Toolbox: Moving Lectures to Online Teaching and Gamification

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HUMAN
RESOURCE
DEVELOPMENT
CENTRE
УНИВЕРСИТЕТ ЗА НАЦИОНАЛНО И СВЕТОВНО СТОПАНСТВО

I Introduction

This instructional paper is intended to help teachers and lecturers to master the challenge of creating, organizing, and conducting games and simulations in the area of logistics and supply chain management.
Offering teaching content partially as a game is nothing new, but with the proceeding innovations the digital world offers us, the focus can more easily be put on digital games and simulations. They are very well accepted by the younger generation, who grew up with online games.

Another huge benefit of our online world is that we now have the opportunity to organize games and simulations with participants from all over the world. At least if the technical requirements are fulfilled. Conference software tools allow us to see and address the participants directly. We can teach in virtual classrooms and play games together close to what we are doing in the real presence. Furthermore, we can discuss the gaming strategies in online team meetings. As a teacher, we are even able to perform online exams.

Online teaching gives us a lot of flexibility. Students have the freedom to juggle their careers and school because they aren't tied down to a fixed schedule, do not have to move to other countries with all the travel restrictions that might come with it. They can join each course anywhere in the world. This will save costs, money that students might not be able to afford, especially in developing countries.

Online teaching is also an essential tool for lifelong learning. There is no need to make big changes in one's professional life anymore if you want to reach another level of education.

Virtual reality technology already allows us to send avatars into the scenery and interact with other participants, so the students feel more like a part of the scenery and can better interact with each other in a social context.

This paper consists of **5** parts.

First, we will explain the common terms that are used in digital teaching formats including gamification. This helps to avoid misunderstandings.

Secondly, we will look at the hardware- and software equipment needed to successfully perform online teaching and online games and simulations.

The **third** part should help to move the teachers' analog lectures into a digital format and the following **fifth** part should help to move analog teaching into online games.

In the **sixth** part, we will pay tribute to the fact that the change into digital formats is full of obstacles and pushbacks: due to technical and humane causes. We will advise on how to prevent them and how to fix them.

The **seventh** and last chapter is the one that still has to be written. What if we could change a complete course of studies into a game-like scenario? The older generation usually undervalues the learning benefits the younger generations get from their gaming

experiences. Embedding a whole course of studies from the beginning to the bachelor's degree into a game-like environment would very much suit the younger generation 's way of learning.

1. Explanation of terms

The following definitions are should help to understand the purpose of this paper and to put it into the right context. They reflect the author's understanding of the terms used in online teaching and online gamification. We are very well aware that they are used in a slightly different context by other authors.

Gamification
Gamification in a learning context is an educational approach to motivate students to learn by using games and game elements in learning environments. The goal is to maximize enjoyment and engagement by capturing the interest of learners and inspiring them to continue learning and applying their knowledge in a simplified scenario. Gamification broadly defined, is the process of defining the elements which comprise games that make those games fun and motivate players to continue playing, and using those same elements in a non-game context to influence behavior. In other words, gamification is the introduction of game elements into a traditionally non-game situation.
Such games can consist of a card deck or a board up to highly sophisticated computer games that for example can simulate a whole company and can also be used online. In this article, we concentrate on the latter.

Game-based learning
This term is often used as a synonym for gamification, but there are important differences. While gamification in education is used to support the learning material, game-based learning is a way to solely learn while playing a game. There would be no theoretical background taught before starting the game. In other words: Game-based learning borrows gaming principles and applies them to real-life scenarios to engage users. Students are encouraged to engage with educational materials playfully and dynamically.

Business simulation (games)
This can be seen as a highly sophisticated kind of business or technical simulation that is mostly delivered through electronic devices. This marks it as an element of gamification. It can be scenario-based or numeric-based. A business simulation is a powerful tool for organizational learning and development. Business simulations enable students to align on strategy, improve their business acumen and business finance skills. While simulations are more regarded as a serious way of learning, the term game might imply spending or even wasting valuable time. Simulation gaming seems to be the best term to connect both worlds.

E-Learning (Electronic Learning)
In general, E-learning describes all kinds of learning (and teaching) where electronic devices are involved. Before the rise of the Internet in the late '90s, learning with the help of electronic devices was limited to TV, Videos, and local computers. The term E-learning - together with a lot of other E-activities - emerged when the Internet started to be accessible by a larger number of users. Today the term e-learning is mostly taken for all sorts of educational activities where computers are involved.

Online Learning

If computers or similar devices and the internet are involved, we better call it online learning. This involves all kinds of learning and teaching that is more or less provided virtually, where the person teaching or learning may be sitting in different locations. Although it was already invented in the '80s at some US universities, it started to spread quickly with the rise of the internet in the late '90s. Today Electronic and Online Learning are often used as synonyms.

Blended learning

If we make the most suitable forms of teaching to meet our goals and to achieve the best possible result in learning in any given situation, this is what is called Blended Learning. This involves an individual mixture of the methods listed above including teaching in presence.
The way and proportion of these teaching and learning elements are used, depends on the individual prerequisite and there is no single best way to teach.

Inverted/flipped classroom

This defines an instructional strategy and a special type of blended learning which aims to increase student engagement and learning by having students complete readings at their home and work on live problem-solving during class time. Content delivery might not be just the classical lecture, but the use of video lessons and similar E-learning means. Gamification of learning content can also be an important part here to fostering motivation.

2. Hardware and Software needed

When talking about the possibilities and techniques of gamified teaching, we also include all the possibilities to create lecture-like online teaching formats and supporting instructional videos to prepare the students for the games and to support them with instructions and information during the games.

A powerful digital infrastructure is required to teach content successfully and play games without disruption or broken connections. Therefore, in this chapter, we will deal with the requirements for the hardware and the software equipment.
This topic and the challenges that come with it are often underestimated when talking about online teaching.
Hardware and Software problems during the course are very embarrassing, especially for the teacher. Even minor problems, like an unstable internet connection for some minutes, can interrupt the flow. Bigger, consistent problems can kill the whole session.

Turning lectures to online formats usually does not come for free. There should be a certain budget available at the institution to provide material and services to the lecturers.

Although we describe hardware and software solutions here, we do not want to recommend certain brands or compare different products in some sort of ranking. Some of the products mentioned below are used by the majority of online teachers, so we cannot bypass them. This is usually more the case with software products. Other items we mention but which are not so common might reflect our own experiences.

Overall we can state, that nowadays we are in the pleasant situation that there is a huge amount of excellent hardware and software products in the market that can be used for online teaching. Their handiness always depends on one's special requests.

To keep it simple, we clustered the budget available for online teaching into three different levels.

Low-level budget: this level aims to lecturers with standard hardware equipment, usually a Windows PC with win10 or 11 (in 2022), the usual MS office software package, and access to a performant internet connection. No extra budget for hardware is available. It is already spent on the lecturers' needs. Fortunately, nowadays we can assume that a passable internet connection is available.

Midsized budget: based on the low-level budget, there might be a more powerful PC provided and an additional amount budget for the lecturer's special purchases, or the option of using software licenses from the institute or a university.

High-level budget: a budget that also allows leasing better hardware equipment, more sophisticated software licenses, and/or access to very well-equipped hardware and software resources at the institute or university.

2.1. Hardware Equipment

We will start with the hardware equipment needed for providing online lectures and gamified teaching. We will show you that even with a very simple setup you can get good results. But a little investment might even bring great results. We all have already experienced frustration when we tried to deliver a well-prepared lecture and had failures on the technical side. So, it's worth having a closer look at what our options are and how to minimize the risk.

2.1.1. Basic equipment: the computer

The most important piece of equipment needed for online teaching and online gamification is a good laptop or desktop PC or one of the latest tablets. Surely it is hard to teach online without one. Teaching from your smartphone might be something to do in a case of emergency - for example, if your computer is broken, has been stolen and you cannot get a replacement in a short term. A smartphone might be suitable for a short lecture without additional supporting tools, but a computer at hand is much preferable.

The good news is that most computers that are sold today already meet the minimum requirements for online teaching and online games. Of course, it all depends on what kind of teaching formats should be delivered to the class.
The bandwidth and computing requirements for most conferencing software and presentation software that is used for online teaching are pretty low. The same is true for gamified teaching as long as there is access to a well-equipped and safe server – platform.
Any modern laptop or PC with at least 8GB RAM, an i5 processor or equivalent, and good WIFI reception should be sufficient. Older models with less RAM and a slower processor might be sufficient but might not satisfy the needs. The operating system is not so important.
Anyways, good results can already be achieved with such basic equipment and no extra investment.

Teachers with an extra budget, the ones with a mid-sized budget, should think about purchasing a larger external screen, an additional webcam, and some items to improve the sound.

Before we talk about this, we might first have a look at another important requirement to do online teaching.

2.1.2. Internet Connection

Although a stable and adequate Internet connection is a matter of course in many regions today, it can happen that some participants do not have such a good connection. This has to be considered. In merely online teaching, you can help your students with the subsequent availability of recordings to fill the gap. But for online games, a high-performance and stable internet connection are essential. The performance of the internet connection should therefore be determined in advance. A change of location of the participants may be necessary.
Most online teaching companies and schools require you to meet minimum upload and download speeds to teach on their platforms. This varies from company to company but as a general rule of thumb, 10Mbps download speeds and 5Mbps upload speeds should be enough in most cases. This can be easily tested with speed meters that are available for free on the internet. Most universities and private institutions can provide this speed nowadays from their side.

This will be also sufficient for conferencing and online games in our context. We usually do not play them in real-time, but the players send their updates to the central server at certain times.

The scenery will change completely if the conferencing and the gaming will be performed in a virtual reality environment. At the moment it looks like this might be the future direction of gaming. It's estimated that such connections will use up to five times more bandwidth than the ones today.

2.1.3. External Screen

If you use a laptop with a medium-sized screen, we recommend investing in a larger external screen. Online teachers tend to have lots of tabs open at once for things like their virtual classroom, classroom and gaming resources, and lesson plans. Therefore, it helps to have plenty of screen space to work with. A second screen, that can easily be connected, might as well be helpful. For our purposes, a 1080p screen is sufficient at this point, although a 4k screen is a good investment into the future.

If the portability of a laptop is preferred or necessary, a screen size starting at 15" is recommended. One should also consider organizing a larger screen on-site to connect to. Some people like to extend their workplace over two screens. Two additional screens usually need some special docking station and dedicated software. We experienced that it is a bit more laborious on iMac laptops than on windows machines.

2.1.4. The camera

Built-in cameras in laptops and desktops are not a good choice for teaching or gaming online. The resolution is 720p or less and there is visible noise, especially in low light. The main specs to look for an online teaching webcam are the resolution and the frames per second (FPS). Ideally, you'll want to choose a webcam that can stream in HD (1080p) and at least 30fps. This will ensure that your video stream is high-quality and running smoothly. Other factors to look for if you want to step up your video quality are great low-light performance, excellent color accuracy and vibrancy, a wide field of view, face tracking, and good autofocus. Small webcams can be placed on top of the screen, have a much better quality than most built-in cameras, and are available from 50€. They connect with the USB port and can be activated without additional software or hardware.

Depending on the brand and costs a smartphone camera can catch up with the quality of a Webcam and can easily be connected to the computer instead of a webcam.

Digital cameras like DSLRs or system cameras or action cams are already available in most households or institutes. The vendors started to provide special software to use them as Webcams - at least for the newer models. For such usage, the cameras run in Live View, but this might be limited to 20 or 30 minutes and will heat the sensor and wear out the camera in a long term.

There are also hardware solutions to use nearly every digital camera as a webcam, but they are more expensive than a good quality webcam and again: digital photo camera sensors are not designed to take long videos.

The most expensive but also best solution, especially for creating videos, is a high-quality video camera, preferably as a part of a professional film studio.

Digital cameras and video cameras on a tripod distributed over the scene enable the lecturer to get up from his/her sitting position and move around the place while teaching. With multiple cameras in action, there is a good opportunity to give a professional and impressive performance and to create professional videos.

2.1.5. Sound

When teaching or conferencing online, the sound is even more important than the visual connection. We usually experience two problems here. First, the built-in microphone of the teacher's computer has no good quality. And second, the acoustics of the room is not suitable, especially if there is a strong hall effect. To make things worse, especially laptops do not have good quality loudspeakers. In consequence, we hear members of online sessions who sound like they would sit on the bottom of a garbage bin or others who manage to create an endless echo when they speak.

If you are on a low budget and your room acoustics and the built-in loudspeakers of your computer are not the problem, you might be able to use your webcam as a microphone. Most webcams have a built-in microphone of good quality.

An easy and cheap solution is simple earplugs with a microphone, similar to the ones that are used to listen to music from your smartphone while doing sports. They are plugged into the microphone port of the computer and are easy to configure in the system preferences. You can also spend a bit more money on a larger headset if you don't mind looking like Neil Armstrong on his way to the moon.

Another – more expensive solution - would be a good microphone of professional quality on a stand with a windbreak. In case a professionally equipped film and sound studio are available at the campus, you can also teach formats of professional quality.

2.1.6. Lighting

Lighting has a huge impact on your video quality. When teaching online, it is important to look professional and ensure that the students can see you. So, it's essential to get the lighting right.

Natural light from a window might be sufficient as long as it does not shine from the back and turns the teacher's face into a dark silhouette.

If the main light source is the computer screen, it might happen that the brightness changes with every new slide – which is very distracting for the students.

There's a lot of different lighting equipment out there to choose from, like umbrella lighting, softboxes, and more. They are affordable nowadays even for a midsized budget and highly recommended in your office or the classroom. They have to be placed in front of the teacher's face and should not be too bright.

Another smart solution is the use of a ring light. Ring lights are circular fluorescent bulbs or LED strips connected in the shape of a circle. You place them directly in front of you, towards your face. They act as a 'key light' and cast an even light onto the face to eliminate shadows and minimize blemishes.

Again, you will find the ideal lighting technique in a film studio if your institution can provide one

2.1.7. Gamification Server

Depending on the kind of game delivered to the class, there will be a need for a well-equipped central computer used as a server to manage all the input and calculations. A personal computer may be sufficient for games that send their data at a certain time to the central server, where they are processed in a so-called batch mode. As soon as the game is played online with continuous flows of data and continuous calculations of large data repositories, a stronger computer is needed. Self-developed games are hosted on your own or rented server. If you use commercial gaming solutions, the use of the server is included as all the data input and calculations happen at the providers' locations.

In case the members meet in a so-called metaspace like Virbela, there might be the need for more calculating power.

2.2. Software Equipment

2.2.1. Presentation Software

The use of presentation software products in the industry has replaced overhead or slide projection during the last decades. They are now state of the art and have left their "wild teenage years" behind, where presentations were overly peppered with all kinds of effects, which distracted from the contents.

MS PowerPoint has been the first presentation software product and is now a standard for more than 30 years. The desktop version is part of the MS Office package that usually is pre-installed on Windows PCs. The online version, PowerPoint online for the web is free of charge. It's a lightweight version of Microsoft PowerPoint available as part of Office on the web, which also includes web versions of Microsoft Excel and Microsoft Word. PowerPoint, like every other software product that is widespread and exists for a long time now, has aggregated a huge repository of functions and gimmicks over the years. We assume that with using only 20% of the functionality, you can create presentations that are very much appreciated by 80% of the audience. That 20% of basic functions are quick and easy to learn.
In the actual version, you can also include live video feeds to any slide in your presentation when presenting in a video call. So you are talking from "inside" the slide. But this will need additional 3rd party tools to achieve. These tools do not come for free.

Free PowerPoint templates can be found at Slidesmania and Slides

Google Slides has the almost identical user interface and functionality of PowerPoint. All generated files are compatible with PowerPoint. This product comes for free.

iMac users also like to use **Keynotes** that does not have so many functionalities like PowerPoint, but is easier to use. It's preinstalled on all iMac and iPad models.
Keynote presentations can be converted created with into PowerPoint without substantial changes in the layout or formatting. The other way around is not possible.
Lecturers presenting online can appear in a window, right on the slides, with a picture-in-picture display.
Keynotes are also available on iPad and iPhones and are fully integrated.
In the latest version (11.xx) you might use show yourself right inside the slides, or show the screen of a connected iPhone or iPad.

The presentation software **Prezi** takes a slightly different approach. The slides are not displayed in a sequence but can be called up dynamically in a mind-mapping-like style. The user creates their content on a large sheet. With the help of markers, he can determine the order of the content during the presentation. During the lecture, you can then jump back and forth between the contents. The tool zooms in and out with a mouse click, moves, and rotates the content. The viewer gets a very good overview of the connections. Prezi immediately captivates the viewer with its dynamic nature and is particularly well suited for creative topics. With Prezi, it is also possible to integrate live

webcams into the presentation. There is a free trial version available which is not suitable for serious presentation.

2.2.2. Video meeting platforms

Video meetings as an alternative and extension for telephone conferences came up in the late nineties but were rarely used because of the high costs per minute. Today video meetings are essential for meetings where the participants are not located in the same building. The connection costs are close to nothing nowadays and the license fees are affordable. Good conference call services must allow users to meet virtually without compromising security or productivity.

Webex is not the conference call service with the most functionalities available on the market, but it's still a good platform—especially for the enterprise. It's strong in multiple use cases, from conferences and lives webinars to IT support and presentations with slides and video. The Interface is very user-friendly
Webex is a collaborative workspace that combines conferencing, messaging, and document sharing. As far as straight-up conference call software goes, though, there may be better, more affordable tools available. Security on the internet is always a topic, even when teaching students. Cisco is the largest enterprise cybersecurity company in the world, so you can trust it to ensure your privacy and data security within a Webex call. Webex encrypts all your data no matter which plans you buy.
Webex can also map directly to Google Workspace and Outlook to sync your meetings with your calendar of choice. The only thing that is missing now that the demands for additional features are getting higher is the lack of more personalization options like virtual backgrounds, color schemes, or window layout options.

Zoom brings teams together to get more done in a frictionless and secure video environment. A video-first unified communications platform, Zoom provides video meetings, voice, webinars, and chat across all devices and spaces.
Zoom has become very popular at the start of the pandemic because they provided their complete services for free.
Zoom deserves its popularity due to its impressive performance, overall stability, and a wide array of features, but its popularity has also been something of a double-edged sword. Security issues have plagued Zoom with its rise to popularity, but the company was reacting fast to patch up the security holes. Zoom offers more personalization options than other platforms and can host up to 500 participants, double the number of other platforms; although we think that we would never reach this limit while teaching or gaming.

Microsoft Teams offers the level of quality and feature set we'd recommend to any organization looking for a video conferencing tool. But this isn't just a video conferencing tool, and that's why it's more effective than the bulk of its competitors.
Rather than combine video and audio conferencing with separate tools for chat and team collaboration, with Teams, you get everything in one powerful digital workspace.
And in terms of performance *and* breadth of features available for both conferencing *and* collaboration, other collaborative platforms just don't match up.
We think Teams is a no-brainer for Microsoft shops and well worth considering as a standalone tool within other ecosystems as well.

Teams provide everything you need for messaging, conferencing, and file sharing—all under one roof, no matter the size of your business. There's very little that other conferencing tools do that Teams cannot do. The usability makes an all-in-one solution much easier than buying and switching between disparate tools.

Teams play well with the entire ecosystem of Microsoft products and sync with a lot of non-Microsoft products

It offers everything you would expect from a mature product—customizable virtual backgrounds, screen sharing, whiteboarding, hand raising, the ability to pin participants to your main view—and then some. Preview your video before joining a call. Use Dark Mode to reduce eye strain. Dial into audio conferencing when you don't have WIFI access. The noise suppression settings cancel background noise when working from home. Another feature we love is the ability to review chats during calls because, in other tools, in-meeting chats disappear after the call.

The app is powerful yet light and doesn't consume huge amounts of data for good-quality audio and video. It runs on all operating systems and device types equally well (functionality isn't quite the same between desktop and mobile, but performance is equal).

Unlike many other video conferencing tools we've tried, Teams will remind external participants to join. And there's no need for external guests to register an account or download the desktop app to join the call. They can easily join from the web (albeit with slightly reduced functionality) with just one click.

Besides these three most used web conference tools, there are several more that have earned an honorable mention and might get more popular in the future. We had a quick look into these products, so the review will highlight a few functionalities we noticed.

Google Meet comes for free and has a lot of functionality like the products mentioned before. What we noticed is that there is a way to highlight and increase the tile of the lecturer and you can also see the whole audience in one window. The latter might be useful if you have a second external screen.

Whereby is a browser-based tool for online meetings? The biggest advantage: The tool is extremely easy to use via the browser. Even people who have never participated in a video conference can simply be switched on without any explanation. All you have to do is to create a link via the platform with your meeting room and send it by email. The other participants can simply click on this link and will join the conference in their browser. The free trial version only allows to meet through one URL and has no security options. The paid versions have full functionality, but users cannot join through the phone.

2.2.3. Engagement and Collaboration Tools

The biggest problem when teaching online is that you cannot check the activity level of your students. Are they listening and looking at your slides? Are they doing something else? Are they present at all? Unlike in the classroom, you cannot see their nonverbal reaction, you might not even be able to see them at all. The conference platforms mentioned above can only show a certain amount of students, if you share your screen, this might be even less.

There are a lot of engagement tools in the market to activate your students and most of them come to have at least a free or a trial version with limited functions.

Quizzes and **Kahoot** are learning platforms to make content immersive and engaging. Participants can engage in live and asynchronous learning using any device—in person or remotely. Teachers and trainers get instant data and feedback while learners engage with competitive quizzes and interactive presentations. Questionnaires and results can be stored, the results can even be downloaded into excel sheets.

Wooclap is an interactive platform that transforms smartphones into exceptional learning tools rather than fighting them in the classroom. It was developed in collaboration with neuroscientists, learning technologists, and teachers to maximize information retention and enhance learning during classes. Wooclap is compatible with all teaching models (traditional, synchronous, asynchronous, distance, hybrid, HyFlex...) and integrates with many tools that teachers use daily (PowerPoint, Google Slides, Genially, Canvas, Microsoft Teams...). There's no application to download, nothing to install. This means they can use Wooclap's many question-types and features within their existing Virtual Learning Environment (VLE).

Mentimeter is an audience engagement platform. Easy-to-use and interactive. You can create dynamic presentations that will impress and engage your audience. With Mentimeter you can better connect with your students, colleagues, and clients. No matter if it is a lecture, workshop, or meeting, Mentimeter has been designed to suit every type of presentation. Zoom and Teams integrations make it even easier to stand out in the remote and hybrid world. The audience can use their smartphones to connect to the presentation where they can submit responses. The real-time visual will help spark chat, discussion, and debate no matter if the meeting takes place online or in person. Once the presentation is over, the results can be downloaded and be used for what has been learned to improve for future meetings, classes, or conferences.

Padlet is a cloud-hosted online bulletin board designed to help entrepreneurs, teachers, and students safely collaborate, reflect, share links, and distribute content in one environment. The software is a user-friendly digital wall that lets you post your content and embed the "walls" into your websites, utilize them via links, or post them on different social media networks. Padlet serves as a sheet of paper that you can use to place together images, videos, texts, and documents with anyone, anywhere using any device. It helps you create a compelling and easy-to-read board, document, and web page that you can share with anyone. The software has two powerful options: the Padlet Backpack, a secure

and private instance intended for schools, and the Padlet Briefcase, a solution made for businesses.

The main benefits of Padlet are its reliable mind-mapping tool, easy-to-use and intuitive interface, and free online bulletin board solution. The mind-mapping tool helps streamline the creation of an online bulletin board that you can use to gather and exhibit data on different topics.
Padlet is an intuitive solution that allows you to post interesting questions and content such as videos, images, texts, and documents. It features an access control and user management tool so you can add or remove members and restrict their access to certain kinds of data. If your employees leave or if your students have graduated, you can seamlessly revoke their access without losing their data. Meanwhile, when one member joins your team, you can give them immediate access to specific data on the system. As for administrators and teachers, they can view the work of other colleagues and contributors.
Furthermore, Padlet provides you with more privacy and enhanced security. It can only be viewed by anyone when set to default. It even lets you add or remove social media capabilities like Facebook sharing without compromising the convenience of imparting content to your members.

Flipgrid is a video discussion platform that is helpful for education purposes.

2.2.4. Postprocessing of Videos and Sound

Videos recorded while teaching live are hardly ever of sufficient quality. May it be the sound or the video quality, slips of the tongue, or anything else that has to be corrected in postprocessing. **Adobe Premiere Pro** and **Final Cut Pro** are the best choices at the moment.
They both come with license costs where FCP has a one-time fee and Premiere comes with a monthly subscription fee.
Both products have the same functionality, but the learning curve is steep, especially for new, inexperienced users.
There are less costly solutions in the market, but they do not have the functionalities needed for professional and smooth video editing.
For Mac users, there is a "light " version of FCP called iMovie preinstalled on every iMac.

Audacity is an open-source software to record edit and mix sounds and comes for free. Although a lot of sound editing can be done with the products described above, audacity is very easy to use and ideal for minor repair works of video sounds or podcasts. You can improve the quality of a recorded sound significantly.

3. Moving the lectures into an online teaching format

3.2. Refurbishing your lectures

Presenting your slides in an online session like they have been presented in the classroom usually does not work very well; for several reasons. First of all, we should ask ourselves if it still makes sense to do hours of lectures in the classroom without changing the format. Long lectures (1 to 4 hours) have always been a challenge for students and lecturers. Even with some breaks after an hour or so, the level of concentration goes down. This is getting worse when teaching online. But the good news is that there are several strategies to ensure teaching success in this situation. This also means that the lectures have to be adapted to online teaching.
The first thing to do – if not already done so – is to create an easy-to-follow course design and navigation. The students should also get clear directions for the activities they need to provide. Reasonably quick responses to students' questions are necessary to avoid misunderstandings.

In the next step, the whole contents should be melted down to the essential topics. We recommend that one lesson should not be longer than 20 minutes.

3.3. Blended learning tools

There are a lot of ideas for restructuring lectures and we will look at the most important ones. Instead of a lecture that is going in one direction, it's much more promising to activate every convenient teaching format at the right time. This should be done one by one over time. Introducing too many changes at the same time would be overwhelming and too much distraction for the lecturer and the students. Once a new format is well established the next one can be tested.

3.3.4. Retrieval in Online Teaching

One of the best things about online education is the ease with which we can incorporate retrieval practice, also known as the testing effect, into our teaching. This is the well-established cognitive principle that attempts to get information out of memory, as we do when we are taking a systematic, repeated quizzing integrated into learning is hard to pull off in a face-to-face classroom, but it is easily done online. Brief quizzes can alternate with the presentation of material and other types of learning activities as frequently as the instructor desires and greatly increase the chances we'll be able to remember that information in the future.

Even when quizzes are used for grading, a fast, frequent quizzing style enabled by technology can be a powerful support for student success. We mentioned some of the software tools for online quizzing already. The instructors in this project took advantage of an additional benefit of technology, the ability to personalize and modify quizzes across students. Questions that a given student answered wrong on one quiz would show up on a future one, encouraging students to do a targeted review of material they didn't understand and further reinforcing learning for the hardest concepts. This kind of innovative, theory-driven application of technology for testing lets us use what we know about retrieval practice to help students learn more in less time.

Similar to the idea of getting students to spend more time retrieving and less time reviewing, there's the emphasis on practice that's well suited to fully online courses. A practice-oriented approach intentionally directs more student time toward applying information instead of watching a presentation of content.

To take full advantage of this powerful effect, we need to adopt the
the somewhat counterintuitive idea that quizzes and tests are parts of teaching and learning rather than something that happens after the teaching is done.

3.3.5. Conveying your Online Teaching Persona

A **persona** is the public image of one's personality. When doing online teaching or gaming, the teachers should think about developing virtual personas as online identities. The Latin word means something like "theatre mask" and this is what describes it very well. Why is this important?

If you are an experienced teacher of classroom courses, you have developed a highly sophisticated persona over time. It's not just about the slides you show and comment on, it is also about their sequence, layout, and content and even more important about the way you present them.

The scenery changes when the same content is taught in an online format. Depending on the conference and presentation software used, the teacher might not anymore be the dominating person on the scenery, but a small tile on the screen. The nonverbal part of the communication might be missing, intonations and punctuations might not be so apparent.

To effectively establish and maintain an active learning community, the instructor must establish his or her teaching persona and maintain it throughout the course. Unlike in a face-to-face classroom, one's persona in the online classroom needs to be deliberately incorporated into the course design.

"The rules are different online. The online teacher has to make a sincere effort to deliver or present an online teaching persona. It may come in different ways. From the way the the online teacher responds—in writing—to the entire class or the single student. It may be in the way the online teacher expresses humor using emoticons or simple words. It might be in videos that introduce each week or chapter in the course.

The teaching style and online teaching persona go hand in hand. No one teaches exactly like another. Adding your persona to a course you did not develop is a challenge."

As for the tools it's recommended for projecting one's online teaching persona, "The introductory e-mail before the start of the course is a great way to begin to project the persona.

Using Web 2.0 tools and technologies also helps facilitate the persona. Still, photographs also carry a strong message. Adding a personal photograph to the course syllabus adds to the entire package."

Like other aspects of online instruction, it's important to determine what works and what doesn't work in one's courses in terms of instructional persona. "We don't recommend radical changes to online courses once you begin. That's going to create more turmoil. But it's important to be able to communicate with the students— whether it is synchronous via chat or perhaps by using a survey instrument—to get at the heart of what's going on."

4.   Moving learning contents into games (gamification)

Gamification, game-based learning, business simulation. We already have defined and discussed them above. As there are a lot of possibilities to turn teaching content into games, we have clustered them into three stages of intensity.

The start of it should be a so-called **"gamification light"**. In this case, only a small part of the lecture contents is turned into a game. This can be Q&A sessions, probably in a competition style or an online quiz. This is an opportunity to check the students' knowledge from the same day lecture or the last lecture. They might receive points for each right answer that counts for the final grading or enables them to reach the next "level of wisdom". It might also be a game that is configured in an escape room scenario, where they only can leave if they have answered a certain amount of questions correctly. If they get stuck, they would get a second chance the following week. Such games can easily be built by teachers with a certain knowledge of the relevant software products mentioned above.

Going one step further would lead us to a **"gamification medium"**. The course of one semester is now divided into two parts. The first part would be lecturing to lay the foundation and enable students to play the game/simulation. This part can be supported by "gamification light" elements and should be 30% to 40% of the total course time. Such kinds of games/simulations are more sophisticated and should be backed by a game designer or similar. An alternative would be to purchase a professional game like Topsim or Inchainge for logistics and supply chain management.

The last stage **"gamification heavy"** would be like the one before, but the difference is that there is no theoretical first part of lectures. The game/Simulation takes place throughout the semester and is founded on knowledge gained during earlier semesters. This would mean a demand for a professional highly sophisticated game/simulation like we had before.

5. Tipps and Tricks and Troubleshooting

5.1. Promoting a Sense of Community

The major concern when starting to teach online is the loss of interaction and sense of community with the students that makes teaching face-to-face so much easier.
The lack of verbal and nonverbal feedback, the impression to speak to an anonymous crowd makes things even worse.
That doesn't have to be the case; many online instructors successfully create a sense of community in their courses. There are a variety of definitions of community. Most include wording or phrases such as "having something in common," "feelings of being connected," "shared goals or aspirations," and "regular interaction."

Online teachers have to find strategies to establish this sense of community. In reality, such strategies are nothing new. In an ideal lecturer's world, they should have been established already.

5.1.1. Being a role model

If instructors are wanting to promote community in their online courses one way to encourage that is by modeling the behavior they would like to see in their students. This can start with a warm and enthusiastic welcome message. It can include responding to student questions promptly and respectfully. And, it can include the instructor sharing personal information about themselves so students have the chance to go beyond seeing their instructor as a content expert teaching the class and view them as a real person they can get to know and relate to. Additionally, if developing a sense of community is a goal for instructors, it is helpful if they let their students know about it.

5.1.2. Letting everyone get to know each other's expectations and opinions about the topic

Sometimes instructors get frustrated that students aren't meeting their expectations when in reality, students might not be clear on what those expectations are. Even in the classroom students hesitate to ask questions, especially about the technical content. This gets worse in online classes. So the teacher has to develop a sense of understanding when their audience needs clarification.

5.1.3. Survey to explore students' interest

Student interest surveys, sometimes called student interest inventories, can be used in online courses to promote relationship building and community. Questions on these surveys can elicit personal information (e.g., what hobbies or activities do you enjoy?), personal related information (e.g., do you enjoy working in groups? why or why not?), and future goals and aspirations (e.g., where do you see yourself in five years?). Questions could even be related to what students might want to see covered in a course and could result in instructors altering their curriculum. This might help students feel more engaged and give them a sense of ownership in a course. Survey results could be used to place students in groups for collaborative work or projects or as a team in a game. And, knowing more about their students (e.g., what type of music they listen to, academic challenges they might have) could help instructors better interact and relate to them.

5.1.4. Building opportunities for students to share their knowledge and experiences

Students come into our courses with a plethora of experiences, from their families, jobs, work, prior schooling, etc. Utilize those past experiences for the benefit of everyone in the class.

Creating social opportunities for Students

In addition to having an introduction or icebreaker activity building in opportunities for online students to interact socially can help promote a sense of community in the class. One-way instructors do this is to have a discussion forum dedicated to personal interactions. Sometimes these forums or spaces are titled "Student Lounge," "Student Cafe," or "The Water Cooler" where students can interact and discuss non-course-related topics. Some online instructors use social media groups such as Facebook, Twitter, or LinkedIn in their courses to encourage social interactions among students. Some online programs even go so far as to add all program alumni to these groups so current students can interact with prior students who are often out working in the discipline.

Building multiple avenues for interaction and engagement.

If an instructor wishes to develop a sense of community in an online course, they will likely be more successful if they create a variety of opportunities for this to occur. These opportunities can be purposefully designed and integrated into the curriculum as an instructor is developing a class. In addition to some of the things already mentioned in this article (e.g., having an introduction or icebreaker activity, creating social spaces for students) other ways instructors can build in student-to-student interaction in a class might include online discussion forums, peer-review activities, collaborative work, and video conferencing. Also, these interactive opportunities could be spaced evenly throughout a course, so for example, if a student is taking a 12-week online course there is some interaction occurring every couple of weeks instead of all happening in the first 2-3 weeks of class.

5.1.5. Motivation

Teachers who are just starting to discover the benefits of online teaching are often very enthusiastic about all the opportunities that come with it and want to include as much as possible into their courses.
On the other side, students might get anxious about this, looking at their more than filled semester plan.
So it might be better to proceed step-by-step each semester and to move to a few new formats in one semester. You should also take the time to announce this new format and describe the benefits. During the semester and especially at the end of the semester the students should have the opportunity to evaluate these new formats.
If it did not ignite, you should look for the reasons and change accordingly.

There is a big discussion going on about whether or not the students should switch on their cameras during the lectures. Experience shows that they are quite hesitant to do so – especially at 8:00 am. There is no easy answer to this, but we should take the following into account.

When teaching in a classroom, it's quite easy to get verbal or non-verbal feedback about the students' motivation. You can often tell by their look what is going on. You can also address them directly. This changes when moving to online teaching. There is not much feedback from the faces you see on the screen. His gets worse if your audience exceeds a certain number of persons and if you start presenting slides. At this point, all the online meeting platforms don't give the teachers the experience that comes close to a lecture in presence.
As a rule of thumb we would state that if your audience exceeds ten members, it does not make much sense to insist on active cameras.

There are several ways to foster motivation among the students, as we have described above. A 90 minutes frontal lecture without interaction is not the way.

The final "dirty trick" would be to finish the session 5 minutes before the official end and see who does not log out.

5.2.   Trouble Shooting

As everywhere, problems will arise sooner or later when converting and implementing online formats in teaching or moving course contents into games. There might be technical problems with the hardware, internet connection, or with the software products. The new formats might not work or might not be accepted as planned. Some students might not be committed to their studies, especially with online formats where they are not really.   visible as in the classroom. None of these problems are new and have certainly been solved somewhere. That's why it makes sense to network with lecturers who are or have been in the same situation - inside and outside the institution right from the start and to help each other. It is also a great advantage if there is 24x7 support with a quick response time for the software and hardware that is used.

5.2.1. Handling failures and learning from Failures

Mistakes happen and can never be avoided 100%. First of all, it makes sense to have a fallback plan, a plan B. In the best case, you can replace one or two of your formats. In the worst case, the event has to be canceled and postponed. But even that should at least be considered beforehand. When solving a problem - if you are involved in the process - you should proceed systematically and document the solution, but also the trial that did not lead to a solution. When working on a solution, you should never change more than one parameter before retesting the functionality.

5.2.2. Unsuccessful online students

Hesitant and/or shy students. There are many possible reasons for students to hang back and not participate in discussions or to give minimal effort in teamwork. Positive encouragement is the key to drawing these students out. One of the best ways is to acknowledge and congratulate the student on something positive the student posted in a discussion or wrote on an assignment. An email or a phone call can reveal some personal situation in the student's life that is affecting his or her involvement. Assure the student that you will work with him or her in getting through the course. Games and major assignments are often processed in teams. So it is unavoidable as a lecturer to recognize and handle a situation of "social loafing".

Students who are absent or who don't submit assignments on time. The two major reasons for these occurrences are students who don't care much for the course or school and students who have personal situations that affect their ability to meet deadlines. While you can't change every student's behavior, individualized emails—and especially phone calls—can go a long way toward resolving the absences/tardiness. Also, keep an upbeat, interested, and enthusiastic tone in the course. It helps make students feel more at ease.