a lesson on **Google Calendar** and **Google Meet**
- Create a simple but engaging presentation with **PowerPoint**.

Some examples

- One idea, one slide. Don't fill slides with text
  - Two colors, two fonts. maximum
  - Keep rhythm and movement by inserting videos.
  - Use icons or pictograms
  - Let quotes do the talking
  - Use images to emphasise important concepts
  - Simplify through visual associations
  - Offer simple content
- **Wevideo** WeVideo has a dedicated plan for teachers. Within Wevideo, the teacher can create his / her own classroom and invite students in via a link or code.
  - The students will only see their project but the teacher can access each of the students' editing projects. The teacher has full access to everything, can correct errors, solve problems, help, etc.
  - This plan includes a royalty-free media library with over 1 million resources of videos, images, music, green screen creativity tools, animation titles and teaching templates. With WeVideo, you can create GIFs, podcasts and screen recordings.









## Feedback from the lesson

### *Strengths:*

- Students can also access their work later or another day according to their needs. A time of 2-3 days could be given to add something that one did not have in mind at that time.
- At home, on their own computer rather than in the classroom, students have access to more material such as photos, music, personal videos to insert in the video

### *Weaknesses:*

- Not all students respond well to this type of lesson because they need to be present to feel accompanied in their learning process.
- it is not possible to solve hardware problems remotely for the teacher
- Need a very fast and stable connection to edit with an online programme

## Online version of the lesson

- The teacher plans the lesson and shares the link with the class via **Google Classroom**
- He/She also create a class group on **WeVideo** and send the invitation via link (or code) to the students
- Before the start of the lesson, it must be ensured that the necessary technical equipment is available. i.e. a laptop/PC and a stable Internet connection for each student.
- Before the lesson, each student should be asked to select a raw video to edit of their choice. The content of the video is not important but we recommend not choosing videos that are too long to make the project easier to manage and to stay within the lesson time
- The teacher gives a general introduction on editing, what it is and gives some examples of editing using **PowerPoint** and **YouTube**
- The teacher shows how WeVideo is structured. Topics:
  - The concepts of Timeline e Sequence
  - Footage categorisation
  - Linear and non-linear story approach



- Editor's workflow
- The teacher illustrates the first stage of editing is rough editing. It is here that the skeleton of the film comes to life, through a series of 'obligatory' steps. The teacher shows how to cut the clip and insert it into the timeline. In this step the student is called upon with an interesting exercise in objectivising the choice of clips, beyond their own tastes and styles.
- Before starting the editing, the teacher gives a brief introduction to the sound design
  - Topics:
    - Reality vs. emotionality of a sound
    - recreating the real or creating drama.
    - Mixing and sound levels of a video
- After the theory comes the time for editing practice. The teacher asks the students to open wevideo and to test themselves with a small edit of the video they have selected for the task. The students also choose the music that best accompanies their editing. They can choose famous songs or music from **Wevideo's internal library**
- The time required here is very different from individual to individual. Let's say that to create a very simple video and test the newly acquired skills takes about 1 hour - 1 hour and half
- During this phase the teacher is available to the students to solve problems within their editing projects. The teacher has access to all the material the students have imported into the project.
- Once the time available to complete the videos is over, the teacher then explains the basic parameters for a successful export.
- Exporting videos usually takes a few minutes.
- It is recommended to allow extra time (few days) to add something and finally save all the material

# Economics



# Health & Work

## Offline version of the lesson

(A brief introduction to the subject, general situation, type of lesson. What the aim of the lesson would be and how the lesson would be used.)

The aim of this lesson is to learn about the relationship between work and health and how they influence each other, both positively and negatively. In this lesson students will learn about various risk factors, risks and eventual harms.

Usually we start by explaining the topic we are going to study. The students offer their ideas and knowledge to add into the topic of the lesson. This part takes place at the beginning of the lesson.

Then we divide into smaller teams to participate in different activities enabling us to put the topic into practice. For example: One team represents a company and the other team represents its employees. And we discuss job-related health issues. Through this experience, we hope that the students will understand - in a practical way - the different functions and obligations they will have depending on the position they will occupy in the future.

My opinion is that the offline lesson leads to good learning results and to better interpersonal relationships.

## Online version of the lesson

(What had to be taken into account, the reasons for the changes that were made, the new applications and tools that had to be incorporated into the lesson.)

To turn it into an online lesson, I had to change the lesson. It is much harder to work as a team online than it is offline.

I had to prepare some extra exercises because, in my opinion, it is more difficult to understand the explanation via online platforms. That is why I am deeply convinced that it is absolutely necessary to include additional exercises to support the explanation.

I decided to change my exercises from teamwork to work with individuals. And I also decided to change my way of teaching the lesson because the students had problems paying attention to online presentations.

I opted to use websites like Kahoot, Genially and Youtube. **Kahoot** helped me to review using the game. **Genial.ly** enabled us to work as a remote team. And **Youtube** provided us with a lot of useful information to support our activities. I had to learn how to use Genial.ly and found some information and videos on Youtube. I already knew Kahoot, so I just had to dig a little deeper on the web.

I used all the websites and apps in the free version, which meant we just had to download the apps and we could start working immediately. The only thing I had to pay for was Kahoot. I did this because it gave me the opportunity to prepare some high quality exams for my students.

## Final result

I prepared PDF notes on the lesson to give to the students. We used Kahoot to introduce various labour-related risks. I had a presentation on the topic of health and work done in Genial.ly. We included competitions – we drew and mimed some keywords. We discussed different labour risks and management of occupational risk prevention.

The learning outcomes were similar in the offline and online versions.

## Feedback on the lesson

There was no connection between the participants themselves. At the beginning I thought that the online lessons would be much more interactive because we had prepared material for it. I used interactive games like Kahoot or team games that simulated the risks of working remotely through their own experiences. I also tried games that involved whole class interaction, such as writing a risk that you think your partner might have in their daily work and then discussing it.

But the reality was a bit different. Most of the participants felt quite disconnected from the group as they did not see each other in person and their enthusiasm vanished. The participants seemed to be much more motivated during the offline lesson because they were able to create real interpersonal relationships and friendships and the general atmosphere was more enthusiastic. Also, the fact that they were not forced to have the camera on often made it difficult for us to know if they were actually connected. I think that the online lesson caused a bit of disappointment on both sides.

In the case of the online lesson, I have to admit that the interpersonal relationships were diminishing and hardly any bonds were created between the students. In the end, we ended up not knowing each other throughout the year. I admit that I might prefer offline teaching as I prefer creating direct relationships with my students.

I focused my effort on creating a bond between the participants and facilitation of learning through fun in the online lesson. On my side it required lots of effort, but the results were, in my opinion, not as satisfactory as I expected. I think we were able to immerse ourselves in the world of new websites and skills, but unfortunately in the end I think it was not as effective as I expected. However, we were able to pick out a lot of helpful elements to use even in face-to-face lessons.

# How to Calculate a Payroll

## Offline version of the lesson

This lesson is part of the Vocational Training and Guidance module, which is included in all intermediate and higher vocational training cycles in Spain.

The objective of this lesson is to know how a simple payroll is calculated and, in particular, the procedure to follow once a job has been found in order to know if the company has calculated the salary to be paid correctly.

To carry out this lesson in an offline scenario, the main thing is to explain the structure of the payroll and how are calculated the quotas that the employer will enter into the system of tax authorities and social security to be able to deduct them from the total of the concepts that the worker receives and know the salary that must be received by the worker. In this case, a step-by-step explanation is given on the blackboard and the students must take note of it in order to carry out the exercises autonomously.

In order to prepare the lesson "How to calculate a payroll", I need:

- to prepare the statements for the exercises and to do the calculations myself;
- to simulate how long it will take me to explain how to do the calculations and to make an estimate of how many lessons it will take;
- to make a list of the copies I should give to the students, because they need to know how to calculate the amount of money the employee is going to receive;
- to make the copies and give them to the students.

## Online version of the lesson

Faced with the need to move this lesson online, I had to consider the following. I had to look for official websites that could be useful for my students and for videos on Youtube on how to calculate a payroll. I also tried to find an application or a website where I could explain the mechanism of a payroll. It was necessary to prepare pdf notes on the mechanism of calculating a payroll. I also had to decide whether to record myself explaining how to calculate a payroll. To do this, I had to buy a digital blackboard to record myself and learn how to use it. I also had to learn how to use the computer screen recording software and how to edit the videos I would record. As this is a very practical lesson, I find the ability to record a video tutorial very interesting, rather than searching for one on YouTube, as it can be very difficult to find a video that shows exactly what I want.

In the end I decided to give them pdf notes because I think the students should have these notes written, but I think they should learn by doing and it is likely that they may not understand the pdf notes without explanation, so in the end I decided not to look for Youtube videos because I have my way of explaining this and I want the students to follow my method.

I also had to study different online applications and programmes to create infographics and videos and learn how to use them to get the most out of them. I also had to learn how to use a digital blackboard to show the calculations, because I think it is better to use it like in the classroom.

I chose Genial.ly, an interactive application designed to create interactive lessons and gamification activities that make it easier for students to understand visual and interactive content. With Genial.ly, students pay attention through visual content and participate through interactivity, so that they can discover information on their own. I purchased the Genial.ly Premium Plan, because it allowed me to use more templates than the free plan.

I also used OBS Studio, a program that allows me to record myself and the computer screen while I explain how to calculate payroll using the digital blackboard.

I certainly had to discover new ways of teaching, how to explain concepts without having face-to-face communication.

## Final result

The first online session introduces the subject of the lesson and explains the different parts of the pay slip.

It then explains how the bases are calculated to determine the rates that the employer deducts from the employee's pay to pay to the tax authorities and social security system, and how the actual amount that the employee receives as salary is determined.

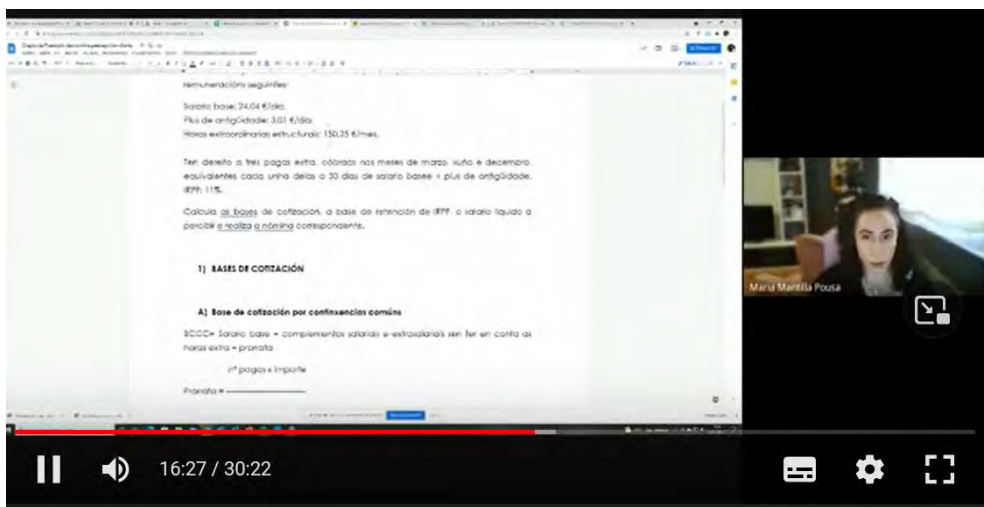
Here are links to the online learning material I managed to produce for the students:

[Pdf notes](#) of the lesson.

[Video](#) of theoretical concepts of the topic based on a [Genial.ly resource](#) of the payroll structure.



[Video](#) on how to calculate a monthly salary worker's payroll.



[Video](#) on how to calculate a daily monthly salary worker's payroll.

[Video](#) on how to calculate a severance payment.

Then, the activities were uploaded to the school application (Moodle), all work done by the students was corrected online.

## Final feedback

The most important thing in this case is to distinguish between the different types of students in higher and intermediate vocational education and training.

The higher cycle students are more mature than the intermediate cycle students, because although both are not compulsory, the higher cycle students are older than the intermediate cycle students, and they usually have more knowledge and are more interested in what they are studying. Therefore they are also more self-motivated than the intermediate cycle students. That is why my experience of teaching online with higher cycle students is much more satisfying than with intermediate cycle students.

The biggest complication we find when teaching online is the students' internet connection. Many do not have a stable connection, either from a desktop computer or a mobile device such as a mobile phone, so it is difficult to maintain constant feedback. It is easier for students in higher cycles because they are more motivated and focused on the subjects than students in intermediate cycles.

In this case, despite having constant weekly contact during the confinement, it was sometimes impossible to contact a student during class (because he/she was not connected or because he/she had just connected to class and was not paying attention) or by email. I can say that this was the worst experience during the confinement.

The method of recording the calculation process works very well with older students, but not so much with the intermediate cycle student, for the reasons explained above.

# Personal Income Tax

## Offline version of the lesson

In this unit, the students learn how to calculate the Spanish personal income tax by carrying out each of the necessary steps.

In a classroom scenario, the notes provided by the teacher would be read and, with the help of the provided legislation, the process of calculating the tax would be explained step by step.

Once the students have understood, they would have to carry out the provided exercises.

## Online version of the lesson

Firstly, I had to consider the learners' ability to access the necessary legislation to carry out the activities.

Then, I needed to know and study the different platforms that exist in order to provide the learners with the necessary competences to carry out the activities, search for YouTube videos that could clarify any doubts about the calculation of the tax.

Finally, I prepared some notes in PDF so that the students could follow them to make a correct calculation of the tax.

I decided to prepare some very clear and simple PDF notes, as I think it is better for the students to be able to reach the final results themselves, with no external help. By having some online classes through Google Meet, I can teach them step by step how to calculate the tax.

I also thought it was necessary, although from my point of view the notes would be enough, to provide them with a link to a YouTube video where, if they needed it, they could clarify some steps in the process of calculating the tax.

We used Renta Web, an official interactive simulation application that makes it easier for students to understand visual and interactive content, so students can discover information on their own.

We also looked at videos on YouTube, because there are a lot of options and really good videos to help them solve any problem on the subject.

I had to learn how to use new interactive note-taking applications such as **CANVA**. And I also had to learn how to synthesise as much as possible to provide clear and simple notes. Especially for those students who have problems with their home internet connection and cannot follow the online lessons.

We also used CAIRENT – an alternative payment program for simulations.



## Final result

In a first connection to Meet, the theoretical content of the unit is explained to the students and they are given some tips on where to find resources on the internet to better understand these concepts.

During the second connection to Meet, the process of calculating personal income tax is explained through a step-by-step example. They are given the first exercises to do and are invited to an extra class to clarify any doubts they may have.

Students complete their activities and upload them to the school application for correction meeting a deadline.

In the final connection to Meet, the suggested exercises are corrected and the last doubts are resolved.

## Theoretical explanation of the unit (Pdf notes - [read more](#))

**DANIEL CASTELAO**  
CENTRO DE FORMACIÓN PROFESIONAL

Regla	Renta obtenida	Límites	Otras condiciones
1ª	- Rendimientos del trabajo	22.000	- Un pagador (2º y restantes ≤ 1.500 euros anuales). - Prestaciones pasivas de dos o más pagadores cuyas retenciones hayan sido determinadas por la Agencia Tributaria.
		14.00	- Más de un pagador (2º y restantes >1.500 euros anuales). - Pensiones compensatorias del cónyuge o anualidades por alimentos. - Pagador de los rendimientos no obligado a retener. - Rendimientos sujetos a tipo fijo de retención.
	- Rendimientos del capital mobiliario. - Ganancias patrimoniales.	1.600	- Sujetos a retención o ingreso a cuenta, excepto ganancias patrimoniales procedentes de transmisiones o reembolsos de acciones o participaciones de IIC en las que la base de retención no proceda determinarla por la cuantía a integrar en la base imponible.
	- Rentas inmobiliarias imputadas. - Rendimientos de Letras del Tesoro. - Subvenciones para la adquisición de viviendas de protección oficial o de precio tasado	1.000	
	- Ganancias Patrimoniales Derivadas de Ayudas Públicas		<b>A partir de 2019!</b>
			<b>Otras condiciones</b>

## Free activity ([read more](#))

(Step-by-step description of what to do in the activities. A video of the Spanish Tax Agency explaining the procedure to be followed is attached.)

	INDIVIDUALES		
	CONJUNTA	Declarante	Cónyuge
	Presentación de declaración	Presentación de declaración	Presentación de declaración
	Villa de origen	Villa de origen	Villa de origen
IRPF			
Resultado de la declaración	0,00	0,00	0,00
Base imponible general	0,00	0,00	0,00
Base liquidable general sometida a gravamen	0,00	0,00	0,00
Base imponible del ahorro	0,00	0,00	0,00
Base liquidable del ahorro	0,00	0,00	0,00
Adecuación del impuesto a las circunstancias personales y familiares			
Máximo del contribuyente, importe estatal	5.550,00	5.550,00	5.550,00
Mínimo del contribuyente, importe autonómico	5.550,00	5.550,00	5.550,00
Máximo por descendientes, importe estatal	1.200,00	1.200,00	1.200,00
Mínimo por descendientes, importe autonómico	1.200,00	1.200,00	1.200,00
Cálculo del impuesto y resultado de la declaración			
Tipo medio estatal general	0,00	0,00	0,00
Tipo medio estatal del ahorro	0,00	0,00	0,00
Tipo medio autonómico general	0,00	0,00	0,00
Tipo medio autonómico del ahorro	0,00	0,00	0,00
Cuota íntegra estatal	0,00	0,00	0,00
Cuota íntegra autonómica	0,00	0,00	0,00
Deducciones generales			
Por rentas obtenidas en Castilla o Melilla (parte estatal)	0,00	0,00	0,00
Por rentas obtenidas en Castilla o Melilla (parte autonómica)	0,00	0,00	0,00

### Example activity. (Read more – in Spanish only.)

An activity through which the calculation of the tax was explained at the Meet session convened for this purpose.

### Final feedback

First of all, we must bear in mind that not all students respond in the same way to this type of online teaching, as there are many variables that can affect them, such as their particular internet connection or their own personal characteristics, for example certain conditions that prevent them from following an explanation.

During our confinement, the school tried to solve the first of the difficulties mentioned above (internet connection) by providing them with the school's own computers and Wi-Fi access, which the school had purchased.

With regard to the second variable (the personal characteristic of the student), it was the teacher himself who had to decide what to do in his module.

In my case, I tried to contact each of them individually to find out what problems they thought they might have and to try to solve them, even offering them private lessons through individual connections on Meet.

However, with some students it was impossible to connect because, despite my efforts, they did not respond to the emails or connect to the online classes.

# Organisation of the Spanish State

## Offline version of the lesson

The aim of this lesson is for students to learn about the political and social context in which the current Spanish Constitution was adopted, so that they would be able to make a critical analysis of the current situation.

In addition, students study in depth the different types of institutions (legislative, executive and judiciary), i. e. what they consist of and how they are constituted.

In the first part of the lesson, we usually watch a one-hour video on the Spanish transition from dictatorship to democracy, which shows what Spanish society was like at the time.

In order to prepare the lesson 'Organisation of the Spanish State', I need to prepare the theoretical notes that will support my explanations, as well as a plan on how long it will take me to explain each part of the lesson.

It is highly recommended to hand out the notes after the explanation so that the students can take their own notes and answer the questions asked during the explanation without reading from the material provided by the teacher.

I find this last point very important as it forces the students to think of an answer and use their own resources rather than reading from a document.

The explanation of this lesson does not require any specific method or knowledge of digital tools, as it is a purely theoretical content with a blackboard and a marker to draw diagrams.

## Online version of the lesson

In order to provide an online lesson for my students, I had to think about several things. I had to look for websites that could be useful for the students, as well as videos on YouTube. I also needed to find applications and websites that could support my explanations with visuals. I decided to prepare PDF notes on the theory and record myself explaining the lesson. I had to buy a digital blackboard to record myself. I had to learn how to use the digital blackboard and the computer screen capture and video editing software.

The most difficult thing is to keep students motivated to study a theoretical lesson, especially a legal lesson like this one, so I decided to use visual aids and not record my own explanations, as the visual aids and the pdf notes were enough to answer the exam questions.

I gave them PDF notes because I think it is better for the students to have the most important points written down. They are preparing for a theoretical exam, so they need such notes.

I also studied various online applications and programmes to prepare infographics and videos, as these will accompany the PDF notes in the general explanation. In this lesson they should learn how to calculate the number of political representatives a party will have in the Parliament, so I wanted to explain the process to them. Having found the appropriate applications and programmes, I had to learn how to use them to get the most out of them.

In the end, I chose Genial.ly, an interactive application helping me create interactive lessons and gamify activities that made it easier for students to understand visual and interactive content. With Genial.ly, students manage to remain focused thanks to visual content and participate through interactivity. It allows them to discover information on their own. I had to purchase the Premium Plan version enabling me to use more templates. And I also looked for videos on YouTube because there are a lot of options and really good videos on this topic that they can use to illustrate the theoretical concepts.

I had to learn to teach in a new and creative way and find ways to explain the subject without face-to-face communication. I also had to master the new applications.

## Final result

The first online session introduces the topic of the lesson by asking what they know about the subject, if they know what a constitution is and, more specifically, if they know the context in which the Spanish Constitution was adopted.

Many of the current students are not Spanish, so this first approach to the subject is very interesting for them, as it enables them to learn why the society of the country in which they live behaves. Since we do not have enough time to watch the video on the transition (which I referred to at the beginning of this document) and there is no way of knowing if the students are paying attention, I would provide them with a YouTube link so that they could watch it also on their own. We discussed the way of transition from dictatorship to democracy in Spain and its profound impact on the rules laid down in the Constitution.

Then we go through the different areas of the subject one by one, explaining the most important parts. We also use explanatory YouTube videos which, if they are simple and less than 5 minutes long, we watch together and then comment on them.

Here are the links to the final online learning material for this lesson.

[Pdf notes](#) of the lesson.

[The Constitution](#). This is an infographic that explains the concept and characteristics of the Spanish Constitution, its inspiring values and principles, who can request its reform and what are the powers of the state.



Aínda que o vídeo fala de Chile, podemos extrapolalo a España.

The [separation of state powers](#). This is a dynamic presentation of genial.ly in which you can find the explanation of Montesquieu's power division theory.

[Constitutional reform](#). YouTube video on constitutional reform.

[The legislature](#). Presentation in Genial.ly on the Cortes Generales (the Spanish Parliament) - the Congress and the Senate and the prerogatives of the parliamentarians.



[The Spanish Parliament](#). YouTube video on constitutional reform.

[Labor Courts](#). It is a dynamic presentation in Genial.ly where you can see the Spanish judicial pyramid and where it is explained how it works and which are each of the judicial levels.



[Video](#) YouTube video on constitutional reform.

[The Constitutional Court](#) YouTube video on Constitutional Court.

[The Public Prosecutor's Office](#) YouTube video on the Public Prosecutor's Office.

[The Executive Power](#) YouTube video on the Executive Power.

[Government and Administration](#) YouTube video on the Government and Administration.

[How the president of the government is elected](#) YouTube video on how the president of the Government is elected.

[Censure motion](#) YouTube video on the censure motion.

Then, the activities were uploaded to the school application (Moodle). Any work of the students was corrected online.

Review of Unit 1 - [Breakout](#)

An online exam. An online questionnaire (short or multiple questions) about the concepts they have studied.



## Final feedback

The module in which this lesson is found is part of a Higher Cycle of Vocational Training, so when programming the course and modules we assume that the students have enrolled in this cycle because they are interested in learning the trade. Despite this, confinement has taught us that motivation for online learning must be accompanied by a good dose of extrinsic as well as intrinsic motivation.

Most of my students were able to complete this module without any problems, as it is sufficient to pay attention to the presentations, the provided YouTube videos and to carry out the practical exercises suggested, together with a proper reading of the notes in pdf.

However, a small part of the students disappeared, they did not connect to the online classes and did not carry out the suggested exercises.

What I mean by this is that in order for an online course to be satisfactory, in addition to having a motivated student, we should bear in mind that not all homes have a stable internet connection or modern computer equipment on which to play videos or process texts correctly.

With this in mind, it is important to use tools that can be used on portable devices such as mobile phones or tablets, so that all students have access to the material to complete the module.

We were instructed by the regional government to maintain a class schedule during the lockdown that simulated school attendance, so we had to be in constant contact with the students. Through these online lessons we could see if the students had difficulties in following the explanations or not. However, in some specific cases, they connected and it seemed that they were not following the lesson, as they did not answer any questions (direct or indirect) they were asked, neither through the microphone nor in the chat of the Google Meet application.

In addition, we could not force the students to turn on the camera to make sure that they were at least in front of the computer, which made it even more difficult to know how they felt and what difficulties they were having.

# Loans and Amortisation System

## Offline version of the lesson

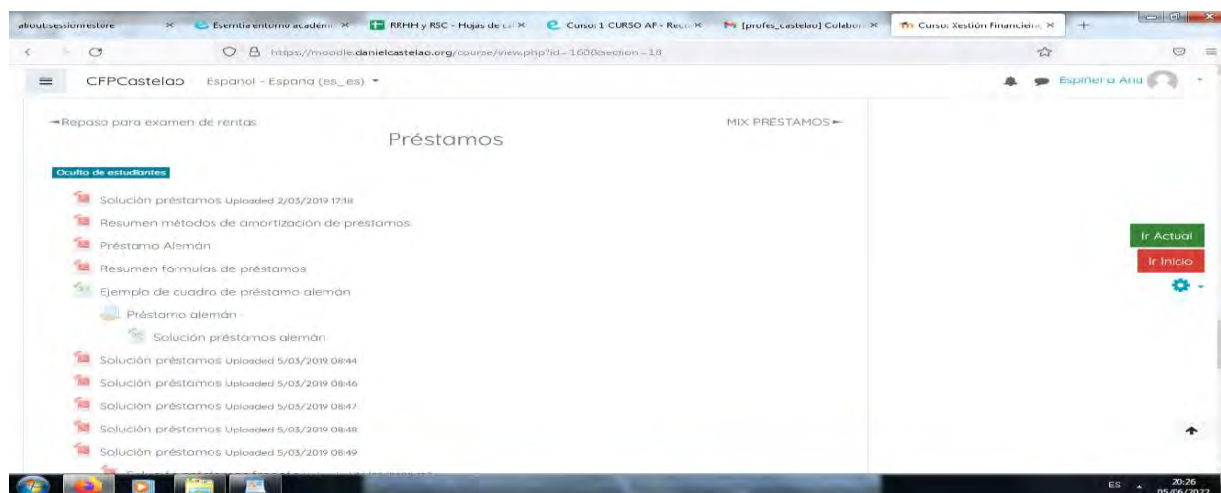
The subject would be Xestión Financeira (Financial Management) in the 2nd year of the Higher Cycle of Administration and Finance. The topic would be loans and amortisation systems; for example, the French system or constant amortisation terms.

In an offline version, it would be a lesson in which I would use a sample exercise and solve it step by step with the help of the board and the provided instructions.

We would explain the characteristics of the method (then I would upload the presentation in the Moodle with all the basic concepts); we would build the amortisation table step by step (then I would upload the presentation, a model of the amortisation table with the basic formulas and the solved exercise in the Moodle).

Afterwards I would assign exercises to practise the method in the Moodle, after the deadline I would also upload the solution of the exercises.

Screenshot of the Moodle in offline version:



## Online version of the lesson

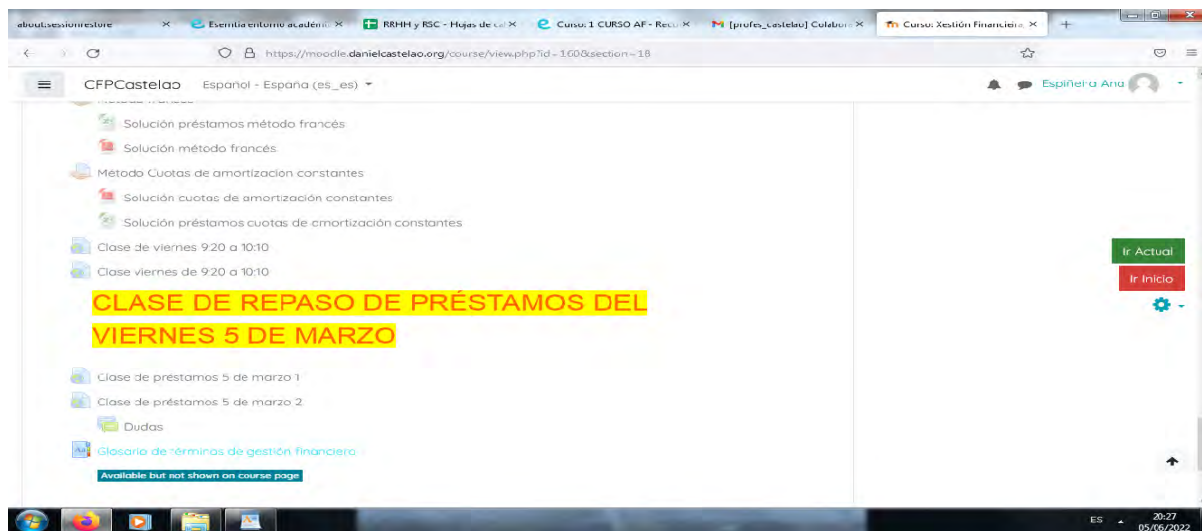
The first thing I had to take into account was the obvious fact that we would not be able to see each other face-to-face and therefore the method of explanation I did in the classroom was not viable anymore.



I decided to use the same lesson but organising a videoconference. I also decided to record it and then upload it to the Moodle so the students could see it and use it as many times as they need. I basically decided to use the computer as if we were in a classroom and use the video conferencing to provide the explanation.

Otherwise the notes would be the same. I planned to use the forums and chats to resolve doubts and encourage teamwork, taking into account all the students.

Screenshot of this online version:



In the end, taking into account the time we had to accommodate our ways and methods, my knowledge and the resources I had at my disposal, I decided to use the computer as a blackboard and use video conferencing to share my screen and run the explanation

Later, when we had half the class in the classroom and the other half at home, I recorded the masterclass and uploaded it to the Moodle so that the students could watch it at any time.

To support my students I used chat, forums and email to clear up any doubts that arose.

The students uploaded the assigned exercises by scanning, using photos or producing them digitally.

I did not have to buy anything, I just had to ask the Virtual Classroom administrator to update certain options, such as the creation of interactive resources. After that, I used other programmes, but I used the free versions, like Padlet, Canva, etc.

## Final result

We used the Meet for video conferencing, screen sharing, and recording, than we shared the recorded version via Moodle. The Moodle was also used for uploading notes (files), exercises (assignments), chats, forums, etc. Also emails were used to resolve any doubts or incidents that might arise among the students. I used Drive to back up the exercises and to share the documents, explanations and solutions to the exercises. All of the above-mentioned tools were used because

they were the ones we all had available and we all knew how to use them. Therefore it was easy to use them or learn how to use them.

## Final feedback

After this forced experience, online and partially online, half face-to-face and half online, I decided that I needed to learn all I could about evaluating and making the most of Moodle. I also had to learn about the assessment tools in the virtual classroom (creating question banks and quizzes; methods of marking assignments; creating surveys; Moodle grader settings; assessment workshops). I also needed tools for collaboration and interaction in the virtual classroom (creating groups, limiting tasks and content; glossary and database; synchronous and asynchronous communication tools). I also had to find tools for creation of digital content for the virtual classroom (question banks: Abalar project repository; creation of interactive resources and integration of content packages in the virtual classroom; editing tools for content creation: sound, image and video). I also needed to create and manage exams in the virtual classroom (creation of a database and organisation of questions into categories; configuration of exams and management of results).

Basically, I decided to train myself in order to have more alternatives when choosing whether or not to run online courses.

If I were to prepare a new online lesson now, I would replace the lecture or accompany it with an interactive video, using as a basis the existing resources both on YouTube and in the Abalar project repository. I would also use a glossary for the basic concepts of this lesson and I would use games such as hangman or crosswords to reinforce these concepts. I would use assessment through the virtual classroom, exams, groups, constraints and graded exams. I would also use chat rooms, forums, etc.

# Expiration of an Employment Contract

Offline version of the lesson:

*(A brief introduction to the subject, general situation, type of lesson. What the aim of the lesson would be and how the lesson would be used.)*

This lesson is part of the Human Resources Management module of the second year of the Higher Cycle of Administration and Finance. Its main objective is to learn about different types of termination of an employment contract and how the different types of compensation are calculated.

As this is a second year course, students will already have some basic idea of the topic from the first course module "Training and Vocational Guidance". Therefore, we would start this lesson by reviewing the types of termination that exist, and then I would explain the practical part, which is to calculate the amount that an employee would receive if he/she were to be compensated for the loss of his/her job.

Before explaining the practical part, the students are given out notes on the theory and on how to carry out the practical part, so that they can consult them in case of doubt.

An example of each type is made by the teacher in the classroom and then we work individually to solve the doubts that arise when the students work autonomously.

Online version of the lesson

*(What had to be taken into account, the reasons for the changes that were made, the new applications and tools that had to be incorporated into the lesson.)*

I had to take these **extra steps** and **change** the following things **for the online version**:

1. Search for websites that could be useful for students.
2. Search for useful videos on Youtube.
3. Try to find an application or website where I could explain the basic concepts using visual thinking.
4. Prepare pdf notes of the theory.
5. Record myself explaining the lesson.
6. Buy a digital blackboard.
7. Learn how to use the digital blackboard.
8. Learn how to use computer screen capture software.

## 9. Learn how to edit the videos I would record.

In this specific case lesson, I found it very useful to **record myself** explaining the practical part. **Following the process step-by-step is better than working with notes.**

Another option is to search for YouTube videos, but sometimes it is difficult to find one that explains the process the way I would find suitable.

## The course of the lesson that had to be changed, how, and why.

I decided to give the students **pdf notes**, because I think it is better for the students to **have these ideas in writing**. They are preparing for a theoretical exam. Therefore, in order to **pass this exam**, they need these notes very much.

I also had to try out various **online applications and programmes** to prepare **infographics and videos**, because I think it is better than preparing only pdf notes to **explain practical concepts**.

And I had to **learn how to use these applications to get the most out of them**.

I have found the following **tools** to be **the most useful**:

1. **Genial.ly**, an interactive application designed to create **interactive lessons** and **gamification activities**. It makes it easier for students to understand visual and interactive content. With genial.ly, students are more attentive when presented with visual content and participating through interactivity. It allows them to discover information on their own. I had to purchase **Genial.ly premium plan**, because it allowed me to use more templates than the free plan.
2. **Videos on Youtube**, because there are a lot of options and really good videos to help them **visualise the theoretical concepts**.

I had to look for new ways of teaching because I had to find out how to explain concepts without face-to-face communication.

I also had to learn how to use the new applications I decided to use.

## The final result

The first thing I did was to summarise all the possible ways of terminating an employment contract, made a list on a Google Docs that could be used as a shared sheet, so the students could see it all at once.

Then, one by one, the students were reminded of the details of how to terminate an employment contract and the consequences for both the employer and the employee.

Once these concepts were clear, we started the practical part of calculating the actual compensation.

An example exercise is introduced to them and we proceeded to solve it gradually, part by part, together - live.

The explanatory videos had been uploaded to the online platform. They could be consulted when solving the exercises individually and when needed. The students were also provided with the solution to the suggested exercises, but only after they handed them in to the teacher. This was done to prevent them from copying.

Any corrections and explanations would be made during the following online session.

[Pdf notes.](#)

[Activities.](#)

[Solved exercises folder](#)

### An excerpt from the folder with solved exercises

\*Annual salary:  $(850 + 47 + 250) \times 12 + (850 + 47) \times 2 = 13.764 + 1.794 = 15.558$

Age: 8 years and 6 months.

Polos 8 years: 33 days x 8 years = 264 days x 42,62 € = 11.251,68 €.

Polos 6 months:

12 months ----- 33 days

6 months ----- x days => 16,50 days x 42,62 € = 703,23 €.

TOTAL: 11.251,68 € + 703,23 € = **11.954,91 €.**

**Limit: 24 monthly payments**

Annual salary 15,558

----- = ----- = 1296,50 €/month x 24 months = 31.116,00

12 months 12

You will be paid according to the calculated compensation.

**TOTAL: 1.147,00 € + 897,00 € + 444,81 € + 382,30 € + 11.954,91 € = 14.826,02 € = 14.826,02 €**



The activities were then uploaded to the school application (Moodle) and corrected online.

An online exam was taken. An online questionnaire (short or multiple choice) on the concepts they had learnt and a practical test to show that they knew how to calculate a redundancy payment.

## Final feedback

Working with the second year students was very satisfying because they already knew the system and methodology I used because I taught them last year and because this group was generally very hardworking.

This made my job a lot easier during the confinement, because even though there were some isolated cases of unstable internet connection, those who were in this situation were able to follow the classes on their mobile phones with great results.

I have to admit that I am not sure how realistic the evaluation of the online teaching of this lesson is, as the experience with other students and a similar subject was not so satisfactory due to low motivation, poor internet connection and computer equipment (lack of it or how outdated it is).

# Labour Law

## Offline version of the lesson

In this lesson, students will learn the basics of Spanish labour law: what law is, more specifically labour law; how labour courts work; and what the types of law exist, and how they are applied.

When teaching this lesson in an offline learning environment, not too many methodological innovations are necessary, since the content is mainly theoretical, so a blackboard and a marker would suffice.

Therefore, the first thing to do is to take some notes to support the teacher's theoretical explanation. In my opinion and experience, it is better to hand them out after the explanation so that the students pay attention to the teacher and do not read from the notes.

Once the notes have been prepared, it is necessary to plan the lesson, i. e. determine or estimate the time needed to explain each part of the lesson.

The next step is to prepare the explanation by making a plan for each part of the lesson.

Finally, the plan is put into practice by checking what was planned and what was actually done.

## Online version of the lesson

I had to consider a lot of different things, for example I had to look for websites that could be useful for the students and videos on YouTube. I also had to try and find an application or a website and prepare pdf notes with the theory. I had to decide whether to record myself explaining the lesson and buy a digital blackboard and learn how to use it. I had to be prepared to learn how to use the software to record the computer screen and edit the videos.

I decided to give them PDF notes because I think it is better for the students to have these terms written down. They would be preparing for a theoretical exam, so they need these notes for that.

I had to study the different online applications and programmes to create infographics and videos, because I think it is better than just preparing pdf notes to explain practical concepts.

In this particular lesson, I did not consider it necessary to record myself explaining the content, as it is theoretical. It is not too complicated, and just by reading the notes, the students should be able to carry out the proposed activities and acquire the necessary competences to pass the course.

I chose Genial.ly, an interactive application whose purpose is to create interactive lessons and gamification activities to help students understand using visual and interactive content. With the paid Genial.ly Premium Plan, students get engaged with visual content and involve themselves with interactivity, allowing them to discover information on their own.

I also used Educaplay, an online platform for creating games to test the content.

And I also looked for videos on YouTube, because there are a lot of options and really good videos to help students visualise the theoretical concepts.

## Final result

During the online meeting, the first thing I did was to tell the students that they already had the notes in PDF format uploaded to Moodle, as well as the different images and explanatory presentations. While I told them about the topics we were going to learn in this lesson, I explained the most important and complex concepts that they needed to know in order to carry out the activities.

The most important or complex concepts that they need to know in order to do the activities were explained and they were reminded that they could contact the teacher whenever they needed to.

Since these are theoretical concepts, they usually did not have many doubts about this lesson, although sometimes it was difficult for them to identify the different types of existing labour relations in practical examples, so it was necessary to give them examples that they could understand during the online explanation.

Afterwards, they were able to work independently and carry out the proposed activities and online quizzes.

These are the resources I used or created:

[Pdf](#) notes.

[Evolution of labour law](#). This is an infographic related to the evolution of labour law, from the Industrial Revolution, through the workers' movement, to the present day in Spain.





[Division of law](#). This is an infographic explaining what both public and private law are and setting out the different parts of each of these divisions.

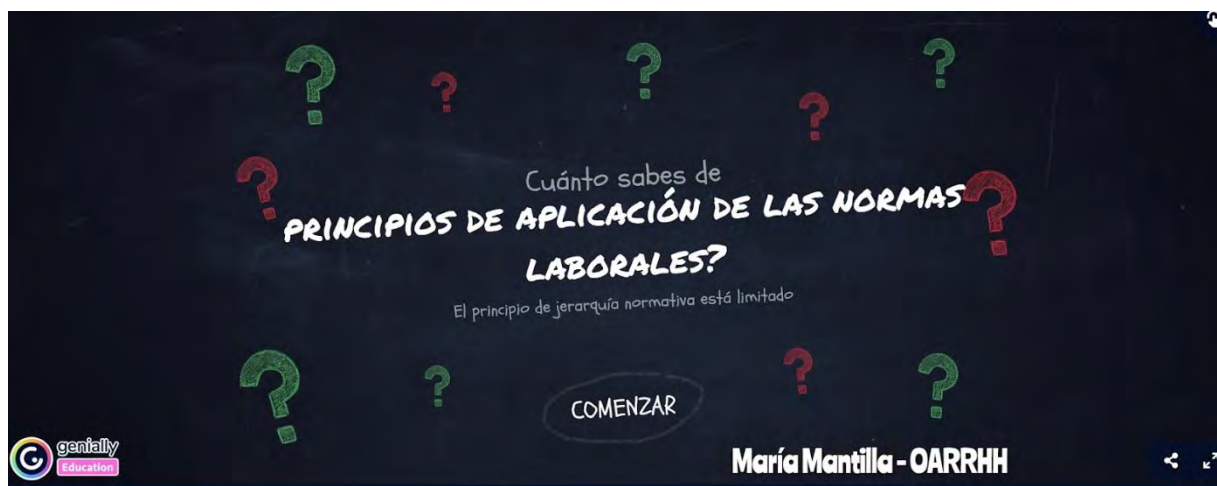
[Labour and labour law](#). It is a dynamic presentation of genial.ly where you can see the different labour relations that exist in Spanish law, as well as the most important labour law regulations and the labour administration.



[Labour courts](#). It is a dynamic presentation of genial.ly where you can see the Spanish judicial pyramid and where it is explained how it works and which are each of the judicial levels.

[Sources of law](#). This is a dynamic presentation of genial.ly where the sources of Spanish labour law can be explained and where the principle of hierarchy of norms is explained, according to which lower-ranking norms cannot contradict higher-ranking norms.

[Principles for the application of labour standards](#). In this last file you will find a Genial.ly game for students to be able to identify the different principles of application of labour standards.



Then, the activities were uploaded on the school application (Moodle) and they were corrected online.

An online exam. An online questionnaire (short or multiple questions) about the concepts they have studied.

## Final feedback

This teaching system will always depend on the involvement of both the students and the teachers.

This subject is part of an intermediate level course, so the students are younger and more immature than in a higher level course, so it was difficult for me to keep them motivated and get them to follow the lessons and do the exercises. In this case, not only because of the lack of intrinsic motivation of the students, but also because not everyone had the same means to have a computer or a stable Wi-Fi connection that would allow them to follow the classes.

One of the best things I can say is that, during my time in confinement, we had an online schedule every week, which allowed me to keep in touch with the students and see if they were following the lessons and if they were struggling with the subject. However, Spanish data protection law does not allow us to force the students to turn on the camera to know if they were really connected or if they had just turned on the app to appear on the list, so sometimes instead of teaching it seemed like we were having séances because you were trying to get a person to answer (orally or through the app's chat) and there was no contact; sometimes because of the poor internet connection and at other times because of the students' own lack of interest.

Anyway, I think that in general I managed to get them to follow this lesson, although for the future I think that in addition to presentations, images or YouTube videos, it would be good to prepare my own videos to create my own video library, and that the theoretical explanations of the notes could be better supported by an oral presentation.

A woman with dark hair in a bun, wearing a green shirt, is seen from behind, sitting at a table. In the background, a man in a light blue shirt is looking towards her. A coffee cup with a red straw is on the table to the right. The scene is set in a dimly lit room with large windows in the background.

# Career Counselling

# Applying for a Job & Interviewing

## Offline version of the lesson

(A brief introduction to the subject, general situation, type of lesson. What the aim of the lesson would be and how the lesson would be used.)

This activity was carried out in May 2020, almost at the end of the third quarter of the course. The students belonged to the first year of the Higher National Course in Administration and Finance. There were a total of 20 students in the group. Prior to the confinement, we worked with a language specialist to develop our English language communication skills.

First, the tutor in charge planned to show some digital content (sample videos) and web resources to practise possible interview questions. The activities were planned to be carried out in pairs or in small groups, with the intention of generating feedback in the class. Pupils would give their opinion on the answers. Then there would be a collective evaluation of the possible reasons why some answers seem more appropriate than others.

Secondly, there would be some sessions in which the students could practise fluency, intonation and correct pronunciation with the help of the language specialist.

Finally, each student would do a mock interview in which the language specialist would play the role of an HR assistant.

## Online version of the lesson

(What had to be taken into account, the reasons for the changes that were made, the new applications and tools that had to be incorporated into the lesson.)

Due to the imposed confinement, all activities that required social contact were cancelled. Interaction between pupils was also affected by the compulsory isolation.

As a teacher, I had to take the new reality into account and start thinking in a more pragmatic way. For example, I started to provide students with “chunks” of reduced and controlled information. In order to work on the interaction between the students and maintain the use of the language, I had to set up a participation table so that the students could talk to the language specialist and ask questions.

In order to work on the interaction between the students and to maintain the use of the language, I had to set up a participation table so that the students could talk to the language assistant and ask questions according to a planned and supervised timetable.

I used **Google Calendar** and **Google Meet** to organise the class. All students had the opportunity to access these services for free with their user accounts. The reason for using Google Calendar is that this service, apart from working as an agenda, allowed students to **mark a regular work schedule**. The reason for using Google Meet is that it is a tool that students can use from any device as it does not require a computer. The advantage of using these two tools was that I did not need to buy any application or tool to carry out this lesson.

**I also had to learn how to record a videoconference - using Google Meet - to give the students access to their exercise so that they could analyse and possibly improve their performance.**

## Final result

Students signed up on a list, indicating the day and time when the mock interview would take place. The teacher set up a meet room and shared the link with the students. These sessions were attended by the language specialist in the role of an HR manager, the candidate (a pupil), and the teacher. The latter did not take an active part. His main task was to initiate the exercise and then to record and evaluate the session. At the end of the session, the candidate was disconnected and the next candidate was given access to the meeting room.

## Feedback on the lesson

Students were not prepared to face simulated interviews via videoconference. The fact that not all students had access to a computer could be considered as a weakness in the organisation of the activity. The possible lack of a connection to the Internet could be seen as an issue that needs to be addressed.

The simulation of job interviews via videoconference was an opportunity for the students to become aware of other alternative ways of applying for a job. In addition, this situation served as an example to raise students' awareness of the fact that conducting job interviews by videoconference is very common in the labour market.

Students showed interest in this type of exercise. This type of activity allows the student to be at the centre of the learning process and to make a more practical use of the foreign language.

# Career Counselling - Employment Interviewing

Off-line version of the preparation

## Goal

In this lesson, students will practice job interview skills, discuss and recognize the do's and don'ts, and participate in a mock interview.

Students will:

- Practice good job interview skills
- Explain the purpose of an interview
- Recognize the do's and don'ts of good interview skills
- Determine the use of their personal resume
- Participate in a mock interview

How does an employer determine who will get hired? What does the process entail? In this lesson, you will prepare for and participate in a “mock” job interview!

## Materials

- 25 essential interview questions and how to answer to them
- Completed job applications
- Props to display examples of what to wear and what not to wear to an interview (examples may include: wrinkled clothes, gum, cell phone, big clunky jewelry, dark lipstick, watch, baseball cap or hat, tennis shoes, t-shirt with logo or inappropriate wording)
- Samples of student resumes
- Classified section of local newspaper

Provide each student with some essential Interview questions that employers typically ask. After allowing students to review the questions, have them brainstorm how they would answer the interview questions.

## **Role Play Activity**

Ask a student to play the role of the employer and you (the instructor) play the applicant. In front of the class, demonstrate how to give a firm handshake. Have them practice with each other.

### **Interview v.1**

Use examples for inappropriate responses such as complaining about the directions to the interview, talking about how your day is going and other things not related to the interview. You may even choose to wear something “inappropriate” and chew gum throughout the interview.

This will allow students to see, first hand, what an “ineffective” interview looks like to an employer.

### **Interview v.2**

On the second interview, model appropriate interview skills. Make good eye contact, have good posture, display a positive attitude, and answer/ask appropriate questions.

As a class, discuss the interviews. Stress the importance of making a good first impression.

Pair students and allow teams to role-play an employer and applicant. Allow them to use the 25 Question material and all their previous created materials (resumes, letter of motivation, etc.).

Have students switch roles after 5 minutes.

Discuss about the experience and what they have learned that will help them in a future job interview.

## **Online version of the preparation**

The essential missing part of this lesson was exactly the direct face-to-face interaction between the students and the experience they could have by being involved in the role-play.

The online approach was cutting off almost everything so I needed to consider how to switch the activities into an online environment and keep the exercising of the skills as much as possible for each student.

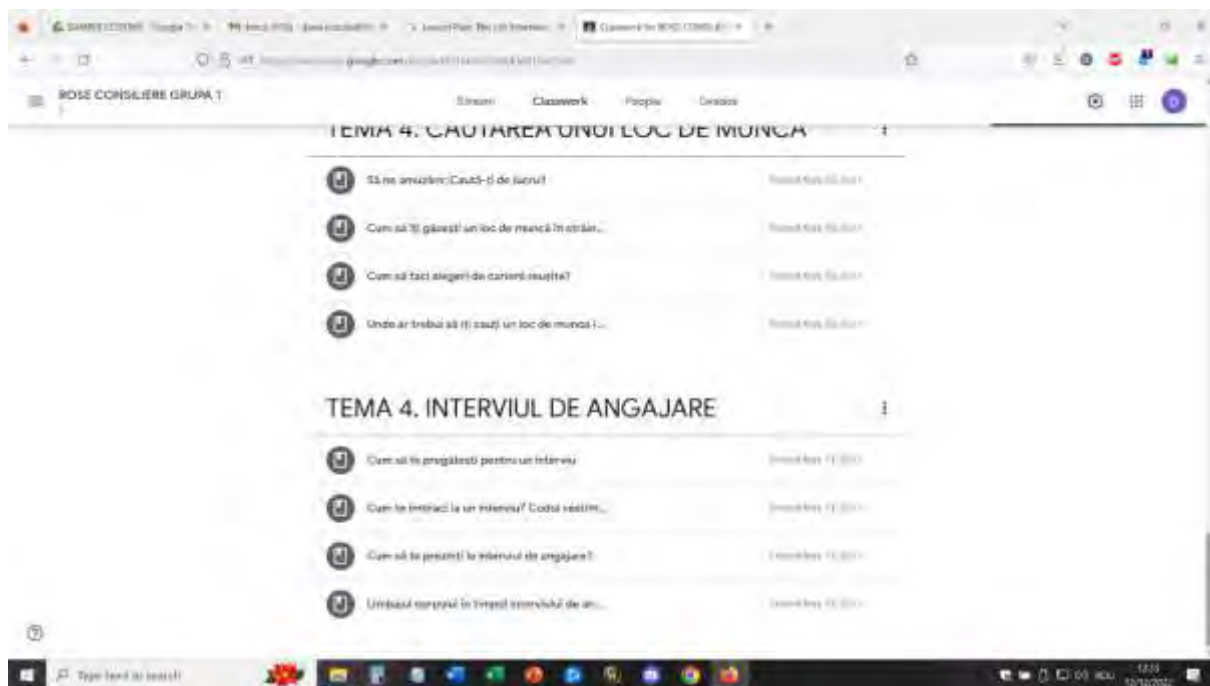
I considered transforming the goal of the lesson and include the Online interview subject as a particular study-case for the students, given the fact that nowadays, this kind of interview is more and more often used by companies who will hire remotely and will use maybe only online recruitment tools. Therefore, students could prepare for such online interviewing and build the new skill, according to the requirements of the employers.

It was essential to have a safe online environment for students to participate in the online lessons. School decided to use the Google Suite for Education – Google Platform and dedicated accounts have been created for both teachers and students.

First, I had created my classes in the Google Classroom Platform. Students first had to roll-in into the class, using the code I provided for each one. Some of the students have been invited by the teacher directly to the class. The enrollment has been done prior to the beginning of the course, in September 2021.

In the class, in the Classwork section I created topics corresponding to the program and inside the Topics, I have uploaded all the materials necessary for each class, always 1 week in advance for the following class.

For the Employment interview, the materials uploaded included: How to prepare for an interview, How to dress up for an interview? (the employment dress-code), How to present yourself to an interview, The body language during the employment interview.



Students have one week to go over the materials (some of them are short video presentations, others are presentations and main ideas schemes) and get a general idea about the topic of the future class.



For this lesson I also created Breakout rooms in advance, using Google Calendar events. (I had to learn how to make this and once I mastered it, it was very easy for me to create Breakout rooms in



advance – either with pre-established participants into each room or shuffled to mix the groups). For this lesson there were 5 breakout rooms with 4 participants in each room.

For the lesson, students will login in with the appropriate account and join the Google Meet environment.

First part of the lesson would consist of a direct online dialogue with students about the materials they had to checkout and their feed-back on these materials.

Some incentive questions could be: How important is the interview in an employment process? If two candidates are on the same level on the basis of their resume, how will the employer choose between the two? Which could be the absolute do's and don'ts in an interview? Which could be the top 5 questions to be asked by an employer at the interview?

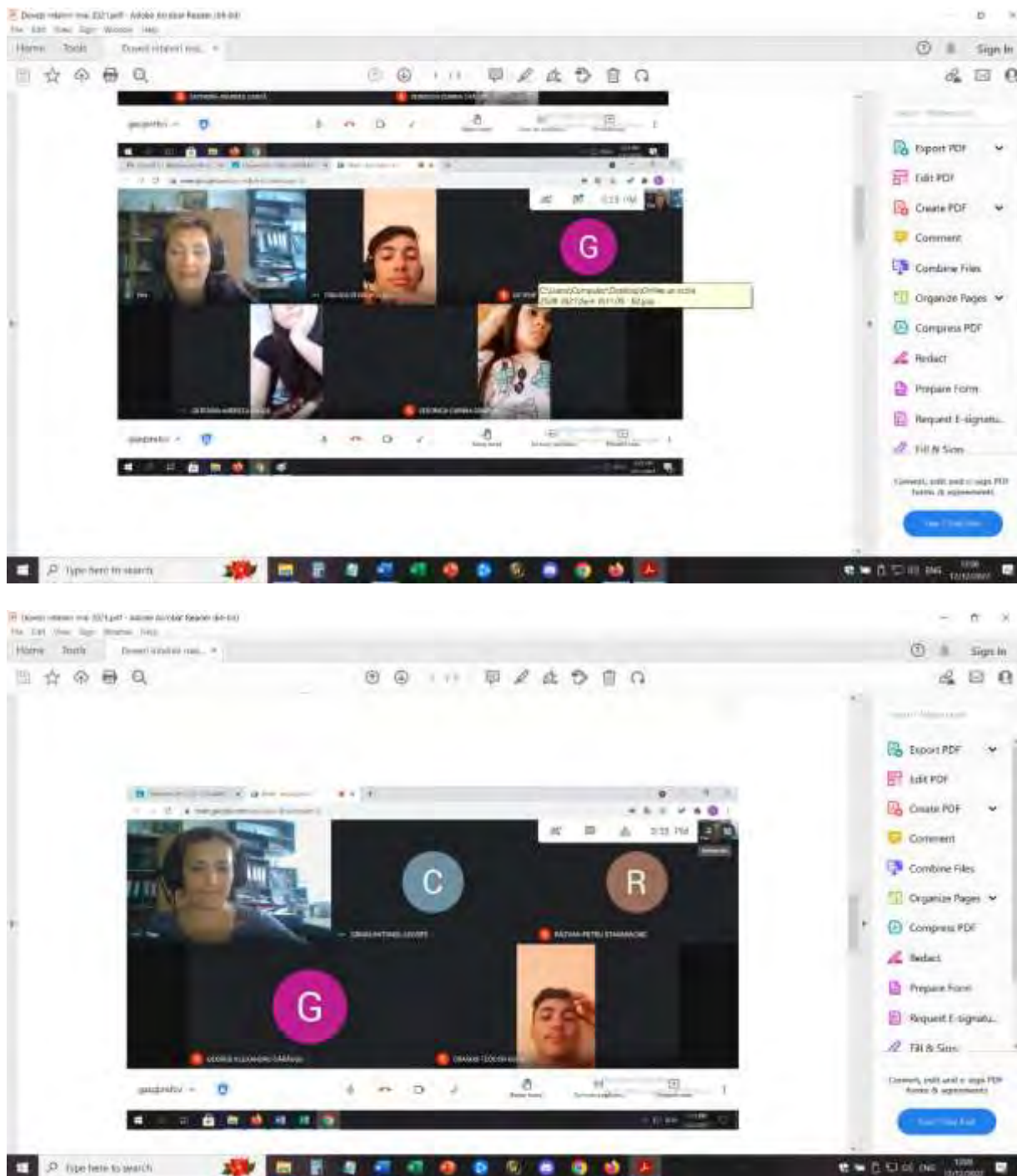
I presented the online video interview topic and together with the students we debated about the similarities and differences between the direct and the online interview.

Interview v.1 and Interview v.2 have been then adapted to the online interview topic and I have illustrated them as a protagonist, whilst some of the students have been the interviewers. Other students have been observers.

Then, students entered breakout rooms and to participate in the role-play in turns: employer and applicant (switch at 5 minutes) in order that all 4 students from each breakout room be applicants once. Students have been encouraged to use the 25 essential questions material or the top 5 questions discussed in the first part of the lesson.

I, as a teacher, supervised each room and encouraged students to be involved, answered questions and observed the activity.

After 20 minutes, the groups rejoined the whole class and all students could give their feedback on the activity. We made new observations about the interview requirements and also we could identify better the differences between the online and direct face-to-face interview.



## Feedback from the lesson

Good equipment and good internet connection are absolutely essential in order to implement such an online activity. Students need to have access to cameras and microphones too. These need to have enough quality in order to provide good image and sound and ease the communication.

It is easier to participate in this activity if using a laptop/PC than using a phone or a tablet.

For the teacher, I would consider it almost impossible to hold the lesson from a phone or tablet.

Students and teachers should get comfortable with this kind of setup. If the platform and the set up are used for the first time, it may take longer for the students to adjust to the activity and participate actively.

Participating requires a proper space (quiet room, silent environment) in order to facilitate direct communication between the participants. Also for the teacher, it is necessary to be in a good environment in order to implement the lesson.

Teachers and students need to speak slowly and clearly and have patience for the communication to happen, in turns. Online communication is slower than face-to-face communication and this is an issue that needs practice in order to adapt.

The best thing is that all these observations are also valid for the topic of this lesson – how to have a successful online video interview!

# ICT – Using collaborative Resources in Online Counselling

## Offline version of the lesson

This lesson series appeared because of the need to upgrade the ways school counselors had to make their counseling activities in an online environment. Therefore, there was no offline version of this approach, the lessons have been designed for online participation from the beginning.

School counselors from VET school express their need to participate in a teachers training for using new means by which their specific activities could be implemented. The topic of the training was focused on using online collaborative softwares for implementing activities specific for training the collaboration and communication between students.

One of the biggest problems of online education was faced by students not being connected with each other and the difficult way to make the cooperation and communication between students really work. Therefore, the main goal of the lessons was to test and train the school counselors in using some simple tools for enhancing students' cooperation and communication.

## Online version of the lesson

The training was based on the fact that school counselors had access to the internet and laptop/PC/phone/tablet but considered that their digital skills were at a beginner level.

The lesson was held in Zoom and by the help of a sharing screen, participants could make the lesson more interactive. There were two simple tools involved in the lesson: Jamboard and Canva.

## Part One - Jamboard

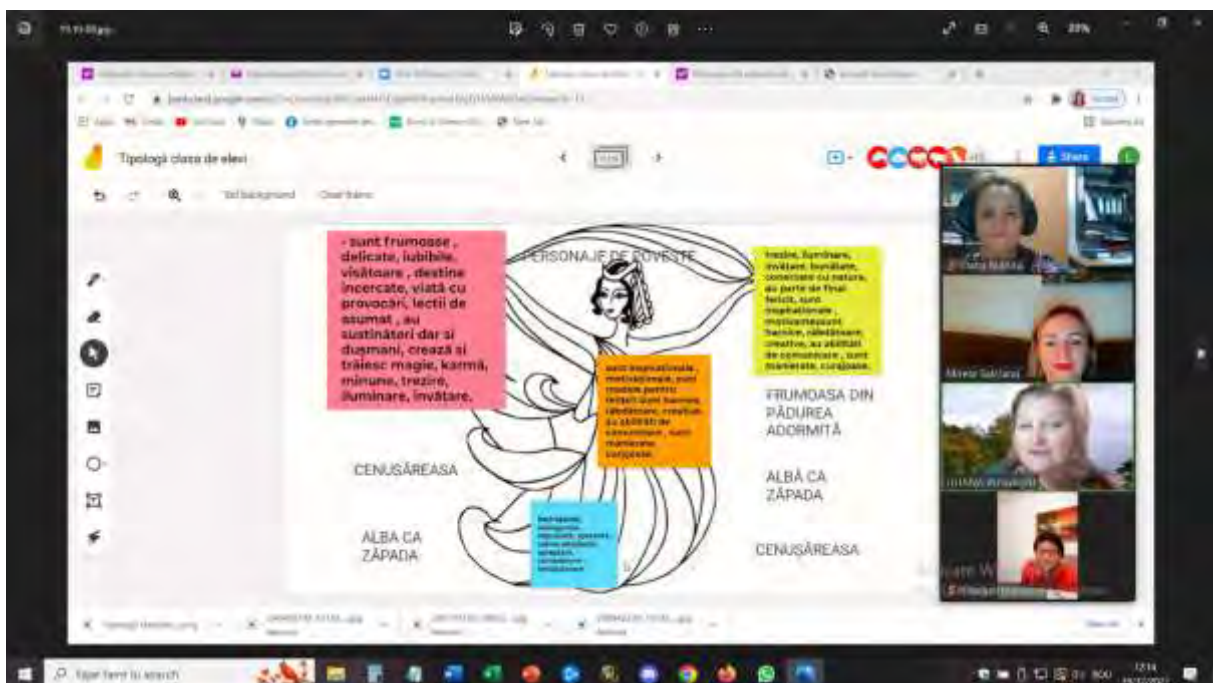
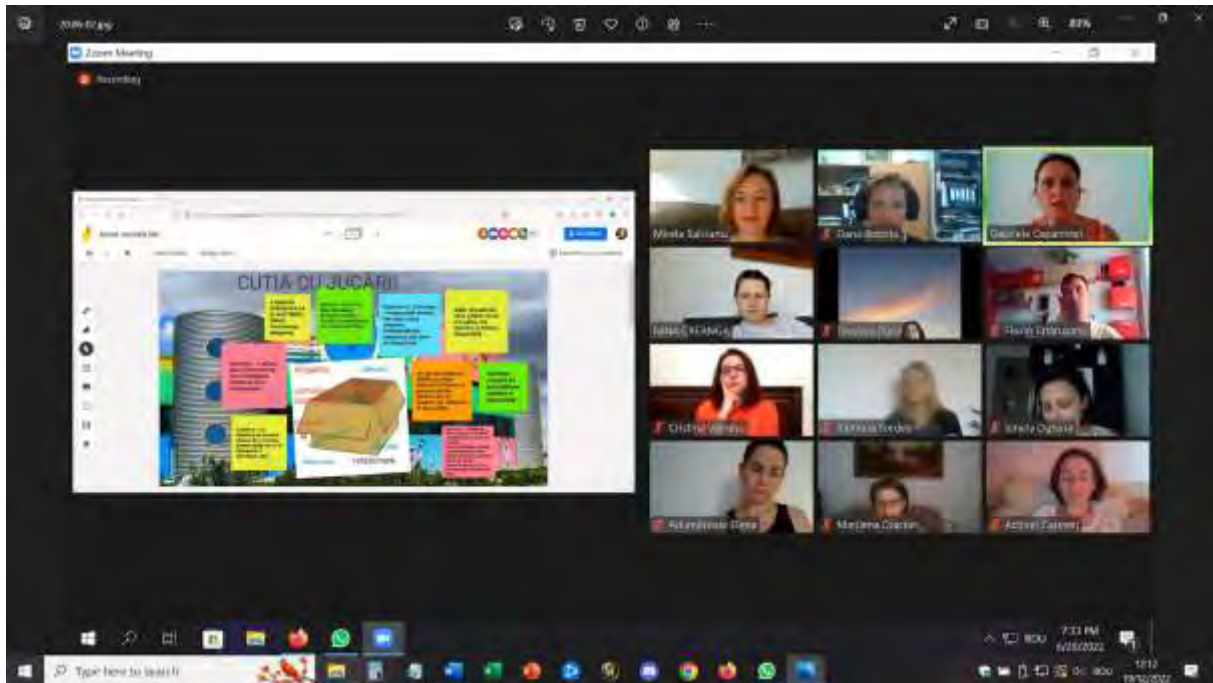
Trainer introduced the topic and invited all participants to open a common Jamboard by sending the link in the chat. All participants joined in the common Jamboard and together with the trainer exercised the basic features in using jamboard for creating a common material. Participants accomplished some simple tasks in order to get familiarized with the software.

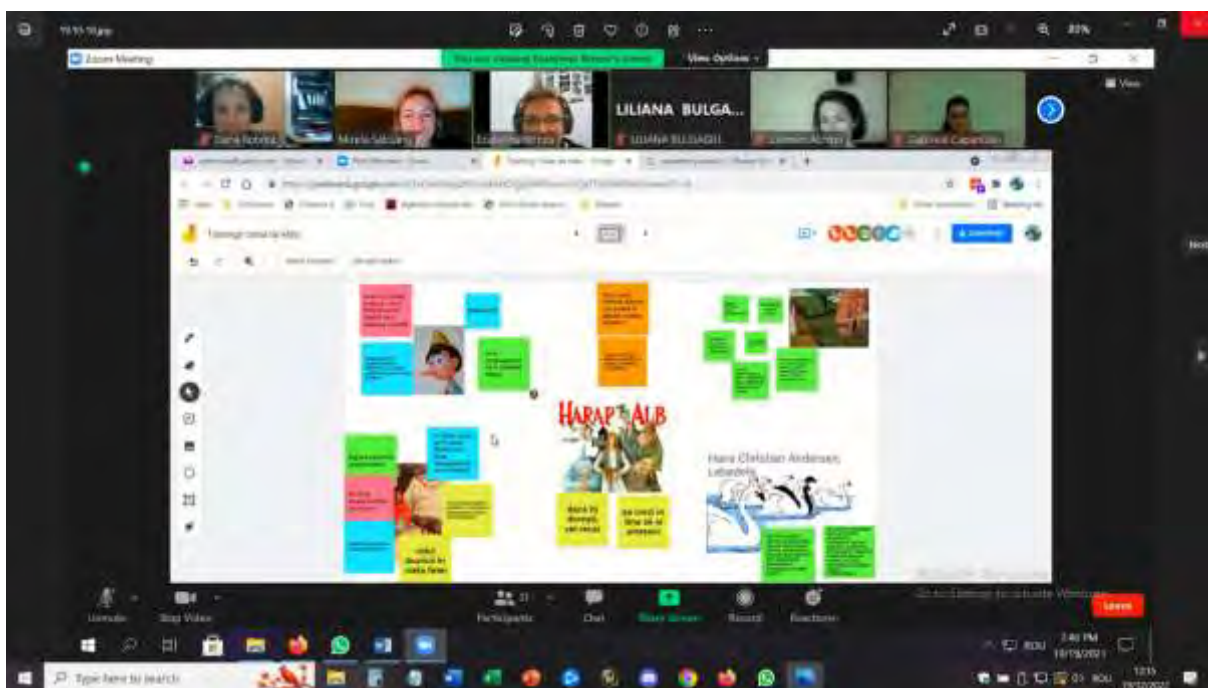
The trainer then invited participants to join smaller teams. Each team chose roles (reporting, facilitating, etc.) and then the trainer introduced a specific topic for cooperation/communication in counseling together with a task that had to be accomplished in teams, by using Jamboard.

The trainer chose to have one file in Jamboard and assigned different pages to each team. The team splitted in breakout rooms and worked together, collaboratively, in implementing the task in the common Jamboard, in their specific page.

After the time expired, all teams returned to the common room and each team presented their work in Canva, by sharing the screen.

At the end, all participants could download the whole Jamboard file (in .pdf format) with the work of all the teams.





## Part Two – Canva

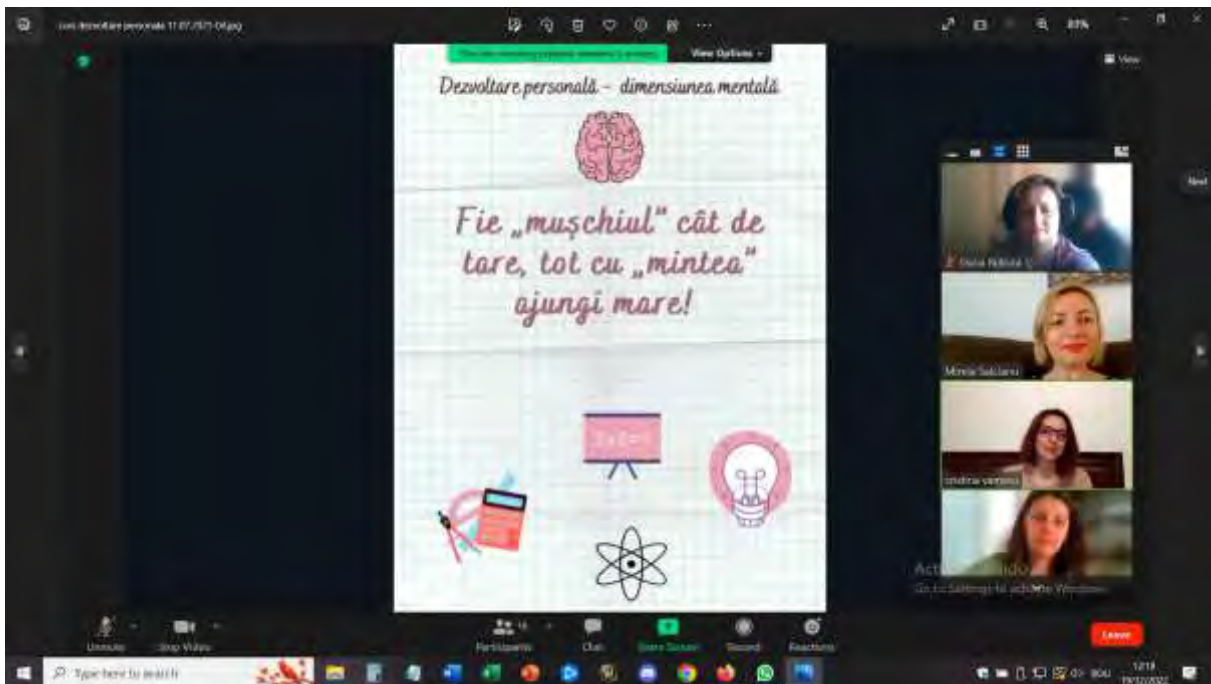
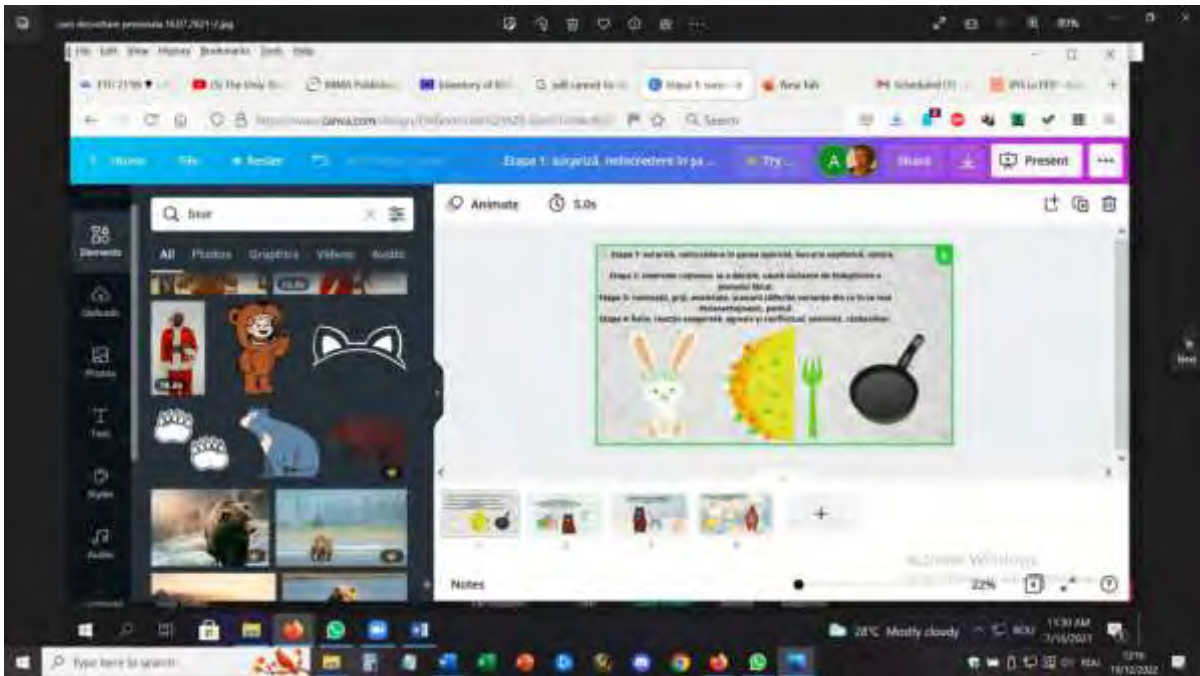
Trainer introduced the topic and invited all participants to open Canva and create their own accounts.

After all participants registered, we received a Canva link from the trainer and could join a collaborative Canva file, by the link given by the trainer. We then exercised together with the trainer the main features of the Canva and we could accomplish several simple tasks.

The trainer then invited participants to join smaller teams. Each team chose roles (reporting, facilitating, etc.) and then the trainer introduced a specific topic for cooperation/communication in counseling together with a task that had to be accomplished in teams, by using Canva.

Then, each team received their own Canva link and in breakout rooms worked together, collaboratively, in implementing the task in the common Canva file.

After the time expired, all teams returned to the common room and each team presented their work in Canva, by sharing the screen.





## Final feedback

Not all participants were connected to a laptop/PC (which was exactly what happens in a group of students) so all the teams had to find solutions in order to work collaboratively. Those with access to laptop and PC were sharing the screen and making the changes into Canva and the ones who were connected only by phones, were contributing with ideas and suggestions. Some of these participants even presented the conclusions and have been helped by the other colleagues in the team by sharing the screen and moving from one slide to another.

Participants could experiment and test the tools and figure out how they can implement them by working with their own group of students.

The training received massive positive feedback because it came exactly when teachers needed to increase their confidence that they can implement activities online and that they can work with specific counseling topics even if not being face-to-face.

A great follow up of this training was that a group of school counselors used these tools for creating OER specific materials to be used by others and by any teacher/trainer.



# Career Counselling – Time Management

## Offline version of the lesson

### Goal

This lesson will offer an opportunity to reflect on how students would choose to spend their time and what they think a healthy and balanced way of spending time is.

Students will brainstorm and discuss strategies for time management.

These lessons will help your students learn how to prioritize and balance their commitments.

Students will identify opportunities to spend more time focused on self-care and the care of others in our school, home, and broader community.

Why is time management important at all ages?

There are only 168 hours in a week, and it is important for young people to reflect on how to use those hours in ways that lead to well-balanced, gratifying lives.

People often drastically overestimate the time they have for various commitments, leaving little time for self-care and care for others.

Students need to be more intentional about the way they spend their time, and they need strategies for aligning their activities with their intentions.

Opening of the lesson with a little debate on the time management of the students.

Incentive questions could be:

- How would you describe a typical day in your life – school and week-end day?
- What are your top three priorities on a day-to-day basis? What should they be?
- How much time do you spend “giving back” to others (including your family, school, or community)?
- When/how do you practice self-care? Is this enough time? Too little? Too much?
- If you could do anything with your time, what would it be?

### Video and Reflections (15-20 minutes)

Students will then engage with a Ted Talk by Laura Vanderkam titled, “How to Gain Control of Your Free Time”

[https://www.ted.com/talks/laura\\_vanderkam\\_how\\_to\\_gain\\_control\\_of\\_your\\_free\\_time/transcript?language=en&subtitle=ro](https://www.ted.com/talks/laura_vanderkam_how_to_gain_control_of_your_free_time/transcript?language=en&subtitle=ro)

Students will have to take note of any strategy mentioned by the speaker.

Reflection questions:

- What can you do to plan your time so that it reflects your most important priorities and so that you feel good about the way you spend it?
- What might be difficult in doing so?
- Who can support you in managing your time well?

### Small Group Work (10-15 minutes)

Students will discuss the benefits and challenges of using each strategy. They will work together to identify three strategies they will use to align their time with their priorities.

Students will share with the class those strategies they’ve identified either during their individual or group work.

### Homework

Students will have to create a time log for themselves for the upcoming week. At the end of the week, they could identify similarities and differences between the actual log and their estimates.

## Shift to online version of the lesson

### Things to be considered

Initially I considered that the lesson could actually work in an online environment as well, sharing the video with the students in online class and having the common work either with the whole group or splitting it into smaller breakout rooms. After testing it 2 times, I considered it to be not so attractive and not involving enough for the students – some of the students were active but others didn’t interact at all. So I considered something different to attract their attention and multiply their involvement.

Materials:

- Tips and tricks for organizing your time and proper conditions for learning
- Methods to manage time – the 4 quadrants method
- Online Google form of circadian rhythm test

A flipped approach:

- Introducing the Online Google form of circadian rhythm test a priori to the lesson, without automated scoring. Students had to complete it and submit their responses. After that they had to wait for the results and interpretation via private message in the Classroom.
- Eliminating the video but introducing the 4 quadrants method – to be worked out in breakout rooms
- Introducing the topic of online learning and management of time during lockdown – as a priority for the students blocked home, especially in rural remote areas and without having family all together or, on contrary, having numerous members of the family sharing the same spaces in the house.

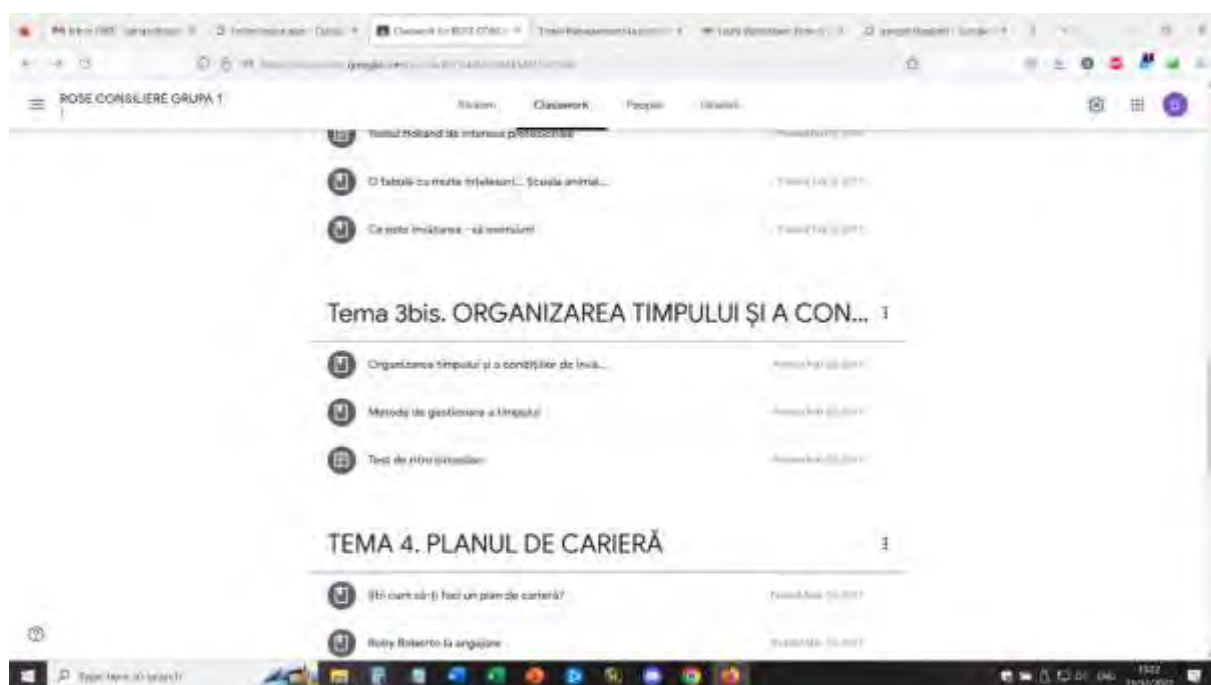
It was essential to have a safe online environment for students to participate in the online lessons. The school decided to use the Google Suite for Education – Google Platform and dedicated accounts have been created for both teachers and students.

First, I had created my classes in the Google Classroom Platform. First of all, the students had to roll-in into the class, using the code I provided for each one of them. Some of the students have been invited by the teacher directly to the class. The enrollment has been done prior to the beginning of the course, in September 2021.

Inside the class, in the Classwork section I created topics corresponding to the program and inside the Topics, I have uploaded all the materials necessary for each class, always 1 week in advance for the following class.

For the Time management, the materials uploaded included: Tips and tricks for organizing your time and proper conditions for learning, Methods to manage time – the 4 quadrants method, Online Google form of circadian rhythm test

Students have 1 week to go over the materials and get a general idea about the topic of the future class and it was compulsory to complete the Online Google form of circadian rhythm test.



For this lesson I also created Breakout rooms in advance, using Google Calendar events. (I had to learn how to make this and once I mastered it, it was very easy for me to create Breakout rooms in advance – either with pre-established participants into each room or shuffled to mix the groups. For this lesson there were 4 breakout rooms with 4 participants in each room.



For the lesson, students will log in with the appropriate account and join the Google Meet environment.

Opening - online dialogue with students about the materials they had to checkout and their feedback on the test they had taken previously. Students could ask details about the response they received to their own test. Students could ask for an individual session of explanations and more details related to their own profile.

### **Short online warming up: How long is your minute?**

All participants CLOSE their camera and close eyes and stay for a minute. Immediately after the minute will pass, they will open the cameras.

- What can be observed? ... everyone has its own perception of time, time flow and a minute may be longer or shorter, depending on the perception

### **A little debate on the time management of the students – with the whole group**

Incentive questions could be:

- How do you spend a typical day of your life – school and week-end day?
- What are your top three priorities on a day-to-day basis? What should they be?
- How much time do you spend “giving back” to others (including your family, school, or community)?
- When/how do you practice self-care? Is this enough time? Too little? Too much?

- Questions for everybody in the group:
- If you could do anything with your time, what would it be?
- If the day would have 1 extra hour, what would you like to do in that hour?

***Introducing the 4 quadrants method – teacher sharing screen and explaining the method.***

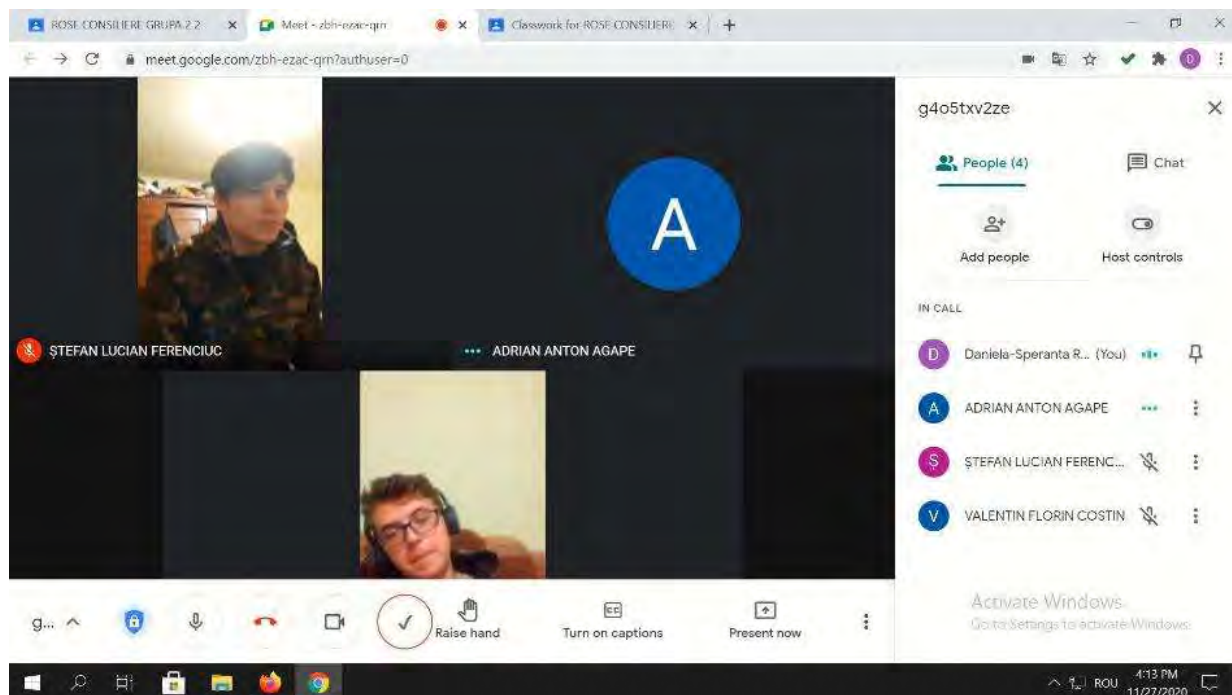
Students could give feed-back and ask questions

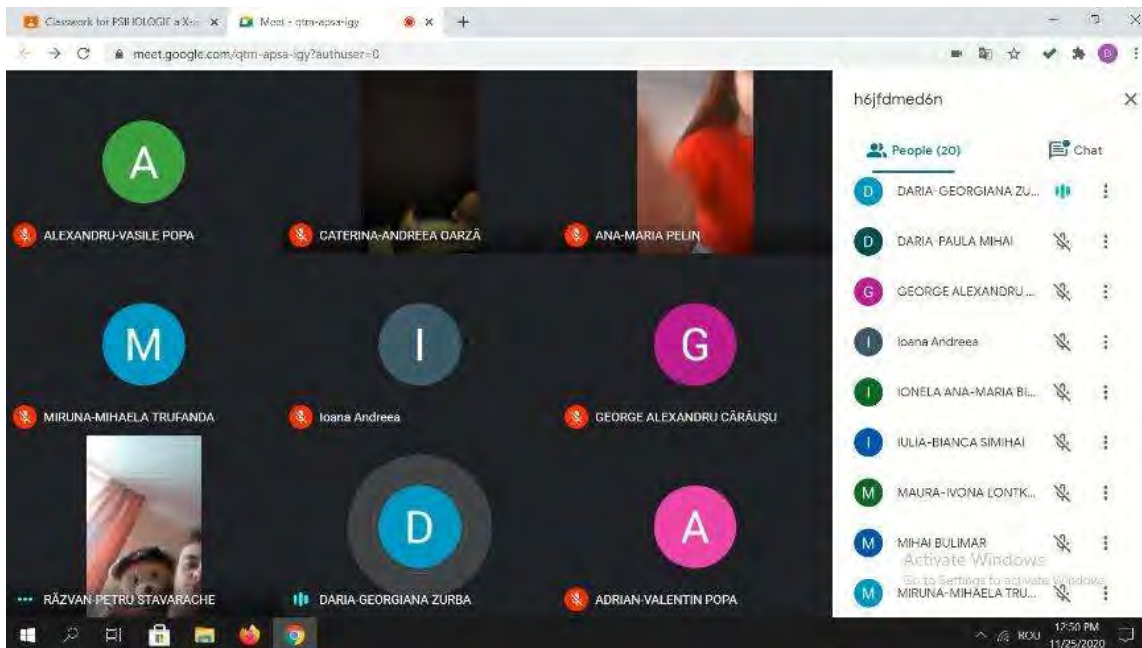
Students go into breakout rooms and will have the common task to create their own quadrant for the following day – for the following week.

I, as a teacher, supervised each room and encouraged students to be involved, answered questions and observed the activity.

After 10 minutes, the groups rejoined the whole class and the students could give their feedback on the activity. The students will have the task to implement the quadrant for the following week, until the next lesson.

Plenary talk about their organizing of time during the lockdown and the pandemic. Students explain their own context and give detail about their household organization – sharing space with others, organizing of their own learning, organizing online learning and working (is there a schedule, are the devices shared between family members, are the spaces shared during learning, what they do in their spare time, etc.)





## Feedback from the lesson

Good equipment and good internet connection are absolutely essential in order to implement such an online activity. Students need to have access to cameras and microphones too. These need to have enough quality in order to provide good image and sound and ease the communication.

It is easier to participate in this activity if using a laptop/PC than using a phone or a tablet.

For the teacher, I would consider it almost impossible to hold the lesson from a phone or tablet.

Students and teachers should get comfortable with this kind of setup. If the platform and the set up are used for the first time, it may take longer for the students to adjust to the activity and participate actively.

Participating requires a proper space (quiet room, silent environment) in order to facilitate direct communication between the participants. Also for the teacher, it is necessary to be in a good environment in order to implement the lesson.

Teachers and students need to speak slowly and clearly and have patience for the communication to happen, in turns. Online communication is slower than face-to-face communication and this is an issue that needs practice in order to adapt.

The time management prove to be a hot topic for the online period of learning, because there were observed 2 extremes between my students: some of the students were having too much free time and being blocked in house and in village (those living in rural areas were heavily affected) and other students had a lot of housework to do (chores and other works given by the parents who considered that if they are at home, they can help with other duties).

# Career Counselling – Self-Awareness

Offline version of the lesson

## Goal:

The lesson will offer an opportunity to help students discover themselves, in order to be able later on to develop a proper good career plan and have solid career orientation and self-development.

### *Students will be able to:*

- Identify one's own strengths and limitations.
- Strengthen self-identity and self-awareness to improve self-efficacy.
- Demonstrate the ability to understand one's own emotions, thoughts, and values and how they influence behavior across contexts.

*Opening the lesson with discussion-provoking questions*, such as: How do you enjoy spending your free time? What are your passions? What would your best friend say you are particularly good at?

After registering some of the students' responses, the class can be splitted into teams (4-5 members) or it can remain as a whole group. It works both ways, depending on the number of students in the class.

*Group exercise (team exercise):* positive reflections about others

Students and teachers describe the positive qualities, personality traits, and character traits of one group member at a time, ensuring that all students have an opportunity to hear praise/descriptions. Students can create their own paper to record the traits and qualities that others observe about them.

At the end, each student will take extra 5 minutes to evaluate their list and write any additional traits they recognize in themselves.

### *Discussion: Unique Attributes*

The idea that every individual has a unique set of positive, valued qualities and traits is reinforced. The individuality of each other is faced (lists are not identical, they may contain same traits but in different combinations) and assumed.

### *Exercise: Identifying Interests and Affinities*

Students will think in groups or in teams about their own interests. Incentive questions:

What do you find exciting to do or learn about? What generally piques your interest? What do you excel in? (Do not hesitate to allow students to choose silly interests such as lip gloss or making nice painted nails). Make this an enjoyable exercise.

### ***Discussion: Identifying Employable Skills***

Discuss what makes a skill relevant to employment. Explain that in addition to positive traits and personal interests, students need to identify the skills they possess that an employer would be interested in. Have students record their employable skills; be prepared to prompt students with employable skills you notice about them.

### ***Discussion: The Other Side***

Time to consider the reverse. Have students consider areas of weakness—skills they might not have an affinity for, might be good at but don't enjoy, or personality traits that might make them unsuited to a given line of work. Describe an area of weakness of your own ("Math is not a strong subject for me.") and talk about how your awareness of this area of weakness helped you make good career decisions. Students will make notes on a separate sheet about their own area of weaknesses .

### ***Review:***

In the end, students will have 2 pieces of paper – one with interests and employable skills and the other with weaker areas.

I would like to emphasize the fact that this exercise is about building awareness so they can make informed decisions.

## Shift to online version of the lesson

### Things to be considered

Definitely the lesson could not be implemented in the online environment in the same way as face to face, because not having direct interaction and communication, the connection and cooperation between students would have been lost.

I had to figure out how to make students be involved in the activity, attract and maintain their attention and develop their own perspectives on self-awareness.

I also had to consider that discussing one's own personality may be sometimes difficult for teenagers and they need to feel secure, accepted and encouraged to do so. When online, a lot of direct interaction and non-verbal support is lost so the level of self-confidence of students may be lower than usual.

### Reasons for the decision

Gamification was the right choice in transforming the lesson so that I could both develop the skills of the students and at the same time maintain their attention and involvement as well.

Materials:



- Interests, Values, Abilities – handout pdf
- Online Google form – my top 10 personal values
- Jamboard exercise – Who am I (positive reflections and unique attributes)
- Online game What would I be, if I were...., What would I do, if I were....?

### Flow of the lesson:

Warming up – state of mind using Mentimeter (students answer individually and anonymously to a question. Software creates a word cloud with the answers, based on the relevance and frequency.

#### **Warming up – Elevator speech (adapted)**

You end-up in the elevator with Elon Musk. You know you can impress him in order to know you better and even work with you. You have a maximum of 30 seconds to do that.

All students participate, teacher included 😊

#### **Jamboard exercise – Who am I (positive reflections and unique attributes)**

Students will be assigned a page in a jamboard and going through every page, each student will complete with sticky notes some traits, attributes and qualities for their own page, making their own description (5 minutes).

Then, teacher shares screen with the jamboard and each student will visualize its own page, the other students will complete the traits and attributes with other sticky notes (they may be put in separate place of the page so that the students compare what they wrote with what others wrote).Teacher will read these notes and the key words for each student.

All students will receive appreciation from the others, in an interactive way.

In the end, students could take a printscreen of their jamboard page – that will be further used in the future lessons/

#### **Online game What would I be, if I were...., What would I do, if I were....?**

Students will be involved in this game, answering each question.

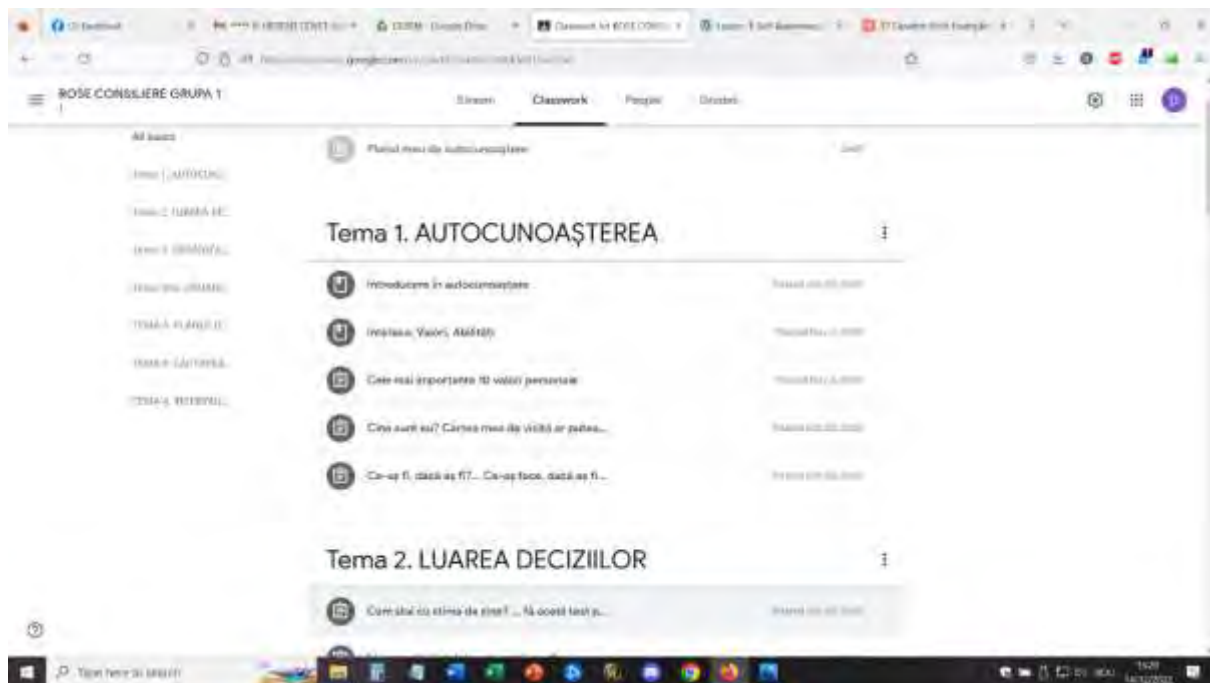
**Variation** – the game can be played also by using a shuffling software so that the students receive a different question and answer to it.

**Homework** – students will complete the Online Google form – my top 10 personal values that will be the incentive for the future online class on personal values (the flipped approach).

It was essential to have a safe online environment for students to participate in the online lessons. School decided to use the Google Suite for Education – Google Platform and dedicated accounts have been created for both teachers and students.

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For the Self-awareness lesson, the materials uploaded included: Introduction to self-awareness – handout .pdf, Interests, Values, Abilities – handout pdf, Online Google form – my top 10 personal values, Jamboard exercise – Who am I (positive reflections and unique attributes), Online game What would I be, if I were...., What would I do, if I were....?, Online Google form – my top 10 personal values.

For the lesson, students will login in with the appropriate account and join the Google Meet environment.

***Opening: how do you feel today? Write in each box a word describing the way you feel now***

(Using Mentimeter software)

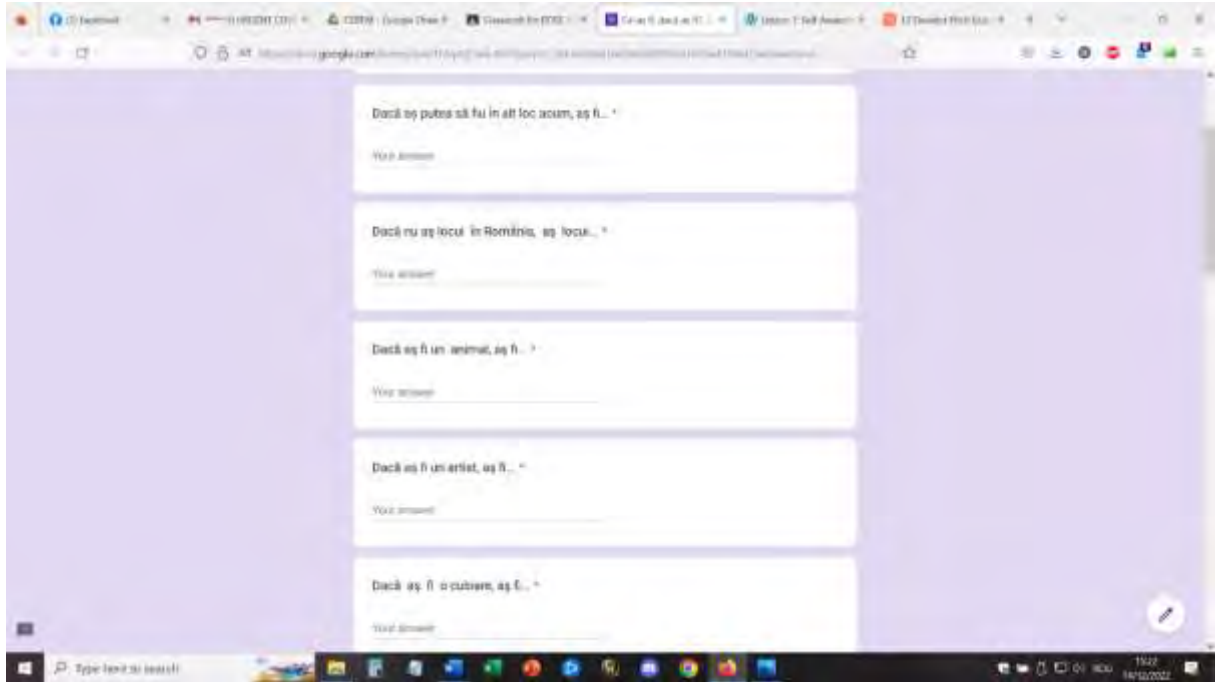
Most often written word was ... tired (not surprising, the class was at the end of the program, the 7th lesson in the day)



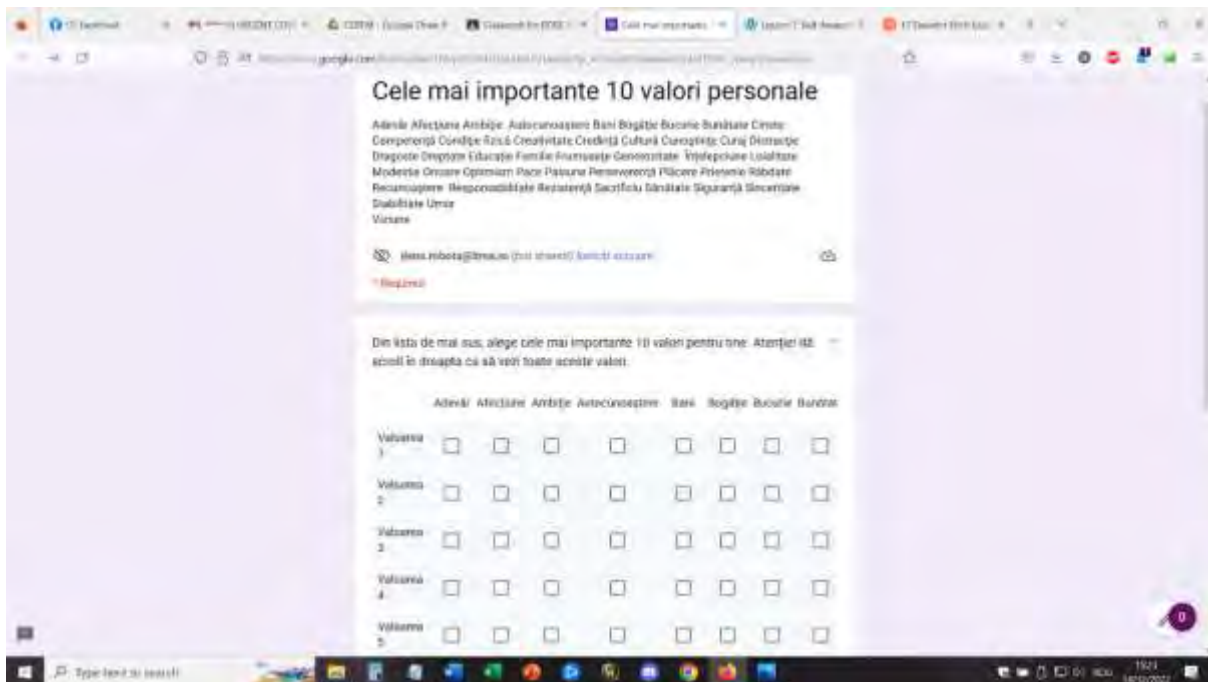
**Online game *What would I be, if I were...., What would I do, if I were....?***

Students will involve in this game, answering to each question.

Variation – the game can be played also by using a shuffling software so that the students receive a different question and answer to it.



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## Feedback from the lesson

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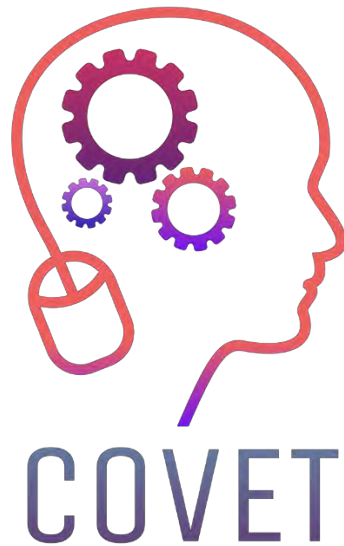
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Teachers and students need to speak slowly and clearly and have patience for the communication to happen, in turns. Online communication is slower than face-to-face communication and this is an issue that needs practice in order to adapt.

It was rather slow at the beginning but when repeating this type of lesson, it worked more than other types of lessons. But I think that the students, once they get used to online learning and participation, could more easily cope with the challenges and involve themselves actively in the lesson.



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